

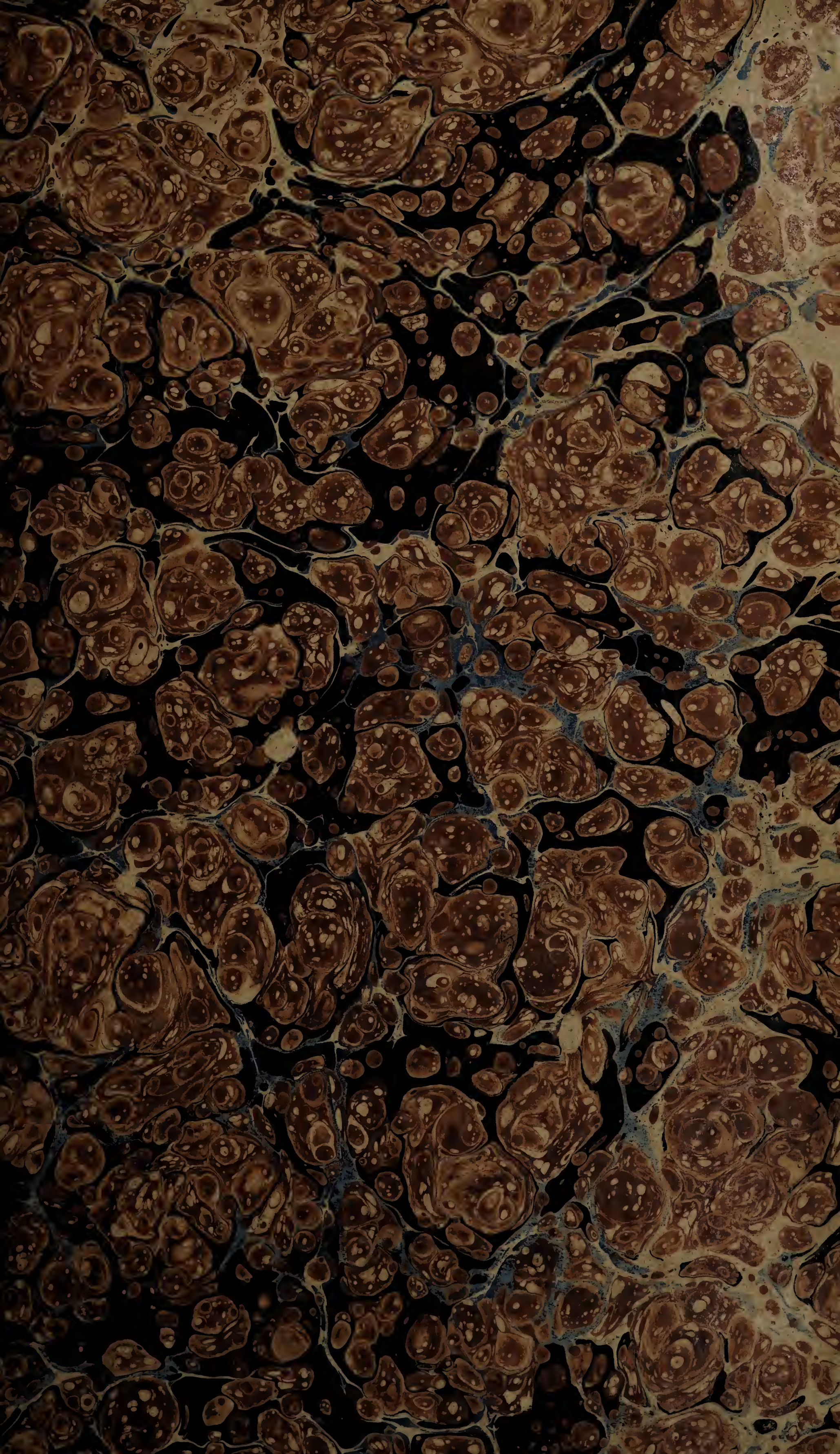






HENRY B. H. BEAUFAY, F. R. S.

















THE  
GARDENER'S AND BOTANIST'S  
DICTIONARY;

CONTAINING

THE BEST AND NEWEST METHODS OF CULTIVATING AND IMPROVING THE  
KITCHEN, FRUIT, AND FLOWER GARDEN, AND NURSERY;

OF PERFORMING THE  
PRACTICAL PARTS OF AGRICULTURE;  
OF MANAGING VINEYARDS,

AND

OF PROPAGATING ALL SORTS OF TIMBER TREES.

BY THE LATE

PHILIP MILLER, F.R.S.

GARDENER TO THE WORSHIPFUL COMPANY OF APOTHECARIES AT THEIR BOTANIC GARDEN IN CHELSEA,  
AND MEMBER OF THE BOTANIC ACADEMY AT FLORENCE.

TO WHICH ARE NOW FIRST ADDED,

A COMPLETE

ENUMERATION AND DESCRIPTION OF ALL PLANTS HITHERTO KNOWN,

WITH THEIR

*GENERIC AND SPECIFIC CHARACTERS,*

PLACES OF GROWTH, TIMES OF FLOWERING, AND USES BOTH MEDICINAL  
AND ECONOMICAL.

THE WHOLE CORRECTED AND NEWLY ARRANGED,

WITH THE ADDITION OF ALL THE MODERN IMPROVEMENTS IN LANDSCAPE GARDENING, AND IN THE  
CULTURE OF TREES, PLANTS, AND FRUITS,

PARTICULARLY IN THE VARIOUS KINDS OF HOT HOUSES AND FORCING FRAMES:

WITH PLATES EXPLANATORY BOTH OF THEM, AND THE PRINCIPLES OF BOTANY.

BY

THOMAS MARTYN, B.D. F.R.S.

REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF CAMBRIDGE.

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IN TWO VOLUMES.

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VOL. II. PART II. Q—Z.

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L O N D O N:

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M DCCC VII.





GARDNER'S AND BOWMAN'S

DICTIONARY

OF

THE

ARTS AND CRAFTS

OF

THE

UNITED STATES

OF

AMERICA

AND

THE

INDUSTRIES

OF

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THE

UNITED STATES

T H E

GARDENER'S AND BOTANIST'S

DICTIONARY.

Q.

Q U A

**Q**UADRIFOLIUM. See *Ornithopus*.

**Q**UAI-FA. See *Olea*.

**Q**UAKING GRASS. See *Briza*.

**Q**UALEA.

*Lin. gen. Schreb. n. 12. Juss 424. Aubl. guian. t. 1.*

Class. 1. Monandria Monogynia.

GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, deeply four-parted: segments ovate, coriaceous, concave, unequal, the two lower larger, gaping.

**COR.** *Petals* two, unequal, inserted into the calyx: upper erect, roundish, emarginate, ending at the base in a horn-shaped, short, blunt *Nectary*, prominent between the upper segments of the calyx: lower larger, bending down.

**STAM.** *Filament* one, short, ascending, inserted between the lower petal and the germ. *Anther* oblong, grooved, recurved.

**PIST.** *Germ* globular. *Style* filiform, ascending, the length of the stamen. *Stigma* blunt.

**PER.** Berry? one-celled.

**SEEDS** very many, nestling in the pulp.

**OBS.** *The corolla has the form of a bilabiate one. The genus is allied to Cucullaria.*

Q U A

ESSENTIAL CHARACTER.

*Cal.* four-parted. *Cor.* two-petalled. *Berry.*

SPECIES.

1. *Qualea rosea*.

*Lin. spec. ed. Willd. 18. Aubl. guian. 1. 5. t. 1. Lower petal blunt, leaves acuminate.*

2. *Qualea cœrulea*.

*Lin. spec. ed. Willd. 18. Aubl. guian. 1. 7. t. 2. Petals emarginate, leaves acute.*

DESCRIPTIONS, &c.

1. This is a tree attaining the height of sixty feet and more; and two feet in diameter: the bark is wrinkled, and the wood reddish and compact: at the top it has large branches, some growing right up, others horizontal, spreading wide in all directions: the twigs are opposite. Leaves smooth, shining, firm, entire, oval: from the midrib spring many lateral nerves, simple and parallel. Petiole cylindrical, nine lines in length, accompanied at its origin by two deciduous stipules. Flowers in terminating panicles; the branches and branchlets opposite. Bractes in pairs, small, deciduous, at the base of the branchlets. The flowers smell very agreeably. This tree is called *Laba-Laba* by the Galibis. It grows in the forests of Guiana



Guiana, which extend to the bank of the river Sinemari, twelve leagues from its mouth.

2. This also is a tree from sixty to eighty feet in height, and three feet in diameter, with a bark and wood like the former. The branches and branchlets also are the same. The leaves are short, in most respects like the other, but terminating only in a short point. The petiole is short. The flowers are in large panicles, with some of the branches alternate. The upper petal is ash-coloured without, and blueish within; the lower is blue, except towards the claw, where it is yellow marked with black: whereas in the other species the upper petal is white on the outside, and rose-coloured within; the lower in opening is reddish, but when expanded becomes white towards the claw, the rest yellow. The flowers have a sweet pleasant odour. This tree has the name of *Qualé* among the Galibis, whence the generic name. It is found in the same country, but higher up the river, namely forty leagues from its mouth<sup>1</sup>.

QUAMOCLIT. See *Convolvulus*, *Cressa*, *Ipomœa*.

QUARARIBEA. See *Myrodia*.

QUASSIA. (So named by Linneus, in memory of *Quassi* a negro slave, who found and discovered to Rolander the wood of this tree.

Lin. gen. n. 529. Reich. n. 578. Schreb. n. 728.

Amoen. acad. 6. monogr. Gertn. t. 70. Juss.

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Class. 10. 1. Decandria Monogynia.

Nat. order of *Gruinales*. *Magnoliæ*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* five-leaved, very short: *leaflets* ovate, permanent.

COR. *Petals* five, lanceolate, elongated, sessile, equal.

*Nectary* of five ovate villose scales, inserted into the interior base of the filaments.

STAM. *Filaments* ten, filiform, equal, the length of the corolla. *Antthers* oblong, incumbent.

PIST. *Receptacle* fleshy, orbicular, elevated, wider than the germ. *Germ* ovate, composed of five. *Style* filiform, the length of the stamens. *Stigma* simple.

PER. five, lateral, distant, inserted into the fleshy orbicular receptacle, ovate, obtuse, two-valved.

SEEDS solitary, globular.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. *Petals* five. *Nect.* five-leaved.

*Peric.* five, distant, each having one seed.

#### SPECIES.

1. *Quassia amara*. Bitter *Quassia*.

Lin. spec. 553. 1679. Syst. ed. 13. 333. ed. 14. 401.

Reich. 275. mat. med. 114. Woodv. med. bot.

215. t. 77. Amœn. acad. 6. 421. t. 429. Suppl.

235. Patris in Roz. obs. t. 9. p. 140. Febr.

t. 2. Plenck ic. 333.

Flowers hermaphrodite, leaves unequally pinnate, leaflets opposite sessile, petiole jointed winged, flowers in racemes.

2. *Quassia Simaruba*. *Simaruba Quassia*.

Lin. syst. 401. suppl. 234. Gertn. fruct. 1. 340.

Woodv. med. bot. 211. t. 76. 3. Lond. med.

journal. 11. 1. Trans. edinb. 2.

*Simaruba amara*. Aubl. guian. 859. t. 331. 332.

Flowers monoecous, leaves abruptly pinnate, leaflets alternate subpetioled, petiole naked, flowers in panicles.

3. *Quassia excelsa*. Lofty *Quassia*.

Swartz prodr. 67.

Flowers hermaphrodite five-stamened panicled, leaves unequally pinnate, leaflets opposite petioled, petiole naked.

#### DESCRIPTIONS, &c.

1. This is a lofty tree, with many strong branches; the wood white and light, the bark thin, and of a gray colour. Leaves alternate, interruptedly pinnate, consisting of two pairs of opposite leaflets at the joints of the petiole, and an odd one at the end. Leaflets elliptic, entire, veined, smooth, acuminate at both ends, sessile, deep green on the upper, paler on the under surface. Common petiole two-jointed, and winged like the orange with a leafy membrane gradually spreading to the joints. The flowers terminate

<sup>1</sup> Aublet.

the branches in elongated racemes or spikes, directed one way, all hermaphrodite, of a bright red colour. Bractes lanceolate or linear, coloured, alternate. It is easily known by its leaves, which are very different from all others.

Native of South America, particularly of Surinam; and also of some of the West India islands<sup>m</sup>.

The figure given in the *Amoenitates Academicæ* is not a just one, the flowers only, as the younger Linneus has observed, being right, but the branch with leaves belonging to another plant, hence the figures of Buchoz, Lettsom, &c. copied from this, are inaccurate: those of Patris and Woodville are right.

The root, wood, bark, and indeed all the parts of this tree are intensely bitter. Linneus says that the wood of the root is a noble remedy, but that the wood of the small branches which has since been substituted for it is good for nothing. The wood of both is now thought to be less intensely bitter than the bark, which is at present regarded as the most powerful medicine.

Quassia has no sensible odour; its taste is that of a pure bitter, more intense and durable than of almost any other known substance; it imparts its virtues more completely to watery than spirituous menstrua, and its infusions are not blackened by the addition of martial vitriol.

The negro Quassi, Quafs, or as it is written by Fermin Coiffi, is said to have employed it with uncommon success, as a secret remedy in the malignant endemic fevers, which frequently prevailed at Surinam. For a valuable consideration this secret was disclosed to Daniel Rolander, a Swede, who brought specimens of the wood to Stockholm, in the year 1756; and since that time the effects of this drug have been generally tried in Europe. The medicinal qualities ascribed to Quassia are those of a tonic, stomachic, antiseptic and febrifuge.

Dr. Cullen believes Quassia to be an excellent bitter, and thinks it will do all that a simple bitter can do, but no more: he ascribes the extraordinary commendations which are given it, to the partiality so often shown to new medicines.

It may be given in infusion, or in pills made from the watery extract; the former is generally preferred in the proportion of three or four drams of the wood to twelve ounces of water<sup>n</sup>.

It is said that considerable quantities of this drug are used by the brewers instead of hops.

2. This tree grows to a considerable height and thickness, with alternate spreading branches: the bark on the trunk of old trees is black and a little furrowed, but that of younger trees is smooth, gray, and here and there marked with broad yellow spots: the wood is hard, white, and without any remarkable taste. Leaves numerous, alternate, composed of several leaflets (from two on each side to nine) oblong or nearly elliptic, sharp at the end, smooth above, and of a deep green colour, beneath whitish, placed alternately on very short foot-stalks. Flowers on branched spikes, or long wide axillary panicles, of a yellow colour.

According to Linneus and others, the male and female flowers are mixed in the same panicle; but Dr. Wright says that the female flower is never found on the same tree with the male, in Jamaica. The small calyx is cut into five obtuse erect segments in both; the five petals are sessile, equal, lanceolate, bent outwards, three times the length of the calyx, into which they are inserted. Nectary composed of ten roundish or ovate villose scales, inserted in a ring at the interior base of the filaments. Receptacle marked with ten grooves. The male flowers have an abortive germ, depressed, five-streaked, covered by the nectaries, but without any style or stigma. The fertile flowers have no stamens, but five roundish germs adhering together, with a cylindrical erect style, about the length of the corolla, divided at the top into five recurved permanent stigmas. The fruit is ovate, black, smooth, pulpy, composed of five drupes, but

<sup>m</sup> Woodville & Linn. suppl.

<sup>n</sup> Woodville. seldom



seldom more than two or three arrive at maturity: each of these contains an oblong pointed nut with a flattish kernel. Gærtner names them berries, which he describes as five in number, from upright spreading, ovate, convex on one side, keeled with a blunt angle on the other, black, smooth, one-celled; the pulp fungose, thick, hardish; the cell invested with a cartilaginous membrane. The common receptacle small, fleshy, subpentangular: the proper receptacle, a thin membranaceous *lacinula*, springing from the internal angle of the cell, and inserted into the side of the seed below the tip. Seed ovate-oblong, very slightly compressed above, thickened and rounded below, of a pale colour.—Gærtner remarks, that the berries which he examined were very dark smooth and shining, whereas those figured by Aublet have branched vessels on the outside of them: and that this pericarp is between a berry and a capsule, seeming to open spontaneously inwards when ripe.

Simaruba is a native of South America and the islands of the West Indies. In Jamaica it is known by the names of Mountain Damson, Bitter Damson and Stave-wood. Although the bark was first imported into Europe in 1713, it is but a few years since this plant was botanically ascertained. Dr. Wright says, that in 1773, specimens of the fructification were sent from Jamaica in spirits to Dr. Hope at Edinburgh, with some dried bark from the roots: and that the following year specimens were also transmitted to Dr. John Fothergill of London, who sent them to Linneus at Upsal. By the assistance of Mr. Alexander Anderson, it was introduced into the royal garden at Kew in 1787. The bark was first sent from Guiana to France in 1713 to the Count de Ponchartrain, then secretary of state, as a remedy of great efficacy in dysentery. In 1718 and 1723 an epidemic flux prevailed very generally in France, which resisted all the medicines usually employed in such cases; under these circumstances, recourse was had to *cortex Simarubæ*, which proved remarkably successful, and first established its medical character in Europe.

This drug is the bark of the roots of this tree; which is rough, scaly and warted: the inside, when fresh, is a full yellow, but when dry paler: it has little smell; and the taste is bitter, but not disagreeable. Macerated in water, or in rectified spirit, it quickly impregnates them with its bitterness, and with a yellow tincture: the cold infusion in water is rather stronger in taste than the decoction; which last grows turbid and of a reddish brown as it cools.

Dr. Wright says, most authors who have written on the Simaruba agree, that in fluxes it restores the lost tone of the intestines, allays their spasmodic motions, promotes the secretions by urine and perspiration, removes the lowness of spirits attending dysenteries, and disposes the patient to sleep; the gripes and tenesmus are taken off, and the stools are changed to their natural colour and consistence. In a moderate dose it occasions no disturbance or uneasiness, but in large doses it produces sickness at the stomach and vomiting. Modern physicians have found this medicine successful only in the third stage of dysentery, where there is no fever, where the stomach is not hurt, and where the gripes and tenesmus are only continued by a weakness in the bowels: but Dr. Wright is convinced by the experience of himself and many friends, of the efficacy of this medicine, and hopes the Simaruba bark will soon be in more general use.

On the other hand Dr. Cullen cannot perceive any thing in this bark but that of a simple bitter; and says that the virtues ascribed to it in dysentery have not been confirmed by his experience, or that of other practitioners in Scotland; and that in dysentery he has found an infusion of chamomile flowers a more useful remedy.

Dr. Wright recommends two drams of the bark to be boiled in twenty-four ounces of water to twelve, the decoction is then to be strained and divided into three equal parts, the whole of which is to be taken in twenty-four hours; and when the stomach is recon-

ciled to this medicine, the quantity of the bark may be increased to three drams. To this decoction some join aromatics; others a few drops of laudanum to each dose.

3. Observed by Swartz in Jamaica.

QUAHMECATL. See *Raullinia*.

QUEENS GILLIFLOWERS. See *Hesperis*.

QUEEN OF THE MEADOWS. See *Spiraea*.]

QUERCUS (of Pliny and other Latin writers. Derivation uncertain. Perhaps, says Vossius, from *νεγκυρεος*, *durus*, *asper*; the wood being hard, and the bark rough. In Greek *Δρυς*.)

Lin. gen. n. 1070. Reich. n. 1168. Schreb. n. 1447.

Tournef. t. 394. Juss. 410. Gært. t. 37. Ilex,

Tourn. t. 350. Suber, Tourn.

Class. 21. 7. Monoecia Polyandria.

Enneandria Monogynia, Thunb.

Octandria Tetragynia, Withering.

Nat. order of *Amentaceæ*.

#### GENERIC CHARACTER.

\* Male Flowers.

CAL. *Ament* filiform, long, loose.

Perianth one-leaved, subquinquefid: segments acute, often bifid.

COR. none.

STAM. Filaments five to ten, very short. Anthers large, twin.

\* Females sessile in the bud, on the same plant with the males.

CAL. Involucre consisting of very many imbricate scales, united at the base into coriaceous hemispherical little cups, the outer ones larger; one-flowered, permanent.

Perianth very small, superior, six-cleft, permanent: segments acute, surrounding the base of the style, pressed close.

COR. none.

PIST. Germ very small, ovate, inferior, three-celled: rudiments of the seeds double. Style simple, short, thicker at the base. Stigmas three, reflex.

PER. none.

SEED. A Nut (Acorn) ovate-cylindrical, coriaceous, smooth, filed at the base, one-celled, fixed in a short hemispherical cup, which is tubercled on the outside.

OBS. Quercus of Tourn. has sinuate leaves. Ilex of Tourn. has tooth-ferrate leaves. Suber of Tourn. has the trunk clothed with a smooth fungous bark. (Cork.)

#### ESSENTIAL CHARACTER.

MALE. Cal. commonly five-cleft. Cor. none. Stam. five to ten.

FEM. Cal. one-leaved, quite entire, rugged. Cor. none. Styles two to five. Seed one, ovate.

#### SPECIES.

1. Quercus Phellos. Willow-leaved Oak Tree.

Lin. spec. 1412. Reich. 4. 159. Gron. virg. 117.

149. Du Roi barbecc. 2. 278. n. 12. Ait. kew.

3. 354.

Q. f. Ilex marilandica, folio longo angusto salicis.

Raii dendr. 8. Catesb. car. 1. t. 16.

Common Willow-leaved Oak Tree.

β. Q. humilis, salicis folio brevior. Catesb. car. 1. t. 22.

Dwarf or highland Willow-leaved Oak Tree.

Leaves silky underneath.

Leaves deciduous lanceolate quite entire.

[2. Quercus molucca.

Lin. spec. 1412. Reich. 4. 160. Rumph. amb. 3.

85. t. 56.

Leaves lanceolate-ovate smooth quite entire.

3. Quercus glabra.

Lin. syst. 858. Thunb. jap. 175.

Leaves lanceolate-oblong acuminate smooth.

4. Quercus acuta.

Lin. syst. 858. Thunb. jap. 175.

Leaves oblong cusped entire, the younger ones tomentose.

5. Quercus glauca.

Lin. syst. 858. Thunb. jap. 175. Kämpf. amoen.

5. 816. ic. select. t. 17.



# Q U E

- Leaves obovate acuminate serrate at the tip glaucous underneath.*
6. *Quercus cuspidata*.  
*Lin. syst.* 858. *Thunb. jap.* 176.  
*Leaves ovate cusped serrate smooth.*
7. *Quercus ferrata*.  
*Lin. syst.* 858. *Thunb. jap.* 176.  
*Leaves oblong parallel-nerved.*
8. *Quercus dentata*.  
*Thunb. jap.* 177.  
*Leaves obovate-oblong obtuse gash-toothed tomentose underneath.]*
9. *Quercus ilex*. *Evergreen or Holm Oak Tree*.  
*Lin. spec.* 1412. *syst.* 858. *Reich.* 4. 160. *hort. cliff.* 448. *Gouan monsp.* 491. *Du Roi barbecc.* 2. 261. *Scop. carn. n.* 1182. *Villars dauph.* 3. 793. *Allion. pedem. n.* 1980. *Regnault bot.* *Ait. kew.* 3. 355.  
α. *Common Evergreen Oak*. With lanceolate quite entire leaves.  
*Ilex folio angusto non ferrato.* *Baub. pin.* 424.  
*Smilax Dalechampii.* *Baub. hist.* 2. 101.  
β. *Serrate-leaved Evergreen Oak*.  
With lanceolate serrate leaves.  
*Ilex oblongo ferrato folio.* *Baub. pin.* 424. *Tourn. inst.* 583. *Dubam. arb.* 1. 314. *t.* 123.  
*I. arborea.* *Baub. hist.* 1. 95. *Raii hist.* 1391.  
*I. major glandifera.* *Ger. emac.* 1344.  
*I. major aculeata & absque aculeis.* *Park. theat.* 1395.  
*I. coccigera.* *Blackw. t.* 186.  
γ. *Q. oblonga*. *Long-leaved Evergreen Oak*.  
With ovate-oblong serrate-toothletted leaves, toothlets pungent.  
*Ilex folio rotundiore molli modiceque sinuato.* *Baub. pin.* 425. *Dubam. arb.* 1. 314. *t.* 124.  
*Leaves evergreen lanceolate or oblong tomentose underneath, calyxes ciliate, anthers ovate, bark even.*
10. *Quercus gramuntia*. *Holly-leaved Evergreen Oak Tree*.  
*Lin. spec.* 1413. *syst.* 858. 8. β. *Reich.* 4. 160. 3. γ. *Ait. kew.* 3. 355.  
*Ilex foliis rotundioribus & spinosis, e luco gramuntio.* *Magn. monsp.* 140.  
*Leaves roundish-ovate cordate at the base sinuate-toothletted pungent waved tomentose underneath, anthers roundish.*
- [11. *Quercus Ballota*.  
*Desfont. atlant.* 350.  
*Leaves evergreen elliptic toothletted or entire tomentose underneath, acorn very long.*
12. *Quercus cornea*.  
*Lour. cochinch.* 572. *ed. Willd.* 700.  
*Leaves oblong-ovate repand serrate, glands.*
13. *Quercus concentrica*.  
*Lour. cochinch.* 572. *ed. Willd.* 701.  
*Leaves lanceolate-ovate quite entire incurved, calyxes loose very short excavated with concentric circles.]*
14. *Quercus Suber*. *Cork-barked Oak or Cork Tree*.  
*Lin. spec.* 1413. *Reich.* 4. 160. *hort. cliff.* 448. *mat. med.* 202. *Gouan. monsp.* 491. *Du Roi barbecc.* 2. 263. *Hunt. Evel. sylva.* 2. 68. *Regnault, bot.* *Dubam.* 2. *t.* 80. *Blackw. t.* 193. *Allion. pedem. n.* 1981.  
*Suber. Camer. epit.* 115.—*latifolium.* *Clus. hist.* 22. *Lob. ic.* 2. 159. *Ger.* 1163. *emac.* 1347. *Park. theat.* 1397. *Baub. hist.* 1. 103. *Raii hist.* 1393.  
*S. latif. perpetuo virens.* *Baub. pin.* 424. *Tourn. inst.* 584.  
*Phellos f. Suber.* *Dod. pempt.* 830.  
*Leaves evergreen ovate-oblong tomentose underneath waved, bark cloven fungose.*
15. *Quercus coccifera*. *Kermes Oak Tree*.  
*Lin. spec.* 1413. *Reich.* 4. 161. *Gron. orient.* 291. *Gouan. monsp.* 491. *Sauv. monsp.* 96. *Scop. carn. n.* 1183. *Villars dauph.* 3. 793. *Allion. pedem. n.* 1982. *Desfont. atlant.* 348. *Ruff. alepp. t.* 15. *f.* 2.  
*Ilex coccifera.* *Camer. epit.* 774.  
*I. aculeata cocciglandifera.* *Baub. pin.* 425. *Dubam. arb.* 2. 314. *t.* 125.  
*I. coccigera.* *Ger.* 1159. *emac.* 1342. *Baub. hist.*

# Q U E

1. 106. *Raii. hist.* 1392. *Clus. hist.* 24. *Tabern. ic.* 969.
1. *aquifolia f. coccigera.* *Park. theat.* 1394. *t.* 1395. *f.* 3. *Tournesf. inst.* 583. *Garid. aix.* 245. *t.* 537.  
*Coccus infectoria.* *Lob. ic.* 2. 153.  
*Leaves ovate cordate at the base tooth-spiny smooth on both sides waved.*
16. *Quercus virens*. *Live Oak Tree*.  
*Ait. kew.* 3. 356.  
*Q. Phellos β.* *Lin. spec.* 1412.  
*Q. virginiana.* *Mill. dict. n.* 16.  
*Q. sempervirens, foliis oblongis non sinuatis.* *Catesb. car.* 1. *t.* 17.  
*Leaves evergreen coriaceous lanceolate-oblong subtomentose underneath undivided and sinuated.*
17. *Quercus Prinus*. *Chestnut-leaved Oak Tree*.  
*Lin. spec.* 1413. *Reich.* 4. 161. *hort. cliff.* 448. *Gron. virg.* 149. *Du Roi barbecc.* 2. 276. *t.* 6. *f.* 3. *Ait. kew.* 3. 356.  
*Q. castaneæ foliis, procera arbor, virginiana.* *Pluk. phyt. t.* 54. *f.* 3. *Catesb. car.* 1. *t.* 18. *Dubam. arb.* 18.  
α. *Q. Prinus lata.* *Broad Chestnut-leaved Oak*.  
With ovate leaves.  
β. *Q. P. oblongata.* *Long Chestnut-leaved Oak*.  
With oblong leaves.  
*Leaves deciduous ovate-elliptic pubescent underneath deeply toothed, teeth very wide blunt almost equal.*
18. *Quercus aquatica*. *Water Oak Tree*.  
*Ait. kew.* 3. 357.  
*Q. nigra α.* *Lin. spec.* 1413. *Gron. virg.* 117. 149. *Du Roi barbecc.* 2. 272. *t.* 6. *f.* 1.  
α. *Q. aquat. cuneata.* *Common Water Oak*.  
*Q. folio non ferrato in summitate quasi triangulo.* *Catesb. car.* 1. *t.* 20.  
*Leaves wedge-shaped sublobed at the tip.*  
β. *Q. aquat. heterophylla.* *Various-leaved Water Oak*.  
*Leaves wedge-form-oblong acute sinuate.*  
γ. *Q. aquat. elongata.* *Long-leaved Water Oak*.  
*Leaves wedge-form-oblong obsoletely sinuate somewhat waved.*  
δ. *Q. aquat. indivisa.* *Entire-leaved Water Oak*.  
*Leaves wedge-form oblong mostly quite entire.*  
ε. *Q. aquat. attenuata.* *Narrow-leaved Water Oak*.  
*Leaves oblong-lanceolate somewhat wedge-shaped acute slightly sinuate.*  
*Leaves annual somewhat wedge-shaped attenuated at the base lobed smooth.*
19. *Quercus nigra*. *Black Oak Tree*.  
*Ait. kew.* 3. 357.  
*Q. nigra β.* *Lin. spec.* 1413.  
*Q. marilandica folio trifido ad fassafra accedente.* *Catesb. car.* *t.* 19. *Gron. virg.* 140. *Du Roi barbecc.* 2. 274. *t.* 6. *f.* 2.  
*Leaves annual wedge-form somewhat cordate at the base, obsoletely lobed, lobes dilated.*
20. *Quercus rubra*. *Red Oak Tree*.  
*Ait. kew.* 3. 357.  
*Q. rubra α.* *Lin. spec.* 1413. *Du Roi barbecc.* 2. 265. *t.* 5. *f.* 2. *Pluk. phyt. t.* 54. *f.* 4. *Catesb. car.* 1. *t.* 23.  
α. *Q. rubra latifolia.* *Champion Oak*.  
*Leaves wide, calyxes abbreviated flattish underneath.*  
β. *Q. rubra coccinea.* *Scarlet Oak*.  
*Leaves middle-sized, calyxes pitcher-shaped.*  
γ. *Q. rubra montana.* *Mountain Red Oak*.  
*Leaves smaller, calyxes abbreviated flat underneath, acorns roundish.*  
*Leaves annual smooth on both sides obtusely sinuate, sinuses divaricating, segments acute setaceous-mucronate.*
- [21. *Quercus discolor*. *Downy-leaved Oak Tree*.  
*Ait. kew.* 3. 359.  
*Q. rubra β.* *Lin. spec.* 1414. *hort. cliff.* 448. *Du Roi barbecc.* *t.* 5. *f.* 3. *Catesb. car.* 1. *t.* 21. *f.* 1. *Pluk. phyt. t.* 54. *f.* 5.  
*Leaves annual pubescent underneath sinuate, sinuses spreading, segments setaceous-mucronate.]*
22. *Quercus alba*. *White Oak Tree*.  
*Lin. spec.* 1414. *Reich.* 4. 162. *Kalm. it.* 2. 357. *Gron. virg.* 117. 149. *Catesb. car.* 1. *t.* 21. *f.* 2.



# Q U E

# Q U E

## DESCRIPTIONS, &c.

1. the Willow-leaved Oak grows naturally in North America, where they distinguish two sorts; one of them ( $\beta$ ) is called the Highland Willow Oak, and grows upon poor dry land; the leaves are of a pale green and entire, shaped like those of the Willow tree. The acorns are very small, but have pretty large cups.

The other grows in low moist land, and rises to a much greater height; the leaves are larger and narrower, but the acorns are of the same size and shape. Their difference is probably owing to the soil in which they grow.

[The latter becomes a large timber tree, and there are said to be several varieties of it.—It was cultivated here in 1724, as appears from Furber's catalogue. It flowers in May and June<sup>1</sup>.

2. This is so named from its having been found by Rumphius in the Molucca islands.

3. Branches by twos or threes, wrinkled, knobbed, from upright spreading. Leaves alternate, petioled, attenuated at the base, cusped, quite entire, parallel-nerved, smooth on both sides, shining above, yellowish underneath. Spikes of flowers terminating, solitary or two or three together, tomentose.

4. Branches knobbed, dotted with white, ash-coloured, smooth, tomentose at the end. Leaves alternate, petioled, rounded at the base, entire, parallel-nerved, in their advanced state smooth, but ferruginous-tomentose underneath when young. Spikes of flowers axillary, ferruginous-tomentose.

5. This is a very large tree. Branches and branchlets subumbelled, round, smooth, with raised white dots, purple, erect. Leaves alternate, on short petioles, attenuated at the base, entire, toothed or serrate from the middle to the tip, cusped, above smooth and green, underneath mealy-white, parallel-nerved, from two to three inches long, and near two inches wide. Flowers axillary. The nest of an insect frequently adheres to the branches. It differs from *Q. Ilex* and *Suber* in having the leaves wider, obovate, cusped, attenuated and entire at the base, glaucous or mealy underneath and not tomentose, parallel-nerved.

6. Branches striated, smooth, spreading. Leaves alternate, petioled, rounded at the base, having unarmed ferratures from the middle to the tip, parallel-nerved, very smooth on both sides, an inch long. Female flowers scattered on the branchlets, solitary, subsessile. Calyxes echinate, the size of a hazel nut. The acorns are said to be eaten both raw and dressed. It differs from *Q. Ilex* and *Suber* in having smooth leaves—from *Q. coccifera* in having cusped leaves with unarmed ferratures—from *Q. glauca* in having the leaves ovate, quite smooth, and smaller, with echinate calyxes.

7. Branches and branchlets alternate, smooth, ash-coloured, knobbed, muricated with white dots, spreading. Leaves alternate, acuminate, the whole edge sharply and equally serrate, green above, paler underneath, parallel-nerved, when young silky-tomentose, but when more advanced very finely villose, unequal, from an inch to a hand in length.

8. Branches and branchlets thick, wrinkled, grooved, muricated with dots and little knobs, the upper ones tomentose, erect. Leaves aggregate at the ends of the branchlets, on very short petioles, unarmed, parallel-nerved, villose above, soft, two inches long. The six last species were observed by Thunberg in Japan<sup>2</sup>.]

9. Of the *Ilex* or evergreen Oak there are several varieties, differing greatly in the size and shape of their leaves; but these will all arise from acorns of the same tree; nay the lower and upper branches have very frequently leaves very different in size and shape, those on the lower branches being much broader, rounder, and their edges indented and set with prickles; but those on the upper long, narrow, and entire. The leaves of the *Ilex* are from three to four inches long, and an inch broad near the base, gradually lessening to a point; they are of a lucid green on

<sup>1</sup> Hort. kew.

<sup>2</sup> Thunb. jap.

their

Leaves annual pinnatifid, sinuses narrowed, segments oblong-linear awnless.

23. *Quercus Esculus*. Italian or Small prickly-cupped Oak Tree.

*Lin. spec.* 1414. *syst.* 858. *Reich.* 4. 162. *mant.* 496. *Allion. pedem.* n. 1984.

*Q. parva* f. *Phagus Grecorum* & *Esculus Plinii*. *Baub. pin.* 420. *Raii hist.* 1386.

*Phagus* f. *Esculus*. *Park. theat.* 1387. 3.

Leaves pinnatifid pubescent underneath, segments lanceolate acute, ramments axillary filiform, acorns oblong, calyxes muricated.

24. *Quercus Robur*. Common Oak.

*Lin. spec.* 1414. *syst.* 858. *Reich.* 4. 163. *hort. cliff.* 448. *fl. suec.* n. 870. *mat. med.* 202. *Woodv. med. bot.* 344. *t.* 126. *Evel. sylva, ed.* *Hunt.* 67. *fig.* *Gartn. fruct.* 1. 183. *Huds. angl.* 421. *Wither. arr. ed.* 3. 387. *Lightf. scot.* 581. *Hall. belv.* n. 1626. *Scop. carn.* n. 1184. *Pollich pal.* n. 909. *Villars dauph.* 3. 792. *Allion. pedem.* n. 1983.

*Q. pedunculata*. Stalk-fruited Oak.

*Ait. kew.* 3. 359. *Fl. rust.* t. 10. *Lin. syst.* 858. 17.  $\beta$ . *Reich.* 4. 163. 11.  $\beta$ . *Abbot, bedf.* n. 690.

*Q. femina*. *Mill. dict.* n. 2. *Wither. arr.* 387.

*Q. vulgaris*. *Ger.* 1156. *emac.* 1339. 1. & 1340. 2.

*Quercus*. *Fuchs. hist.* 229. *Matth.* 204. *Dod.* 823. 1. *Lob. ic.* 2. 155. 1. *Park. theat.* 1386. 1. & 1390. 1. *Baub. hist.* 1. 70. f. 2.

*Q. cum longo pediculo*. *Baub. pin.* 420. *Raii hist.* 1386. iv.

*Q. latifolia* *Park.* *Raii syn.* 440. 1.

Leaves subsessile, acorns on fruit-stalks single or two together.

$\beta$ . *Q. sessilis*. Sessile-fruited Oak.

*Ait. kew.* 3. 359. *Fl. rust.* t. 11. *Huds. angl.*  $\beta$ . *Haller*  $\beta$ .

*Q. Robur*. *Mill. dict.* n. 1. *Wither. arr.* 387. *Abbot, bedf.* 689.

*Q. latifolia mas. quæ brevi pediculo est.* *Baub. pin.* 419. *Raii hist.* 1385. 1. *syn.* 440. 2.

*Q. vulgaris brevibus pediculis.* *Baub. hist.* 1. 70. f. 1.

Leaves petioled, acorns subsessile in clusters.

$\gamma$ . *Q. humilis*. Dwarf Common Oak.

*Mill. dict.* n. 4. *Ait. kew.* 3. 359.

*Q. humilis gallis binis ternis aut pluribus simul junctis.* *Baub. pin.* 421.

Shrubby, with wand-like branches, and sessile fruits.

Leaves oblong smooth sinuate, lobes rounded, acorns oblong.

25. *Quercus Ægilops*. Great prickly-cupped Oak Tree.

*Lin. spec.* 1414. *Reich.* 4. 163. *Scop. carn.* n. 1185. *Allion. pedem.* n. 1985. *Mill. fig.* 143. t. 215.

*Q. calyce echinato, glande majore.* *Baub. pin.* 420.

*Cerri glans Ægilops.* *Baub. hist.* 1. 77.

*Ægilops* f. *Cerrus mas majore glande.* *Park. theat.* 1388. 4. *Raii hist.* 1387.

*Æ. f. Cerris majore glande.* *Dod. pempt.* 831. 1.

Leaves ovate-oblong tomentose underneath sinuate repand, segments acuminate, calyxes very large, scaly-squarrose.

26. *Quercus Cerris*. Turkey Oak Tree.

*Lin. spec.* 1415. *Reich.* 4. 164. *Du Roi barbecc.* 2. 259. t. 5. f. 1. *Allion. pedem.* n. 1986. *Ait. kew.* 3. 359.

*Q. calice hispido glande minore.* *Baub. pin.* 420.

*Haliphæos f. Cerrus femina minore glande.* *Park. theat.* 1388. 5. *Raii hist.* 1387.

*Ægilops minore glande.* *Dod. pempt.* 831. 2.

$\alpha$ . *Q. Cerris frondosa*. Common Turkey Oak.

Leaves ovate-oblong slightly sinuate flattish.

$\beta$ . *Q. Cerris bullata*. Rough-leaved Turkey Oak.

Leaves ovate-oblong slightly sinuate somewhat bulate.

$\gamma$ . *Q. Cerris sinuata*. Narrow-leaved Turkey Oak.

Leaves oblong deeply sinuate, sinuses unequal.

Leaves sinuate-pinnatifid pubescent underneath, segments sharpish, ramments axillary filiform, calyxes echinate-ramentaceous.



their upper side, but whitish and downy on their under, stand upon pretty long foot-stalks, and do not fall till they are thrust off by young leaves in the spring. The acorns are smaller than those of the common Oak, but of the same shape.

[Scopoli remarks, that the leaves are faithful specific characters in this genus, and that the bark, cups of the fruits, and galls, afford more certain distinctions.

Native of the South of Europe, Cochinchina and Barbary.—It is a stranger in England, says Gerard, (1597) notwithstanding there is here and there a tree thereof, that hath been procured from beyond the seas; one groweth in his Majesty's garden of Whitehall, near to the gate that leadeth into the street. Our old authors name it the Holm Oak, an appellation corresponding better with the next species, which has leaves much resembling the Holly or Holm. In French it is *le Chêne verd*: in Italian *Elice*; in Spanish *Enzina*.

The wood, says Evelyn, is serviceable for stocks of tools, mallet-heads, mall-balls, chairs, axle-trees, wedges, beetles, pins, and palisadoes in fortifications: it supplies almost all Spain with the best and most lasting charcoal.—Mr. Boucher affirms that these trees soon make warm and lofty hedges, forty or fifty feet high; but that they should not be planted near the house or in the gardens, because they make a great litter in April and May, when they cast their leaves.

Mr. Bradley says, that the Ilex produces admirable timber, particularly valuable for knee timber, being much tougher than English Oak; that many ship's lading of it have been brought to England; that it is of quick growth; that Robert Balle, Esq. raised some thousands of these trees from acorns at Mamhead in Devonshire, some of which, in thirty years, have grown to a considerable size; and that within the compass of six years (1724) many millions of them have been raised in England, from acorns brought from Italy and Virginia, as well as great numbers of Cork-trees\*. The latter were killed by the frost; but what is become of the millions of Ilexes?

10. This is hardly a distinct species from the common Evergreen Oak. It is a native of the South of France; and appears to have been cultivated here in 1730. It flowers in June†.

11. This tree is allied to the Ilex; but the leaves are tomentose and white underneath, and the acorn is almost twice as long, with a sweet pleasant taste; it differs also in height and habit from the Ilex, and from the Cork-tree especially in not having a fungose bark. It varies by soil and age: in some trees the leaves being small and orbicular; in others elliptic; in others again lanceolate and acute. It seems to be the same with Ilex major of Clusius. (hist. 22.)

Native of Barbary, about Algier, Belide, Mascara, Themsen, &c. and of Spain, if it be Clusius's tree. The acorns are eaten both raw and roasted. The wood being compact and very hard is used for many purposes.

This very useful tree, according to Mons. Desfontaines, was not unknown to the ancients: for Pliny says—"glandes opes esse nunc quoque multarum gentium etiam pace gaudentium constat, nec non & inopia frugum arefactis molitur farina, spissaturque in panis usum." L. 16. c. 5.

12. This is a large tree, with ascending branches. The wood is very hard, heavy, and brown. Leaves somewhat acuminate, smooth, hard, alternate, petioled. Both male and female flowers are sessile, on long, linear, terminating aments: the former have five stamens; the latter three simple sessile stigmas. Fruit somewhat woody, turbinate, truncate, three-celled, one-seeded, covered up to the shoulders with a thick rough cup, regularly marked with polyhedrous segments.—Native of high woods both in China and Cochinchina.

13. This also is a high tree with ascending branches. Leaves acuminate, smooth on both sides, petioled, scattered. Male flowers on linear aments, heaped,

erect, terminating: females on the same ament, but lower and peduncled. Fruit oblong-ovate, acuminate, smooth, rufous; with the cup permanent, hollow within like a dish, engraved on the outside with five parallel circles.—Native of high woods in Cochinchina.

Though this species seems to resemble *Q. molucca* in the leaves, yet it is very different in the curvature of them, and in the cup.

Both species, as well as the common Ilex, afford excellent timber for ship-building, and all domestic and rural purposes, but *Q. cornea* is superior to the others for bearing great weights\*.]

14. Of the Cork Tree there are two or three varieties; one with a broad leaf, a second with a narrow leaf, both evergreen; and one or two which cast their leaves in autumn; but the broad-leaved evergreen is the most common. The leaves of this are entire, about two inches long, and an inch and quarter broad, with a little down on their under sides, on very short foot-stalks: these leaves continue green through the winter till the middle of May; when they generally fall off just before the new leaves come out; so that the trees are often almost bare for a short time. The acorns are very like those of the common Oak.

The exterior bark is the cork, which is taken from the tree every eight or ten years; but there is an interior bark which nourishes them, so that stripping off the outer bark is so far from injuring the trees, that it is necessary to continue them; for when the bark is not taken off, they seldom last longer than fifty or sixty years in health; whereas trees which are barked every eight or ten years, will live 150 years or more. The bark of a young tree is porous and good for little; however it is necessary to take it off when the trees are twelve or fifteen years old, for without this the bark will never be good: after eight or ten years, the bark will be fit to take off again; but this second peeling is of little use: at the third peeling the bark will be in perfection, and will continue so for 150 years, for the best cork is taken from old trees. The time for stripping the bark is in July, when the second sap flows plentifully: the operation is performed with an instrument like that which is used for disbarking the Oak.

[Native of the South of Europe, Barbary, &c. Pliny says that there were no Cork trees in France or Italy in his time. At present there are considerable woods of them in the South of France, between Rome and Naples, between Pisa and Leghorn, where all the underwood is Myrtle, &c. It was cultivated here in 1699 by the Dutchess of Beaufort. The tree which I remember to have seen in the botanic garden at Chelsea, which was killed in the severe winter of 1739-40, must at least have been of that age, if not older.

The uses of Cork, says Mr. Evelyn, are well known amongst us both at sea and land, for its resisting both water and air: the fishermen who deal in nets, and all who deal with liquors, cannot be without it. Antient persons prefer it before leather for the soles of their shoes, being light, dry and resisting moisture; whence the Germans name it *Pantoffel-holz* or Slipper-wood; but it was first applied to that purpose by the Grecian ladies, whence they were called light-footed: from them it is likely the Venetian dames took it up for their monstrous choppines; affecting or usurping an artificial eminency above men, which nature has denied them. The poor people in Spain lay broad planks of it by their bed-side to tread on; as great persons use Turkey and Persian carpets, to defend them from the floor; and sometimes they line the walls, and inside of their houses built of stone, with this bark, which renders them very warm, and corrects the moisture of the air. Also they employ it for bee-hives. For this last purpose they roll the bark of young trees and of the branches into a cylinder, in Barbary, where this tree abounds.

Desfontaines has a species which he names *Q. Pseudo-*

\* Improvements, p. 47. ed. 1719. Husb. and Gard. vol. 3. 2. 66. and 3. 161.

† Scopoli.

‡ Hort. kew. from hort. angl. 41. Ilex 3.

§ Desfontaines.

\* Loureiro.

† Hort. kew.

‡ Desfontaines.

§ Sylva, b. 2. ch. 5.



Suber, from its having a fungose bark, but in a less degree than in the true Suber. The younger branches are tomentose, hoary and striated. Stipules subulate, membranaceous, deciduous. Leaves deciduous, ovate-oblong, smooth above, pubescent underneath, ash-coloured, acute, ferrate; the ferratures somewhat remote, longer or shorter according to the age of the tree or the soil. Fruit on a short peduncle. Cup echinate with scales loose at the tip. Nut oblong, ovate, of the same size as in the Ilex. Leaves in younger trees deeply sinuate and ferrate; in older ones slightly ferrate. The flowers come out early in spring.—Found about Tlemfen.]

15. The Kermes Oak is of small growth, seldom rising above twelve or fourteen feet high, (about two feet, *Villars*) sending out branches the whole length on every side, so as to form a bushy shrub. Leaves armed with prickles like those of the Holly. Acorns smaller than those of the common Oak. [The leaves resemble those of the Ilex; but they are less, thinner, and green on both sides<sup>b</sup>.

Native of the South of Europe, the Levant, Barbary, &c. Cultivated in 1683, by Mr. James Sutherland. It flowers in may<sup>c</sup>.

From this species they collect the Kermes or Scarlet Grain, a little red gall, occasioned by the puncture of an insect called *Coccus ilicis*.—With this the ancients used to dye cloth of a beautiful colour called *coccineus* or *coccus*; being different from the *purpura* of the Phœnicians obtained from the shell-fish called *Murex*. In course of time, the *Murex* was neglected, and the Kermes was introduced. This supported its reputation till the discovery of America; when, in turn, it gave place to the *Cochineal*, an insect found in the Mexican woods, upon the Cactus<sup>d</sup>.

According to Belon and Rauwolf, the Kermes is exported from Bagdat to India. Desfontaines relates, that although this tree abounds in Barbary, and bears great quantity of the coccus, yet it is totally neglected by the inhabitants, and the drug purchased at a high price from the French merchants, for dying woollen cloth red.

The following account of the Kermes is given by the Rev. Mr. Townsend:

*Quercus coccifera*, *Cuscoja* in Spanish, grows about Alicant from twelve inches to two feet in height. The *Grana Kermes* appear on the stems or small branches, some near the bottom, but mostly on the upper branches, yet always protected by the leaves, and fixed to the stem by a glue, resembling thin white leather, spread over the stem, and covering, like the cup of the acorn, a segment of the grana. The agglutinating coat may be traced through a small hole into the grana, from whence it proceeds, and where it spreads, like the placenta, on the internal surface.

The grana are of various sizes from one eighth to one-fourth of an inch in diameter, perfectly spherical, and covered with a white powder, which being rubbed off, the surface appears red, smooth, and polished. On the same stem the grana may be observed in several stages—as in tough membranes filled with a red juice resembling blood, but on paper leaving a stain as bright and beautiful as the best carmine. In the second stage, under the first coat or pellicle is a thin tough membrane inclosing the eggs, now most minute, and scarcely to be distinguished without the assistance of a glass. Between this membrane and the pellicle is the same red liquor, but less in quantity. This pellicle is evidently separate from the inner membrane, by what seems to be the viscera and blood-vessels, but near the hole these two coats adhere closely together.

The interior membrane is thin, white and tough, with a lunar septum, forming the ovary, which at first is very small, and scarcely discernible, but progressively enlarges, till in the third stage it occupies the whole space, when the tincturing juice disappears, and only eggs are to be seen, to the number of 1500 or 2000.

It is clear that the grana derive no kind of nourish-

<sup>b</sup> Villars

<sup>c</sup> Hort. kew.

<sup>d</sup> Hunter, *Evel. sylva*.

ment from the plant on which it is fixed; and from its position it seems that the little animal chooses the *Quercus coccifera*, which in its prickly leaf resembles the Holly, only for the sake of shelter and protection from birds.

Some of the grana being put into a coffee-cup on the 31st of may, on june the 12th a multitude of animalcula were discovered of a bright red colour, exceedingly minute, running about the cup with astonishing rapidity, but for short intervals. Some grana, being put into a snuff-box, were forgot; at the distance of a few weeks, the top was found covered internally with dew, and a multitude of winged insects, all dead, adhering to it.

Besides the kermes, there are many large red excrescences on the *Qu. coccifera*, some formed on the leaf, others on the common peduncle of the amentaceous flowers. These morbid tumours have many perforations, communicating with little cells, which contain each a small white grub. The cell is formed by a strong membrane, but the substance of the tumor is spongy<sup>e</sup>.

Desfontaines has a species which he names *Q. Pseudo-coccifera*; which has the leaves perennial, ovate or elliptic, shining, rigid, smooth, on very short petioles, slightly ferrate at the edge, with spinulose ferratures. Fruit sessile or on short peduncles. Calyx echinate with rigid scales, loose at the tip. Acorn ovate, mucronate.—Native of Algiers and mount Atlas.]

#### AMERICAN OAKS.

16. This is called *Live Oak* in North America, where it rises to the height of forty feet. The grain of the wood is hard, tough and coarse; the bark is grayish; the leaves are about three inches long, and an inch and half broad, entire, of a dark green, thick consistence, and placed on short foot-stalks. Acorns small, oblong, with short cups; they are very sweet, and are eaten by the Indians, who lay them up in store for winter; they also draw a very sweet oil from them, little inferior to that of sweet Almonds.

[It was cultivated by Mr. Miller in 1739<sup>f</sup>. Linneus confounded it with the first species.]

17. Of this there seem to be two varieties, one of which grows to a much larger tree than the other; but this may be occasioned by the soil, for the largest trees grow in rich low lands, where they become bigger than any of the North American Oaks. The wood is not of a very fine grain, but is very serviceable; the bark is gray and scaly; the leaves are five or six inches long, and two inches and a half broad in the middle, indented on the edges with many transverse veins running from the midrib to the borders; they are of a bright green, and so nearly resemble those of the Chestnut tree, as scarcely to be distinguished from it. The acorns are very large, and their cups are short. The leaves of the other variety are not so large, nor so strongly veined, and the acorns are smaller and a little longer.

[The Chestnut-leaved Oak was cultivated here in 1730<sup>g</sup>. The two varieties are distinguished by the form of the leaves, which in the one is ovate, in the other oblong. It flowers here in may and june<sup>h</sup>.

18. The Water Oak is confounded by Linneus with the Black Oak, but the leaves of this are drawn to a point at the base, whereas in that they are cordate. The leaves vary much, but all approach to wedge-shaped, as may be seen in the four varieties enumerated above. Mr. Miller cultivated it in 1748<sup>i</sup>: it is omitted in his later editions.]

19. The Black Oak grows on poor land in most parts of North America, where it never attains to a large size, and the wood is of little value. The bark is of a dark brown colour. The leaves are very broad at the top, where they have two waved indentures, which divide them almost into three lobes; they diminish gradually to their base, where they are narrow; they are smooth, of a lucid green, and have

<sup>e</sup> Travels into Spain, III. 202.

<sup>f</sup> Idem, from hort. angl. 62. n. 6.

<sup>g</sup> Idem.

<sup>h</sup> Hort. kew.

<sup>i</sup> Hort. kew.



short foot-stalks. The acorns are smaller than those of the common Oak, and have short cups.

[Mr. Bartram mentions some gigantic black Oaks in North America, many of which measured eight, nine, ten, and eleven feet in diameter five feet above the ground, and ascending perfectly straight, with a gradual taper, forty or fifty feet to the limbs<sup>k</sup>. The above description therefore of Miller's cannot belong to these black Oaks of Bartram's, which he names *Q. tinctoria*, the bark affording a valuable yellow dye; and says they are called black Oaks in Pennsylvania, New Jersey, New York and New England. Miller's description of the leaves agrees rather with the Water Oak.—According to the Kew catalogue, he cultivated the Black Oak in 1739.]

20. This arrives at a large size in North America, where it grows naturally. The bark is smooth, of a grayish colour, but that of the younger branches is darker. Leaves six inches long, two inches and a half broad in the middle, obtusely sinuate, each sinus ending in a bristly point, bright green, standing upon short foot-stalks: the leaves continue their verdure very late in autumn; so that unless hard frost comes on early, they do not fall till near Christmas, and do not even change their colour much sooner. Acorns a little longer than those of the common Oak, but not so thick.

[There are several varieties of the Red Oak. It was cultivated in 1691, by Bishop Compton at Fulham<sup>l</sup>.

21. This, which has been confounded with the preceding, was introduced in 1763, by Mr. Murdock Middleton<sup>m</sup>.]

22. The wood of the White Oak is esteemed preferable in America to any of their other sorts for building, being much the most durable. The bark is grayish; the leaves are light green, six or seven inches long, and four broad; they are regularly cut almost to the midrib, and stand on short foot-stalks. The acorns greatly resemble those of the common Oak. [It was cultivated here in 1724<sup>n</sup>.]

23. The leaves of the *Esculus* or Italian Oak are smooth and deeply sinuated; some of the sinuses are obtuse, and others end in acute points; they are on very short foot-stalks: the branches are covered with a purplish bark when young: the acorns are long and slender; the cups rough and a little prickly, sitting close to the branches. These acorns are sweet, and frequently eaten by the poor in the South of France: in times of scarcity they grind them and make bread with the flour. [From this esculent quality of the fruit, this tree was named by the Latins *Esculus*. It is probable that the *Φηγος* of the Greeks is the same tree: but the *Fagus* of the Latins is the Beech. Professor John Martyn is of opinion that the *Esculus* is our sessile-fruited Oak; this variety having a broad, dark green, firm leaf, not so much sinuated about the edges as that of our first variety, agreeing better with the "nemorum Jovi quæ maxima frondet" of Virgil. And it is remarkable that the very expression—

—"Quantum vertice ad auras  
Ætherias, tantum radice ad Tartara tendit,"

which the Poet uses of the *Esculus* in the Georgics, he applies to the *Quercus* in the fourth Æneid.

This species is a native of the South of Europe; was cultivated in 1739 by Mr. Miller, and flowers in May<sup>o</sup>.

The Romans made their civic crowns, first of the *Ilex*, but afterwards of the *Esculus*. "Civica iligno  
"prima fuit, postea magis placuit ex Esculo Jovi  
"sacra<sup>p</sup>."

The *Esculus* also furnished a wreath of honour in the games.

"His juvenum quicumque manu, pedibusve, rotave  
"Vicerat, *esculeæ* capiebat frondis honorem<sup>q</sup>."

24. The Common Oak, as is well known, attains a very great size, but slowly. In woods it rises to a

<sup>k</sup> Travels, p. 37.

<sup>m</sup> Idem.

<sup>n</sup> Pliny.

<sup>l</sup> Hort. kew. from Plukenet.

<sup>o</sup> Idem. from Furber's catalogue.

<sup>q</sup> Ovid. metam. 1. f. 9.

very considerable height, but singly it is rather a spreading tree, sending off horizontally immense branches, which divide and subdivide very much. The trunk is covered with a very rugged brown bark. Leaves alternate, oblong, blunt and broader towards the end, the edges deeply sinuate, forming obtuse or rounded lobes, dark green and shining above, paler underneath and finely netted, five inches or more in length, two inches and a half in breadth: they are deciduous, but often remain on the tree till the new buds are ready to burst. The male flowers come out on aments in bundles, from the buds, alternately and singly from the axils of the leaves; they are pendulous, cylindrical, a little above three inches long, and two lines wide, consisting of yellow, short, roundish, scattered bundles of anthers, the upper ones nearer, the lower farther distant from each other: a short membranaceous toothletted (six to nine-toothed) calyx collects the globules of (six to nine) anthers. Above the males the aments of female flowers come out, each composed of three or four small reddish florets placed alternately, having at the base little reddish scales, (involucre) which afterwards become the cup and form the rugged external surface of it: there are three reddish styles, connected at the base, standing out beyond the scales, and three short, broadish, reddish, reflex stigmas<sup>r</sup>. According to Gærtner, one short pyramidal style, with three stigmas. Acorn ovate-cylindrical, coriaceous, very smooth except at the base, where it is as if rasped, one-celled, valveless, received at bottom in a hemispherical cup, which is tubercled on the outside. The germ is three-celled, with two embryos in each cell, fastened to the base; but the fruit when ripe has only one cell, and commonly one seed, sometimes two, very seldom three, corresponding exactly with the cavity of the nut, of a ferruginous colour<sup>s</sup>.

Native of Europe; flowering in April. The fruit ripens in October.

#### Varieties.

Mr. Miller has made four species out of this:]

1. *Q. Robur*, the common Oak. 2. *Q. fœmina*, with the acorn on long peduncles. 3. *Q. sempervirens*, or broad-leaved evergreen Oak. 4. *Q. humilis*, or dwarf Oak.

The first is the most common Oak of this country. The leaves have pretty long foot-stalks, and the acorns have none, but sit close to the branches.

The second is not so common as the first, but in the wilds of Kent and Sussex there are many large trees of this kind. The leaves are not so deeply sinuated, nor are they so irregular, but the indentures are opposite; they have scarce any foot-stalks but sit close to the branches: but the acorns stand upon very long foot-stalks. The timber of this sort is accounted better than that of the first, and the trees when growing have a better appearance. These two have been generally regarded as femal varieties, but having seen some young trees with acorns on them, which were raised from acorns of this second sort, and finding they retain their difference, I am inclined to believe they are different.

The third grows upon the Apennines and also in Suabia and Portugal. The leaves are broader and not so deeply sinuated as those of the common Oak; they are of a lighter green on their upper side, and pale on their under; they have very short foot-stalks, and their points are obtuse; the acorns have very long foot-stalks, which frequently sustain three or four in a cluster.

The fourth grows in the South of France and Italy; this is a low bushy Oak, which rises but six or seven feet high, sending out many slender branches the whole length. Leaves oblong and obtusely indented, about three inches long, and an inch and half broad, standing upon slender footstalks: acorns small, growing in clusters. The galls grow three or four together.

[Mr. Miller is mistaken in affirming that the tree which bears sessile acorns is the most common Oak of this country; and in referring us only to the wilds

<sup>r</sup> Pollich.

<sup>s</sup> Gærtner.



of Kent and Suffex for the other. This mistake has been copied by Dr. Hunter in his edition of Evelyn's *silva*. His third sort is only a variety of his second, and it is not unusual for some Oaks to retain their leaves till the spring. His fourth is probably a variety also of the second, owing to soil and situation.

It is well observed by Mons. Du Hamel, that Oaks in forests being propagated from the acorn, there are so many varieties, that it is difficult to find two resembling each other in every respect. This is in great measure true, with respect to little variations in the shape and size both of the leaves and fruit, and some other subordinate circumstances. There are also many varieties of Oak which dealers in timber and woodmen distinguish by their use, qualities and accidents, and to which they give different names; but these being merely local, and not founded on permanent characters, it is difficult to ascertain them.

Du Hamel, following Tournefort, sets down the species or varieties which are to be found in the pinax of Caspar Bauhin, to the number of fourteen, and adds some others from Tournefort's corollary, &c. making twenty-three in the whole: but out of these, seven are natives of America or the Levant, and are probably distinct species. Boerhaave gives only five sorts in his catalogue of the Leyden garden, but it is said that he cultivated there no fewer than seventy species: if so, he must have had both many distinct sorts of Oak, and many varieties of the common one.

Mons. Fougereux, in an ingenious essay on this subject, printed in the Memoirs of the French Academy for 1781, remarks, that Oaks commonly used for timber may be thus distinguished: 1. *Quercus latifolia mas, quæ brevi pediculo est*, C. B. 2. *Q. cum longo pediculo*, C. B. 3. *Q. foliis molli lanugine pubescentibus*, C. B. called in French *Chêne noir* from the dark colour of the wood, and *Chêne blanc* from the white down on the under surface of the leaves. This he affirms to be the common Oak of England, the true *Robur* of the ancients, and the sort that is taken by builders for Chestnut.

In this work I have followed the Kew catalogue in giving only three varieties of the common Oak. The third is of little signification, on account of its dwarf size: but the two others furnish excellent timber. Our first variety seems to be Mons. Fougereux's second sort; and our second variety to be his first sort; the third of that gentleman being only an intermediate variety. The distinction of the first and second is founded upon two obvious and seemingly permanent characters of the leaf and fruit.

The figures in old authors all seem to belong to our first variety, the acorns being evidently peduncled, and they do not notice the other. John Bauhin distinguished the Oak with acorns on long peduncles, from that which bears them on short ones; and Ray, who trod very much in his steps, thinks that these are specifically different, because the latter has the fruit not merely on short peduncles, but with the cup sessile or adhering close to the branch<sup>a</sup>. The former with the acorns on long peduncles he regards as the common Oak of England, and when he writes his history, (1688) he supposed it to be the only one which is indigenous of this country. He was afterwards however informed by Bobart, that the Oak with acorns on short foot-stalks is found in Bagley-wood and divers other places; and adds, that the leaves being of a darker green and less deeply sinuate than the common Oak, it is known about Newbery by the name of Bay Oak<sup>b</sup>. It has been observed since in Norwood, Surrey. Mr. Ruggles discovered one only, a vigorous pollard, at least two hundred years old, in his paddock at Cobham in Surrey, and could not find or hear of another in the neighbourhood<sup>c</sup>. It occurs however in many other places, though it is certainly much less common than the stalk-fruited Oak. Besides the principal differences pointed out in the specific characters, the sessile-fruited

or Bay Oak has the leaves of a deeper green, not so deeply indented as in the common one; they also appear later, and frequently remain on the tree all winter; the flowers also come out later, and of course the acorn is later. This is in clusters from three or four to twelve. Mr. Lightfoot says, that it bears six or seven acorns in a cluster, on very short foot-stalks; that the leaves are less divided, of a firmer and more laurel-like (he should have said bay-like) texture; that the tree itself is more humble, and the timber harder and higher-coloured. Du Roi affirms that the timber is reddish and brittle, whereas that of the stalk-fruited Oak is whitish and hard. If this should turn out to be the case, it behoves planters of Oak for timber to attend to the distinctions given above, and to avoid gathering acorns for planting from such trees as have the leaves or foot-stalks with sessile fruits<sup>d</sup>.

The wood of the Oak, when of a good sort, is well known to be hard, tough, tolerably flexible and not easily splintering, strong without being too heavy, and not easily admitting water; for these excellent qualities it is preferred before all other timber for building ships. It is also adapted to almost every purpose of the carpenter; and it would be difficult to enumerate all the uses to which it may be applied. There is a kind of it, says Evelyn, so tough and compact, that our sharpest tools will hardly enter it. Though some trees be harder, yet we find them more fragile, and not so well qualified to support great weights, nor is there any timber more lasting, which way so ever used.

That which is twined and a little wreathed is best to support burthens, for posts, columns, summers, &c. for all which our English Oak is greatly preferable to the French: and it is found that the rough-grained body of a stubbed Oak is fittest for the case of a cyder-mill, and such like engines, as best enduring the unquietness of a ponderous rolling stone. For shingles, pales, laths, cooper's ware, clap-board for wainscot, much esteemed in former times; for wheel-spokes, pins and pegs for tiling, Oak is excellent. The knottiest is most proper for water-works, piles, &c. because it will drive best, and last longest: the crooked yet firm for knee-timber in shipping, mill-wheels, &c. Coppice Oak makes the best hoops. The smaller trunchions and spray make billet, bavin and coals; poles, cudgels and walking staves. Of the roots were formerly made hafts for daggers, hangers and knives, handles for staves, boxes, mathematical instruments, &c. &c.<sup>e</sup>

Oak saw-dust is the principal indigenous vegetable used in dying fustian: all the varieties of drabs, and different shades of brown are made with Oak saw-dust, variously managed and compounded.—Oak-apples are likewise used in dying, as a substitute for galls: the black got from them, by the addition of copperas, is more beautiful than that from galls, but not so durable. The galls upon the leaves, are occasioned by a small insect called *Cynips quercus folii*, which deposits an egg in the substance of the leaf, by making a small perforation on the under surface.—The bark is universally used to tan leather: an infusion of it, with a small quantity of copperas, is used by the common people to dye woollen of a purplish blue; the colour, though not very bright, is durable<sup>f</sup>. The highlanders in Scotland, dye their yarn with it of a brown colour: a herdsman there would think himself and his flock unfortunate, if he had not a staff of it.—The saw-dust, and even the leaves may be used for tanning; but they are much inferior to the bark for that purpose. The leaves are very subject to be covered with a sweet viscid juice, called honey-dew, which bees and other insects are very fond of: the larvæ of many insects feed upon them<sup>g</sup>. Where they are in quantity they may be used when dried for litter. By some they are preferred to dung for making hot-beds for melons; and may probably be used instead of the bark in tanning.

<sup>a</sup> Hist. 1385.

<sup>b</sup> Syn. 440.

<sup>c</sup> Gentl. Mag. vol. 53. for 1783. p. 678. see p. 654.

<sup>d</sup> See Flora rustica, 10.

<sup>e</sup> Withering.

<sup>f</sup> Evelyn, *silva*. b. 1. ch. 3.

<sup>g</sup> Lightfoot.



Supposing Oak-bark to be sold at five guineas a ton: in its marketable state, it is by no means sufficiently dry for preservation; the tanners therefore are obliged to dry it more perfectly: they likewise get it cleaned from much extraneous matter at a considerable trouble and expense. The loss of weight from these operations cannot be estimated at less than 20s. the ton. The ton of bark therefore stands the tanner in 6l. 5s.; for the sake of easier calculation say 6l. The Rev. Mr. Swayne, of Pucklechurch, near Bristol, had Oak-leaves collected for making hot-beds, at 3d. and 4d. the sack of four bushels; which, according to experiments made by him, are equal to thirty-two pounds of bark; which, at 6l. the ton, come to 1s. 8½d. and a fraction. It follows then that the tanner might obtain as much astringent matter in leaves for 4d. as costs him in bark five times that sum: whether it would equally answer his purpose, remains to be proved. There would be much trouble and some expense in drying the leaves, and they would occupy much room. Perhaps for these reasons, the most economical plan would be, to obtain a concentrated extract from them, on or near the place where they should be collected, which might be conveyed and stored in casks. This likewise remains as the subject of experiment; but before leaves can be legally used by the tanner, the act of parliament confining him to the use of Ash and Oak bark must be repealed. This restriction was probably laid; not solely from the belief that those substances were the most proper for tanning leather, but likewise to encourage the planting and nurturing of those valuable timber trees. Be this as it may, at present it rather operates to their destruction, than preservation or increase; since the high price which Oak-bark now bears, proves an irresistible temptation with needy proprietors to cut down their Oaks before they arrive at a proper age for timber. Should Oak leaves ever be in much request for tanning, this doubtless would prove an antidote to the rage of felling, and an effectual preservative of timber; since no one surely would ever think of felling his Oaks prematurely, whilst they yielded him an annual profit by standing\*.

Acorns were of considerable importance formerly, when a great proportion of this island was forest, for feeding swine. About the end of the seventh century King Ina, among the few laws which he gave to regulate the simple œconomy of our Saxon ancestors, gave particular directions relating to fattening swine in woods, since his time called *pawnage* or *pannage*.

In a succeeding century, Elfhelmus reserves the pannage of two hundred hogs for his lady, in part of her dowry.

Mast is particularly mentioned about the middle of the eleventh century in a donation of Edward the Confessor.

It appears from Domesday-Book, that in William the Conqueror's time, Oaks were still of no farther consequence than from the food they afforded to swine; for the value of the woods, in several counties, is ascertained by the number of hogs they would fatten. The survey was taken so accurately, that in some places woods are mentioned of one hog.

Swine fed in the woods furnished so considerable a part of the food of former ages, that a scarcity of mast was one of the causes of the frequent famines that then happened. The author of *Chronicon Saxonicum*, after describing the extraordinary famine and mortality of the year 1116, records particularly the failure of mast in that year.

Our Norman line of Kings, in their rage for extending forests for the chase, took away the right of pawnage from those on whose lands they had encroached: this was one of the grievances that King John was compelled to redress in the *Charta de Foresta*.

In Strabo's time, Rome was chiefly supplied with hogs, which were fatted on mast in the woods of Gaul. That author also says, that in the mountainous parts of Spain, the inhabitants ground their acorns into meal. Pliny, who describes very minutely the

different effects of the various sorts of acorns in the fattening of swine, informs us, that in his time, acorns were brought to table in Spain, for the desert. It is probable that they still continue to be eaten by the common people of that country, for they are produced after the repast of the goat-herds of Cervantes, and Teresa sends the Dukes a present of the choicest she could collect<sup>c</sup>. But we must not estimate the taste of the peasants in the southern countries of Europe, by the quality of our acorns: for the fruit of our common Oak is probably less bitter in a warmer climate: and the acorns generally eaten there are from another species.

The astringent effects of the Oak were well known to the ancients, by whom different parts of the tree were used; but it is the bark which is now directed for medicinal use by our pharmacopœias.

Oak bark manifests to the taste a strong astringency, accompanied with a moderate bitterness, qualities which are extracted both by water and spirit. Like other astringents it has been recommended in agues, and for restraining hæmorrhages, alvine fluxes, and other immoderate evacuations. A decoction of it has likewise been advantageously employed as a gargle, and as a fomentation or lotion in procidentia recti et uteri. Dr. Cullen frequently employed the decoction with success in slight tumefactions of the mucous membrane of the fauces, in prolapsus uvulæ, and cynanche tonsillaris, to which some persons are liable upon the least exposure to cold: in many cases this decoction, applied early, has appeared useful in preventing these disorders. Dr. Cullen almost constantly added a portion of alum to these decoctions; but he did not find a solution of alum alone so effectual.

Some have supposed that this bark is not less efficacious than that of the Cinchona, especially in the form of extract; but this opinion now obtains little credit; though there is no doubt that Oak bark will cure intermittents, both alone and joined with chamomile flowers.

Galls appear to be the most powerful of the vegetable astringents, striking a deep black when mixed with a solution of green vitriol, and therefore preferred to every other substance for the purpose of making ink. As a medicine they are to be considered as applicable to the same purposes as Oak-bark, and by possessing a greater degree of astringent and styptic power, seem to have an advantage over it, and to be better suited for external use. Reduced to fine powder, and made into an ointment, they have been found of great service in hæmorrhoidal affections. Their efficacy in intermittent fevers was tried by Monsr. Poupert, by order of the Academy of Sciences, and from his report it appears, that the Galls succeeded in many cases; but that they failed in many others, which were afterwards cured by the Peruvian Bark.

Two sorts of Galls are distinguished in the shops; one said to be brought from Aleppo, the other from the southern parts of Europe. The former are generally of a blueish colour, or of a greyish, or black, verging to blueness, unequal and warty on the surface, hard to break, and of a close compact texture: the others are of a light brownish or whitish colour, smooth, round, easily broken, less compact, and of a much larger size. The two sorts differ only in strength, two of the blue Galls being supposed equivalent in this respect to three of the others<sup>d</sup>.

The Oak is remarkable for its slowness of growth, longevity and bulk.

It has been remarked that the trunk has attained to the size of twenty inches, and sometimes not more than fourteen inches in diameter, in four-score years. I have just measured an Oak in my possession, which is nearly of that age, and is in circumference five feet three inches, at five feet above the ground. But size will depend much upon soil and situation.

The age of an Oak is commonly estimated at three

\* Transact. Arts, vol. 10, for 1792. p. 153—163.

<sup>c</sup> Thomas White, Esq. in Gentl. Mag. vol. 55. for 1785. p. 111.  
<sup>d</sup> Woodville.



hundred years. Tradition carries some trees which have escaped the axe to an antiquity much more remote. Mr. Gilpin speaks of a few venerable Oaks in the New Forest, that chronicle on their furrowed trunks ages before the conquest<sup>a</sup>. Mr. Evelyn mentions three fine Oaks in Dennington-park, as an instance of the bulk and stature to which this tree may arrive within less than three hundred years. Sir Edward Harley relates, that he was assured by an inquiry taken about three hundred years since, that a park of his, and some adjacent woods, had not then a tree capable to bear acorns; yet that very park he had seen full of great Oaks, and most of them in the extreme wane of decay. Mr. Evelyn informs us, that from three to four hundred rings were distinguished in some trees cut down in the New Forest.

The same great planter sets down the age for felling the Oak at between fifty and sixty years growth<sup>f</sup>. This is when the trees in general are in the greatest perfection. The Bishop of Landaff mentions it as a general opinion, that it is more profitable to fell Oak timber at this age, than to let it stand to eighty or one hundred; according to the price now paid for it, he believes the opinion to be founded in truth, and it is confirmed by Mr. Marsham's tables of the growth of trees in the Philosophical Transactions for 1759. The learned Prelate lays down a general rule, that considering profit only, every tree of every kind ought to be cut down and sold, when the annual increase in value, by its growth, is less than the annual interest of the money it would sell for. From observation on Mr. Marsham's tables the Bishop fixes upon 30s. as the value of trees which should be cut down for mere profit, the proprietor being a loser, if they are cut sooner or later. Unless therefore the Navy-board would give 8l. or 9l. a load for timber trees containing one hundred cubic feet or upwards, instead of 4l. or 5l. it is every man's interest to cut down his trees before they attain that size, and consequently little dependance can be placed on private property for a supply of naval timber<sup>g</sup>.

Of the bulk, stature and extent of the Oak we have abundance of recorded instances. In Workfop-park there was a tree spreading almost three thousand yards square, so that under the shade of it near a thousand horse might commodiously stand at once. Dr. Plot mentions an Oak at Narbury, of fifteen yards in girth, which being felled, two men at either side on horseback could not see one another.

An Oak at Reedham in Norfolk in Sir Richard Berney's park, was valued at 40l. and 12l. the lopping wood.

Of the three Oaks, said to be planted by Chaucer, in Dennington-park near Newbury, one called the King's Oak was fifty feet in height before any bough or knot appeared, and cut five feet square at the butt-end, all clear timber. The second, called the Queen's, held forty feet excellent timber, straight as an arrow in growth and grain, cutting four feet at the stub, and near a yard at the top: besides a fork of almost ten feet clear timber above the shaft. The third, called Chaucer's Oak, though it were not of these dimensions, yet was it a very goodly tree. The diameter of the Oak that afforded the beams of the Royal Sovereign was four feet nine inches, and yielded four square beams of forty-four feet in length each. It grew near Framlingham in Suffolk.—Dr. Plot mentions an Oak between Nuneham Courtney and Clifton, spreading eighty-one feet, shading in circumference five hundred and sixty yards of ground, under which two thousand four hundred and twenty men may commodiously stand in shelter. And a bigger than this near the gate of the water-walk at Magdalen College, Oxford, the branches of which shoot sixteen yards from the stem; likewise another at Ricot, extending its arms fifty-four feet, under which three hundred and four horses or four thousand three hundred and seventy-four men may sufficiently stand<sup>h</sup>.

Mr. Evelyn has given an account of many other

<sup>a</sup> Forest scenery, 2. 63.

<sup>f</sup> Sylva, b. 3. ch. 3.

<sup>g</sup> Survey of Westmoreland, prelim. obs.

<sup>h</sup> Evelyn's Silv. 3. 3.

large Oaks in Yorkshire, Nottinghamshire, &c. from Mr. Halton, auditor to the Duke of Norfolk.

In the St. James's Chronicle, n. 5038. it is said that an Oak was felled a few days before at Morley in Cheshire, which produced upwards of a thousand measurable feet of timber: Its girth was fourteen yards, and one branch contained two hundred feet. Its existence can be traced back for eight hundred years, and it was supposed to be the largest tree in England; as a proof of it; the trunk has been used some years for housing cattle; and it is said Edward the Black Prince once dined under it.

In Doddsley's Annual Register for 1758, p. 116. mention is made of an Oak in Langley-wood, near Downton, Wilts, the property of the Bishop of Salisbury, supposed to be of near one thousand years growth. It was six feet two inches in diameter, contained about ten tons of timber, and was sold for 40l.

An Oak on Sir John Barnard's estate in Huntingdonshire, contained seven hundred and fifty feet of timber, which at 2s. a foot was worth 75l.

The contents of an Oak felled at Withy-park, near Wenlock in Shropshire in 1697 were as follows:

The spread from out bough to out bough was forty-eight yards. The trunk was nine feet in diameter, besides the bark. It contained twenty-four cords of yard wood, worth 9l. 10s. and eleven cords and a half of four feet wood worth 12s. per cord: two hundred and fifty-two park pales, six feet long: six tons and a half of timber in the boughs: one load of cooper's ware: twenty-eight tons of timber in the body. All this besides faggots. The stem was so wide, that two men might thresh on it without striking each other. Several boughs dropped off in Mr. Weld's father's and grandfather's times.

In Holt-forest in Hampshire, near Bentley, not far from Farnham in Surrey, an Oak in 1759 girted thirty-four feet, at seven feet from the ground. In 1778 this tree was increased only half an inch.

In Workfop-park were three Oaks: the first of which girted thirty feet: the second spread one hundred and eighty feet or 2827 square yards, which is above half an acre: the third had forty feet of timber in it, two feet square at the top end, and contained six tons and a quarter of timber.

Shire Oak, near Workfop-park, is so named because it drops into three shires, viz. York, Nottingham and Derby: the spread ninety feet, or 707 square yards.

Lady Oak was five feet square for forty feet in length; it had twenty tons of timber, and the boughs yielded twenty-five cords of fuel wood.

An Oak at Cowthorpe, near Wetherby in Yorkshire, within three feet of the surface measures sixteen yards in girth, and close to the ground twenty-six yards: its height in 1776, was about eighty-five feet; and its principal bough extended sixteen yards. It is now thin of leaves, and in a state of decay. It is figured in the second volume of Dr. Hunter's edition of Evelyn's Silva, at p. 197. Mr. Marsham says, that in 1768, at four feet it girted forty-six feet six inches: at five feet thirty-six feet six inches: and at six feet thirty-two feet one inch.

Mr. Marshall gives the following account of the Boddington Oak, growing in the old orchard ground belonging to Boddington Manor farm, near the turnpike road between Cheltenham and Tewksbury in the vale of Gloucester. The stem is remarkably collected and snug at the root, the sides of its trunk being more upright than those of large trees in general; nevertheless its circumference at the ground, as near to it as one can walk, is twenty paces: measuring with a rule, it is somewhat more than eighteen yards. At three feet high it measures forty-two feet, and at its smallest dimensions, namely from five to six feet high, it is thirty-six feet. At about six feet it begins to swell out larger; forming an enormous head, which heretofore has been furnished with huge, and in all probability extensive arms. But age and winds have robbed it of a principal part of its grandeur; and the greatest extent of arm in 1783 was eight yards from the stem. From the ground to the top of the trunk is



is about twelve feet, and the greatest height of the branches by estimation forty-five feet. The stem is quite hollow, being, near the ground, a perfect shell, forming a room, which at the floor measures one way more than sixteen feet in diameter; it is a natural dome at top, and no light is admitted except at the door, and an aperture in the side. That year it had a fine crop of acorns on it. The leaves, as generally on old trees, are very small; not larger, for the most part, than those of the Hawthorn.

These very old Oaks have generally short stems, at six, eight, ten, or twelve feet high throwing out large horizontal arms. The Oak however will acquire a great length of stem, but then it rarely swells to any considerable girth. Mr. Marsham indeed mentions one in the Earl of Powis's park near Ludlow, which in 1757 measured, at five feet high sixteen feet three inches, and which ran quite straight and clear of arms near or full sixty feet.

Mr. Lightfoot mentions an Oak belonging to Lord Powis, in Broomfield-wood, near Ludlow in Shropshire, in the year 1764, the trunk of which measured sixty-eight feet in girth, twenty-three in length, and which, reckoning ninety feet for the larger branches, contained in the whole one thousand four hundred and fifty-five feet of timber, round measure, or twenty-nine loads and five feet, at fifty feet to a load.

There are several fine Oaks in Welbeck-park. Sixty pounds was offered for one of them. That which is called the Duke's walking-stick is one hundred and eleven feet six inches in height; seventy feet six inches up to the branches; the circumference at bottom twenty-one feet, at one yard high fourteen feet, at two yards high twelve feet; solid contents four hundred and forty feet; weight eleven tons.—Two Oaks called the Porters: the height of one ninety-eight feet six inches; the circumference at bottom thirty-eight feet, at one yard high twenty-seven feet, at two yards twenty-three feet; solid contents eight hundred and forty feet: the other eighty-eight feet high, the circumference at bottom thirty-four feet, at one yard twenty-three feet, at two yards twenty feet; the solid contents seven hundred and forty-four feet.

The Greendale Oak, thought to be above seven hundred years old: the circumference thirty-five feet three inches<sup>1</sup>. Dr. Hunter gives the dimensions thus: Circumference at one foot from the ground thirty-three feet one inch, at two feet twenty-eight feet five inches, at six feet twenty-five feet seven inches: spread eighty-one feet: the whole height eighty-eight feet. There are prints of this tree in its state of ruin in the second volume of Dr. Hunter's edition of Evelyn's *Silva*.

In this park is a fine grove of large Oaks measuring from twelve to twenty-two feet in circumference.

On the hills at the east end of the park are plantations, chiefly of Oak and Chestnut, with some Beech, Larch, Weymouth Pine, and Firs, near four hundred acres, all planted by the present Duke of Portland.

There are several fine Oaks in Welbeck-park in full vigour, above five hundred years old.

On Sherwood-forest, five miles from Welbeck is a beautiful wood of above ten thousand old Oaks, with Birches intermixed, whence it is called Birchland; the whole about one thousand eight hundred acres. On the north side of the great riding is a curious ancient Oak, measuring near the ground thirty-four feet four inches, at one yard twenty-seven feet four inches, at two yards thirty-one feet nine inches. It cannot be less than one thousand years old.—An Oak cut down in Birchland, had the letters J. R. more than a foot within the tree, and about a foot from the centre; so that it must have been near six feet in circumference when the letters were cut out. A tree of that size is judged to be about one hundred and twenty years growth. If we suppose the letters to be cut about the middle of James the First's reign, it is one hundred and seventy-two years to the year 1786, when the tree was cut down, which added to one hundred and twenty, makes the tree two hundred and ninety-two

<sup>1</sup> Rooke's Oaks at Welbeck, qu. 1790.

years old. It was perfectly sound, and had not arrived to its highest perfection. It was about twelve feet in circumference<sup>k</sup>.

Fisher's Oak, about seventeen miles from London, or half way to Tunbridge, of a monstrous bulk; the trunk only remaining of above four fathoms in compass. When King James the First made a progress that way, a school-master of the neighbourhood and all his scholars dressed in oaken garlands came out of this tree in great numbers, and entertained the King with an oration. They have a tradition at Tunbridge, that thirteen men on horseback were once sheltered in this Oak.

In the hall at Goodrich-castle in Herefordshire was a beam of Oak without knot, sixty-six feet long, and near two feet square the whole length<sup>l</sup>.

At Selborne, in the county of Southampton, about the year 1768, twenty trees were felled in a little wood, tall and taper like firs, with only a little brush at the top, and without any large limbs, from fifty to sixty feet in the trunk, and twelve inches diameter at the small end: they sold for 20l. a tree.

The lawn of the Duke of Bolton's Lodge at Burley is adorned with some very grand Oaks, which from the dignity of their form, and venerable appearance, as well as the number of the most respectable of them have obtained the name of the twelve Apostles<sup>m</sup>.

An Oak was felled in april 1791, in the park of Sir John Rushout, Bart. at Northwick, near Blockley in Worcestershire, judged to be about three hundred years-old, perfectly sound and fine timber.

			Feet.
Girth at five feet from the ground	-	-	21
Smallest girth	-	-	18
Length to the branches	-	-	30
<hr/>			
Solid contents of the body	-	-	634
Estimated timber in the arms	-	-	200
<hr/>			
			834
<hr/>			
At 2s. a foot, worth	-	-	£. 83
Firewood estimated at	-	-	s. 8
Bark sold for	-	-	6 6
<hr/>			
			5 5
<hr/>			
			94 19

In Whittlewood forest Mr. Arthur Young measured Wake's Oak, which is the ruins of a noble tree, twenty feet three inches in circumference at five feet from the ground; and twenty-five feet eight inches at two feet. Raven's Oak, sixteen feet inches at five feet. The Lawnhead Oak, sixteen feet six inches<sup>n</sup>.

In Hainault forest, Essex, stands a remarkable tree, well known by the name of Fairlop Oak. The stem, which is rough and fluted, measures, at three feet from the ground, about thirty-six feet in girth. The boughs extend about three hundred feet in circumference. Under their shade, on the first Friday in July, is held a fair, founded by Mr. Daniel Day, who used annually to dine there on that day with a select party of friends. The tree is now fenced round with a close paling about five feet high, and Mr. Forsyth's composition has been applied to its decayed branches, to preserve it from future injury. The Hainault Foresters, one of the societies formed for the purpose of enjoying the amusement of archery, held their meetings near this Oak<sup>o</sup>.

Mr. Gilpin mentions Arthur's table, in the town-hall of Winchester, cut out of a tree of immense girth. The Cheltenham Oak, which as near its roots as you can walk, exceeds twenty paces round. The Swilter Oak in Needwood forest, which he believes was equal to any of them<sup>p</sup>. He is very particular on the Oak which stood by the gate of the water-walk at Magdalen college in Oxford, mentioned above. He amuses himself with the idea that it was a sapling

<sup>k</sup> Idem.

<sup>l</sup> Grose's Antiq. vol. 2.

<sup>m</sup> Gilpin's For. scen. 2. 110.

<sup>n</sup> Annals, 16. 515..

<sup>o</sup> Lyson's, env. of Lond. 4. 56. and 646.

<sup>p</sup> Forest scenery, 1. 120, 121.



when Alfred the Great founded the University, a period including *only* a space of nine hundred years, which is no great age for an Oak! About five hundred years after the time of Alfred, William of Wainfleet, Dr. Stukeley tells us, ordered his college to be founded near the *great Oak*; and an Oak could not be less than five hundred years of age, to merit that title, together with the honour of fixing the site of a college. It was much injured in Charles the Second's time, when the present walks were laid out: the roots were then disturbed, from that period it declined fast, and became reduced by degrees to little more than a mere trunk. It once could have sheltered with ease three thousand men, though in its decayed state, it could for many years do little more than shelter some luckless individual from the driving shower. In the summer of 1788, this magnificent ruin fell to the ground. Its grand tap-root was decayed, and it had hold of the earth only by two or three roots, of which no one was more than two inches in diameter. From a part of its ruins a chair was made for the president of the college, which will long continue its memory<sup>1</sup>.

From a note in my possession, probably in some periodical publication of the time, it appears that this Oak fell suddenly at four o'clock on Monday morning, June 29th, 1789.

The girth was 21 feet, 9 inches.

Height 71 feet, 8 inches.

Cubic contents 754 feet.

The trunk for more than nine feet from the ground, was reduced to a perfect shell, but upwards the tree seemed in the full vigour of vegetation.

Not far from Blandford in Dorsetshire stood a tree known by the name of Damory's Oak. At the ground its circumference was sixty-eight feet; and seventeen feet above the ground its diameter was four yards. As this vast trunk decayed, it formed a cavity fifteen feet wide and seventeen high, capable of holding twenty men. During the civil wars and after the restoration, this cave was inhabited by an old man, who sold ale in it. By the storm of 1703, it lost many of its noblest limbs. But forty-five years after that, some of its branches were seventy-five feet high, and extended seventy-two feet. In the year 1755, when it was fit for nothing but fire-wood, it was sold for 14l.<sup>2</sup>

In Torwood, in the county of Sterling, stand the ruins of an Oak, supposed to be the largest tree that ever grew in Scotland. It is now hollow, but from what remains it is evident that the diameter of the trunk could not have been less than eleven or twelve feet. It is probably a tree of great antiquity; the vestiges of a circle round it resemble those works which are commonly attributed to the Druids. When William Wallace roused the Scotch nation to oppose the tyranny of Edward, he often assembled his army at Torwood, and then this Oak is said to have been his head quarters; hence it has ever since been known by the name of *Wallace tree*<sup>3</sup>.

Herne's Oak, celebrated by Shakspeare, is said still to exist in the little park at Windsor, in Queen Elizabeth's walk, all the trees in which are Elms, except this. It is a large tree, measuring about twenty-four feet in circumference, and seems yet too vigorous to have been a proper tree for Herne the hunter to have danced round, more than two centuries since.

An Oak in the grounds of Sir Gerard Vanneck, at Heveningham in Suffolk, carries us likewise into the times of Elizabeth. It is now falling fast into the decline of years. Its trunk, which measures thirty-five feet in circumference, still maintains its grandeur, but in appearance only, for it is a mere shell. In Queen Elizabeth's time it was hollow. That princess, who from her earliest age loved masculine amusements, used often, it is said, in her youth, to take her stand in this tree, and shoot the deer as they passed. From that time it has been known by the name of *Queen Elizabeth's Oak*<sup>4</sup>.

<sup>1</sup> Idem, p. 135.

<sup>2</sup> Idem, from Hutchins's Dorsetshire, where is a print of it.

<sup>3</sup> Idem, from Nimma's Sterl. p. 145. <sup>4</sup> Idem, p. 145, 147.

The Oak tree in the New Forest in Hampshire against which the arrow of Sir Walter Tyrrel glanced, and killed King William Rufus, about sixty years ago became so decayed and mutilated, that the spot would probably have been forgotten, had not John Lord Delaware, who lived in one of the neighbouring lodges, erected a triangular stone, with an inscription on each face, before the stump was eradicated<sup>5</sup>.

The Cadenham Oak, in the New Forest, near the village of Cadenham, about three miles from Lyndhurst, buds every year in the depth of winter, and like the Glastonbury Thorn is believed by the country people to produce its buds only on old Christmas-day: these premature buds, after unfolding themselves, make no farther progress, but shrink and die; the tree vegetating again at the usual season, and being in full leaf in the middle of summer, without any difference, form or foliage, from other Oaks<sup>6</sup>.

The Oak which was planted at Penshurst on Sir Philip Sidney's birth-day still remains, and is twenty-two feet round<sup>7</sup>.

Mr. Collinson makes mention of an Oak at Curry-Rivel in Somersetshire, which bears acorns more than thrice the usual dimensions; and by some experiments made by an eminent naturalist, it appears, that the plants which they produce grow twice as fast as those raised from common acorns<sup>8</sup>.

Many places in England are named from this favourite tree: as Barkshire, from a bare Oak, at which the people of that shire used to assemble; Oakingham, Oakhampton, Oakington, Aukland, Oxenham, Baldock, Hatfield Broad-Oak, Acca in Somersetshire, in Doomfday book, &c. &c.

The Oak at Boscobell, which sheltered King Charles the Second after the battle of Worcester, and thence was called the Royal Oak, was famous in the last century. Several trees were raised from the acorns. One of these was in the botanic garden at Chelsea. Another was removed, when Marlborough house was built in St. James's-park.

The particular and most valued qualities of the Oak, says Mr. Gilpin, are *hardness* and *toughness*. Box and Ebony are harder, Yew and Ash are tougher than Oak; but no timber is possessed of both these qualities together in so great a degree as British Oak. Almost all arts and manufactures are indebted to it; but in ship-building and bearing burdens, its elasticity and strength are applied to most advantage. It is not the erect, stately tree that is always the most useful in ship-building; but more often the crooked one, forming short turns and elbows, commonly called *knee-timber*. Nor is it the straight, tall stem, with the fibres running in parallel lines, that is the most useful in bearing burdens, but the "unwedgeable and gnarled Oak," as Shakspeare calls it.

Virgil has brought together, in few words, the most obvious qualities of this noble tree, in one point of view:

"Esculus imprimis, quæ quantum vertice ad auras  
Æthereas, tantum radice in Tartara tendit.  
Ergo non hiemes illam, non flabra, neque imbres  
Convellunt: immota manet, multosque per annos  
Multa virum volvens durando secula vincit.  
Tum fortes late ramos, ac brachia tendens  
Huc illuc, media ipsa ingentem sustinet umbram<sup>9</sup>."

The first characteristic of the Oak which Virgil mentions, is its firmness, or the strength with which it takes hold of the ground; driving its tap-root to a depth equal to the height of the tree. No tree therefore resists the blast so steadily; and we seldom see it take a twisted form from the winds. A second characteristic is the stoutness of its limbs. We know not any tree, except perhaps the Cedar of Lebanon, so remarkable in this respect. The limbs of most trees spring from the trunk. In the Oak they may be rather said to divide from it. You hardly know which is stem and which is branch; and towards the top, the stem is entirely lost in the branches. This gives particular propriety to Virgil's epithet *fortes* in

<sup>5</sup> Idem, p. 160.

<sup>6</sup> Idem, 165.

<sup>7</sup> Gough's Camden.

<sup>8</sup> Somersetshire, 1. 24.

<sup>9</sup> Georg. 2. 290.



characterizing the boughs of the Oak, and hence its finewy elbows are of such peculiar use in ship-building. The next characteristic of the Oak noticed by the poet is the twisting of its arms: *brachia tendit huc illuc*. Examine almost any other tree, and you may observe in what direct and straight lines the branches shoot from the stem: whereas the limbs of an Oak are continually making various contortions, and sport and play in every possible direction. Another peculiarity which Virgil notices in the Oak, is its expansive spread. This is a just characteristic of it; for its boughs, however twisted, continually take a horizontal direction, and overshadow a large space of ground. Indeed, where it is fond of its situation, and has room to spread, it extends more than any other tree, and like a monarch takes possession of the soil. The last Virgilian characteristic of the Oak is its *longevity*. In age it exceeds any other tree, except perhaps the Yew.

The Oak is confessedly the most picturesque tree in itself, and the most accommodating in composition. It refuses no subject, either in natural or in artificial landscape. It is suited to the grandest, and may with propriety be introduced into the most pastoral. It adds new dignity to the ruined tower and gothic arch; it throws its arms with propriety over the purling brook or the mantling pool; and may be happily introduced even in the lowest scene:

“ Hard by a cottage chimney smokes  
“ From between two aged oaks<sup>b</sup>.”]

25. This is one of the fairest species of Oak. The trunk rises as high as that of the common Oak; the branches extend very wide on every side, and are covered with a grayish bark, intermixed with brown spots. Leaves about three inches long, and almost two inches broad, deeply cut with most of the teeth turning back and terminating in acute points; they are stiff, of a pale green on their upper side, and downy on their under. The acorns have very large scaly cups, which almost cover them; the scales are woody and pointed, standing out a quarter of an inch; some of the cups are as large as middling Apples.

Native of the Levant, whence the acorns are annually brought to Europe for dyeing; they are called *Velani* and the tree *Velanida*, by the Greeks. [*Vallonia* at Venice. It is also found in Spain, Carniola, Piedmont, and Dalmatia. Mr. Miller cultivated it in 1731<sup>c</sup>. He says there were few in England about the year 1760, and that the greatest part of these were raised in the Chelsea garden in 1748<sup>d</sup>.]

26. The leaves of this are oblong and pointed, and are frequently lyrate; they are jagged and acute-pointed, a little hoary on their under side, and stand on slender foot-stalks. The acorns are small, and have rough prickly cups.

[Native of the South of Europe. Cultivated in 1739, by Mr. Miller. There are several varieties of it<sup>e</sup>. The Lucombe or Devonshire Oak is one. An account of it may be seen in the sixty-second volume of the Philosophical Transactions.

Mr. Gilpin says it is nearly an ever-green, named from the person who raised it, produced from an acorn of the common Turkey Oak, from which all these have been grafted. It is said the growth is rapid; but from few trees, and those but young, no judgment can well be formed<sup>f</sup>.]

#### PROPAGATION AND CULTURE.

All the sorts of Oak are propagated by sowing their acorns, and the sooner they are put into the ground after they are ripe, the better they will succeed; for they are very apt to sprout where they are spread thin, and if they are laid in heaps, they ferment and rot in a little time; the best season therefore for sowing them is the beginning of november, by which time they will be fallen from the trees.

[This early sowing seems to be the most natural, but the destruction made by the Field Mouse has induced many to prefer spring-sowing.

Seedsmen, when they preserve acorns for this purpose, lay them thin upon a boarded floor, where, if full ripe, they will retain their vegetative power during the winter<sup>g</sup>.]

I shall first give directions for raising the several sorts of Oak in a nursery, when they are intended to be planted out for ornament, and the timber is not regarded. These acorns may be sown in beds four feet wide, with paths of two feet broad between them: in these beds there may be four rows sown, at about nine inches distance from each other. [Others allow only four inches between the rows.] Draw straight drills with a hoe, into which drop the acorns two or three inches apart, covering them carefully with the earth, two inches thick.

In the spring, when the plants begin to appear, clear them carefully from weeds, and if the season prove dry, refresh them now and then with a little water. Let them remain until the following autumn: at which time have a spot of ground, in size proportioned to the quantity of plants, well trenched and levelled; at the middle or end of october carefully take up the plants, so as not to injure their roots, and plant them out in rows three feet asunder, and eighteen inches apart in the rows; never suffering the plants to abide long out of the ground, so as the roots may become dry.

[This work may be done in march, if there was not time for it in the autumn. Deep trenching or double digging being very expensive, those who plant on a large scale, may take a crop of Oats, Rape or Turneps off the land, the year before they plant, by which means the sward may be effectually destroyed, and the land cleaned. After the crop is off, let the ground be trench-ploughed, and then harrowed with heavy harrows. About the end of october let it be again ploughed cross-wise, and harrowed as before, previous to the planting of the sets.

In planting these, having carefully taken them out of the seed-bed, shorten the tap-root, and take off part of the side shoots. Each line should have a man and boy: the man strikes his spade into the earth close to the line; he gives another stroke at right angles with it: then the boy having a parcel of plants under his left arm, takes one with his right hand, and puts it into the crevice made by the spade at the second stroke: after this, the man gently presses the mould to it with his foot. An active man and boy will thus plant fifteen hundred or two thousand in a day; and whilst they are planting, others should be employed in taking up fresh sets, sorting them, and preparing the roots. There should be a sufficient number of hands, for the ground cannot be too soon planted when it is ready; neither can the plants be put in too soon, after they are taken up. The weakest plants may be left a year longer, to gain strength<sup>h</sup>.]

When the plants have taken root in the nursery, they will require little more care than to keep them clear from weeds, and dig the ground between the rows every spring; in doing which, you should cut off such roots as extend very far from the trunk of the trees, which will render them better for transplanting again; you should also prune off such side-branches as extend themselves very far, and would retard the upright shoot; but you should by no means cut off all the small lateral branches, some of which are absolutely necessary to be left on, to detain the sap for the augmentation of the trunk; for I have often observed, where trees have been thus closely pruned, that their heads have overgrown their bodies, so that they have bent downward and become crooked.

When these trees have remained in the nursery three or four years, they will then be large enough to transplant to the places where they are to remain; for it is not proper to let them grow very large before they are planted out, because these are very hazardous trees to remove when old, or after they have taken deep root.

<sup>b</sup> Forest scenery, i. 24.  
<sup>c</sup> Hort. kew.

<sup>d</sup> Hort. kew.

<sup>e</sup> Figures.

<sup>f</sup> Forest scen. i. 97.

<sup>g</sup> Hunter's Evelyn.

<sup>h</sup> Idem.



The season for this work is (as I said before) in the autumn; at which time, if they are carefully taken up, there will be little danger of their succeeding. In transplanting these trees, by no means cut their heads, which is too much practised; all that should be done, must be only to cut off any bruised or ill-placed branches, which should be taken off close to the place where they are produced; but there can be no greater injury done to these trees, than to shorten their shoots; for when the leading bud (which is absolutely necessary to draw and attract the nourishment) is taken off, the branch often decays entirely, or at least down to the next vigorous bud.

The trees thus raised and managed, will, (if planted in a proper soil) grow to a considerable magnitude, and are very proper for a wilderness in large gardens, or to plant in clumps in parks, &c. but if they are designed for timber, it is much the better method to sow the acorns in the places where they are to remain; in order to which, provide yourself in autumn with a sufficient quantity of acorns, which should be always taken from straight, upright, vigorous growing trees; these should be gathered from under the trees as soon as may be after they are fallen; and, if possible, in a dry time, laid thin in some open room to dry; after which they may be put into dry sand, and preserved in a dry place until the beginning of november, when you should prepare the ground for planting them.

The directions before given are designed only for small plantations in a garden or park, which are only for pleasure; but where these trees are cultivated with a view to profit, the acorns should be sown where the trees are designed to grow; for those which are transplanted will never grow to the size of those which stand where they are sown, nor will they last near so long sound. For in some places, where these trees have been transplanted with the greatest care, and they have grown very fast for several years after, yet they are now decaying, when those which remain in the place where they came up from the acorns, are still very thriving, and have not the least sign of decay. Therefore, whoever designs to cultivate these trees for timber, should never think of transplanting them, but sow the acorns on the same ground where they are to grow; for the timber of all those trees which are transplanted, is not near so valuable as that of the trees from acorns. I shall therefore add some plain directions for sowing acorns, and managing young trees during their minority, until they are out of danger, and require no farther care.

The first thing to be done is that of fencing the ground very well, to keep out cattle, hares and rabbits; for if these can get into the ground, they will soon destroy all the young trees. Indeed they will in a few years grow to be out of danger from hares and rabbits, but it will be many years before they will be past injury from cattle, therefore durable fences should be put round the ground: if in the beginning a pale fence is made about the land, which may be close at the bottom and open above, and within the pale a Quick-hedge planted, this will become a good fence by the time the pale decays, against all sorts of cattle; and then the trees will have got above the reach of hares and rabbits, so that they cannot injure them, for the bark of the trees will be too hard for them to gnaw.

After the ground is well fenced, it should be prepared, by ploughing it three or four times, and after each ploughing to harrow it well, to break the clods, and cleanse the ground from Couch, and the roots of all bad weeds. Indeed if the ground is green sward, it will be better to have one crop of Beans, Peas, or Turneps off the ground, before the acorns are sown, provided these crops are well hoed to stir the surface and destroy the weeds; for if this is observed, the crop will mend and improve the land for sowing; but in this case the ground should be ploughed as soon as possible, when the crop is taken off, to prepare it for the acorns, which should be sown as soon as may be after the acorns are ripe; for although these may be preserved in sand for some time, yet they will be apt

to sprout; and if so, the shoots are in danger of being broken and spoiled; therefore I should advise sowing early, which is certainly the best method.

In making choice of the acorns, all those should be preferred, which are taken from the largest and most thriving trees; and those of pollard-trees should always be rejected, though the latter are generally the most productive of acorns, but those of the large trees commonly produce the strongest and most thriving plants.

The season for sowing the acorns being come, and the ground having been ploughed and levelled smooth, the next work is to sow the acorns, which must be done by drawing drills across the ground, at about four feet asunder, and two inches deep, into which the acorns should be scattered at two inches distance. These drills may be drawn either with a drill plough, or by hand with a hoe; but the former is the most expeditious method, therefore in large plantations should be preferred. In drawing the drills, if the land has any slope to one side, these should be made the same way as the ground slopes, that there may be no stoppage of the wet by the rows of plants crossing the hanging of the land. This should be particularly observed in all wet ground, or where the wet is subject to lie in winter, but in dry land it is not of much consequence. When the acorns are sown, the drills should be carefully filled in, so as to cover the acorns securely; for if any of them are exposed, they will entice the birds and mice; and if either of these once attack them, they will make great havock with them.

The reason of my directing the drills to be made at this distance, is for the more convenient stirring the ground between the rows, to keep the young plants clear from weeds; for if this is not carefully done, it cannot be expected that the young plants should make much progress; and yet this is generally neglected by many who pretend to be great planters, who are often at a large expense to plant, but seldom regard them after; so that the young plants have the difficulty to encounter the weeds, which are frequently four or five times the height of the plants, and not only shade and draw them, but also exhaust all the goodness of the ground, and consequently starve the plants. Therefore, whoever hopes to have success in their plantations, should determine to be at the expense of keeping them clean for eight or ten years after sowing, by which time the plants will have obtained strength enough to keep down the weeds; the neglecting of this has occasioned so many plantations to miscarry, as are frequently to be met with in divers parts of England.

About the middle of april the young plants will appear above ground; but before this, if the ground should produce many young weeds, it will be good husbandry to scuffle the surface over with Dutch hoes, in a dry time, either the latter end of march or the beginning of april, to destroy the weeds, whereby the ground will be kept clean until all the plants are come up so as to be plainly discerned; by which time it may be proper to hoe the ground over again, for by doing it early, while the weeds are small, a man will perform more of this work in one day than he can in three or four when the weeds are grown large; besides, there will be great hazard of cutting off or injuring the young plants when they are hid by the weeds; and small weeds being cut, are soon dried up by the sun; but large weeds often take fresh root and grow again, especially if rain should fall soon after, and then the weeds will grow the faster for being stirred; therefore it is not only the best method, but also the cheapest husbandry, to begin cleaning early in the spring, and to repeat it as often as the weeds are produced.

The first summer, while the plants are young, it will be the best way to perform these hoeings by hand, but afterwards it may be done with the hoe-plough; for as the rows are four feet asunder, there will be room enough for this plough to work; and as this will stir and loosen the ground, it will be of great service to the plants; but there will require a little hand-labour



where the plough is used, in order to destroy the weeds, which will come up in the rows between the plants; for these will be out of the reach of the plough, and if they are not destroyed, they will soon overgrow and bear down the young plants.

After the plants have grown two years, it will be proper to draw out some of them, where they grow too close; but in doing this, great care should be had not to injure the roots of those left; for as the plants which are drawn out are only fit for plantations designed for pleasure, so these should not be so much regarded in their being removed, as to sacrifice any of those which are designed to remain. In the thinning of these plantations, the plants may at the first time be left about one foot asunder, which will give them room enough to grow two or three years longer, by which time it may be easy to judge which are likely to make the best trees; therefore these may be then fixed on as standards to remain, though it will be proper to have a greater number at this time marked than can be permitted to grow, because some of them may not answer the expectation; and as it will be improper to thin these trees too much at one time, so leaving double the number intended at the second thinning will not be amiss. Therefore, if they are then left at about four feet distance in the rows, they will have room enough to grow three or four years longer; by which time, if the plants have made good progress, their roots will have spread over the ground, therefore it will be proper to take up every other tree in the rows. But by this I do not mean to be exact in the removing, but to make choice of the best plants to stand, which ever rows they may be in, or if they should not be exactly at the distance here assigned; all that is designed here, is to lay down general rules, which should be as nearly complied with as the plants will permit; therefore every person should be guided by the growth of the trees in the performance of this work.

When the plants have been reduced to the distance of about eight feet, they will not require any more thinning. But in two or three years time, those which are not to remain will be fit to cut down, to make stools for under-wood; and those which are to remain, will have made such a progress as to become a shelter to each other; for this is what should be principally attended to, whenever the trees are thinned; therefore in all such places as are much exposed to the wind, the trees should be thinned with great caution and by slow degrees; for if the air is let too much at once into the plantation, it will give a sudden check to the trees, and greatly retard their growth; but in sheltered situations, there need not be so great caution used as in those places, for the plants will not be in so much danger of suffering.

The distance which I should chuse to allow to those trees which are designed to remain for timber is, from twenty-five to about thirty feet, which will not be too near, where the trees thrive well; in which case their heads will spread, so as to meet in about thirty or thirty-five years; nor will this distance be too great, so as to impede the upright growth of the trees. This distance is intended, that the trees should enjoy the whole benefit of the soil; therefore, after one crop of the under-wood, or at the most two crops are cut, I would advise the stubbing up the stools, that the ground may be entirely clear, for the advantage of the growing timber, which is what should be principally regarded; but in general, most people have more regard for the immediate profit of the under-wood than the future good of the timber, and frequently by so doing spoil both; for if the under-wood is left after the trees are spread so far as that their heads meet, the under-wood will not be of much worth; and yet, by their stools being left, they will draw away a great share of nourishment from the timber-trees, and retard them in their progress.

The soil in which the Oak makes the greatest progress, is a deep rich loam, in which the trees grow to the largest size; and the timber of those trees which grow upon this land, is generally more pliable than that which grows on a shallower or drier ground, but

the wood of the latter is much more compact and hard. Indeed there are few soils in England, in which the Oak will not grow, provided there is proper care taken in their cultivation, though this tree will not thrive equally in all soils; but yet it might be cultivated to a national advantage upon many large wastes in several parts of England, as also to the great profit of the estates where these tracts of land now lie uncultivated, and produce nothing to the owner. And should the present temper of destroying the timber of England continue in practice some years longer, in the same degree which it has for some years past, and as little care taken to raise a supply, this country which has been so long esteemed for its naval strength, may be obliged to seek for timber abroad, or be content with such a naval strength, as the poor remains of some frugal estates may have left growing; for as to the large forests, whence the navy has been so long supplied, a few years will put an end to the timber there; and how can it be otherwise, when the persons to whose care these are committed, reap an advantage from the destruction of the timber?

Before I quit this subject, I must beg leave to take notice of another great evil, which is of so much consequence to the public, as to deserve their utmost attention; which is, that of cutting down the Oaks in the spring of the year, at the time when the sap is flowing. This is done for the sake of the bark, which will then easily peel off; and for the sake of this, I think, there is a law, whereby people are obliged to cut down their timber at this season. But by so doing, the timber is not half so durable as that which is felled in the winter, so that those ships, which have been built of this spring-cut timber, have decayed more in seven or eight years, than others which were built with timber cut in winter, have done in twenty or thirty. And this our neighbours the French have experienced, and therefore have wisely ordered, that the bark should be taken off the trees standing, at the proper time, but the trees are left till the next, and sometimes until the second winter, before they are cut down; and the timber of these are found to be more durable and better for use, than that of any trees which have not been peeled.

[Mr. Boutcher's method of raising Oaks is this.— Having provided acorns in the autumn, gathered from the handfomest and most vigorous trees, in fair weather, spread them in an airy covered place, and turn them frequently till quite dry; then mix them with sand, or light loose earth, and let them be protected from vermin, frost, and moisture till about the middle of february.

Having then tried the goodness of your seeds in water, make shallow drills across the ground, which has been well prepared by clean digging and raking, at eighteen or twenty inches distance: in these drop the acorns about two inches asunder, covering them two inches deep with the back of a rake; keep the ground, when raked smooth, clean and mellow during the summer.

At the beginning of april cut them under ground, and let them remain till the spring after. Then, as soon as their buds begin to swell, take them carefully up, without tearing their roots or fibres: separate the straight free-growing plants from the crooked and shrubby; shorten any downright or bruised roots, but be very sparing of the small fibres: plant the straight and crooked trees separate, in rows two feet asunder and nine inches in the row. Take up few at a time, that they may not be too long out of the ground: four men will quickly dispatch a great number, one in taking up, a second in pruning, and two in planting.

If the land be good, and the seasons favourable, the straight plants may be removed in two years; otherwise they may continue three seasons.

The crooked and brushy trees having stood two years, must be cut over near the ground, and remain two years longer: as soon as their shoots are four or five inches long, pinch off all but the most promising one.

Another method of raising these trees is, to sow the acorns on beds in rows seven or eight inches asunder, and



and two or three inches in the row, covering them the usual depth, and letting them remain only one year. Remove them the following spring, and having shortened their tap-roots, lay them in rows, cut down perpendicular by the spade, eighteen inches asunder, and eight or nine inches in the row; here they may continue two years.

Then remove them again, separating the straight from the crooked, and plant them in rows, two feet and a half asunder, and one foot distant in the row; the straight plants to continue three years, and the crooked, if they have grown freely, to be cut over in one year; if not, in two years; and here they should remain three years longer.

Mr. Boutcher prefers spring sowing, because ground, well trenched and dug, mellowed by the winter, and laid down sweet and loose in spring, must nourish the plants much better than that laid down in autumn, and battered by winter rains.

He is also very much against dibbling, on this and all other occasions, especially for the Oak and the nut-bearing trees, particularly on strong land. He observes very well, that if the holes made by a dibble prove not their immediate grave, they will at least be their prison.

If trees are to be transplanted large, they must be removed once or twice more: remaining from four to six years after the first removal; and six or seven after the second, by which time they will be twenty feet high. They may be removed with more safety, and grow more freely, when transplanted in the spring than in autumn.—But this method of Mr. Boutcher's will answer only for ornamental trees, or where they are wanted for immediate shelter, or to fill up gaps near the mansion.

A gentleman of considerable experience in this matter, greatly doubts whether a single planted Oak was ever carried into the dock-yard for the purpose of ship-building. Transplanted Oaks, in his opinion, scarcely ever make thriving trees; the tap-root, which is destroyed in moving, seeming to be necessary towards extending the plant to its fullest size. Whoever therefore transplants Oaks, would do well to set some acorns among them<sup>1</sup>.

There is little doubt but that in raising Oak for timber, it is far better to sow the acorns in the spot finally destined for the wood, than to raise the trees in a nursery, and transplant them. But it is a doubt, says Mr. Gilpin, whether it be more judicious to sow the acorn, after inclosing and grubbing the ground; or, without either operation, in the midst of Thorn-bushes and Hollies, which will defend the sapling from cattle, till it be able to stand alone; and will draw it in its early state to much quicker maturity, than it can arrive at without such shelter. The latter way is not so sure; but much greater quantities may be sown at a smaller expense; and if one tenth of the acorns succeed, the saving is great on an equal quantity of timber<sup>2</sup>.

In wastes, if acorns were to be sown unprotected by bushes, however they may be guarded by the first planter, they require so many renewals of fences and guardians, that they have little chance, before they are neglected, of arriving at a height sufficient to withstand the attacks of cattle, especially when we consider how difficult it is to preserve fences from the lawless depredations of cottagers inhabiting the borders of forests<sup>3</sup>. If the ground however be inclosed and not grubbed, the acorns sown among the bushes have thus a double chance of escaping.

The late Duke of Bedford, when he was Lord Warden, was very intent on raising timber in this fortuitous manner. He merely inclosed, and left it to chance to fill his inclosures. But Mr. Gilpin says, he does not find that any of them succeeded. He recommends to inclose, and here and there to grub a spot and sow two or three acorns in it, taking some little care of them afterwards. This he suggests, as perhaps the most certain, and the least expensive way of raising timber<sup>4</sup>.

<sup>1</sup> Gentl. magaz. 55. 109. & 57. 860. Tho. White, Esq.

<sup>2</sup> For. scen.

<sup>3</sup> White in Gent. magaz. 57. 860.

<sup>4</sup> Forest scenery, 2. 35.

Mr. Nichols, whose good sense and experience demand our respect and confidence, affirms that nothing assists more in the propagation and preservation of timber than thorns and bushes, especially where there are no fences to keep off cattle. Under-wood, says he, never fails to bring a stock of timber on a favourable soil: and the destruction of bushes in lands not inclosed, will assuredly prevent a succession of timber, by depriving the young plants of their nurseries; and leaving the acorns which are casually dropped exposed to various enemies. The constant cutting therefore of under-wood by the keepers in forests, under pretence of browse for the deer, is attended with the most mischievous consequences to the growth of timber. The unlimited mowing of Fern is also extremely injurious to the growth of timber; for the Fern shades the roots, and keeps the young plants moist and cool: and by cutting it up, the young trees are cut up with it as soon as they arise.

Making plantations therefore without any previous preparation, being the cheapest, and answering the purpose extremely well, is recommended by Mr. Nichols<sup>5</sup>.

This is certainly a very reasonable mode of proceeding in forests, and wastes full of bushes: and Mr. Nichols has invented a very good instrument for introducing and planting acorns among the bushes. But in raising a new wood, it must be much more effectual to prepare and clean the ground well, and to set the acorns in drills, that the young plants may be kept clean by horse-hoeing till they can bid defiance to weeds.

With respect to the comparison between sown and planted Oaks, Mr. Plampin, of Chadacre in Suffolk, affirms, that the latter are so inferior to the former, as to induce him to give a general condemnation of planting for timber<sup>6</sup>.

Hanbury joins his testimony to that of Miller, in favour of raising Oaks from the acorn, without removing. They grow slowly, says he, on account of the tap-root striking deep into the ground, where there is less nourishment; but when they arrive at timber, they are the best trees, being generally fuller at heart, and more compact, strong and lasting<sup>7</sup>.

Mr. Marshall would reconcile the dispute about sowing and planting, in some measure thus: Where the strength of the land lies in the substratum, while the surface soil is of an ungenial nature, *sow*, in order that the roots may strike deep: but on the contrary, when the top soil is good, and the bottom of an opposite quality, *plant*, and thereby give the roots the full enjoyment of the productive part of the soil; or, under these last circumstances, *sow*, and *tap* the young plants as they stand, and thereby check their downward tendency, as well as strengthen their horizontal roots<sup>8</sup>.

Lewis Majendie, of Hedingham Castle, Essex, Esq. in his plantations of Oak, removed two-year old seedlings with the greatest care from the seed-bed, by undermining the roots, so as to bring them up undamaged and entire: the subsoil being a rich tender loam, holes were bored into it with an iron instrument used for fixing hop-poles: great caution was used that each seedling should have a hole suitable to the length of its tap-root, which was set upright, with care not to double it: the tap-roots were from eighteen to thirty-six inches in length.

By this method, Mr. Majendie avoided giving his young Oaks two checks, which they have in the common way of transplanting; and by planting them out finally at so early an age, they would the sooner recover their removal. By preserving the tap-roots also, he planted his trees as much as possible in a natural state; which is a reasonable practice, as he remarks, until the question shall be decided, whether it is best, in order to procure timber of the first quality, to sow acorns where they are to remain, or to transplant them from the seminary or nursery.

<sup>5</sup> Observation on Oak trees, 1791. oct. p. 8, 9, 10, 22, 24, 30.

<sup>6</sup> Young's annals, 5. 51.

<sup>7</sup> Body of planting, 1770, vol. 1. p. 5.

<sup>8</sup> Planting, 1. 121. ed. 2.



With a view to a comparison between young Oaks planted with their roots entire, and those whose roots had been tapped, Mr. Majendie, in december, 1786, selected from among his seedlings, twenty-four of the straightest, three feet six inches in length: of these he planted twelve with entire roots; and the remaining twelve at the same time and distance, taking off eighteen inches from their tap-roots, and leaving nine inches. In december 1791, he took up trees of each sort, and found that in the former, the tap-root had acquired a regularity of thickness in its general growth, and that its lateral shoots were mostly fibrous: and that on the other hand the mutilated trees had thrown out a number of thick woody horizontal roots near the place where the tap-root was shortened; after which the root resumed its natural downward tendency, with a regularity that might almost induce an idea that the root had never been divided.

These trees were fifteen inches in height from the ground, when they were planted: five years after the following were the measurements of each.

Oak planted with an entire root.	Feet. In.	Oak planted with a tapped root.	Feet. In.
Extreme height from the bottom of the tap-root - - -	11 2½	—	10 3
Height from the ground - - -	7 7	—	6 9
Circumference close to the ground - - -	0 6½	—	0 6½

As this ingenious gentleman purposes from time to time, by digging up others of these trees, to observe the comparative progress of them, the public will hereafter be enabled to form some judgment on this subject. It were to be wished that Mr. Majendie had sown some acorns in his plantations, in order to have compared the trees from those with the planted ones.

In raising Oaks for timber, draining should be well attended to; nothing contributing more to their growth and health, than keeping the land dry, if it is in the least inclinable to be swampy.

The Oak flourishes best and grows quickest in a rich deep loam, and the wood of such trees is of the firmest and best texture<sup>1</sup>.

It will also grow exceedingly well on clays and sandy soils, and on these last the finest-grained timber is produced. Many fine trees of this texture may be seen on Nottingham forest, particularly at Welbeck<sup>2</sup>.

The Oaks of Temple and Blackmoor in Selborne parish have furnished much naval timber; the soil a wet sandy loam. The trees on the freestone grow large, but are what workmen call *shakey*, and so brittle as often to fall to pieces in sawing<sup>3</sup>.

Mr. Speechly affirms that it matters not from what sort of tree the acorns are gathered, provided they are good. Mr. Nichols on the contrary advises the choice of acorns from the most healthy trees. The latter had seen the bad consequences of not attending to this choice, in the New Forest, where some of the inclosures were planted at the beginning of this century with acorns taken from a variety known there by the name of the *Durmast Oak*, which is of a freer growth than the true Oak, and attains as large a size, but in the quality of the timber is far inferior<sup>4</sup>.

There can certainly be no harm in taking the acorns from flourishing healthy trees; and at any rate they should not be gathered until they are full ripe, and beginning to fall. If the quantity wanted be not great, such as fall of themselves, or may easily be shaken from the trees ought to be preferred: these I have never known fail to grow.

Mr. Evelyn says, that six bushels of acorns will plant an acre, at the distance of one foot from each

other. Two bushels therefore, which some recommend as sufficient, must be much under the mark; unless the acorns are sown with the seeds of other trees, for a mixt wood or coppice.

One of the most essential things to be observed in the management of Oak woods is the judicious thinning of them. When they are thinned so as to be about two feet distant, they may stand twelve or fourteen years, when every second plant may be taken out and sold for hoops or small poles: only observing that if the ground be good, and the trees take to growing well, they will want thinning sooner. In seven or eight years more the healthiest trees must be marked for timber, and the others cut down for poles, and the stools left for under-wood<sup>5</sup>. In thirty years they will be useful for small scantlings, spars, rafters, battlings, rails, props, &c. not quartered.

All this time, according to the opinion of some, they should never on any account be touched with the knife, axe or pruning-hook. Some recommend the cutting off side shoots; others cutting them to the ground to make the better shoots.

This is the reason why, when Oaks are cut up in expectation of finding them clean timber, that a variety of rotten knots grown over with sound wood appear in them, being the places where boughs had been cut off.

This is certainly the case where Oaks are advanced in growth, but in their infant state it is generally allowed that they require judicious pruning.

To hack off a large bough, says Mr. Marshall, from an aged tree, is a crime of the deepest dye in the management of timber. But what relation has this mad act to the salutary operation of removing a twig from the stem of a young growing tree, or of pruning the boughs, or even removing the leader of a tree in a youthful growing state? In that case, the size of the wound and the exhausted state of the tree unite to prevent the healing, and a defect in the timber consequently takes place: whilst in this, the wound is inconsiderable, and the vigorous state of the tree enables it to cicatrize the sore, in a few months perhaps after the operation is performed.

By freeing the stems of young trees from side shoots, and by keeping their leaders single, a length of stem is obtained; and by afterwards checking their upright growth, and throwing the main strength of the head into one principal bough, by checking, not removing the rest, a crookedness of timber is had; and what is equally necessary in ship-timber, a cleanness and evenness of contexture are produced. The dangerous, and too often fatal defect caused by the decayed stumps of dead stem boughs being overgrown and hid under a shell of sound timber, a defect which every fortuitous tree is liable to, is by this provident treatment avoided: the timber from the pith to the sap becoming uniformly sound, and of equal strength and durability.

Nothing but prejudice of the most inveterate kind, can reject a practice founded on the most obvious principles of nature and reason. The mischief done to hedge-row trees by injudicious lopping, too generally observable, has arisen from the practice of taking large boughs from the stems of aged trees; not from training young trees, during the early stages of their growth<sup>6</sup>.

For more on this and other parts of this important subject see the articles *TIMBER* and *WOODS*.

The *striped* variety of Oak is propagated by budding or grafting on the common sort. It is a beautiful variegation, and may be improved by joining it to the Scarlet, Virginian, or Chestnut-leaved.

The more tender sorts will be rendered more hardy, and the dwarf ones improved in size, by grafting or budding on the common Oak<sup>7</sup>.

9. There is no tree more difficult to transplant than the Ilex, because it runs with a downright root, and very few fibres; the acorns therefore should be put into the places where they are designed to remain. These trees soon make warm and lofty hedges, forty

<sup>1</sup> Transact. Arts, vol. 10. for 1792. p. 4—12.

<sup>2</sup> Nichol's obs. p. 6 and 44.

<sup>3</sup> Hunter's Evelyn.

<sup>4</sup> White's Selborne.

<sup>5</sup> Flora Rustica, where it is described, and figured in t. 12.

<sup>6</sup> Hunter's Evelyn,

<sup>7</sup> Planting, 1. 140.

<sup>8</sup> Boucher.



or fifty feet high. To have plants for removal, either set the acorns in pots, or in drills two feet and a half asunder, and three or four inches apart in the drill, on good soil; water them, and keep the ground clean: the second spring, with a spade clear away the earth from one side of the plants, five inches deep, and with a sharp knife, at that depth, cut the roots across, taking care not to disturb the plant, and then replace the earth, pressing it gently down with your hands: this should be repeated for three or four years. These trees should not be planted near the house or gardens, because they make a great litter in april and may, when they cast their leaves.

The beginning of march prepare a shallow box or boxes, the bottom bored with holes half an inch in diameter, and four or five inches asunder, covered with oyster-shells or broken tiles; put light rich mould in them five inches deep, on which place the acorns four inches asunder, and cover them with two inches more of the same mould; place these boxes on a moderate hot-bed; and in ten or twelve days, when you find the earth beginning to dry, give them a very gentle sprinkling of water, which repeat every fourth or fifth day. In a month the plants will begin to appear, when the quantity of water must be increased. In this hot-bed the boxes may remain till the beginning of july, when they may be placed in a shady sheltered situation; having been before gradually inured to the open air. On the approach of winter, having cleared the boxes of all musty particles, and replaced them with fine rich mould, place them under frames till the succeeding spring, covering them with glasses, only in violent rains and hard frosts.

When the weather is favourable in april or may, remove them to a well-sheltered shady place in the nursery, and place them on stones or logs of wood some inches above the ground. During the summer months let them be regularly watered; and in the autumn they may again be put under a frame, to be covered in case of a severe winter.

The beginning of april following the plants must be taken out of the boxes, when from the interruption the roots have met with, they may be taken up by a trowel, with earth adhering to them. This being done, without wounding the smallest fibre if possible, put them in penny pots filled with rich loose mould; plunge the pots in a moderate hot-bed for six weeks or two months. Harden them gradually, and remove the pots to a north border during the remainder of the summer.

Having stood two years in the pots, they may be shaken out, and planted where they are designed to remain, or in the nursery two or three years more<sup>b</sup>.

QUERCUS MARINA OR MARITIMA. See Fucus.

QUERIA. (So named by Linneus, from Joseph Quer, Professor of Botany at Madrid, author of Flora Espannola, 1762.)

Lin. gen. n. 108. Reich. n. 115. Schreb. n. 141.

Gartn. t. 128. Juss. 300. Loeßing.

Class. 3. 3. Triandria Trigynia.

Nat. order of Caryophyllei. Caryophylleæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved, erect: leaflets oblong, acute, permanent; the outer ones recurved.

COR. none.

STAM. Filaments three, capillary, short. Anthers roundish.

PIST. Germ ovate. Styles three, the length of the stamens. Stigmas simple.

PER. Capsule roundish, one-celled, three-valved. (Valvelets in Q. canadensis, G.)

SEED single.

OBS. It differs manifestly in the number of seeds from Minuartia.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Caps. one-celled. Seed one.

SPECIES.

1. Queria hispanica.

Lin. spec. 132. Reich. i. 250. Willd. 493. Loeß. it. 48.

Flowers in clusters.

<sup>b</sup> Boucher.

2. Queria canadensis.

Lin. spec. 132. Reich. i. 250. Willd. 494. Gartn. fruct. 2. 217. Gron. virg. 14. (Mollugo).

Flowers solitary, stem dichotomous.

3. Queria trichotoma.

Thunb. in Linn. transf. 2. 329. Lin. spec. ed. Willd. 494.

Rubia spicis ternis: Thunb. jap. 357. n. 44.

Flowers in racemes, stem trichotomous.

DESCRIPTIONS, &c.

1: This has the habit of Minuartia montana, but it is smaller and more brittle. The head of flowers is more obscurely four-cornered; and very easily parts from the stem. Bractes bristle-shaped, erect, hooked outwards at the tip, and adhering to the clothes. Seed one, compressed, roundish. Colour of the plant whitish. The structure of the flowers, as well as the habit, is the same as in Minuartia; but this having single, and that many seeds, their genera are distinct. It is an annual plant, and a native of Spain<sup>c</sup>.

2: Root fibrose, perennial. Stem stiff, dichotomous, a span high, round, filiform, erect. Leaves opposite, lanceolate-ovate, quite entire, with dusky spots scattered over them on each side. Stipules in pairs on each side, acute, membranaceous. Flowers subpeduncled, small, green, from each division. Calyx five-parted, with bluntish, somewhat arched leaflets. The wild plant is higher, with a capillary stem; in cultivation it is thicker, with the leaves not at all dotted<sup>d</sup>. Capsule small, globular; mucronate at top, membranaceous, very thin, one-celled, not opening. Seed reniform-globular, very smooth, shining, dark<sup>e</sup>. It differs from the preceding in having the stem dichotomous, with one flower at each fork, the leaves stipulaceous, and the habit of Linum catharticum<sup>f</sup>. It not only differs in its external habit, but recedes far from Q. hispanica in the structure of the calyx and capsule; and has so much affinity to Arenaria and Paronychia nitida, as to differ little from them, except in the number of stamens<sup>g</sup>.

3. Stem herbaceous, with filiform, very spreading, smooth branchlets. Leaves opposite, on very short petioles, ovate, acute, entire, smooth, spreading very much, half an inch long. Axillary racemes opposite, terminating ones three.

Native of Japan<sup>h</sup>.

QUICK: See Triticum.]

QUICK. By this word is generally understood a live hedge, of whatever plants composed, in contradistinction to a dead hedge; [or rather the shrubs of which such live hedge is formed.] In the more strict sense of the word it is applied to the Cratægus Oxyacantha, Hawthorn or Whitethorn; young plants or sets of which are commonly sold by the nursery-gardeners under this name of Quick.

In the choice of these sets, those which are raised in the nursery, are to be preferred to such as are drawn out of the woods, because the latter have seldom good roots: many persons prefer them because they are larger plants than are commonly to be had in the nursery; but from long experience I have found that young plants from the nursery always make the best hedges. Indeed if the seed or haws were sown in the place where the hedge is designed to be, these unremoved plants would make a much stronger and more durable fence than those which are transplanted; but I am aware, this practice will be generally condemned, as tedious; but if the haws are buried one year in the ground, to prepare them for vegetation before they are sown, it will not be so long before this will become a good fence, as is generally imagined. Nay, from some trials of this kind, which I have made, I have found, that those plants which have remained where they came up from seed, have made such progress as to overtake, in six years, plants of two years growth, which were transplanted at the time when these seeds were sown.

And if the hedges are raised from seed, it will not be amiss to mix Holly berries with the Haws; and if

<sup>c</sup> Linn. spec. <sup>d</sup> Idem.

<sup>e</sup> Gartner.

<sup>f</sup> Jussieu.

<sup>h</sup> Thunb. jap.



so, these berries should also be buried one year, to prepare them, so that then both will come up together the following spring; and this mixture of Holly with the Quick, will not only have a beautiful appearance in the winter, but will also thicken the hedge at the bottom, and make it a better fence.

But where the hedge is to be planted, the sets should not be more than three years old from the Haws; for when they are older, their roots will be hard and woody; and as they are commonly trimmed off before the sets are planted, so they very often miscarry; and such of them as do live, will not make so good progress as younger plants, nor are they so durable; for these plants will not bear transplanting so well as many others, especially when they have stood long in the seed-bed unremoved.

The method of planting, as also of plashing and pruning of these hedges, having been fully explained under the article of HEDGES, I shall not repeat that here, but shall only beg leave to add the method which is prescribed by Thomas Franklin, Esq. which he had long practised in planting of these hedges, which is as follows:

He first set out the ground for ditches and Quick ten feet in breadth; he subdivided that, by marking out two feet and a half on each side (more or less at pleasure) for the ditches, leaving five in the middle between them; then digging up two feet in the midst of those five feet, he planted the sets in; which although it required more labour and charge, he says, he soon found it repaid the cost. This done he began to dig the fosses, and to set up one row of turfs on the outside of the said five feet; namely, one row on each side thereof, the green side outmost, a little reclining, so as the Grass might grow.

After this, returning to the place he began at, he ordered one of the men to dig a spit of the under-turf mould, and lay it between the turfs placed edgewise, as before described, upon the two feet, which was purposely dug in the middle, and prepared for the sets, which the planter set with two Quicks upon the surface of the earth almost upright, whilst another workman laid the mould forwards about twelve inches, and then set two more, and so continued.

This being finished, he ordered another row of turfs to be placed on each side upon the top of the former, and filled the vacancy between the sets and turfs as high as their tops; always leaving the middle, where the sets were planted, hollow, and somewhat lower than the sides of the banks by eight or ten inches, that the rain may descend to their roots; which is of great advantage to their growth, and by far better than by the old method, where the banks are made too much sloping; and the roots of the sets are seldom wetted, even in a moist season, the summer following; but if it prove dry, many of the sets, especially the late planted, will perish; and even few of those that had been planted in the beginning of april (the summer happening to be somewhat dry) escaped.

The planting being thus advanced, the next care is fencing, by setting a hedge of about twenty inches high upon the top of the bank on each side thereof, leaning a little outwards from the sets, which will protect them as well (if not better) than a hedge of three feet or more, standing on the surface of the ground; for as these are raised with the turfs and sods about twenty inches, and the hedge about twenty inches more, it will make three feet four inches, so as no cattle can approach the dead hedge to prejudice it, unless they set their feet in the ditch itself, which will be at least a foot and a half deep; and from the bottom of the foss to the top of the hedge, about four feet and a half, which they can hardly reach over to crop the Quick, as they might in the old way; and besides, such a dead hedge will endure a year longer.

He says, he had a hedge which had stood five years; and though nine or ten feet were sufficient for both ditches and banks, yet where the ground is but indifferent, it is better husbandry to take twelve feet, which will allow of a bank at least six feet broad, and gives

more scope to place the dead hedges farther from the sets, and the ditches being shallow, will in two years time graze.

As to the objection, that taking twelve feet wastes too much ground, he affirms, that if twelve feet in breadth be taken for a ditch and bank, there will no more ground be wasted than by the common way; for in that a Quick is rarely set, but there are nine feet between the dead hedges, which is entirely lost all the time of fencing; whereas with double ditches, there remain at least eighteen inches on each side where the turfs were set on edge, that bear more Grass, than when it lay on the flat.

But, admitting it did totally lay waste three feet of ground, the damage would be very inconsiderable; since forty perches, in length, two hundred and twenty yards, will make seven poles and a half; which at 13s. and 4d. the acre, amounts not to 7d.  $\frac{1}{2}$  per annum.

Now that this is not only the best, but cheapest way of Quick-setting, will appear by comparing the charge of both.

In the usual way, the charge of a three feet ditch is 4d. per pole, the owner providing sets; if the workman finds them, he will have for making the said ditch and setting them, 8d. per pole; and for hedging, 2d. that is, for both sides, 4d. the pole; which renders the charge of hedging, ditching, and sets, 12d. the pole; that is, for forty rods in length 40s.

Then one load of wood out of the copse costs (with the carriage, though but two or three miles distance) 10s. which will seldom hedge above eight poles (single hedge;) but allowing to do ten, to fence forty poles, there must be at least eight loads of wood, which costs 4l. making the whole expense for ditching, fencing, and setting forty poles, to be 6l. reckoning with the least; for scarce any will undertake to do it for less than 3s. 6d. per pole, and then the forty poles cost 7l.

Whereas with double ditches, both of them, with the plants included, will be done for 8d. the pole, and the husbandman get as good wages as with the single ditch (for though the labour about them is more, yet the making the table is saved,) which costs 1l. 6s. 8d. and the hedges being low, they will make better wages at hedging for a penny a pole, than at 2d. for common hedges, which comes to 6s. 8d. for hedging forty poles on both sides. Thus one load of wood will fence thirty poles at least, and forty hedged with two thirds of wood less than in the other way, and cost but 1l. 6s. 8d. which makes the other whole charge of sets, ditching, fencing, and wood, but 3l.

[At present, garden Quick, or Whitethorn raised by nursery gardeners is generally used in fencing new inclosures. It is sold at from 7s. to 10s. the thousand. According to Mr. Marshall's account a gentleman near Tamworth was the first who ventured to plant garden Quick on a large scale, and his success ruined the business of collecting the plants from woods. Autumnal planting generally succeeds best; especially if the soil be light, the situation dry, and the following spring and summer should prove dry also.

The methods of planting Quick are various. Some put the plants into a broad flat mound; generally planting two rows, ten or twelve inches apart, and at the like distance from the brink of the trench, by the side of which they are planted. The reason given for this mode of planting is, that a deep ditch makes a high heavy bank, and this overloads the roots. There is some truth in this reasoning. Plants never thrive so well as on level ground, provided they are not incommoded by standing water. Yet we see that hedges may be raised with success in front of a high bank, and that its advantages are by no means equal to the advantage gained by a deep ditch and high bank, as a defence to the rising hedge. Two rows of oak posts with three, or in some places only two rails, are the common guard; and a smaller post, (provincially a pile,) should be nailed to the rails in the middle between the principal posts to strengthen the rails, which will otherwise easily be displaced or broken. All this is done at an expense at least double that of a deep ditch and banklet on one side, and a high bank and hedge on



on the other. If the hedge be planted behind a shelf of sufficient width, and part of the mould of the ditch be applied in forming a banklet on its outer brink, the load incurred by the remainder is little; if any impediment to the progress of the young hedge.

The method of planting a Quick hedge in this manner is thus. The ditch is an equilateral triangle, each side or slope, as well as the width being forty-nine inches and a half or a quarter of a rod. The bank, on the fence side is formed of the three first spits of mould; a banklet, as a guard to the outer brink of the ditch, of the fourth spit and the pointing; which last is raised with a narrow-pointed draining tool. At each rod an oakling may be laid in with the Hawthorn plants. The planting of these is performed thus. The first spit forms the bottom or foundation of the bank; over this the second spit being spread evenly, the face is adjusted and the top levelled; and a line being stretched a foot from the angle of the mound, a narrow trench is opened behind it, by chopping the spade down to the first spit, and drawing back the loose mould. In this trench the plants are set, from four to six inches apart, nearly upright, and their roots bedded in the finest of the mould; casting the third spit behind the line of plants. The guard in front is a sharp ridge or banklet, formed on the opposite brink of the ditch, with the fourth spit and the pointing. Behind is a low stiff hedge, set on the bank formed by the third spit; the edgers well beaten down with a beetle, and the stakes driven to within a hand's breadth of the edgers; and the face trimmed to prevent the spray from dripping upon the plants. Lastly the back of the bank is made up with a sufficient slope to stand firmly, and may be sown with Ray-grass and white Clover. The expense of such a fence as this was not quite 2s. 3d. a rod, not 5d. a yard<sup>1</sup>. A low dead hedge upon the ridge in front will be a great additional security to the Quick.

Quick hedges are raised in Norfolk without post or rail at less than two-pence halfpenny a yard; whilst in many parts of the kingdom, where two rows of posts and rails are in common use, 8d. to 1s. a yard is the usual expense. But their mode of planting is bad, for they lay in the Quicksets near the top of the bank, with their heads pointing into the ditch, and the rains washing away the bank, the sets are often found at the bottom of the ditch<sup>2</sup>.

The late Mr. Bakewell planted one row of Quick at a foot from set to set, and making his ditch, laid the earth which came out of it to form a bank on the side opposite to the Quick. In the common method, the bank is made on the Quick side above it. Reasons are not wanting to induce a preference of this method. The plants grow only in the surface earth, uncovered from the atmosphere, which must be a great advantage; whereas in the usual way of planting, that earth which is always the best, is loaded with a thick covering, obliquely, of the earth out of the ditch. If the roots shoot in the best soil, they will be out of the reach of the influence of the air, the consequence of which is, they cannot have so large a space of that earth, as if set upon a flat. The way to have a Quick thrive in the best manner possible, is to set it on the surface, without any ditch or trench, that cuts off half its pasture. But if a ditch be necessary, the next best way must still be to keep it on the flat surface; and the worst way to cover up that surface, by loading it with dead earth out of a trench.

The fences, with a double post and rail, one on the outside of the bank, the other on the outside of the Quick are very expensive, and together with the ditch and bank, altogether occupy a space, which on good land is enormous. It seldom happens that a post and rail is necessary on the bank side; commonly a few thorns laid against the bank are a sufficient fence; and on the other side, if the land be kept in tillage, no guard is wanted, as the cropping of the Quicksets in the autumn does them little injury for the two first years, after which they should be cut off; and

after this, browsing in the autumn does little injury; but in the spring it should be carefully guarded against, by some temporary fence<sup>3</sup>.

This cheap mode of fencing might perhaps suffice, if the landlord had an agent in whom he could confide, always on the spot, or if the tenant were to make and keep up the fences. But unless horses, cattle and sheep are effectually kept from the Quick, the expense of planting will be in a manner thrown away; and it is seen by fatal experience that tenants will not attend to the preservation of Quick, although a good live fence<sup>4</sup> is so much to their advantage.

In poor sandy soils, where the growth of Quick-hedges is slow, where they are liable to the depredations of sheep, and where, by reason of the looseness of the soil, the ditch is little or no defence, Brambles have been recommended to raise Quick hedges in the shortest time, and at the least expense. Mr. Le Blanc informs us, that the idea of the utility of Brambles for this purpose first struck him, by observing several inclosures made in a blowing sand, on each side of a narrow field-road, along which a large flock of sheep was frequently driven: on one side of the road the bank was planted with Brambles mixed with the White-thorn, and a dead hedge placed on the top; this has never since been renewed, and the fence became a tolerably good one. The Bramble, which is a very fast grower, not only defends the young Quick from the sheep, but likewise by twisting itself through the dead hedge strengthens it, and prevents it from being broken down or carried off. On the other side of the road, the bank was planted at the same time, and in the same manner, but with White-thorn only. The dead hedge has been renewed several times, and there is no probability that the Quick will ever make a fence. From this hint Mr. Le Blanc made an improvement, by planting two rows on the bank; the lower one of Bramble only, the upper one of White-thorn only. He tried this method in 1781 and the following year, and both fences in september 1784 were much more promising than he could have expected them to be, if planted with White-thorn only<sup>5</sup>.

Quick does well on good strong land; but on dry, gravelly or poor soils it seldom prospers. The reasons of this are, first, that the sets are put too low or flat on the surface, whence their roots only occupy a little depth of the soil. Secondly, when set higher, they are generally too near the slope of the bank; hence they do not receive the benefit of the rain. To remedy these inconveniences, two lines may be marked out, twelve feet from each other; from three feet within each line the upper part of the soil is to be taken, and cast into the centre of the space, so as to form a flat bed, three feet broad, in the middle of which the Quicks are to be planted; the remaining eighteen inches on each side is to be filled up with earth, gravel or sand, taken out of the ditches: this extends the bed to five feet, allowing six inches for the slope of the bank: the Quicks planted in this body of soil, will find sufficient nourishment, before the tap-root reaches the barren gravel below, and the earth thus placed, (especially if the bed be laid concave, or sloping a little to the middle,) will retain sufficient moisture to nourish the plants, and they will soon form a fence. By raising the bank on each side at pleasure, the plants may be defended from sharp winds, or the sea-air. The space required for such a fence is no great object on low-priced land, and a good thriving hedge is an ample compensation<sup>6</sup>.

On such dry soils, Furze, called also Gorse and Whins, is easily propagated from seed, grows fast, and when sown in a triple row, makes a very formidable fence; but it is liable to be completely cut down by a severe winter. No dependance therefore can be placed on it, except as a temporary defence, during the minority of the White-thorn<sup>7</sup>.

Nursing young Quick hedges, by proper training and weeding, is too much neglected. The luxuriant

<sup>1</sup> Midland Counties, 1. 84. & 2. 295.

<sup>2</sup> Norfolk, 1. 102.

<sup>3</sup> Young's annals, 6. 494.

<sup>4</sup> Idem, 2. 342.

<sup>5</sup> Idem.

<sup>6</sup> Idem, 7. 486.



side-shoots ought to be taken off, and thereby the upright growth of the plant promoted, by training it to a single stem.

One advantage of this method is that of rearing every plant with a degree of certainty; the tops being in this operation attended to as well as the stems: those of the stronger plants being lessened, to give head-room to the weaker. Another great advantage, especially on a sheep-farm, is that of getting the young plants out of harm's way. Sheep are dangerous enemies to young Quick; and every expedient to guard against them deserves a trial. Strong plants, judiciously placed, and trained in this manner, may, with a degree of certainty, be got out of the reach of sheep in three or four years. The pruning should be done in winter or spring, whilst the sap is down<sup>p</sup>.

Young Quick hedges should be kept constantly clean from weeds; and, if foul, should be hoed and weeded by hand twice in the year. If the weeds are numerous and strong, so as to outgrow the shoots, these are drawn up weak and are much injured. Root or perennial hedge-weeds should be carefully eradicated, as the common creeping Thistle (*Carduus arvensis*), Docks, Nettles, Bindweeds (*Convolvulus sepium* and *arvensis*), Fern: in moist situations, the Meadow-sweet, Willow-herbs, &c. but especially the *Perficarias*, which are almost certain suffocation to weak plants, the first and second years, if not repeatedly removed by hand. Grasses in general may be destroyed by the hoe; but scarcely any art can free young hedge plants from Quick-grass or Couch; which ought therefore, at almost any cost to be destroyed before the Quick is planted. Cleavers (*Galium Aparine*, provincially *Hairoff*) and other climbing plants, are a burden to the taller more upright shoots. Biennial and annual weeds, such as all the Thistles, except that mentioned above, Sowthistles, the Hawkweeds (provincially *Goulds*), Cow-weed, and several other umbelliferous plants (provincially *Kecksies*), Charlock, several of the wild Vetches, and a variety of small weeds, which rob the plants of their nourishment, ought to be cut off with the hoe, so often as they rise, or at least before they come to seed<sup>q</sup>. Great care is requisite in weeding young hedge-shoots. They are very brittle, and roughness in handling is liable to break them off at the stub. They ought not to be pulled aside, nor weeded over-hand; but the weeds should be drawn out at the bottom, by putting the hand, or the fingers in neatly between the stubs<sup>r</sup>.

For farther particulars on this subject see Mr. Marshall on planting, and our articles CRATÆGUS, FENCES, HEDGES.

QUICKEN TREE. See *Sorbus aucuparia*.

QUILL-WORT. See *Isoetes*.

QUINARIA LANSIUM of Loureiro, is the same with *Cookia punctata* of Sonnerat. See *Retz. obs.* 6. 29.

QUINCE TREE. See *Pyrus Cydonia*.

QUINCHAMALA. (*The vernacular American name.*)  
*Lin. spec. ed. Willd.* 1217. *Quinchamalium*. *Juss.* gen. 75.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Elæagni*, *Juss.*

ESSENTIAL CHARACTER.

*Cal.* inferior, five-toothed. *Cor.* tubular, superior.  
*Anth.* sessile. *Seed* one.

SPECIES.

1. *Quinchamala chilensis*.

*Lin. spec. ed. Willd.* 1217.

*Quinchamali*. *Lamarck, encycl.* t. 142.

*Q. lini folio*. *Feuill. peruv.* t. 44.

DESCRIPTION, &c.

It has the habit of *Thesium*. Leaves alternate, linear, acute, quite entire. Flowers corymbed.—Native of Chili<sup>s</sup>.

QUINGAMBO. See *Hibiscus*.

QUINQUEROLIUM. See *Cleome*, *Comarum*, *Potentilla*.

QUINQUINA. See *Cinchona*.

<sup>p</sup> Marshall, York. 1. 210.

<sup>r</sup> Id. ib. 2. 367.

<sup>q</sup> Midland, 1. 32.

<sup>s</sup> Willdenow.

QUISQUALIS.

*Lin. gen. n.* 539. *Reich. n.* 537. *Schreb. n.* 739.  
*Juss.* 78.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Vepreculæ*. *Thymelææ*, *Juss.*

GENERIC CHARACTER.

*CAL.* *Perianth* filiform, very long, tubular, with a five-cleft patulous mouth, deciduous.

*COR.* *Petals* five, inserted into the jaws of the calyx, sessile, oblong, blunt, spreading, larger than the border of the calyx.

*STAM.* *Filaments* ten, bristle-shaped, inserted into the jaws of the calyx, five of them lower. *Antbers* in the jaws of the calyx.

*PIST.* *Germ* ovate. *Style* filiform, longer than the stamens. *Stigma* obtuse, wider.

*PER.* *Drupe* dry, five-cornered.

*SEED.* *Nut* roundish.

ESSENTIAL CHARACTER.

*Cal.* five-cleft, filiform. *Pet.* five. *Drupe* five-cornered.

SPECIES.

1. *Quisqualis indica*.

*Lin. spec.* 556. *Reich.* 2. 283. *Burm. ind.* t. 35.  
*f.* 2. & t. 28. *f.* 2. *Lour. cochinch.* 272. 336.  
*Rumph. amb.* 5. 71. t. 38.

DESCRIPTION, &c.

Branches round, pubescent. Leaves opposite, petioled, cordate or ovate, quite entire. Stipules none. Spikes terminating and axillary peduncled, with ovate-oblong opposite bractes, and opposite flowers, the size of those of *Daphne*, with the calyx filiform, pubescent on the outside<sup>t</sup>.

Loureiro describes it as a large unarmed shrub, with a thick, almost upright stem, and climbing branches: the flowers white tinged with red, in terminating corymbs. Drupe oblong, attenuated at both ends, acutely five-cornered, an inch long.

Native of the East Indies, China and CochinChina. It differs according to season and situation, but these varieties make one species.

QUIVISIA of *Jussieu*, is the same genus as *Quivisia* of *Cavanilles*; and is taken up by *Gmelin* under the name of *Gilibertia*<sup>u</sup>.

R.

RACOMA. See *Trianthema*.

RACUBEA. See *Homalium*.

RADERMACHIA. See *Artocarpus*.

RADICULA. See *Sisymbrium*.

RADIOLA. See *Linum*.]

RADISH. See *Raphanus*.

——, HORSE. See *Cochlearia*.

——, WATER. See *Sisymbrium*.

[RADIX CAVA. See *Fumaria*.

—— IDÆA. See *Arbutus*.

—— IN MALACCA. See *Thalia*.

—— MUSTELÆ. See *Ophioxylum*.

—— TOXICARIA. See *Crinum*.

—— VESICATORIA. See *Plumbago*.

RAGGED ROBIN. See *Lychnis*.

RAGWORT. See *Senecio*.

RAJANIA. (*So named by Linneus, in memory of our celebrated naturalist John Ray. Plumier had given this genus the barbarous name of Jan-Raia; Linneus could not properly name it Raia, because that appellation was already preoccupied by a genus of Amphibia; he therefore altered it as above.*)

<sup>t</sup> Linn. spec.

<sup>u</sup> Dryander in Linn. trans. 2. 234.



Lin. gen. n. 1121. Reich. n. 1226. Schreb. n. 1529.

Gartn. t. 14. Juss. 43.

Class. 22. 6. Dioecia Hexandria.

Nat. order of *Sarmentaceae*. *Asparagi*, Juss.

GENERIC CHARACTER.

\* Male.

CAL. *Perianth* six-parted, bell-shaped: *leaflets* oblong, acuminate, more spreading above.

COR. none.

STAM. *Filaments* six, bristle-shaped, shorter than the calyx. *Anthers* simple.

\* Female.

CAL. *Perianth* one-leafed, six-parted, bell-shaped, placed on the germ, permanent, shrivelling.

COR. none.

PIST. *Germ* inferior, compressed, one side augmented with a prominent rim, three-celled, Gartn. *Styles* three, the length of the calyx. *Stigmas* blunt.

PER. *Capsule* membranaceous, three-celled, valvules, crowned with the calyx: two of the cells barren, almost obliterated, wingless; the third fertile, compressed, produced into a very large, half-ovate, membranaceous wing.

SEED single, subelliptic, compressed.

ESSENTIAL CHARACTER.

Cal. six-parted. Cor. none.

FEM. *Styles* three. *Germ* inferior, three-celled, with two of the cells obliterated. *Seed* one, with one wing.

SPECIES.

1. *Rajania hastata*.

Lin. spec. 1461. Reich. 4. 259. hort. cliff. 458.

Jan Raia scandens, folio oblongo angusto auriculato.

Plum. gen. 33.

Bryonia fructu alato, fol. auriculatis. Plum. amer. 84.

t. 98. fil. t. 178.

Leaves hastate-cordate.

2. *Rajania cordata*.

Lin. spec. 1461. syst. 888. Reich. 4. 259. Gartn.

fruct. 1. 42.

Jan Raia scandens, folio tamni. Plum. gen. 33. ic. 155.

f. 1.

Leaves cordate seven-nerved.

3. *Rajania angustifolia*.

Swartz prodr. 59. descr. 639.

Leaves linear-lanceolate, rounded at the base.

4. *Rajania ovata*.

Swartz prodr. 59. descr. 638.

Leaves ovate acuminate three-nerved.

5. *Rajania quinquefolia*.

Lin. spec. 1462. Reich. 4. 259.

Jan Raia scandens quinquefolia. Plum. gen. 33. ic.

155. f. 2.

Leaves in fives ovate-oblong.

6. *Rajania quinata*.

Lin. syst. 888. Thunb. jap. 148.

Leaves quinate, leaflets emarginate, flowers umbelled axillary.

7. *Rajania hexaphylla*.

Lin. syst. 888. Thunb. jap. 149.

Leaves serrate, leaflets oblong acute, flowers in racemes.

DESCRIPTIONS, &c.

These are climbing plants, by means of the stem twisting towards the left. The root is tuberous; and the flowers in axillary spikes or racemes. They are natives of the West Indies.

1. Native of Domingo.

2. Leaves oblong, acuminate, netted. Flowers in racemes<sup>z</sup>. Capsule like parchment, of a silky-tawny colour; the surface of the wing, from the place of the seed, radiately striated. Seed smooth, shining, of a deep chestnut colour, fastened to the anterior angle of the cell, below the rise of the flower<sup>y</sup>.—Native of South America.

3. Stem filiform, twining, loose, round, subdivided, smooth. Leaves alternate, about a span in length, entire, three-nerved, veined, smooth. Petioles twisted in the same direction with the stem, smooth, red. Racemes filiform, in pairs, the length of the leaves,

<sup>z</sup> Linn. spec.

<sup>y</sup> Gertner.

pendulous, many-flowered: flowers polygamous, very small, subsessile, red: pedicels alternate, directed one way, five or six-flowered. Bractes very minute, acute, blood-red, under the flowers. Segments of the calyx; in both flowers, from upright spreading, blunt: Anthers in the male subsessile, small, placed in three rows so as to form a triangle. The hermaphrodite flowers have six filaments with fertile anthers; a three-cornered oblique germ, without any style, but with three minute stigmas. It flowers in may, and seeds in june. It is an annual, and is found in the driest coppices of Hispaniola, on the western side, climbing up the tall trees.

4. Stem frutescent, filiform, subdivided: branches filiform, leafy, smooth. Leaves somewhat remote, entire, veined, smooth on both sides. Petioles often the length of the leaves, round, smooth. Racemes axillary, several, longer than the leaves, filiform, subflexuose, many-flowered. Flowers dioecous: the males in compound racemes, with alternate racemelets; the females in simple racemes, with the flowers mostly directed one way, and pedicelled. Calyxes very minute: in the males yellowish green; in the females reddish. Native of Domingo, in the mountain coppices<sup>z</sup>.

5. Leaves at each joint five, ovate-lanceolate, bluntish, petioled. Racemes from the middle of the internodes, but not from the axils.—Native of America<sup>z</sup>.

6. Stem round, ash-coloured, smooth, branched. Leaves from the axils several, petioled, quinate, smooth. Leaflets umbelled, petioled, ovate, emarginate with a point, entire, from half an inch to an inch in length. Common petioles filiform, smooth, two inches long and more; partial ones a quarter of an inch long. Flowers from the same bud with the leaves, petioled, umbelled. Peduncles filiform, the length of the petioles. Pedicels capillary, half an inch long. It differs from *R. pentaphylla* in having quinate, petioled and petioluled leaves, and umbelled, axillary flowers—from *R. hexaphylla*, in having emarginate leaves and umbelled flowers.—Native of Japan.

7. Stem round, striated, smooth. Leaves alternate, smooth. Leaflets umbelled, petioled, entire, veined, pale underneath, two inches long. Petioles round, thickened at the base and top, bent, a hand in length: petiolules filiform, patulous, half an inch long. Flowers snow-white. It differs from *R. quinata* in having for the most part six leaflets, which are acute, netted-veined underneath, and larger; and the flowers in racemes snow-white.—Native of Japan<sup>b</sup>.

RAMEUM. See *Urtica*.

RAMONTCHI. See *Flacourtia*.]

RAMPIONS. See *Campanula*, *Jasione*.

RAMSONS. See *Allium*.

[RANÆ MORSUS. See *Hydrocharis*.

RANDALIA. See *Eriocaulon*.

RANDIA. See *Gardenia*.

RANUNCULO AFFINIS. See *Hydrocotyle*.

RANUNCULOIDES. See *Ranunculus*.

RANUNCULO-PLATYCARPOS. See *Grielum*.]

RANUNCULUS (of Pliny. Diminutive from *Rana*, a frog: some of the species growing in watery places, frequented by those animals.)

Lin. gen. n. 699. Reich. n. 757. Schreb. n. 953.

Tourn. t. 149. a. c. Juss. 233. Gartn. t. 74.

Ficaria. Dill. gen. 5. Hudf. angl. 244. Ra-

nunculoides. Vaill. aët. gall. 1719.

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Multifiliqæ*. Lin. *Ranunculaceæ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* ovate, concave, coloured a little, deciduous.

COR. *Petals* five, blunt, shining, with small claws.

*Neetary* a little cavity just above the claw, in each petal.

STAM. *Filaments* very many, shorter by half than the corolla. *Anthers* upright, oblong, blunt, twin.

PIST. *Germ*s numerous, collected into a head. *Styles* none. *Stigmas* reflex, very small.

<sup>z</sup> Swartz.

<sup>a</sup> Linn. spec.

<sup>b</sup> Thunberg.



PER. none. Receptacle connecting the seeds by very minute peduncles.

SEEDS very many, irregular, varying in figure, naked, with a reflex point.

OBS. The essence of the genus consists in the nectary. The other parts of fructification are always inconstant. Hence before the nectary was observed, the great confusion in this genus. This nectary is in some species a naked pore; in others encompassed by a cylindrical border; and in others again, closed by an emarginate scale.

In *R. Ficaria* the calyx is three-leaved, and the petals more than five. *R. hederaceus* has only five stamens. *R. falcatus* has an ensiform tail to the seeds, and the calyx appendicled at the base. *R. sceleratus* has an awl-shaped receptacle, and the fruit in a spike. In some species the seeds are roundish, in others depressed, sometimes they are beset with prickles like a hedge-hog, and sometimes they are but few in number.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five (to eight) with a honied pore at the claw. Seeds naked.

#### SPECIES.

\* With simple leaves.

- [1. *Ranunculus Flammula*. Lesser Spear-wort.  
*Lin. spec.* 772. *syst.* 515. *Reich.* 2. 653. *Willd.* 1307. *hort. cliff.* 228. *fl. suec. n.* 494. *lapp. n.* 235. *Huds. angl.* 239. *Wither. arr. ed.* 3. 504. *Smith, brit.* 587. *engl. bot. t.* 387. *Lightf. scot.* 288. *Curt. lond.* 6. t. 37. *Relb. cant. n.* 400. *Sibth. oxon. n.* 489. *Abbot, bedf.* 120. *Fl. dan. t.* 575. *Hall. belv. n.* 1182. *Pollich pal. n.* 527. *Scop. carn. n.* 682. *Neck. gallob.* 238. *Krock. files.* n. 869. *Villars dauph.* 3. 730. *Allion. pedem. n.* 1443. *Desfont. atlant.* 435. *Bulliard. herb. t.* 15.  
*R. longifolius palustris minor.* *Baub. pin.* 180. *Mor. hist. f. 4. t. 29. f. 34.* *Tournef. inst.* 292.  
*R. flammeus minor.* *Ger.* 814. 2. *emac.* 961. 2. *Raii hist.* 587. *syn.* 250.  
*R. palustris flammeus minor f. angustifolius.* *Park. theat.* 1215. 2.  
*Flammula Ranunculus.* *Dod. pempt.* 432. 1.  
 β. *R. flammeus ferratus.* *Ger.* 814. 3. *emac.* 962. 3. *Park. theat.* 1215. 3. *Mor. f.* 35.  
 Small Spearwort. *Petiv. herb. brit. t.* 39. f. 6.  
*R. longifolius, aliis Flammula.* *Baub. hist.* 3. 864. 3.  
*Flammula Ranunculus fol. ferrato.* *Dod. pempt.* 432. 2.  
 γ. *R. flammeus, latiori plantaginis folio, marginibus pilosis.* *Dill. in Raii syn.* 251. *Pluk. alm.* 312.  
 δ. *R. reptans.* *Lin. spec.* 773. *fl. suec. n.* 495. *lapp. n.* 236. t. 3. f. 5. *With.* 505. *Lightf.* 289. *Dicks. hort. succ.* 6. 10. *Fl. dan. t.* 108. *Krock. files. n.* 870. *Hall. belv. n.* 1183. *Villars dauph.* 3. 731.  
*Leaves ovate-lanceolate bluntish petioled, stem declined.*
2. *Ranunculus Lingua*. Great Spear-wort.  
*Lin. spec.* 773. *syst.* 515. *Reich.* 2. 653. *Willd.* 1308. *mant.* 407. *hort. cliff.* 228. *fl. succ. n.* 493. *Huds. angl.* 240. *Wither. arr. ed.* 3. 504. *Smith, brit.* 588. *engl. bot. t.* 100. *Lightf. scot.* 287. *Relb. cant. n.* 401. *Sibth. oxon. n.* 490. *Abbot, bedf.* 120. *Fl. dan. t.* 755. *Hall. belv. n.* 1181. *Scop. carn. n.* 683. *Neck. gallob.* 278. *Pollich pal. n.* 528. *Krock. files. n.* 871. *Villars dauph.* 3. 732. *Allion. pedem. n.* 1442.  
*R. longifolius palustris major.* *Baub. pin.* 180. *Tournef. inst.* 292. *Mor. hist. f. 4. t. 29. f. 33.*  
*R. flammeus major.* *Ger.* 814. 1. *emac.* 961. 1. *Raii hist.* 587. *syn.* 250. *Petiv. brit. t.* 39. f. 5.  
*R. palustris flammeus major.* *Park. theat.* 1215. 1.  
*R. folio longo maximus, Lingua Plinii.* *Baub. hist.* 3. 864. 3.  
*R. lanceolatus major.* *Tabern. ic.* 48.  
*Lingua Plinii.* *Dalech. hist.* 1037.  
*Leaves lanceolate acuminate, stem erect many-flowered.*
3. *Ranunculus nodiflorus.*  
*Lin. spec.* 773. *Reich.* 2. 654. *Willd.* 1308. *hort. cliff.* 228. *Dalib. par.* 164.

- R. parisiensis pumilus, plantaginellæ folio.* *Pet. gaz.* 40. t. 25. f. 4. *Vaill. at. par.* 1719. 52. t. 4. f. 4.  
 β. *R. ficulus, folio rotundo vix ferrato.* *Pet. gaz.* 39. t. 24. f. 9.  
*Leaves ovate petioled, flowers sessile.]*
4. *Ranunculus gramineus.* Grassy Crowfoot.  
*Lin. spec.* 773. *syst.* 515. *Reich.* 2. 654. *Willd.* 1309. *hort. cliff.* 228. *Wither. arr. ed.* 3. 505. *Smith, brit.* 588. *Krock. files. n.* 872. *Villars dauph.* 3. 732. *Ger. prov.* 384. 3. *Sauv. monsp.* 75. *Curt. magaz.* 164. *Bulliard, fr.* 123.  
*R. gramineo folio, bulbosus.* *Baub. pin.* 181. *Raii hist.* 588.  
*R. angustifolius bulbosus.* *Baub. hist.* 3. 850.  
*R. gramineus.* *Park. parad.* 218. t. 221. f. 1.  
*R. phoeniceus Myconi.* *Dalech. hist.* 1036.  
 β. *R. montanus, gramineo folio.* *Baub. pin.* 180.  
 γ. *R. mont. fol. gramin. multiplex.* *Baub. pin.* 181. *Park. parad. t.* 221. f. 1.  
*Leaves linear-lanceolate many-nerved sessile, stem upright few-flowered very smooth.*
- [5. *Ranunculus pyrenæus.* Pyrenean Crowfoot.  
*Lin. syst.* 515. *Reich.* 2. 655. *Willd.* 1309. *mant.* 248. *Ger. prov.* 384. 4. *Jacqu. misc.* 1. 154. t. 18. f. 1. *Hall. belv. n.* 1180. *Villars dauph.* 3. 732.  
*R. plantagineus.* *Allion. pedem. n.* 1445. t. 76. f. 1.  
*R. alpinus pumilus, gramineo folio, flore albo.* *Tournef. inst.* 292.  
*R. pumilus gramin. foliis.* *Baub. hist.* 3. 850.  
*R. gramineus.* *Tabern. ic.* 51.  
*Leaves linear undivided, stem upright striated subbi-florous.*
6. *Ranunculus parnassifolius.* Parnassia-leaved Crowfoot.  
*Lin. spec.* 774. *Reich.* 2. 655. *Willd.* 1310. *Gouan, illustr.* 34. *Hall. belv. n.* 1179. *Villars dauph.* 3. 733. *Curt. magaz.* 386.  
*R. montanus graminis parnassifolius.* *Tournef. inst.* 286.  
*Leaves subovate nerved marked with lines quite entire petioled, flowers umbelled.]*
7. *Ranunculus amplexicaulis.* Embracing-leaved Crowfoot.  
*Lin. spec.* 774. *syst.* 515. *Reich.* 2. 655. *Willd.* 1311. *hort. cliff.* 229. *Sauv. monsp.* 76. *Kniph. cent.* 2. n. 66. *Curt. magaz.* 266.  
*R. montanus folio plantaginis.* *Baub. pin.* 180. *Raii hist.* 588. *Mor. hist.* 2. 444. f. 4. t. 30. f. 36.  
*R. folio plantaginis.* *Ger. emac.* 963. f. 2. *Park. theat.* 334. n. 3. *Mor. hist. f. 4. t. 30. f. 36.*  
*R. dulcis, fol. latis rapistri perfoliatis, floribus albis.* *Mentz. pug. t.* 8. f. 8.  
*R. pyrenæus flore albo.* *Clus. cur. app. alt. ic.* 4.  
*Leaves ovate acuminate embracing, stem many-flowered, roots in bundles.*
8. *Ranunculus bullatus.* Portugal Crowfoot.  
*Lin. spec.* 774. *Reich.* 2. 656. *Willd.* 1311. *hort. cliff.* 229. *Desfont. atlant.* 435.  
*R. latifolius bullatus, asphodeli radice.* *Baub. pin.* 181.  
*R. lusitanicus.* *Tabern. ic.* 50. *Dod. pempt.* 429. *Dalech. hist.* 1033. *Ger.* 809. 12. *emac.* 955. 11.  
*R. grumosa radice.* 1. *Clus. hist.* 1. 238. *Raii hist.* 591.  
*R. lusit. autumnalis simplex.* *Park. theat.* 332. f. 13.  
 β. *R. latifolius bullatus autumn. flore pleno & prolifero.* *Mor. hist.* 2. 247. f. 4. t. 31. f. 49, 50, 51.  
*R. lusit. fol. subrotundo, parvo flore.* *Tournef. inst.* 286.  
*R. grumosa radice 2.* *Clus. hist.* 238.  
*Leaves ovate serrate, scape naked one-flowered.*
9. *Ranunculus Ficaria.* Pilewort or Lesser Celandine.  
*Lin. spec.* 774. *syst.* 515. *Reich.* 2. 656. *Willd.* 1312. *fl. suec. n.* 496. *hort. cliff.* 228. *mat. med.* 141. *Wither. arr. ed.* 3. 503. *Smith, brit.* 589. *engl. bot. t.* 584. *Lightf. scot.* 289. *Curt. lond.* 2. t. 39. *Relb. cant. n.* 402. *Sibth. oxon. n.* 491. *Abbot, bedf.* 121. *Fl. dan. t.* 499. *Scop. carn. n.* 684. *Pollich pal. n.* 529. *Crantz. austr.* 120. *Neck. gallob.* 237. *Krock. files. n.* 873. *Villars dauph.* 3. 730. *Allion. pedem. n.* 1446.



- n. 1446. Desfont. atlant. 436. Ludw. cef. t. 52. Kniph. cent. 1. n. 73. Regnault, bot. Fl. rust. t. 21. Berg. phyt. 43. Bulliard. herb. 43.
- R. vernus rotundifolius, major, minor & maculatus. Tournef. inst. 286.
- R. rotundifolius Asphodeli radice. Mor. hist. f. 4. t. 30. f. 45.
- Ficaria. Brunf. herb. 1. 215. Hall. helv. n. 1160. Blackw. t. 51.
- F. verna. Hudf. angl. 244.
- Chelidonium minus. Dod. pempt. 49. Matth. 631. Lob. ic. 593. Fuchf. hist. 867. Ger. 669. emac. 816. Park. theat. 617. 3. Raii hist. 579. syn. 246. Petiv. brit. t. 38. f. 1. Best. eyf. ord. 9. t. 1. f. 2.
- Chelidonia rotundifolia minor. Baub. pin. 309.
- Scrophularia minor f. Chelidonium minus vulgo dictum. Baub. hist. 3. 468.
- β. Ch. rotundif. major. Baub. pin. 209. prodr. 137. Leaves cordate angular petioled, petals numerous.
10. Ranunculus plantaginifolius. Plantain-leaved Crow-foot. Lin. syst. 515. Murr. in comm. gott. 1777. p. 39. t. 2.
- R. ruthenicus. Jacqu. hort. 3. 19. t. 31.
- R. falsuginosus. Willd. spec. 1311. Leaves cordate-ovate, either entire or three-toothed at the tip.
11. Ranunculus Thora. Kidney-leaved Crow-foot. Lin. spec. 775. syst. 516. Reich. 2. 656. Willd. 1312. Scop. carn. n. 685. Hall. helv. n. 1178. Jacqu. vind. 249. obs. 1. 25. t. 13. Jacqu. austr. 5. 21. t. 442. Krock. files. 874. Villars dauph. 3. 729. Allion. pedem. n. 1447.
- R. Pthora. Crantz. austr. 119. n. 17.
- Thora valdensis. Dodon. purg. 322. Ger. 816. emac. 966. Raii. hist. 591. Mor. hist. f. 4. t. 31. f. 59.
- T. major. Camer. epit. 825: & minor. 826.
- Pthora valdensium. Lob. ic. 604. Clus. hist. 1. 239. Dalech. hist. 1735.
- Aconitum pardalianches 1, f. Thora major. Baub. pin. 184.
- β. A. pard. alterum, f. Thora minor. Baub. pin. 184. Thora minor. Camer. epit. 826.
- Limeum pardal. genus, uno tantum folio. Dalech. hist. 1738.
- Leaves kidney-form subtrilobate crenate, stem-leaf sessile, flowers lanceolate, stem subbiflorous.]
- \*\* With dissected and divided leaves.
12. Ranunculus creticus. Cretan Crowfoot. Lin. spec. 775. Reich. 2. 657. Willd. 1313.
- R. asphodeli radice creticus. Baub. pin. 181.
- R. creticus latifolius. Clus. hist. 1. 239.
- Root-leaves kidney-form crenate sublobate; stem-leaves three-parted lanceolate quite entire, stem many-flowered.
- [13. Ranunculus cassubicus. Lin. spec. 775. Reich. 2. 657. Willd. 1314. Reyg. ged. 1. 143. n. 4. Breyn. prodr. 1. 45. Krock. files. n. 877.
- Root-leaves roundish-cordate crenate, stem-leaves digitate toothed, stem many-flowered.]
14. Ranunculus auricomus. Wood Crowfoot or Goldilocks. Lin. spec. 775. syst. 516. Reich. 2. 657. Willd. 1314. hort. cliff. 229. fl. suec. n. 498. Hudf. angl. 242. Wither. arr. ed. 3. 505. Smith, brit. 590. engl. bot. t. 624. Lightf. scot. 290. Curt. lond. 2. t. 41. Relb. cant. n. 403. Sibth. oxon. n. 492. Abbot, bedf. 121. Fl. dan. t. 665. Hall. helv. n. 1177. Scop. carn. n. 687. Pollich pal. n. 530. Neck. gallob. 240. Krock. files. n. 875. Villars dauph. 3. 744. Allion. pedem. n. 1448. Gmel. fib. 4. 202. n. 47. Kniph. cent. 2. n. 67. Ger. 807. 7. emac. 954. 7.
- R. nemorosus dulcis, secundus Tragi. Park. theat. 326. 7. Raii hist. 584. syn. 248. Petiv. brit. t. 38. f. 2, 6. Mor. hist. f. 4. t. 28. f. 15.
- R. prima species sylvestris. Fuchf. hist. 156. Dalech. hist. 1029.
- R. nemorosus f. sylvaticus folio subrotundo. Baub. pin. 178.

- R. rotundifolius vernus sylvaticus. Baub. hist. 3. 857. 3.
- R. auricomus dulcis Tragi 97. Lob. ic. 669. 2. Root-leaves kidney-form three-parted crenate; stem-leaves digitate linear, stem many-flowered, calyx coloured.
- [15. Ranunculus abortivus. Lin. spec. 776. Reich. 2. 658. Willd. 1314. Gron. virg. 166. 86. Herm. lugdb. 514. Root-leaves cordate crenate; stem-leaves ternate angular, stem subtriflorous.
16. Ranunculus sceleratus. Marsh or Celery-leaved Crow-foot. Lin. spec. 776. syst. 516. Reich. 2. 658. Willd. 1315. hort. cliff. 230. fl. suec. n. 499. Hudf. angl. 241. Wither. arr. ed. 3. 505. Smith, brit. 590. Lightf. scot. 291. Curt. lond. 2. t. 42. Relb. cant. n. 404. Sibth. oxon. n. 493. Fl. dan. t. 571. Gunn norv. n. 84. Hall. helv. n. 1175. Scop. carn. n. 688. Pollich pal. n. 531. Krock. files. n. 876. Villars dauph. 3. 750. Allion. pedem. n. 1461. Gmel. fib. 4. 203. t. 83. f. a. Gron. virg. 63. Regnault. bot.
- R. palustris. Tabern. 42. Cord. hist. 119. Ger. 814. 4. Raii syn. 249. Petiv. brit. t. 38. f. 11. Blackw. t. 259.
- R. pal. rotundifolius. Ger. emac. 962. 4. Raii hist. 585.
- R. pal. apii folio lævis. Baub. pin. 180. Mor. hist. f. 4. t. 29. f. 27, 28.
- R. pal. sardonius lævis. Park. theat. 1215. 6.
- R. pal. flore minimo. Baub. hist. 3. 858. 1.
- R. secundi species. Fuchf. hist. 159.
- R. primus. Camer. epit. 380.
- R. sylvestris 1. Dod. pempt. 426. f. inf.
- R. 1. Matth. 610. Lower leaves palmate, upper digitate, fruits oblong.]
17. Ranunculus aconitifolius. Aconite-leaved Crowfoot. Lin. spec. 776. syst. 516. Reich. 2. 658. Willd. 1315. hort. cliff. 229. upf. 156. fl. suec. n. 497. Hall. helv. n. 1164. Scop. carn. n. 680. Pollich pal. n. 532. Krock. files. n. 879. Villars dauph. 3. 735. Allion. pedem. n. 1450. Pallas, it. 2. 568.
- R. albus simplici flore. Baub. hist. 3. 859. Raii hist. 589.
- R. montanus, aconiti folio, albus, flore minore. Baub. pin. 182. Tournef. inst. 290.
- R. alpinus albus. Ger. 805. 4. emac. 951. 4.
- R. montanus albus minor simplex. Park. theat. 335. fig. Lobelii.
- R. mont. 4. Clus. hist. 1. 236. Camer. epit. 383.
- R. flore albo. Dod. pempt. 429.
- β. R. folio aconiti, flore albo multiplici. Baub. pin. 179. Tournef. inst. 290. Kniph. cent. 2. n. 65. Curt. magaz. 204.
- R. albus flore denso. Baub. hist. 3. 860.
- R. pleno flore albo. Clus. hist. 1. 236.
- R. albus multiflorus. Ger. 812. 1. Park. theat. 340. 1. Leaves five-lobed toothed, lobes acuminate, the intermediate ones trifid, the upper floral ones digitate sessile lanceolate.
- [18. Ranunculus platanifolius. Plane-leaved Crowfoot. Lin. syst. 516. Reich. 2. 659. Willd. 1316. mant. 79. Fl. dan. t. 111. Gouan illustr. 35. Villars dauph. 3. 734.
- R. montanus aconiti folio, flore majore. Baub. pin. 182. Tournef. inst. 290.
- R. mont. albus. Dalech. hist. 1031.
- R. albus flore simplici, f. batrachium album. Tabern. 43. sec. Gouan.
- R. montanus albus simpl. flore. Lob. obs. 381. ic. 668. —Aconitum batrachoides, adv. 300.
- R. flore albo alpinus major. Baub. hist. 3. app. 860. Raii hist. 589.
- R. aconiti folio. Ger. emac. 954. 8.
- R. mont. maximus albus. Park. theat. 336.
- R. 4. Matth. 458. Camer. epit. 383. Leaves five-lobed toothed, lobes blunt, the intermediate ones trifid, the upper floral ones digitate sessile linear-subulate.



19. *Ranunculus illyricus*. *Illyrian Crowfoot*.  
*Lin. spec.* 776. *fst.* 516. *Reich.* 2. 659. *Willd.*  
 1317. *fl. suec.* n. 500. *hort. cliff.* 230. *Jacqu.*  
*austr.* 3. 13. t. 222. *Sauv. monsp.* 181. *Villars*  
*dauph.* 3. 752. *Krock. files.* n. 880. *Pallas,*  
*it.* 3. 584.  
*R. lanuginosus angustifolius*, *grumosa radice*, major &  
 minor. *Baub. pin.* 181.  
*R. illyricus*. *Ger.* 806. 5. *emac.* 953. 5.—minor. *Park.*  
*theat.* 330. 11. *Raii hist.* 591.—rad. bulbosis, foliis  
 oblongis. *Baub. hist.* 3. 863.  
*R. grumosa radice* 4. *Clus. hist.* 1. 240. f. 1.  
*Leaves silky-villose ternate, leaflets trifid gashed quite en-*  
*tire, calyx reflex.*  
 20. *Ranunculus pensylvanicus*. *Pennsylvanian Crowfoot*.  
*Lin. fst.* 516. *Willd.* 1323. *suppl.* 272.  
*R. canadensis*. *Jacqu. misc.* 2. 343. *ic. rar.* 1. 105.  
*Calyxes reflex, stem upright, leaves ternate trifid gashed*  
*hairy underneath.*  
 21. *Ranunculus ternatus*. *Ternate-leaved Crowfoot*.  
*Lin. fst.* 516. *Willd.* 1323. *Thunb. jap.* 241.  
*All the leaves ternate, leaflets trifid, stem many-flowered,*  
*calyxes reflex.]*  
 22. *Ranunculus asiaticus*. *Persian Crowfoot or Garden*  
*Ranunculus*.  
*Lin. spec.* 777. *fst.* 516. *Reich.* 2. 660. *Willd.*  
 1318. *hort. cliff.* 230. *ups.* 156. *Mill. fig.* 144.  
 t. 216.  
*R. grumosa radice, ramosus*. *Baub. pin.* 181. *Ger.*  
*emac.* 959. 5. *Raii hist.* 593. *Mor. hist.* f. 4.  
 t. 27. f. 2.  
*R. asiaticus polyclonos*, f. *grumosa radice* 2. *Clus.*  
*hist.* 1. 241. *Baub. hist.* 3. 863. f. ult.  
*R. creticus vel asiaticus flore argenteo*. *Park. parad.*  
 220. 15.  
 β. *R. grumosa radice, flore flavo vario*. *Baub. pin.* 181.  
*Ger. emac.* 960. 7. *Raii hist.* 593. *Mor. t.* 27.  
 f. 3.  
*R. asiaticus flore luteo vario simplici*. *Park. parad.*  
 222. 19.  
 γ. *R. grumosa radice, flore albo*. *Baub. pin.* 181.  
*Raii hist.* 593. *Mor. t.* 27. f. 1.  
*R. asiaticus grum. radice, flore albo*. *Ger. emac.*  
 959. 6.  
*R. asiat. vel creticus flore albo*. *Park. theat.* 340. 4.  
*parad.* 220. 14.  
 δ. *R. grum. rad. flore albo leviter crenato*. *Baub.*  
*pin.* 181. *Raii hist.* 593.  
 ε. *R. grum. rad. flore niveo*. *Baub. pin.* 181. *Mor.*  
*t.* 27. f. 4.  
*R. creticus grum. rad. flore niveo*. *Clus. Raii hist.*  
 594.  
 ζ. *R. grum. rad. flore phœniceo minimo simplici*.  
*Baub. pin.* 181.  
*R. asiat. grum. rad. 1.* *Clus. hist.* 240. 2. *Raii*  
*hist.* 592.  
*R. tripolitanus*. *Ger. & Park. parad.* 222. 16.  
 η. *R. sanguineus*. *Mill. dict.* n. 10.  
*R. asphodeli radice, flore sanguineo*. *Baub. pin.* 181.  
*Mor. t.* 27. f. 9.  
 θ. *R. asphod. rad. flore subphœniceo rubente*. *Baub.*  
*pin.* 181. *Raii hist.* 593. *Mor. hist.* t. 27.  
 f. 5. 7.  
*R. asiat. flore rubro pleno*. *Park. parad.* 223. 20.  
*R. flore pleno miniato*. *Ger. emac.* 958. 2.  
*R. asiat. grum. rad. pleno flore 2.* *Clus. hist.* 243.  
 ι. *R. asphodeli rad. prolifer miniatus*. *Baub. pin.* 181.  
*Mor. t.* 27. f. 8.  
*R. asiat. grum. rad. pleno flore 3.* *Clus. hist.* 243.  
*R. asiat. flore pleno prolifero*. *Ger. emac.* 959. 3.  
*Leaves ternate and biternate, leaflets trifid gashed, stem*  
*branched at bottom.*  
 23. *Ranunculus rutæfolius*. *Rue-leaved Crowfoot*.  
*Lin. spec.* 777. *fst.* 517. *Reich.* 2. 660. *Willd.*  
 1319. *hort. cliff.* 230. *Hall. helv.* n. 1165.  
*Crantz, austr.* 113. n. 6. *Villars dauph.* 3. 740.  
*Allion. pedem.* n. 1451. t. 67. f. 1.  
*R. rutacco folio, flore suaverubente*. *Baub. pin.* 181.  
*Mor. hist.* 2. 448. f. 4. t. 31. f. 54. *Tourn. inst.*  
 289. *Seguier, veron.* 1. 486.  
*R. nemorosus rutaceo folio*. *Park. theat.* 336. *cum ic.*  
*Clusii.*
- R. præcox 1. rutæ folio*. *Clus.* 1. 232.  
*Leaves pinnate and ternate, leaflets thrce-parted multifid,*  
*stem quite simple, corolla many petalled, root tuberos.*  
 24. *Ranunculus glacialis*. *Two-flowered Crowfoot*.  
*Lin. spec.* 777. *fst.* 517. *Reich.* 2. 661. *Willd.*  
 1320. *fl. suec.* n. 501. *lapp.* n. 233. t. 3. f. 1.  
*Fl. dan.* t. 19. *Hall. helv.* n. 1166. *Villars*  
*dauph.* 3. 738. *Allion. pedem.* n. 1452.  
*R. montanus purpureus, calyce villosa*. *Baub. hist.* 3.  
 868. *Scheuch. alp.* 339. t. 20. f. 1. *Tourn. inst.*  
 289. *Raii hist.* 590.  
*Calyxes hirsute, stem two-flowered, leaves multifid.*  
 25. *Ranunculus nivalis*. *Alpine Yellow Crowfoot*.  
*Lin. spec.* 778. *fst.* 517. *Reich.* 2. 661. *Willd.*  
 1321. *fl. lapp.* n. 232. t. 3. f. 2. *suec.* n. 502.  
*Gunn. norv.* 627. *Retz. obs.* 2. 19. *Sawartz*  
*act. holm.* 1789. 47.  
*R. lapponicus*. *Fl. dan.* t. 144.  
 β. *R. idem pygmæus*. *Linn. lapp.* n. 232. t. 3. f. 3.  
*Calyx hirsute, stem one-flowered, root-leaves palmate,*  
*stem-leaves many-parted sessile.*  
 26. *Ranunculus alpestris*.  
*Lin. spec.* 778. *fst.* 517. *Willd.* 1322. *Reich.* 2.  
 661. *Hall. helv.* n. 1167. *Crantz, austr.* 113.  
 n. 7. *Jacqu. austr.* 2. t. 110. *Pallas, it.* 2. 568.  
*Scop. carn.* n. 679. *Villars dauph.* 3. 736. *Allion.*  
*pedem.* n. 1455.  
*R. alpinus humilis rotundifolius, flore majore & minore.*  
*Baub. pin.* 181.  
*R. humilis alpinus albus, folio subrotundo*. *Segu.*  
*ver.* 1. 489. t. 12. f. 1.  
*R. montani 1. species 1 & 2.* *Clus. hist.* 1. 234.  
*Root-leaves subcordate blunt three-parted, lobes three-*  
*lobed, stem-leaf lanceolate quite entire, stem one or*  
*two-flowered.*  
 27. *Ranunculus lapponicus*. *Lapland Crowfoot*.  
*Lin. spec.* 778. *fst.* 517. *Reich.* 2. 662. *Willd.*  
 1322. *fl. lapp.* n. 231. t. 3. f. 4. *suec.* n. 503.  
*Fl. dan.* t. 144.  
*eaves three-parted, lobed blunt, stem almost naked, one-*  
*flowered.*  
 28. *Ranunculus monspeliacus*. *Montpelier Crowfoot*.  
*Lin. spec.* 778. *Reich.* 2. 662. *Willd.* 1323.  
*Sauv. monsp.* 181. *Villars dauph.* 3. 743. *Desfont.*  
*atlant.* 438. *Poiret, itin.* 2. 183.  
*R. saxatilis magno flore*. *Baub. pin.* 182. *prodr.* 96.  
*Tournef. inst.* 291.  
*Leaves three-parted crenate, stem simple villose almost*  
*naked one-flowered.*  
 29. *Ranunculus bulbosus*. *Bulbous Crowfoot*.  
*Lin. spec.* 778. *fst.* 517. *Reich.* 2. 662. *Willd.*  
 1324. *fl. suec.* n. 504. *lapp.* 429. *hort. cliff.* 230.  
*Huds. angl.* 241. *Wither. arr. ed.* 3. 508. *Smith,*  
*brit.* 591. *engl. bot.* t. 515. *Lightf. scot.* 292.  
*Relb. cant.* n. 405. *Sibth. oxon.* n. 494. *Curt.*  
*lond.* 1. t. 38. *Fl. dan.* t. 551. *Pollich pal.*  
*n.* 533. *Leers, herb. n.* 425. *Scop. carn.*  
*n.* 692. *Hall. helv.* n. 1174. *Krock. files.* n. 881.  
*Villars dauph.* 3. 749. *Allion. pedem.* n. 1457.  
*Desfont. atlant.* 439. *Kniph. cent.* 7. n. 74. *Mill.*  
*illustr. t.* 51. *Fl. rust.* t. 28. *Lob. ic.* 666.  
*Ger.* 806. 6. *emac.* 953. 6. *Park. theat.* 329. 5.  
*Raii hist.* 581. *syn.* 247. *Petiv. brit.* t. 38. f. 4.  
*R. pratensis, radice verticilli modo rotunda*. *Baub.*  
*pin.* 179. *Tournef. inst.* 289.  
*R. tertia species*. *Fuchs. hist.* 160.  
*R. 5.* *Matth.* 614.  
*R. tuberosus*. *Dod. pempt.* 431. 1.  
*R. tub. major*. *Baub. hist.* 3. 417. 4.  
 β. *R. tuberosus flore multiplici*. *Dod. pempt.* 431. 2.  
*Calyxes bent back, peduncles grooved, stem upright many-*  
*flowered, leaves compound, root bulbous.*  
 30. *Ranunculus hirsutus*. *Pale hairy Crowfoot*.  
*Curt. lond.* 2. t. 40. *Wither. arr. ed.* 3. 508. *Smith,*  
*brit.* 592. *Relb. cant.* n. 406. *Sibth. oxon.* n. 495.  
*Abbot, bedf.* 122.  
*R. Philonotis*. *Willd. spec.* 1324. *Retz. obs.* 6. 31.  
*R. bulbosus β.* *Huds. angl.* 241.  
*R. rectus, foliis pallidioribus, hirsutus*. *Baub. hist.* 3.  
 417. *Raii hist.* 582. *syn.* 247.  
*Calyxes bent back acuminate, stem upright many-flowered*  
*hirsute, leaves ternate, root fibrous.]*  
 31. *Ranunculus*



31. *Ranunculus repens*. *Creeping Crowfoot*.  
*Lin. spec.* 779. *syst.* 517. *Reich.* 2. 662. *Willd.* 1325. *fl. suec.* n. 505. *lapp.* n. 230. *Huds. angl.* 240. *Wither. arr. ed.* 3. 509. *Smith, brit.* 592. *engl. bot. t.* 516. *Lightf. scot.* 292. *Relb. cant.* n. 407. *Sibth. oxon.* n. 496. *Curt. lond.* 4. t. 38. 211. *Fl. dan.* t. 795. *Hall. belv.* n. 1173. *Pollich pal.* n. 534. *Leers, herb. born.* n. 426. *Scop. carn.* n. 689. *Neck. gallob.* 241. *Krock. files.* n. 882. *Villars dauph.* 3. 748. *Allion. pedem.* n. 1458. *Gron. virg.* 166. *Gmel. fib.* 4. 206. *Blackw. t.* 31. *Regnault. bot. Fl. rust.* t. 29. *Bulliard. fr.* 77.
- R. pratensis repens*. *Park. theat.* 329. 3. *Raii hist.* 581. *syn.* 247. *Petiv. brit. t.* 38. f. 7, 8.—*hirsutus*. *Baub. pin.* 179. *Mor. hist. f.* 4. t. 28. f. 18. *Tourn. inst.* 289.
- R. hortensis* 1. *Dod. pempt.* 425.
- R. pratensis etiamque hortensis*. *Ger.* 804. 1. *emac.* 951. 1.
- Calyxes spreading a little, peduncles grooved, runners creeping, leaves compound.*
- [32. *Ranunculus polyanthemus*. *Many-flowered Crowfoot*.  
*Lin. spec.* 779. *Reich.* 2. 663. *Willd.* 1325. *fl. suec.* n. 506. *Hall. belv.* n. 1171. *Neck. gallob.* 240. *Pollich pal.* n. 535. *Krock. files.* n. 883. *Villars dauph.* 3. 747. *Allion. pedem.* n. 1460.
- R. polyanthemus simplex*. *Lob. ic.* 666.
- R. sylvestris*. *Tabern. ic.* 42. *hist.* 117.
- Calyxes spreading a little, peduncles grooved, stem upright, leaves many-parted.*]
33. *Ranunculus acris*. *Upright Meadow Crowfoot*.  
*Lin. spec.* 779. *syst.* 517. *Reich.* 2. 663. *Willd.* 1326. *fl. suec.* n. 507. *lapp.* n. 228. *hort. cliff.* 231. *Huds. angl.* 241. *Wither. arr. ed.* 3. 506. *Smith, brit.* 593. *engl. bot. t.* 652. *Lightf. scot.* 293. *Curt. lond.* 1. t. 39. *Relb. cant.* n. 408. *Sibth. oxon.* n. 497. *Woodv. suppl. t.* 246. *Fl. rust. t.* 30. *Hall. belv.* n. 1160. *Neck. gallob.* 239. *Pollich pal.* n. 536. *Scop. carn.* n. 690. *Krock. files.* n. 884. *Villars dauph.* 3. 746. *Allion. pedem.* n. 1459. *Gmel. fib.* 4. 206. n. 53. *Knorr. del. i. t. H. i.* *Bulliard, fr.* 109.
- R. pratensis erectus acris*. *Baub. pin.* 178. *Mor. hist. f.* 4. t. 28. f. 16. *Raii hist.* 583. *syn.* 248. *Petiv. brit. t.* 38. f. 3.—*vulgaris*. *Park. theat.* 328. 2.
- R. hortensis* 2. *Dod. pempt.* 426. 1.
- R. furectis cauliculis*. *Ger.* 804. 2. *emac.* 951. 2.
- R. non repens, flore simplici luteo*. *Baub. hist.* 3. 416.
- β. *R. hortensis erectus, flore pleno*. *Baub. pin.* 179. *Knorr. del. i. t. H. 2.* *Curt. magaz. t.* 215.
- Calyxes spreading a little, peduncles round, leaves three-parted-multifid, the uppermost linear.*
- [34. *Ranunculus lanuginosus*. *Broad-leaved Crowfoot*.  
*Lin. spec.* 779. *syst.* 517. *Reich.* 2. 664. *Willd.* 1327. *Fl. dan.* t. 397. *Leers, herb. born.* n. 429. *Hall. belv.* n. 1172. *Crantz, austr.* 118. *Scop. carn.* n. 691. *Ger. prov.* 387. 14. *Sauv. monsp.* 227. *Villars dauph.* 3. 745. *Allion. pedem.* n. 1462. *Krock. files.* n. 886.
- R. montanus lanuginosus, foliis Ranunculi pratensis repentis*. *Baub. pin.* 182. *prodr.* 96.
- R. magnus valde hirsutus, flore luteo*. *Baub. hist.* 3. 417.
- β. *R. montanus subhirsutus, geranii folio*. *Baub. pin.* 182.
- R. mont. subhirs. latifolius*. *Baub. prodr.* 96.
- R. nemorosus hirsutus, foliis caryophyllatæ*. *Loef. pruss.* 220. t. 7 f.
- Calyxes spreading a little, peduncles round, stem and petioles hirsute, leaves trifid lobed crenate velvety.*
35. *Ranunculus chærophyllus*. *Fine-leaved Crowfoot*.  
*Lin. spec.* 780. *Reich.* 2. 665. *Willd.* 1327. *Guett. stamp.* 275. *Dalib. par.* 166. *Zinn. goett.* 129. *Villars dauph.* 3. 752.
- R. grumosa radice, folio Ranunculi bulbosi*. *Baub. pin.* 181. *prodr.* 96.
- R. chærophyllus, asphodeli radice*. *Baub. pin.* 181. *Barr. ic.* 581.
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- R. montanus leptophyllos, asphod. radice*. *Col. ecphr.* 1. 312. t. 311.
- Calyxes turned back, peduncles grooved, stem upright one-flowered, leaves compound linear multifid.*
36. *Ranunculus millefoliatus*.  
*Vahl, symb.* 2. 63. t. 37. *Willd. spec.* 1328. *Desfont. atlant.* 1. 441. t. 116.
- Leaves superdecompound linear, calyxes hairy, stem branched silky villose.*
37. *Ranunculus parvulus*. *Little upright Crowfoot*.  
*Lin. syst.* 518. *Reich.* 2. 665. *Willd.* 1328. *mant.* 79. *Smith, brit.* 593. *Gmel. it.* 196.
- R. parviflorus*. *Gouan, flor. monsp.* 270.
- R. arvensis parvus folio trifido*. *Magnol, monsp.* 217.
- R. minimus saxatilis hirsutus*. *Baub. pin.* 182. *prodr.* 96.
- R. minimus apulus*. *Col. ecphr.* 314. t. 316. f. 1.
- Seeds tubercled, leaves hirsute three-lobed gashed, stem upright few-flowered.*
38. *Ranunculus arvensis*. *Corn Crowfoot*.  
*Lin. spec.* 780. *Reich.* 2. 665. *Willd.* 1329. *hort. cliff.* 229. *Fl. suec.* n. 508. *Huds. angl.* 242. *Wither. arr. ed.* 3. 509. *Smith, brit.* 594. *engl. bot. t.* 135. *Lightf. scot.* 294. *Relb. cant.* n. 409. *Sibth. oxon.* n. 498. *Curt. lond.* 6. t. 36. *Fl. dan.* t. 219. *Hall. belv.* n. 1176. *Scop. carn.* n. 693. *Pollich pal.* n. 537. *Krock. files.* n. 885. *Villars dauph.* 3. 751. *Allion. pedem.* n. 1463. *Desfont. atlant.* 440. *Kniph. cent.* 12. n. 82. *Fl. rust.* t. 56.
- R. echinatus*. *Crantz, austr.* 118.
- R. arv. echin.* *Baub. pin.* 179. *Baub. hist.* 3. 859. 1. *Mor. hist. f.* 4. t. 29. f. 23.
- R. arvorum*. *Ger.* 805. 3. *emac.* 951. 3. *Park. theat.* 328. 4. *Raii hist.* 585. *syn.* 248. *Petiv. brit. t.* 38. f. 10.
- R. silvestris* 3. *Dod. pempt.* 427. 2.
- R. hortensis simplicis prima species*. *Fuchs. hist.* 157.
- Seeds prickly, leaves trifid-decompound, segments linear.*
39. *Ranunculus muricatus*.  
*Lin. spec.* 780. *Reich.* 2. 666. *Willd.* 1329. *hort. cliff.* 229. *ups.* 157. *Gartn. fruct.* 1. 353. t. 74. *Sauv. monsp.* 204. *Desfont. atlant.* 440.
- R. palustris echinatus*. *Baub. pin.* 180. *prodr.* 95. *Baub. hist.* 3. 858. *Raii hist.* 585. *Tournef. inst.* 286.
- R. parvus echinatus*. *Ger. emac.* 965. 7.
- R. Apuleii quibusdam*. *Clus. hist.* 233. 2. *Park. theat.* 331. 7.
- R. creticus echinatus latifolius*. *Alp. exot.* 263. t. 262.
- Seeds prickly, leaves simple lobed blunt smooth, stem diffused.*
40. *Ranunculus parviflorus*. *Small-flowered Crowfoot*.  
*Lin. spec.* 780. *Reich.* 2. 666. *Willd.* 1329. *Huds. angl.* 242. *Wither. arr. ed.* 3. 506. *Smith, brit.* 594. *engl. bot. t.* 120. *Relb. cant.* n. 410. *Sibth. oxon.* n. 499. *Desfont. atlant.* 441.
- R. hirsutus annuus, flore minimo*. *Raii syn.* 248. t. 12. f. 1. *Pluk. phyt. t.* 55. f. 1.
- R. hirs. flore omnium minimo luteo*. *Mor. hist. f.* 4. t. 28. f. 21.
- R. hirs. annuus, foliis Geranii columbini*. *Merr. pin.*
- Ray's hairy Crowfoot*. *Petiv. brit. t.* 38. f. 9.
- Seeds prickly, prickles hooked, leaves simple lacinated acute hirsute, stem diffused.*
41. *Ranunculus orientalis*. *Oriental Crowfoot*.  
*Lin. spec.* 781. *Reich.* 2. 666. *Willd.* 1330.
- R. lesbius Pulsatillæ folio flore magno*. *Tourn. cor.* 20.
- Leaves spiny-subulate recurved, calyxes reflex, leaves multifid.*
42. *Ranunculus grandiflorus*. *Great-flowered Crowfoot*.  
*Lin. spec.* 781. *Reich.* 2. 666. *Willd.* 1330.
- R. orientalis aconiti folio flore maximo*. *Tournef. cor.* 25.
- Stem upright two-leaved, leaves multifid, stem-leaves alternate sessile.*
43. *Ranunculus falcatus*. *Sickle-seeded Crowfoot*.  
*Lin. spec.* 781. *syst.* 518. *Reich.* 2. 666. *Willd.* 1330. *hort. ups.* 157. *cliff.* 117. (*Myosurus*).  
 11 B *Sauv.*



- Sauv. monsp.* 205. *Gron. orient.* 69. *Jacqu. vind.* 250. *austr.* 1. t. 48.
- R. testiculatus. *Crantz. austr.* 119.
- R. ceratocephalus, femin. falcatis in spicam adactis. *Mor. hist.* 2. 440. f. 4. t. 28. f. 22.
- R. alopecuroides, Ajugæ foliis. *Bocc. sic.* 28. t. 14. f. 3.
- Leaves wedge-form three-parted, segments multifid filiform, seeds sickle-shaped, scape naked one-flowered.
44. Ranunculus hederaceus. Ivy-leaved Crowfoot.
- Lin. spec.* 781. *Reich.* 2. 667. *Willd.* 1331. *hort. cliff.* 231. *Huds. angl.* 243. *Wither. arr. ed.* 3. 507. *Smith, brit.* 595. *Lightf. scot.* 294. *Relb. cant. n.* 411. *Sibth. oxon. n.* 500. *Abbot, bedf.* 123. *Curt. lond.* 4. t. 39. 247. *Fl. dan. t.* 321. *Leers, herb. n.* 431. *Pollich. pal. n.* 538. *Desfont. atlant.* 442. *Dalech. hist.* 1031.
- R. aquaticus hederaceus luteus. *Baub. pin.* 180. *Mor.* 2. 441. f. 4. t. 29. f. 29.—flore albo parvo. *Tournef. inst.* 286.
- R. aquatilis hed. albus. *Raii hist.* 586. *syn.* 249. *Petiv. brit. t.* 38. f. 12.
- R. hed. rivulorum se extendens, atra macula notatus. *Baub. hist.* 3. 782. 2.
- R. aquatilis varietas altera. *Ger. emac.* 830.
- R. hed. aquaticus. *Park. theat.* 1216. *quoad. descr.*
- Leaves roundish kidney-shaped three or five-lobed entire even, stem creeping.
45. Ranunculus aquatilis. Water Crowfoot.
- Lin. spec.* 781. *Reich.* 2. 667. *Willd.* 1332. *fl. suec. n.* 509. *lapp. n.* 234. *Huds. angl.* 243. *Wither. arr. ed.* 3. 507. *Smith, brit.* 596. *engl. bot. t.* 101. *Lightf. scot.* 295. *Relb. cant. n.* 412. *Hall. belv. n.* 1163. *Neck. gallob.* 242. *Pollich. pal. n.* 539. *Scop. carn. n.* 681. *Crantz. austr.* 118. *Gmel. fib.* 4. 207. *Krock. files. n.* 887. *Villars dauph.* 3. 753. *Allion. pedem. n.* 1468. *Desfont. atlant.* 442. *Dod. pempt.* 587. 2. *Ger. emac.* 829. 2. *Raii hist.* 586. *syn.* 249. *Petiv. brit. t.* 39. f. 1.
- R. heterophyllus. *Wigg. holsat.* 42. *Hoffm. germ.* 197. *Roth. germ. i.* 240. 2. 619. *Sibth. oxon. n.* 501. *Abbot, bedf.* 123.
- R. aquatilis albus tenuifolius. *Baub. hist.* 3. 781. 1.
- R. aquaticus folio rotundo & capillaceo. *Baub. pin.* 180. *Tournef. inst.* 291.
- R. aquat. hepaticæ facie. *Lob. obs.* 497. 2. *ic.* 2. 35. 2. *Mor. hist. f.* 4. t. 29. f. 31. *Park. theat.* 1216. 8.
- β. R. aquatilis. *Sibth. oxon. n.* 502.
- R. aquat. omnino tenuifolius. *Baub. hist.* 3. 781. 2. *Raii hist.* 586. *syn.* 249. *Ger. emac.* 827. *Park. theat.* 1256.
- R. aquat. capillaceus. *Baub. pin.* 180. *Tournef. inst.* 291. *Mor. hist. f.* 4. t. 39. f. 32.
- γ. R. circinatus. *Sibth. oxon.* 503.
- R. aquat. albus, circinatis tenuissime divisis foliis, floribus ex alis longis pediculis innixis. *Pluk. phyt. t.* 55. f. 2. *Raii syn.* 249.
- Millefolium aquat. cornutum.* *Baub. prodr.* 73. *Baub. hist.* 3. 784. *Park. theat.* 1257.
- δ. R. fluviatilis. *Wigg. holsat.* 42. *Sibth. oxon.* 504. *Abbot, bedf.* 123. *Willd. spec.* 1333.
- R. peucedanoides. *Lin. spec.* 782. *Desfont. atlant.* 444. *Hall. belv. n.* 1161. *Allion. pedem. n.* 1469.
- R. f. Polyanthemum aquat. albo affine, *Millefolium Maratriphyllum fluitans.* *Baub. hist.* 3. 782. 1. *Raii hist.* 586. *syn.* 250. *Ger. emac.* 827. 3. *Park. theat.* 1257. *Fl. dan. t.* 376.
- R. aquat. albus fluitans, Peucedani foliis. *Tournef. inst.* 291.
- Submerged leaves capillaceous, emerged leaves subpeltate.

## Species ex Willdenovio, &amp;c.

46. Ranunculus ophioglossoides.
- Willd. spec.* 1310. *Villars dauph.* 3. 731. t. 49.
- Stem simple upright, leaves nerved, lower leaves ovate subcordate petioled, floral leaves sessile lanceolate.
47. Ranunculus frigidus.
- Willd. spec.* 1312.

Root-leaves wedge-form-ovate five-toothed at the tip, stem-leaves sessile palmate.

48. Ranunculus trilobus.
- Willd. spec.* 1315. *Desfont. atlant.* 437. t. 113.
- Stem upright, leaves smooth, stem-leaves three-lobed, peduncles striated, seeds compressed tubercled.
49. Ranunculus spicatus.
- Willd. spec.* 1317. *Desfont. atlant.* 438. t. 115.
- Leaves five-lobed toothed, stem simple, seeds in spikes.
50. Ranunculus flabellatus.
- Willd. spec.* 1318. *Desfont. atlant.* 438. t. 114.
- Leaves simple toothed and ternate, leaflets lacinate, stem simple.
51. Ranunculus japonicus.
- Willd. spec.* 1319. *Thunb. in Linn. transf.* 2. 337.
- R. asiaticus. *Thunb. jap.* 241.
- Leaves gash-ternate, lobes gashed toothed hirsute, stem hirsute.
52. Ranunculus Seguieri.
- Willd. spec.* 1320. *Villars dauph.* 3. 737. t. 49.
- R. Columnæ. *Allion. pedem. n.* 1453. t. 67. f. 3, 4. *Wulffen in Jacqu. collect.* 4. 345.
- R. alpinus apii folio, flore albo magno. *Ponted. comp.* 117. *Segu. veron.* 1. 490. t. 12. f. 2, 3.
- R. minor rutæ folio, flore simplici, grumosa radice, italicus. *Barr. ic.* 1153.
- R. alter faxatilis asphodeli radice. *Col. ecphr.* 312. t. 313?
- Leaves three-parted, lobes multifid-lacinate acute, all petioled, stem many-flowered, calyxes smooth.
53. Ranunculus montanus.
- Willd. spec.* 1321. *Hall. belv. n.* 1168.
- R. nivalis. *Jacqu. austr.* 4. 13. t. 325, 326. *Villars dauph.* 3. 742.
- R. minimus alpinus luteus. *Baub. hist.* 3. 861. f. inf. *Raii hist.* 590.
- Leaves five-lobed toothed, stem-leaf sessile digitate, segments linear-lanceolate quite entire, stem one-flowered.
54. Ranunculus Gouani.
- Will. spec.* 1322.
- R. pyrenæus. *Gouan, illustr.* 33. t. 17. f. 1, 2.
- Leaves five-lobed toothed, stem-leaf sessile palmate, segments lanceolate toothed, stem one-flowered.
55. Ranunculus hyperboreus.
- Willd. spec.* 1322. *Rothb. act. Hafn.* 10. 458. t. 4. f. 16. *Retz. prodr. fl. scand. n.* 691. *Fl. dan. t.* 331. *Gmel. fib.* 4. 204. t. 836.
- R. Ammanni. *Gunn. norv. n.* 826.
- Leaves deeply three-lobed, lobes oblong divaricate, stem filiform creeping.
56. Ranunculus polyrhizos.
- Willd. spec.* 1324.
- Root leaves palmate, stem-leaves sessile digitate, stem many-flowered, roots in bundles.
57. Ranunculus cappadocicus.
- Willd. spec.* 1326.
- R. orientalis dulcis Doronici radice. *Tournef. cor.* 20.
- Calyxes patulous, peduncle round, stem subbifid, leaves cordate three-lobed toothed.
58. Ranunculus oxypermus.
- Willd. spec.* 1328.
- Root-leaves oblong blunt sinuate-toothed, stem-leaves sessile digitate gashed, seeds awned.
59. Ranunculus polyphyllus.
- Willd. spec.* 1331.
- Submerged leaves oblong petioled capillaceous, floating leaves wedge-shaped three-lobed, emerged leaves elliptic, stem upright.

## DESCRIPTIONS, &amp;c.

1. This species of Ranunculus or Crowfoot, which is commonly called in English the *Small* or *Lesser Spearwort*, has a perennial root, composed of simple, very long, and rather large fibres. Stem a foot, or sometimes eighteen inches high, spreading a little or almost upright, somewhat decumbent at the base, branched, leafy, round or flattened a little, smooth and even, frequently tinged with purple: the branches short,



short, alternate, divaricating. Leaves alternate, lanceolate, acute, nerved, smooth, perfectly entire, or else toothed more or less; the teeth blunt, unequal, callous, of a brownish colour: the lower leaves are ovate-lanceolate, and on longer foot-stalks; which are channelled, and widen at the base: the uppermost and those next the flowers are linear. Flowers terminating, solitary, on round peduncles, upright. Calycine leaflets bent back, blunt, slightly villose, yellowish. Petals thrice as long as the calyx, roundish and slightly obcordate, spreading, slightly concave, of a golden yellow colour, glossy on the upper side. Nectareous cavity very small. Stamens numerous, to thirty. Seeds smooth and even<sup>a</sup>.

Mr. Lightfoot remarks, that in some states it differs very little from *R. Lingua*; that it varies wonderfully in magnitude, and in gravelly soils degenerates to a trailing dwarfish size, with linear leaves.

It grows plentifully in marshy places, especially in the wet and boggy parts of heaths and commons, where it flowers from June to September<sup>b</sup>.

This species is very acrid. Applied externally it inflames and blisters the skin. Its acrimony rises in distillation. Some years ago a man travelled in several parts of England administering vomits, which like white vitriol, operated the instant they were swallowed. The distilled water of this plant was his medicine; and from the experience I have had of it, says Dr. Withering, I feel myself authorized to assert, that in the case of poison being swallowed, or other circumstances occurring in which it is desirable to make a patient vomit instantaneously, it is preferable to any other medicine yet known, and does not excite those painful contractions in the upper part of the stomach which the white vitriol sometimes does; thereby defeating the intention for which it was given<sup>c</sup>.

It is used in many parts of the highlands of Scotland to raise blisters: for this purpose the leaves are well bruised in a mortar, and applied in one or more limpet shells to the part where the blisters are to be raised. This is the practice in the isle of Skye, and other places upon the coast<sup>d</sup>.

Small Spearwort varies with serrated leaves; with broader leaves like Plantain, hairy at the edge, sent from Ireland to Plukenet by Gideon Bonavent<sup>e</sup>; and of a smaller size, with a rooting stem.

The last variety is regarded by Linneus and others as a distinct species. He allows it to be very nearly allied to the common Spearwort, but distinguishes it by its linear leaves, and its filiform, longer, creeping runners. In his *Flora Lapponica*, he describes the stem as quite simple, the length of a finger or a span at most, procumbent, and lying close to the ground, having several joints, and at every joint throwing out a slender fibrous root; one little flower commonly terminates the stem; sometimes, but seldom, there are two. There are two, three or four upright, sessile leaves at each joint; and not unfrequently a single flower issues from each axil<sup>f</sup>. These differences may possibly be owing to its situation on the borders of alpine lakes. Scopoli relates that he has specimens which gradually connect the common *Flammula* with the creeping variety; that a boggy soil promotes the growth of the plant, but the root being weak, cannot support it so as to enable it to grow erect; hence it is decumbent, and puts forth fibres from the joints: but if the ground be harder, sandy or dry, the root has faster hold, and supports the plant in a more erect posture.—Willdenow insists that it is not a variety.

It is found in Sweden, Russia, Switzerland and Germany, on the banks of lakes.

2. Great Spearwort has the habit of the preceding, but is three times the size. The stem is upright, and (from two or three to) four feet in height. The leaves are on shorter petioles, acuminate or more sharply pointed, not bluntish, as in that. The calyx is hairy; and the hairs of almost all the herb are short and pressed close to the leaves and stem, as Linneus observes; but this is the case also in *R. Flammula*.

The flowers are large, and of a bright golden colour: Like the preceding it varies with serrate leaves<sup>g</sup>.

Linneus describes the stem as branched, leafy, often a foot and half high; the leaves as somewhat toothed, rugged with short hairs pressed close; the peduncles opposite to the leaves and one-flowered<sup>h</sup>.

The herb is acrid, like most of its tribe. Linneus gives it the trivial name of *Lingua*, because Dalechampsius guessed it to be the *Lingua* of Pliny. It grows generally in muddy ditches, (bogs, or by the sides of lakes;) flowering in July. The root is perennial, like the preceding<sup>i</sup>.

In England it is reckoned among the rarer plants, but it occurs in many places, as near London between Rotherhithe and Deptford; on Iver heath near Uxbridge; in several parts of Norfolk; on Teversham moor near Cambridge, and in the isle of Ely; Goldington and Oakley in Bedfordshire; in ditches near a pool of water called Brayford, in Lincolnshire; on the banks of the Cherwell near King's Mill, in Oxfordshire: bogs on Malvern Chase, Worcestershire; Kineson pool near Stafford; sides of Ancott pool, Salop; in several parts of the North of England. In Scotland, as in Duddingston Loch near Edinburgh, and about Restennet in Angus-shire.

3. This is found about Paris, and in marshy places in the island of Sicily. In habit it is not unlike *Limosella aquatica*.]

4. Root perennial. Leaves long and narrow, like those of Grass, sessile. Stems little more than a foot high, dividing at the top into three or four slender foot-stalks, which are terminated by single yellow flowers, like those of the common Butterflower.

[Root bulbous, tuberous, cylindrical, fibrous at the top, putting out the fibres all round like rays. Stem upright, round, smooth, few-flowered, with not many leaves on it. Leaves quite entire, glaucous. Calyx very smooth, spreading but not bent back<sup>k</sup>. Corolla pale yellow, somewhat smaller than that of *R. Lingua*<sup>l</sup>.

It is distinguished from *R. pyrenæus* by its yellow flowers and tuberous root: in that, the flowers are white, and the root bulbous<sup>m</sup>.

Native of the South of France, and of Spain; on dry alpine pastures: flowering in April and May. Specimens, says Dr. Withering, were brought from North Wales, by Mr. Pritchard.

Parkinson figures it with double flowers, but describes it with semi-double ones only.] Mr. Miller affirms that a variety with double flowers is in the Paris garden, but that we have not yet got it in England. [Probably it has fallen a victim, as Mr. Curtis expresses it, to the rage for novelty.—That with single flowers was cultivated by Gerarde in 1596<sup>n</sup>.

5. Stem scarcely half a span in height, quite simple, round, upright, softly hairy from the middle to the top; having a single sessile, lanceolate-linear, striated, perfectly entire leaf about the middle of it, and one flower at the top; sometimes, but seldom, a single peduncle bearing one flower comes out from the axil of the leaf; at the base the stem swells into an ovate-oblong, solid, white bulb, covered with oblong, imbricate, brown scales, which seem to be the remains of the root-leaves; four or more round, whitish, thickish fibres spring from the base of the bulb, and spread out horizontally; in their common centre binding up a smaller bulb, of a spheroidal form and blackish colour, netted with fibres. Root-leaves few, upright, higher than the middle of the stem, resembling those of *P. lanceolata*, but more acute, naked, bright green with darker lines, quite entire, running along the petiole. Flower large in proportion to the size of the plant: calycine leaflets ovate-lanceolate, white at the edges, pubescent at the back, at first green, then yellowish white; petals large, obovate-rounded, snow-white, entire; style short, hooked outwards, stigma simple<sup>o</sup>.

Root a sort of bulb, covered with a tomentose net, and having fibres in bundles. Stem upright, filiform,

<sup>a</sup> Curtis, Smith. <sup>b</sup> Curtis. <sup>c</sup> Withering. <sup>d</sup> Lightfoot.  
<sup>e</sup> Ray, syn. <sup>f</sup> Linn. lapp. & succ.

<sup>g</sup> Smith. <sup>h</sup> Mantissa. <sup>i</sup> Engl. bot. <sup>k</sup> Smith.  
<sup>l</sup> Withering. <sup>m</sup> Linn. <sup>n</sup> Hort. kew. <sup>o</sup> Jacquin.



even, a finger's length, with one or two leaves. Both root-leaves and stem-leaves linear, undivided, quite entire, even, upright, an inch long. Flowers terminating, one or two, peduncled, small, white. Fruit roundish. Stamens roundish, mucronate<sup>p</sup>.

The root is bulbed with a tuft of fibres; the lower fibres are full of transverse wrinkles, like those of white Hellebore. The stem has commonly only two flowers; but sometimes it has seven or eight, and then it is a foot high or more, instead of three or four inches, which is its common height. Petals white, a little plaited, which gives them the appearance of being toothed and even gnawn on the edge: the nectary is in form of a tongue, or half pointed horn. The fruit often becomes oblong<sup>q</sup>.

Haller, who describes it well, remarks that it has sometimes a double flower, and that it varies with lacerated leaves. Villars observes, that this plant is hardly distinguishable for the same species, when it descends from the Alps into the more fertile pastures of the mountains.

Native of the Alps and Pyrenees, Switzerland, Carinthia, Dauphiné, Provence, Piedmont.

6. The radical bud produces two lanceolate, membranaceous leaves, standing above the ground. Leaves ovate, blunt, coriaceous, pubescent above, when young rolled in at the base on long petioles. Stem quite simple, leafless. Involucre terminating, two-leaved. Peduncles from two to four, one-flowered, pubescent. Calyx purplish. Corolla whitish, or purplish, with purple nerves<sup>r</sup>.

Root a bundle of fibres, producing at first two, three or four leafy scales, whitish or tinged with purple, scarious, ovate-oblong, acute and permanent. Root-leaves from two to five, cordate-ovate, quite entire, acute, fleshy, almost an inch long, tomentose hoary, sometimes purplish, marked with seven nerves like those of Plantain, in shape resembling those of *Par-nassia*. Petioles two inches long, thick, involved at the base in wide membranaceous nerved sheaths. The leaves are not unfrequently spotted, as in *Erythronium*, *Pulmonaria*, &c. Stem striated, a hand high, branched, hoary at the branches, leafy, bearing from one to twelve flowers. Leaves at the division of the stem and branches solitary, sessile, nerved, half embracing, more acute than the root-leaves. Peduncles axillary, solitary, one-flowered.

It varies with a stem scarcely two inches high, with only one, two or three flowers at most; in such a dwarf plant the leaves and peduncles are so near one another as to appear to be opposite: hence Linneus, who made his description from a dwarf specimen, has attributed to it an involucre and a leafless stem. Gouan had specimens of that kind from Haller; and refers Haller's *Ran. n.* 1179. to this species, which he himself refers to Linneus's *amplexicaulis*<sup>s</sup>.

Native of the South of Europe. Introduced by Messrs. Kennedy and Lee in 1769<sup>t</sup>. Mr. Curtis received it from Switzerland in the autumn of 1796; it flowered early in the summer of 1797; and he has given a beautiful figure of it.

7. The leaves in part surround the stalk at their base, whence the trivial name; in colour they differ from most others of the genus, being of a grayer or more glaucous hue; which joined to the delicate whiteness of the flowers, renders this species very desirable in a collection of hardy herbaceous plants, more especially as it occupies little space, and has no tendency to injure the growth of others.

It is a native of the Apennine and Pyrenean mountains, and flowers in april and may.

Clusius is the first author who describes and figures this species. Johnson, in his edition of Gerarde, copies his figure, and mentions it as being then (1633) made a denizen in our gardens<sup>u</sup>.

8. Roots numerous, fleshy, thickish, round, attenuated at bottom, in bundles, putting out fibrils. Leaves three, four, five or six, lying on the ground in a ring, blunt, villose, with unequal serratures, blunt

or acute, on very short petioles. Scape hirsute, upright. Calyx villose, with ovate blunt leaflets. Corolla yellow, the size of *R. bulbosus*. Petals five or more. Head of seeds roundish<sup>v</sup>.

Native of Portugal, the island of Candia, and Barbary, where it flowers in winter.

9. This common plant, called in English *Pilewort*, and *Lesser Celandine*, is easily distinguished by its roots, formed of many knobs or tubers, shaped like the fig, whence its name *Ficaria*; from the top of these arise many small fibres. The whole plant is smooth. Stems numerous, four inches or more in length, tender, leafy, red at bottom. Leaves roundish-heart-shaped, shining, on long foot-stalks, sometimes spotted with white, the veins of the upper side pressed in: they vary much in shape, and are more or less notched or scalloped about the edge: those on the stem are sometimes triangular, or else deeply three-lobed or five-lobed. Peduncles grooved, one-flowered, bent back when the flower falls. Flowers upright. Calycine leaflets three, (sometimes four or five) concave, deciduous, with a small reflex scale under each. Petals usually eight, (seven to twelve) elliptic-lanceolate, (but varying in form,) of a golden yellow colour and shining, each having a small scale at the base, as in the other species. Seeds subovate, commonly abortive.

Pilewort differs from the Crowfoots in the number of petals in the corolla, and leaflets in the calyx, hence Dillenius, Haller and Hudson have made a distinct genus of it, adopting Brunfelsius's name of *Ficaria*; yet since it agrees with the Crowfoots in the same general nature and habit, as well as in the nectary or little scale at the base of the petals, it seems to be of the same natural genus with them. In the spring almost every grove, thicket and hedge-bottom is enamelled with the glossy golden flowers of the Pilewort: when they have been exposed a few days to a bright sun, the petals become white, and then soon fall off. It is also common in meadows, orchards and plantations: flowering in february, and continuing through march and a great part of april.

At its first appearance in the spring, this plant is small and extends but little; but in the month of may, particularly by the side of moist ditches, it grows much more luxuriantly; and in this state, as Mr. Ray has remarked, it puts forth small bulbs, like grains of wheat, from the bosoms of the leaves: these, as the stalks lie on the ground, get into the earth, and become the tuberous roots of young plants. Thus the plant readily propagates itself; and this provision is the more necessary, because the seeds usually prove abortive. The roots, like those of the Orchis, are renewed every year.

As Pilewort blows earlier than the other Crowfoots, it is liable to have its parts of fructification injured by the inclemency of the weather, to secure it from which, it has the power of closing its petals in a much greater degree, and in this state we usually find it from five in the evening to nine in the morning; and in wet weather.

According to Linneus, the young leaves are eaten in the spring by the common people in some parts of Sweden, boiled as greens. Though milder than most of the genus, this however retains something of that acrimony, which many of the species possess in a high degree. The particular form of the roots probably recommended this plant as a cure for the piles; and this fancied quality was the origin of the English name. The roots are sometimes washed bare by the rains, and in this state have induced the ignorant, under the reign of superstition, to fancy that it rained Wheat, which these tubercles a little resemble.

Linneus remarks, that Pilewort choaks other plants which grow near it. Not being eaten by cattle, and occupying much room in some meadows, it ought to be extirpated. Nothing discourages its increase more than coal or wood ashes, which are both at the same time excellent dresses for meadows. It is sometimes

<sup>p</sup> Linn. mant.

<sup>r</sup> Gouan, illustr.

<sup>q</sup> Villars.

<sup>t</sup> Hort. kew.

<sup>v</sup> Linn. spec.

<sup>u</sup> Curtis.

<sup>s</sup> Desfontaines.



seen in gardens with a double flower<sup>r</sup>. Rea says he found it wild, and set it in his garden, and that most of the plants in England come from this root.

10. Root fibrous, with thicker fibres among the more slender ones. Leaves radical, numerous, thick, concave, entire at the sides, but with two or three teeth at the end, in the latter case, which is most frequent, the middle tooth is the largest; the older leaves are generally entire and blunt; they are nerved, very large, two inches long and an inch and half wide, very smooth, ascending, petioled. Petiole channelled, pubescent, thick, flattened at the base, membranaceous at the edge, twice or thrice as long as the leaf, procumbent, ascending at the end. Each plant has one, two or more runners, emerging within the petiole of a leaf, from two to four feet in length, round, spotted with red towards the top, pubescent, straight, the internodes a span long, rooting at the joints; and at each of these is one leafy ligule or stipule, of a linear-lanceolate form, sheathing, inflexed. Flowering-stems one or more, a hand and half in length, procumbent, ascending at the top, simple or sometimes divided into two peduncles, of different lengths, almost naked, round, even or obscurely streaked, spotted with red, having one or two leafy lanceolate or linear ligules or stipules. Flowers solitary, terminating, large, resembling those of *Ran. lanuginosus*. Calyx yellow. Petals five or six to ten, yellow, spreading very much, and even recurved, longer than the calyx, ovate-oblong. Seeds oblong, forming a globular body. It propagates itself by runners like the Strawberry.—Native of Siberia, beyond Baikal, in the salts<sup>z</sup>.

11. Root round, brownish, from one to two inches long, perpendicular, the thickness of a straw, and permanent, in its whole length putting forth many fusiform, long, pale, subimbricate fibres. The whole plant shining. Stem round, from a hand to a foot in length, upright, purplish next the ground. Root-leaves subreniform, coriaceous, firm, veined, crenate on the sides, not cut in the same manner at top, but often retuse; in the flowering plant these are often solitary, always very few, when any, for sometimes there are none. Such a leaf, only much larger, and on a much shorter petiole, if not sessile, occupies the upper part of the stem: from the axil of this comes out a one-flowered branchlet; whilst the stem itself is terminated by a similar one, or in stronger plants is divided into a few more; otherwise the stalks end in a single flower, without any branch. The leaves of the branchlets are lanceolate, acute, quite entire and sessile; in plants that are more branched, the lowest leaves, whether bifid or trifid, have the lobes like those of the uppermost leaves in form. Petals sometimes six, yellow with the claw paler, spreading. Calyx shorter. Seeds few, smooth, brown, flattish on one side, roundish without, ending in an unarmed reflexed point<sup>a</sup>.

Native of the Alps of Switzerland and Austria; the Pyrenees, Dauphiné, Piedmont, Silesia. It appears from Salmon's Herbal (616) that it was cultivated here in 1710<sup>b</sup>. It flowers in may and june.]

12. This has an Asphodel root. The lower leaves are large, and a little hairy, about three inches long and four broad, deeply crenate, divided usually into five lobes, and on hairy footstalks. Stems nine or ten inches high, having two or three leaves on them, cut into three segments and entire; dividing at top into several peduncles, each sustaining one large, pale yellow flower. It flowers the beginning of june.

Native of the island of Candia or Crete. [Cultivated by Mr. Miller in 1759.

13. This resembles the *sceleratus*. Stem larger. Flowers large, yellow, destitute sometimes either of calyx or corolla<sup>c</sup>.

Native of Germany and Siberia.—According to Willdenow, it much resembles the *auricomus*, but the stem-leaves are lanceolate and toothed, not linear and quite entire.

14. Root fibrous, perennial. Stems a foot high, upright, dividing into two or three branches, leafy, round, often slightly downy on the upper part, smooth and purplish at bottom. Leaves generally inclined to be downy: root-leaves on long foot-stalks, mostly three-cleft, deeply notched; sometimes five-cleft; stem-leaves sessile, divided to the base into many linear lobes, which are seldom subdivided or cut. Flowers terminating erect, solitary, of a bright golden hue; on round, pubescent peduncles. Calyx pale yellow, hairy, scarcely at all reflexed. Nectary a naked pore, not closed by any scale. In cold backward seasons, in gardens, in unsheltered situations, and in more northern countries, the real petals are sometimes wanting, the calyx being dilated and more coloured than usual, so as to supply their place. It has been called *Goldilocks*, and *Sweet Wood Crowfoot*: the epithet *sweet* being intended to express, that it has none of the acrid or caustic flavour usual in this genus<sup>d</sup>: the other epithet is expressive of its place of growth. It flowers in april and may.

This species is easily distinguished from the other wild Crowfoots, by its yellow, patulous calyx; the nakedness of its nectary, which is a small oblique hole running downwards at the base of each petal; by the bottom leaves being less cut, and the upper ones narrower than in most of the others; by the petals being frequently wanting; and by its place of growth<sup>e</sup>. It affects chiefly a clayey soil. This species has sometimes double flowers.

15. Native of Virginia and Canada, in marshes. Root-leaves petioled; stem-leaves few, sessile. Flowers yellow, small.

16. Root annual, composed of many whitish fibres. Herb various in size and luxuriance, of a pale shining green colour, juicy and very smooth, except the flower-stalks and upper part of the stem, which are occasionally hairy. Stem straight, round, hollow, thick, branched, leafy. Lower leaves on long foot-stalks, lobed and cut, but less deeply than the upper ones, which are divided to the very base and sessile; their segments linear and entire. Flowers numerous, peduncled, small, of a palish yellow. Calyx deflexed, shaggy. Honey-pore somewhat tubular. Fruit ovate-oblong, composed of a multitude of small seeds<sup>f</sup>.

This species is easily distinguished, by its broad shining bottom leaves, thick stalk, small yellow flowers, and smooth oblong seed-heads<sup>g</sup>.

It is very common in watery places, where it may be found in flower and seed, from june to the end of august.

This is one of the most virulent of our native plants. Bruised and applied to the skin it soon raises a blister, and makes a sore by no means easy to heal. Strolling beggars have been said to use it for that purpose, in order to excite compassion<sup>h</sup>. When chewed, it inflames the tongue; and when taken into the stomach, it produces violent effects. It is suspected to have proved poisonous to sheep<sup>i</sup>.

17. This is a very handsome species, three or four feet high and branched. Stem hollow within. Leaves large, digitate, three-lobed divided to the base: segments lanceolate, serrate all round, somewhat hirsute especially at the base. Flower white, terminating each branch. Petals roundly serrate. Calyx fugacious, purplish<sup>k</sup>.—Native of the Alps of Europe.]

The double-flowering variety has been obtained by seeds, and is preserved in many curious gardens for the beauty of its flowers. It is by some gardeners called *Fair Maid of France*. The root is perennial, and composed of many strong fibres: the leaves are divided into five lanceolate lobes; the four side-lobes are upon foot-stalks coming from the side of the principal stalk, and the middle one terminates it; they are deeply serrate, and have several longitudinal veins. The stalks rise a foot and half high, and branch out at the top into three or four divisions, at each of which there is one leaf, of the same shape with the lower,

<sup>r</sup> Curtis, Flora Rustica, Smith, Lightfoot.

<sup>z</sup> Murray.

<sup>a</sup> Jacqu. austr.

<sup>b</sup> Flort. kew.

<sup>c</sup> Krockner.

<sup>d</sup> Engl. bot.

<sup>e</sup> Curtis.

<sup>f</sup> Curtis.

<sup>g</sup> Engl. bot.

<sup>h</sup> Pollich.

<sup>i</sup> Engl. bot.

<sup>j</sup> Curtis and Haller.



but smaller. The flowers are pure white, and very double, each standing upon a short foot-stalk. It flowers in may. [Gerarde in 1597 says, "it groweth in the gardens of Herbarists, and lovers of strange plants, whereof we have good plentie, for it groweth not wild any where." Gerarde was not aware that it is a variety of what he had figured under the name of *Ran. alpinus albus*.

18. This has the stature of *R. aconitifolius*, and it has also white flowers; the leaves however are not compound, but palmate, less thick, and more cut: the flowers are larger. In the preceding the lobes of the leaves are acuminate, and the segments of the upper floral leaves lanceolate.

Native of the mountains of Germany and Italy, and of the Pyrenees<sup>1</sup>. Introduced in 1769, by Messrs. Kennedy and Lee.

19. Root tuberous. Stem a foot high, round, upright, divided at top into a few one-flowered peduncles. Root-leaves in younger plants quite entire, the rest petioled and ternate; the upper ones binate and subsessile, or even simple; in other individuals they are often more irregularly compound. Leaflets lanceolate-linear, long, acute, entire. Stem, peduncles and leaves covered with a soft hoary down. Calycine leaflets green on the inside with a white edge, on the outside woolly-white, wholly turned back. Petals large, a third longer than the calyx, on the upper surface shining and deep yellow, with a greenish claw; on the lower surface greenish; they are flat and spread very much, and sometimes are six in number. Head of germs ovate-oblong, yellowish green, with villose stigmas. Seeds smooth and acute<sup>m</sup>.

Native of the South of Europe, on dry hilly pastures. Cultivated in 1596, by Gerarde. It flowers in may and june<sup>n</sup>.

20. Stem round, with spreading hairs, branched. Leaves slightly marked with lines. Leaflets trifid, acute, cut and serrate. Peduncles round, even, wandering. Calycine leaflets ovate, concave. Petals yellow, scarcely as big as the calyx. Stamens small, the length of the corolla. Head of germs ovate, longer than the corolla. Seeds ovate, compressed, mucronate. It is an annual or biennial plant, native of Canada and Pennsylvania<sup>o</sup>. Introduced in 1789, by Chevalier Thunberg.

21. Found by Thunberg in the island of Nipon in Japan, flowering in may<sup>p</sup>.

22. Stem upright, branched, pubescent, round, as are also the peduncles. Lower leaves simple, lobed, gashed, acute, pubescent underneath, as are also the petioles: upper leaves three-parted and biternate. Calyx not reflex<sup>q</sup>. Thunberg remarks, that all the parts are hairy, except the corolla.

Root composed of many thick fleshy fangs or fibres, uniting at top into a head; from these are sent forth many slender long fibres, striking deep in the ground. From the top arise several leaves, composed of three, six or nine lobes of irregular forms, and cut at top into various segments. Between these arise the flower-stalks, about a foot high, taper, hairy, and branching out at a little distance from the root. Stem-leaves dividing into three parts, these again cut, and generally terminated by trifid points: the petioles are embracing at the base. The leaves are all hairy; the lower ones much larger and more compound than the upper. Flowers terminating, with the stem naked for a considerable length below them. They vary much in size and colour, and the petals are frequently of different colours on the two surfaces. They appear in may, and in moderate seasons, or where they are shaded from the sun in the heat of the day, there will be a succession at least during a month. The seeds ripen in july<sup>r</sup>.

Native of the Levant. Cultivated by Gerarde in 1596<sup>s</sup>.]

Mr. Miller says it was originally brought from Persia; but since it has been in Europe, many new

varieties have been obtained from seeds, particularly of semidouble flowers. These are so large, and of so many beautiful colours, as to exceed most other flowers of their season, and even to vie with the Carnation itself: they are many of them finely scented; and the roots, when strong, generally produce from twenty to thirty flowers in succession; which qualities have rendered the Garden Ranunculus, in its improved state, much admired.

Mr. Miller has made a distinct species of the bloody-flowered Ranunculus, under the name of *R. sanguineus*. This, says he, has been almost banished from our gardens, since so many fine varieties have been obtained from seeds of the Persian Ranunculus. This has a grumous root like that: the leaves are divided by threes, twice again divided by threes, and obtuse; the stalk rises about nine inches high, and is terminated by one large double red flower. It appears at the end of april; and sometimes one or two very small flowers branch out from the side.

[Parkinson enumerates the following varieties of the

Garden Ranunculus or Crowfoot, as he calls it.

1. The broad-leaved Candy Crowfoot.
2. The white Candy Crowfoot.
3. The Argentine, or cloth of silver Crowfoot.
4. The single red Crowfoot of Asia or Tripoli.
5. The large single red Crowfoot of Asia.
6. The red stript single Crowfoot of Asia.
7. The yellow stript Crowfoot of Asia.
8. The double red Crowfoot of Asia.

Ray (hist. 594.) besides several which he enumerates as species, has twenty varieties, from the catalogue of the Royal garden at Paris, of the year 1665.

Rea has—

The double white, or Crowfoot of Candy.

Cloth of silver of Candy.

Double yellow of Asia.

Double red of Asia,

And thirteen others, with barbarous names.

Ranunculus of Asia with single flowers; of which eleven varieties are set down.

But the varieties produced of late years from the seeds of semidouble flowers are unbounded: and Mr. Maddock remarks that they are more numerous than of any other flower. Accordingly his catalogue boasts nearly eight hundred, all with their proper names; ranged under the heads of,

1. Dark and dark purple.
2. Light purple and Gray, &c.
3. Crimson, &c.
4. Reds, &c.
5. Rosy, &c.
6. Orange, &c.
7. Yellow and yellow spotted, &c.
8. White and white spotted, &c.
9. Olive, &c.
10. Purple and Coffee striped, &c.
11. Red and yellow striped.
12. Red and white striped.]

23. This has a tuberous root; the leaves are de-compounded and smooth; the stalks rise near a foot high, and have one leaf of the same shape with the lower, but smaller; the stalk is terminated by one double flower, about the size of the common Butter-flower, of a fine bright yellow colour.

[The stem is commonly one-flowered and one-leaved; it occurs however very frequently with a three-flowered stem. It comes from Siberia with a branched stem. Corolla white, often eight or ten-petalled<sup>t</sup>.

Native of the mountains of Austria, Dauphiné, Switzerland, Piedmont, &c. It flowers in may, and was cultivated in 1759, by Mr. Miller<sup>u</sup>.

24. Root big and fleshy, in form of a bulb, and very acrid, pushing forth many long thick fibres. Hence springs the stem, gradually becoming smaller. Leaves alternate, dividing into three petioles, each of which divides a second and even a third time, and finishing in flat, smooth, fleshy, lanceolate leaflets; the lateral ones smaller and frequently once more divided. Stem from three to six inches high, terminating in two or more branches, often nine and even fifteen, each having a single leaf at their base, and one handsome flower at the end: calycine leaflets blunt, covered with rustlet or very minute hairs: petals sel-

<sup>1</sup> Willdenow.

<sup>m</sup> Jacquin.

<sup>n</sup> Hort. kew.

<sup>o</sup> Linn. suppl.

<sup>p</sup> Thunberg.

<sup>q</sup> Linn. spec.

<sup>r</sup> Mill. fig.

<sup>s</sup> Hort. kew.

<sup>t</sup> Willdenow.

<sup>u</sup> Hort. kew.



dom white, but almost always tinged with a pleasant vinous or purple red, from five to seven or more in number, large, and permanent. Fruit large, oval, composed of from forty to one hundred seeds, smaller than in the other species<sup>x</sup>.

Native of Lapland, Denmark, Switzerland, Dauphiné and Piedmont, on high granite mountains near the snow. It flowers in June, and was introduced in 1775 by Drs. Pitcairn and Fothergill<sup>y</sup>.

Willdenow remarks, that the figure of the leaves in the Flora lapponica and Flora danica is not very good, so that at first sight it appears to be a different plant, but the dried specimens have leaves of the same shape with those in the more southern countries of Europe.

25. The whole plant is very smooth, and therefore it cannot be that which is found in the more southern parts of Europe; for that is hirsute<sup>z</sup>. This differs from the *lapponicus* in having the calyx hirsute, the stem-leaves sessile, the stem firmer, and the flower larger<sup>a</sup>.—Native of Lapland and Norway.

26. The leaves resemble the floating leaves of *Ran. aquatilis*. Calyx reflex, smooth. Petals white, two-lobed<sup>b</sup>.

It is only two or three inches high. The numerous fibres of the root are often longer than the whole plant, they are very acrid, and insinuate themselves into the clefts of rocks: the leaves are smooth; those on the stem are rather simple bractes: the calyx and petals are white; the latter blunt and even emarginate. It is often found of a larger size<sup>c</sup>.

Native of Switzerland, Austria, Carniola, Dauphiné, Piedmont, &c.

27. Root fibrous. Root-leaf single, on a filiform petiole the length of a finger, three-parted almost to the base, where the lobes are narrower, towards the top they widen, are blunt, and have three or four notches. Stem-leaf also single, on a shorter petiole, smaller, of the same shape with the other, sometimes in the middle of the stem, sometimes near the root. In the Flora Suecica it is said, that the leaves are nearly kidney-form, but three-parted to the very base; the middle lobe less and obscurely three-lobed, the side lobes divided into several smaller ones.—Stems filiform, a span high, quite simple and straight. Flower one, terminating, yellow. Calyx yellow, commonly three-leaved, even, the size of the petals, turned back. Petals small, sharp at both ends. Stamens twelve to fifteen. Pistils six to eighteen. Seeds acuminate, turned back at the top, forming a globe.—Native of Lapland<sup>d</sup>.

28. Root thick and creeping, sometimes half a foot in length, with fibres on every side insinuating themselves into the clefts of rocks. Leaves rounded, very villose, divided into three lobes, which are very large and close to each other. The stem bears only one or two flowers, which are yellow and vary in size; it is quite villose and almost lanuginose, as well as the calyx, and is six or eight inches in height. It differs little from the *auricomus*, and perhaps may be no more than a variety, but if it be, it deserves to be known<sup>e</sup>. Native of the South of France and of Barbary.

29. Root a solid white roundish bulb, flattened a little both at top and bottom, somewhat resembling a small Turnep: it throws out several long fibres from the under side, but scarcely appears to produce any offsets: the bulb is formed above the bulb of last year, and when the plant flowers, the old bulb, in a dry soil, may be found in a state of decay under the new one, and surrounded by the fibres, but without the least appearance of suckers proceeding from either of them. Mr. Woodward remarks, that in a turf containing six plants, the roots were all distinct, excepting one, which appeared from its size to be a seedling, with the old bulbs at the bottom. Stems upright, a foot high, branched above, but never producing runners below, leafy, round, hairy, many-flowered. Root-leaves on long hairy footstalks, dilated and embracing the stem at bottom, ternate, trifid, variously

cut, more or less hairy: stem-leaves sessile or nearly so, deeply divided into numerous and narrower linear segments. The stem and each branch terminates in a single flower, on a grooved, angular, hairy peduncle. Calyx-leaves ovate, concave, hairy, thin at their base, turned back to the peduncle soon after they expand. Petals bright yellow, as if varnished, roundish, emarginate, concave. Nectary covered with a short inversely-heart-shaped or emarginate scale. Germs small, compressed, forming a little head. It propagates itself copiously by seed, but is of slow growth and long duration. The flowers are sometimes double, but not so frequently as *R. acris*. It is distinguished from the *repens*, with which it has been confounded by some authors, by its roots, by its never throwing out runners, and by its reflexed calyx; this last character arises from its particular structure, the lower half being thin and almost transparent, and therefore not having a sufficient degree of solidity to support itself upright. Ray adds, that the upper leaves are cut into finer and longer segments, that the heads of seeds are more produced, that the seeds themselves have no spinule at top, and that the flowers appear a little earlier. It is the second flower which, next to the Dandelion, covers the meadows with dazzling yellow. Like most of the Crowfoots it possesses the property of inflaming and blistering the skin; particularly the root, which is said to raise blisters with less pain and more safety than Spanish flies; hence these roots have been applied for that purpose, particularly to the joints in cases of the gout. According to Hoffman, beggars make use of them to blister their skins, with a view of exciting compassion. The juice of the herb is said to be more acrid than that of *R. sceleratus*, and if applied to the nostrils it provokes sneezing. The roots on being kept, lose their stimulating quality, and are even eatable when boiled. Hogs are fond of them, and frequently dig them up. The herb is too acrid to be eaten unmixed by cattle, accordingly the flowering-stalks are left to perfect the seed in pastures, some of it however is consumed, and it is not improbable that this and other pungent plants, mixed with the grasses, may act as a powerful stimulus, to some animals, as salt does to others. It abounds in dry pastures, and flowers in May<sup>f</sup>. Besides the name of round-rooted or bulbous Crowfoot, it is called by the common people Butter-flower, Butter-cups, King-cups, Gold-cups; and it is the Cuckow-buds of yellow hue in Shakspeare. We must remark however that the *repens*, *hirsutus* and *acris* are all confounded with this, under one name by the vulgar.

30. Root fibrous, annual. Stem upright, a foot and half high, leafy, generally more branched and spreading, producing a greater number of flowers, and covered with stiffer and longer hairs than in the *bulbosus*; the hairs in that are more numerous and soft, but in this they are hispid and stand out very much. Foot-stalks of the lower leaves hollow, and if cut asunder the nerves appear projecting into the inside of the tube: the leaves themselves are more perfectly trilobate than in the *bulbosus*; the middle and outermost lobe rounder, and less deeply divided at the edges; from the inner edge of each of the two side lobes it seems as if a bit were cut away: these leaves are frequently of a white or pale colour, in irregular spots, not unlike what we sometimes meet with in the *R. Ficaria*; and the upper surface is full of little projecting points, whence the hairs issue. The upper leaves are more finely cut, and the segments generally linear. The calyx is reflexed, as in *bulbosus*; hence many botanists, not finding any other British species recorded by Linneus, with this character, concluded it to be a variety of that, though Ray and John Bauhin long since considered them as distinct. But although the calyx be turned back, yet before the opening of the flower it is essentially different, being much more pointed, as if it had been squeezed to a point with the fingers; and the outside of it is very visibly covered with little papillæ or

<sup>x</sup> Villars.

<sup>y</sup> Hort. kew.

<sup>z</sup> Linn.

<sup>a</sup> Retzius.

<sup>b</sup> Lin. syst.

<sup>c</sup> Villars.

<sup>d</sup> Linn. lapp.

<sup>e</sup> Villars.

<sup>f</sup> Curtis, Smith.



projecting points, whence the hairs proceed. The flowers and seed are smaller than in *bulbosus*. The *hirsutus* flowers later, namely from June to October, and flourishes chiefly by the sides of roads, in gardens, and among rubbish<sup>g</sup>.

Observed by Mr. Curtis in various places near London, by the road side between Croydon and Mitcham, near Gravesend, and plentifully by the sea side; also on the gravelly banks about Southampton. Mr. Ray remarked it in salt marshes near Gravesend, and in moist clayey places where water had stood during the winter: Mr. Relhan, by road sides, among rubbish, &c. in Cambridgeshire: Mr. Woodward, among corn, in a clayey soil, and on new made banks of salt marshes, by Yarmouth: Dr. Sibthorp on South Leigh common in Oxfordshire. Mr. Abbot says it is abundant in pastures in Bedfordshire; and there is no doubt of its being common enough, but having been taken for the *bulbosus*, it has frequently passed unobserved.

31. Root perennial, consisting of numerous whitish fibres. Stems generally several from one root, a foot or more in length, beset with rough hairs, throwing out long creeping runners. Leaves ternate, trifid and gathered, generally hairy on both sides, but sometimes smooth and shining, frequently marked with white (black, *Engl. bot.*) spots; on long hairy petioles dilated at the base: the leaflets also are on petioles, and are sometimes divided only into two segments: the leaves are broader, darker, and more distinctly divided twice than those of *bulbosus*: the uppermost leaves are quite entire. Flowering-stems erect, branched and leafy, generally supporting two flowers. Peduncles pubescent, commonly five-furrowed. Calyx-leaves hirsute, spreading, yellowish, membranous at the edge, deciduous. Petals of a deeper yellow than in *R. acris*, commonly emarginate or obcordate, shining very much on the inside. Nectary covered with an obcordate scale. Stamens upwards of thirty (in *bulbosus* as many as sixty or even eighty). Germs numerous, in a little flattened, upright head. Seeds flat, smooth, with a small point.

This species is sufficiently distinct from the other common Crowfoots (*bulbosus*, *hirsutus* and *acris*) in its creeping stems sending forth roots at every joint; it is on this account more mischievous than those, as also because it will thrive in almost any soil, and is very apt to become the principal plant of the pasturage, to the great detriment of the farmer.

From the great variety of soil and situation in which the Creeping Crowfoot is found, it assumes many varieties: by a river's side or in marshes it will grow three or four feet high, with a stem nearly as large as the human thumb; in barren gravelly fields it is entirely procumbent, with a stem not larger than a small wheat straw; but in all states it retains the character of the creeping stem, and it does not lose it in cultivation. Its principal time of flowering is in June, but it may be found in blossom during most of the ensuing summer months, in meadows and pastures, under hedges, in shady waste places, church-yards and gardens.

The qualities of this and *bulbosus* are similar: both blister the skin, and are very acrid in taste.

Like the *acris* and *bulbosus* it is sometimes found double, but more rarely<sup>h</sup>.

32. Stem partly creeping, about two feet long, often naked and branched, terminated by several branches, which finish each in a peduncle a little grooved, sustaining a middle-sized yellow flower. Leaves a little villose, frequently with black marks in the disk, and pale ones below the divisions, divided into three lobes, the two lateral ones forming four others that are smaller, the middle one subpetioled; each lobe is subdivided into deep linear lobules. Petals blunt, shining all over within, like those of the *repens*, but larger. The roots, leaves, stems and flowers much resemble those of the *repens*, but the size of the leaves and their tissue are more like the *acris*, as also the hooked, yellowish permanent pistils,

<sup>g</sup> Curtis.

<sup>h</sup> Curtis, Smith, Withering.

which are only less recurved than in that. It has no sensible acrimony<sup>i</sup>.

Native of Germany, Switzerland, Sweden, Dauphiné and Piedmont, in woods; flowering in May and June. Perennial.

33. Root perennial, tuberous, with many long simple white fibres. Stem upright, about two feet high, round, hollow, having close-pressed hairs on it, not very leafy, much branched at top. Leaves three-parted and five-parted, many-cleft; the segments black or deep purple at the points: the root-leaves on long upright petioles: stem-leaves nearly sessile, less and more finely cut: the uppermost linear and sessile: sheaths of the foot-stalks hairy. Peduncles round, not grooved, hairy. Calyx hairy, spreading but not reflexed, yellowish. Petals of a shining yellow, subcordate, notched or entire. Nectary covered with an emarginate scale. Seeds roundish, flat, bending back at top, of a brown colour.

The scale of the nectary at once distinguishes this species from *R. auricomus*; the spreading calyx, from *bulbosus* and *hirsutus*; the round even flower-stalks, from both those and *repens*; whilst the smooth seeds prevent our mistaking it for any species which has them rough or muricated<sup>k</sup>. It is known at first sight from all our other wild species, by its tall, slim, genteel, upright growth; which circumstance has given occasion to the English name.

Most of the Crowfoots are acrid, and in some degree poisonous; but this is supposed to possess the property in a considerable degree, whence Linneus gave it the name of *acris*. Mr. Curtis says that even pulling up the plant, and carrying it to some little distance, has produced a considerable inflammation in the palm of the hand: that cattle in general will not eat it, yet that sometimes, when they are turned hungry into a new field of grass, or have but a small spot to range in, they will feed on it, and hence their mouths have become sore and blistered. According to Linneus, sheep and goats eat it; but kine, horses and swine refuse it. When made into hay it loses its acrid quality; but then it seems to be too starchy and hard, to afford much nourishment: if it be of any use, it must be to correct, by its warmth, the insipidity of the grasses<sup>k</sup>. In many pastures the flowering stems are left standing in vast abundance, to disseminate their seeds: before they do that, they might easily be cut down with the scythe, or pulled up by women and children after a shower, which would more effectually destroy the plants; they should be gathered into heaps and burnt. It flowers in June and July; and is confounded vulgarly with the *repens* and *bulbosus* under the name of *Butterflower* or *Butter-cups*; under a notion that the yellow colour of butter is owing to these plants. It is the richness and exuberance of the pasture that communicates this colour; and not these flowers, which the cattle seldom or ever touch.

It is frequent in gardens with a double flower, among other herbaceous perennials, under the name of *Yellow Bachelor's Buttons*.

34. Root composed of many long round fibres. Stem a foot or eighteen inches high, upright, rough-haired, very seldom branched. Leaves like those of Aconite or *R. acris*, but more cut, with a pale spot at the sinuses, where they are thicker to the touch. Peduncles long, round. Seeds acute, compressed<sup>i</sup>.

According to Scopoli, it is very hirsute, branched, the calyx-leaves are coloured at the edge, and the styles are reflexed; it is easily known by its stature, hairiness, and place of growth in woods and shade. It differs from the *acris* in this circumstance, in flowering earlier, in being very hirsute, large, with scattered flowers on fistular peduncles.

Villars says that the root is creeping and tubercled; the stem soft and fistular, three or four feet high, a little villose, straight and branched; the leaves large, villose, divided into three great lobes, irregularly cut into five or seven sharp and not deep subdivisions. Peduncles from seven to ten, not grooved; straight, villose, cylindrical. Petals large, yellow, blunt, shining

<sup>i</sup> Villars.

<sup>k</sup> Curtis, Smith.

<sup>i</sup> Linn, spec, Krock.

within.



within. Pistils terminating in a yellowish hook, bent outwards and permanent. It has the calyx villose, and membranous at the edge, in common with the *acris* and *polyanthemos*; it is less acrid than the former, but a little more than the latter; and is perhaps the connecting link between the *saxatilis* and the *acris*, as the *polyanthemos* is between this and the *repens*, from which Haller is not inclined to separate it. The nectary is truncate, and swollen at the base.

Native of Denmark, Germany, Switzerland, Austria, the South of France, and Piedmont. Cultivated in 1683, by Mr. James Sutherland<sup>m</sup>.

35. This species resembles rather an umbellate plant or an *Anemone*, than a *Ranunculus*, in its decomposed, linear, villose, leaves; it forms considerable tufts, and increases by off-sets. The flower is yellow, the plant is acrid, and the root is perennial<sup>n</sup>.—Native of France and Italy.

36. Roots tuberous, oblong, in bundles, narrowing downwards and ending in a fibre. Root-leaves many, multifariously decomposed, on villose petioles; with the extreme leaflets unequal, numerous, smooth, small, linear, acute. Stem simple or seldom divided, round, upright, hirsute, half a foot high, commonly one-flowered; putting forth one, two or three leaves above the middle. Calyx-leaves coloured, ovate-oblong or lanceolate, hairy, sharpish. Corolla yellow, the same size as in *R. Lingua* (or *R. illyricus*, Vahl.) Petals obovate, rounded at the top. Germs in an oblong head, reflexed at the top. It is allied to *R. chærophyllus*, but has the leaves more finely divided, the pinnules much smaller and more acute, the corolla twice or three times as large, and the calyx erect, not reflexed.

Native of the kingdom of Tunis, where it flowers in winter<sup>o</sup>.

37. Root small, annual, with long simple fibres. Stem upright, scarcely a span high, sometimes branched, leafy, few-flowered, hirsute with from upright spreading hairs. Lower leaves petioled, three-parted, cut, hairy on both sides; upper leaves trifid or undivided. Stipules membranaceous, hairy, fastened to the petioles. Flowers terminating, solitary, upright, smaller than in the *acris* and our other common species. Calyx reflexed, hairy, scariose at the edge. Petals rounded, gold coloured and shining above, underneath paler and opaque. Nectary covered with a wedge-shaped, retuse scale. Seeds lens-shaped, compressed, margined, dotted, muricated on both sides with irregular sharp tubercles.

Native of the South of France, Italy and Russia. Discovered by Mr. T. W. Dyer, in a low meadow, on the banks of the Avon, below Bristol Hot-wells, plentifully; flowering in July and August<sup>p</sup>.

38. Root annual, composed of simple fibres. Stem upright, a foot or more in height, leafy, round, smooth except towards the top, where it is pubescent, very much branched, the branches nodding somewhat before flowering. Leaves the first pair linear, the second ovate and serrate, the third trifid and three-toothed, the fourth twice-trifid, on longer petioles: stem-leaves alternate, except some of the upper ones, usually three-parted, with the leaflets again deeply divided into two or three parts; these leaflets are linear or lanceolate-linear, and slightly hairy, somewhat narrowed at the base, and pointed at the end. Each flower is opposite to a leaf, on a long round peduncle, small and brimstone or lemon-coloured. Calyx spreading, hairy, yellowish, except at the base, which is whitish, deciduous. Petals obovate. Stamens fourteen to sixteen. Seeds five or six (sometimes eight or nine), remarkably armed on the sides with strong prominent spines, larger towards the margin, and projecting much more than those of *R. parviflorus*, though sometimes like them terminating in a minute hook.

Every part of the plant has a pale appearance, and is easily distinguished from our wild meadow Crowsfoots by this circumstance, by its large prickly seeds, its annual root, and its place of growth, which is in

corn fields, where it is very common among crops of all kinds, in most parts of Europe, but more abundantly in some soils than in others; flowering in May and June, and ripening its seeds before harvest, so that it fills the ground, but not being a very luxuriant plant, is not a very formidable weed. Linneus affirms that the seeds do not come up till the second year. In some counties it has the name of *Hungerweed*, perhaps from its indicating a sterile soil. It is said to be as highly acrimonious, when fresh, as any of the species. M. Brugnion, in the fourth volume of the Memoirs of the Turin Academy, relates its poisonous effects on sheep, who nevertheless eat it greedily, as do kine and horses. It occasions cholic, gangrene of the stomach, and death in a few hours. Three ounces of the juice killed a dog in four minutes. M. Brugnion thinks vinegar the best antidote. Happily this plant generally grows with us where it is not accessible to cattle; which probably is the reason why we have not heard of any mischief done by it in this country; but the husbandman would do well to guard against it in fallow fields, and pastures in the neighbourhood of corn land<sup>q</sup>.

39. Root-leaves three-lobed, smooth, toothed: teeth blunt, unequal. Peduncles one-flowered. Calyx reflexed, with acute leaflets. Corolla small, yellow. Seed compressed, excavated on both sides, oblong, acuminate, muricated here and there. Annual<sup>r</sup>.

Gærtner, who does not distinguish this from the preceding, says that the fruit consists of several coriaceous capsules, not distinct from the seeds themselves; and that the seeds are sometimes as many as twelve, of an ovate-lanceolate form, beaked, compressed, surrounded by a callous, hard, whitish, smooth rim, echinated on both sides, in the middle of the sub-ferruginous disk, with short little prickles, spreading horizontally; they are fastened by a very short obscure chord, which enters the base of the capsule.

Native of the South of Europe and of Barbary, in ditches and marshes. Cultivated in 1683 by Mr. James Sutherland.

40. Root annual, fibrous, throwing out many prostrate spreading branched stems, which are round, hollow, leafy, and clothed like the leaves with long, spreading, soft hairs. Leaves on very long foot-stalks, kidney-shaped, gash-crenate; the upper ones three-lobed; the uppermost lanceolate and quite entire; all of them extremely soft to the touch. Peduncles solitary, opposite to a leaf, each bearing a small yellow flower, the petals of which are so minute and fugacious, that they can rarely be seen in their proper form and number. Calyx spreading. Stamens few. This species is characterized very clearly by its compressed seeds, the sides of which are muricated with thick-set tubercles, each ending in a minute hooked point. It flowers in May and June, and the seeds ripen in June and July<sup>s</sup>.

Native of the South of Europe and of Algiers, in dry gravelly soils, but with us not very frequent, or at least not very frequently observed, which may be owing to its humble growth, the smallness of its flowers, and its want of elegance in form or colour. It occurs in several places about London, as near Camberwell, about Lee Bridge, near Walthamstow, where it was gathered by Mr. B. M. Forster. On Greenstreet green, not far from Dartford in Kent. Found near Worcester by Dr. Stokes: on Malvern hill, by Mr. Ballard. Near Norwich by Mr. Pitchford. Near Madingley, Trumpington, Shelford, Toft and Gamlingay in Cambridgeshire. Bullington green, Shotover hill and South Leigh in Oxfordshire, by Dr. Sibthorp. On St. Vincent's rocks, near Bristol, by Mr. Swayne. Near Lymington, and Lulworth Cove in Dorsetshire, by Dr. Withering. Dr. Pulteney, in his catalogue of the more rare plants of the latter county remarks, that it is common there in corn-fields, and on fallow lands, some of which in the neighbourhood of Blandford, where he resides, are overrun with it.

41, 42. Found in the Levant by Tournefort.

<sup>m</sup> Hort. kew.

<sup>n</sup> Villars.  
<sup>p</sup> Smith.

<sup>o</sup> Desfontaines.

<sup>q</sup> Curtis, Smith, brit. & Engl. bot. Fl. rust. Withering.  
<sup>r</sup> Desfontaines. <sup>s</sup> Smith, brit. & Engl. bot.



43. Root annual. Native of Austria, in corn fields, and of other parts in the South of Europe and the Levant, flowering early in spring, and soon passing away. Introduced in 1782, by P. M. A. Broussonet, M. D.

44. Roots perennial, fibrous, numerous, simple, whitish, penetrating deeply into the mud. Stems numerous, prostrate or floating, rooting, branched, spreading wide, smooth, round, solid, jointed, thickish. Leaves kidney-shaped, obscurely three-lobed or five-lobed, somewhat fleshy, shining and veinless; on long flattened petioles, having a large membranous sheath at the base. Peduncles not grooved, shorter than the petioles, and opposite to them, one-flowered, at first upright, but after the flowering is over curved back towards the ground. Flowers small. Calyx-leaves membranous and yellowish at the edges. Petals white, oblong or lanceolate, somewhat blunt, larger than the calyx. Nectary a naked pore at the base of each petal. Stamens five to ten, but rarely more than seven. Seeds numerous, roundish, blunt, corrugated, crowded together in roundish heads, about the size of the common Tare<sup>†</sup>.

It is nearly allied to *R. aquatilis*, and was not distinguished from it by Linneus, Haller and Scopoli: it differs however in having three-lobed or five-lobed leaves, with the lobes rounded, not deeply cut, and entire.

Native of many parts of Europe, as Denmark, Britain, Germany, France; also of Barbary and Siberia; in slow shallow rivulets, especially where the soil is sandy, in watery places, shallow muddy ditches, &c. flowering from May to August.

The leaves have sometimes a dark spot in the middle of each, and in some situations the flowers are much larger than in others<sup>‡</sup>.

45. Root perennial, fibrous, throwing up long round stems, clothed with alternate leaves, having broad membranous stipules at the base of their foot-stalks. Leaves petioled, smooth; the upper floating ones subpeltate, three-lobed or five-lobed and cut or grossly notched; the lower ones which grow under water three-parted multifid, superdecompound, divided into fine linear or capillary acute segments: sometimes all the leaves are capillary, none of them emerging from the water, and in a strong stream their outline is much lengthened out, by the action of the current. The foot-stalks of the floating leaves are often very long, probably stretched by supporting the plant. Flowers on peduncles which arise from the same sheath with the leaves and opposite to them, white with a yellow spot at the base. Nectary a short open tube. Stamens numerous (thirty-three). Seeds corrugated<sup>\*</sup>.

Native of Europe, in ponds, ditches and streams; flowering from May to July.

The flowers are sometimes very large and make a handsome show in ponds and ditches: the curious variety in the floating and immersed leaves, adds to the beauty of this common aquatic plant. The other varieties grow in floating waters, and have all the leaves capillary. In  $\gamma$  they form a roundish outline. In  $\delta$  the segments of the leaves are very long, parallel, and take the direction of the current. These variations are clearly occasioned by the depth and velocity of the stream. Dr. Sibthorp, in his *Flora Oxoniensis*, has made species of these varieties, whilst others have united the *hederaceus* with them all, into one species.

My learned friend Dr. Pulteney (Linn. trans. vol. 5. p. 19.) has recorded a curious fact, with respect to the *R. aquatilis fluviatilis*, which contradicts the assertions of its deleterious qualities, and proves that it is not merely innoxious, but nutritive to cattle, and capable of being converted to useful purposes in agricultural economy.

In the neighbourhood of Ringwood, on the borders of the Avon, some of the cottagers support their cows, and even horses, almost wholly by this plant. A man collects a quantity every morning, and brings it in a

boat to the edge of the water, from which the cows eat it with great avidity; insomuch that they stint them, and allow only about twenty-five or thirty pounds to each cow daily. One man kept five cows and one horse, so much on this plant, with the little which the heath afforded, that they had not consumed more than half a ton of hay throughout the whole year; none being used, except when the river is frozen over. Hogs also are fed with this plant, and improve so well on it, that it is not necessary to give them any other sustenance, till they are put up to fatten.

This property of Water Crowfoot is the more remarkable, as all the species have been deemed acrimonious, and some of them are without doubt highly so. It is probable that this species is rendered inert as a poison, by growing in the water; although it must be confessed that in other instances, moisture heightens the deleterious property of vegetables, especially in the umbelliferous tribe.

This remark of Dr. Pulteney's is the more important, as in the Swedish experiments, the *R. aquatilis* is recorded as the only one rejected by all the species of domestic cattle. Of the common sorts there is no doubt but that *R. Flammula*, *bulbosus*, *acris*, *sceleratus*, and *arvensis* are acrimonious. Before the introduction of Cantharides, they were used as vesicatories, and are said to act with less pain than flies, without any effect on the urinary passages; but their action is related to be uncertain, and they are accused of frequently leaving ill-conditioned ulcers.

The acrimony, even of the most virulent, is wholly dissipated in drying; so that in form of hay, they appear to be harmless. It is also expelled in decoction; accordingly the shepherds of Morlachia boil the *R. sceleratus* and eat it: and both *R. auricomus* and *repens* are said to be wholly inoffensive, and are ranked by some authors among oleraceous plants.

The Ranunculi give out their acrimony wholly in distillation. The distilled water of *R. sceleratus* is intensely acrimonious; and when cold, deposits crystals, which are scarcely soluble in any menstruum, and are of an inflammable nature.

46. This approaches to the *parnassifolius*, and agrees with it in its lower leaves: but the stem-leaves are petioled, with the petioles dilated; the floral leaves are lanceolate; the stem upright; the flowers one-third only of the size and yellow; the root fusiform.—Native of the mountains of Dauphiné.

47. This resembles *R. gracilis* in the size and colour of the flower, but is very distinct in the leaves. Root-leaves many, petioled, scarcely half an inch in length, quite entire, truncate at the end, and having there five large blunt teeth. Stem upright, one or two-flowered. Stem-leaves two or three, alternate, remote, sessile, wedge-shaped at the base, deeply five-lobed; lobes lanceolate, quite entire, sharpish. Calycine leaflets elliptic, blunt, hirsute. Petals obcordate, larger than the calyx.—Native of the mountains of Siberia<sup>‡</sup>.

48. Roots fibrous, numerous. Stem smooth, striated, near a foot high. Root-leaves crenate; lower and middle stem-leaves petioled, deeply three-lobed; lobes wedge-shaped, unequally toothed: upper ones lacinate, with narrow-lanceolate jags. Peduncles striated, one-flowered. Flowers very small. Corolla yellow. Seeds in a round head, small, compressed, orbicular with a point, tubercled on both sides. Allied to *R. parviflorus*, but differs in having the stem upright, and the stem-leaves smooth and deeply three-lobed.—In moist fields near Mayane in the north of Africa.

49. The roots consist of numerous oblong bulbs in bundles. Root-leaves petioled, villose, orbicular, at the base emarginate, unequally lobed, gashed and crenate, the notches rounded. Stem upright, villose, slightly striated, putting forth two or four-parted leaves, but sometimes leafless. Peduncles few, one-flowered. Calyx five-leaved, villose. Corolla yellow, the same size as in *R. acris*. Petals obovate, rounded at the

<sup>†</sup> Curtis, Smith, Withering.

<sup>\*</sup> Smith, Withering.

<sup>‡</sup> Curtis.

<sup>‡</sup> Willdenow.



end. Seeds flat, margined, forming a close cylindrical spike, an inch and half in length.—Native of marshes about Algiers<sup>z</sup>.

50. This very much resembles *R. asiaticus*, but the stem is simple, and has only one or two flowers; the primordial leaves are wedge-ovate, undivided, unequally toothed, quite entire at the base; the calycine leaflets are ovate and acute, not lanceolate; the corolla is yellow; the head of seeds elliptic, not cylindrical.—On uncultivated moist hills about Algiers<sup>a</sup>.

51. Root-leaves rounded, uppermost cloven with the clefts lanceolate, all trifid, with the segments cut again, toothed, acute, hirsute on both sides. Petioles from an inch to a foot in length, hirsute. Stems striated, hirsute, scarcely leafy, flexuose, branching at top into peduncles.—Native of Japan<sup>b</sup>.

52. Calyx coloured, smooth, with a few hairs at the tip only.—Native of the mountains of Dauphiné, Italy and Carniola.

53. This differs abundantly from the *nivalis*, with which it has been confounded.—Native of the mountains of Switzerland, Dauphiné, Austria, &c.

54. This approaches to the preceding, but is double the size in all its parts, and differs in having the stem-leaf toothed.—Native of the Pyrenees and Hungary.

55. This differs very much from *R. lapponicus* in the stem and leaves; nor does it at all resemble *R. saluginosus*, with which Gunner united it.—Native of Groenland Island, Norway and Siberia.

56. Root in bundles. Root-leaves like those of *Ran. sceleratus*, three-lobed, with the lateral lobes two-lobed, and the segments bluntly three-toothed, wedge-shaped like the leaves. Stems a finger's length, two or three from one root, upright or ascending, simple. Stem-leaves wedge-form at the base, with the segments linear, bluntish, quite entire. Peduncles two, three or four, long, one-flowered, round, not grooved, very finely pubescent like the stem. Calycine leaflets coloured, smooth, blunt, spreading. Petals yellow, the size of *R. Flammula*. Head of seeds roundish. Seeds ovate, compressed, even, crowned with the blunt permanent stigma.—Native of Siberia.

57. Root hard, the thickness of a goose-quill, like that of *Doronicum*. Root-leaves roundish-cordate, very shortly three-lobed; lobes acuminate, with a few large teeth; having scattered hairs pressed close, on both sides. Stem-leaf single, petioled like the root-leaves; and in the middle of the peduncle, a small sessile lanceolate leaf, quite entire. Stem a span long, with hairs pressed close, simple or cloven above the leaf, with one-flowered peduncles. Corolla yellow, the size of *R. polyanthemus*. Head of seeds roundish. Seeds compressed, hooked.—Found by Tournefort in Capadocia.

58. This seems to be an annual plant. Root-leaves petioled, ovate, obtuse, unequally sinuate toothed, hairy on both sides, as are the petioles. Stem upright, a foot high and more, branched, hairy. Stem-leaves sessile, digitate, with the segments of the lower ones unequally pinnatifid; of the upper ones linear and quite entire. Calyx reflex. Corolla yellow, the size of *R. bulbosus*. Heads of seeds elliptic. Seeds flattened a little, acute, subulate-awned with the awns erect.—Native of Siberia, by the river Tereck.

59. Stem long a span in height, upright, branched at top. Leaves under water very numerous, covering the whole stem, oblong, half an inch in length, on a capillary petiole an inch long: floating leaves small, half an inch long, quite entire, on a thicker petiole. Branches an inch in length and upright, spring out of the water, and bear leaves on short petioles, four or six lines long, elliptic, attenuated both ways, blunt. Flowers very small, yellow.—This is an annual plant, native of Hungary<sup>c</sup>.]

#### PROPAGATION AND CULTURE.

4. 6. 7. 11. 17. 18. 19. 24. 33. 34. 39. 42. are hardy perennials, and are easily propagated by parting their roots in autumn.

<sup>z</sup> Desfontaines.

<sup>a</sup> Willdenow.

<sup>b</sup> Thunberg.

<sup>c</sup> Willdenow.

The Alpine species are not so easy to cultivate in gardens. The *parnassifolius* (n. 6.) grew and flowered with Mr. Curtis in a small pot of loam and bog earth, sheltered during the winter in a frame. They require a pure air, and succeed best in a situation moderately moist and shady.

12. 23. are propagated by offsets from the roots, in the same manner as the Garden Ranunculus (n. 22.) and should be planted in a warm border, otherwise the frost will destroy the roots.

22. PERSIAN CROWFOOT OR GARDEN RANUNCULUS. The Garden Ranunculus was originally brought from Persia, but since it has been in Europe, has been greatly improved by culture, and many new flowers obtained from seeds, amongst which are many with semidouble flowers, which produce seeds; and from these there are such prodigious varieties of new flowers annually obtained, which are so large, and of such variety of beautiful colours, as to exceed all other flowers of that season, and even vie with the most beautiful Carnations; these are many of them finely scented, and the roots, when strong, generally produce twenty or thirty flowers upon each; which, succeeding each other, continue in beauty a full month or longer, according to the heat of the season, or the care taken to defend them from the injuries of the weather; all which excellent qualities have rendered them so valuable, that the old sorts are almost disregarded except in some old gardens.

All the very double flowers never produce seeds, so that they are only multiplied by offsets from their roots, which they generally produce in great plenty, if planted on a good soil, and duly attended in winter.

The season for planting their roots is any time in october, for if they are planted sooner, they are apt to come up in a short time, and grow pretty rank before winter, whereby they will be in great danger of suffering by frost; and if they are planted much later, they will be in danger of perishing under ground; so that you should not keep them out of the ground any longer than the beginning or middle of october.

The beds in which the Persian Ranunculus roots are planted, should be made with fresh, light, sandy earth, at least three feet deep: the best soil for them may be composed in this manner, viz. Take a quantity of fresh earth from a rich upland pasture, about six inches deep, together with the green sward; this should be laid in a heap to rot for twelve months before it is mixed, observing to turn it very often, to sweeten it and break the clods; to this you should add a fourth part of very rotten neats dung, and a proportionable quantity of sea or drift-sand, according as the earth is lighter or stiffer; if it be light and inclined to a sand, there should be no sand added; but if it be a hazel loam, one load of sand will be sufficient for eight loads of earth; but if the earth is strong and heavy, the sand should be added in a greater proportion; this should be mixed eight months or a year before it is used, and should be often turned over, in order to unite their parts well together before it is put into the beds.

The depth which this should be laid in the beds, must be about three feet, and should be below the surface, in proportion to the dryness or moisture of the place where the beds are situated; for in dry ground it should be two feet eight inches below the surface, and the beds raised four inches above; but in a moist place they should be two feet below, and one foot above the ground; and in this case, it will be very proper to lay some rubbish and stones in the bottom of each bed, to drain off the moisture; and if upon this, at the bottom of the beds, some very rotten neats dung is laid two or three inches thick, the roots will reach this in the spring, and the flowers will be the fairer. This earth I would by no means advise to be screened very fine, only in turning it over each time, you should be careful to break the clods, and throw out all large stones, which will be sufficient; for if it is made very fine, when the great rains in winter come on, it will cause the earth to bind into one solid lump, whereby the moisture will be detained, and the roots, not being able to extend their tender fibres, will rot.



Of this I have had many examples, but one particularly to my cost: when I had procured a fine parcel of these roots from abroad, and being desirous of having them thrive very well, I took great pains to screen the earth of my beds very fine, which I had laid above two feet deep, and planted a good part of my roots therein; but the season advancing, and having a great deal of other business upon my hands, I did not screen the earth of all my beds, but planted some of them without doing any thing more than raking them; and the success was, that the roots in those beds which were screened did, great part of them, entirely rot; and the remaining part were so weak, as not to produce any good flowers; whereas those which were planted in the beds which were not screened, did thrive and flower very well, and scarce any of the roots failed, though the earth of all the beds was the same, and were in the same situation, both with regard to wind and sun; so that the damage which those roots sustained, was owing entirely to the fineness of the earth; and this I have several times since observed in other gardens.

I am aware that this depth of three feet, which I have here directed to make the beds of these flowers, will be objected to by many persons, on account of the expence and trouble of preparing them, as also supposing it necessary to make the beds so deep, for flowers whose roots are small; but if they will give themselves the trouble of making the experiment, by preparing one bed in this manner, and another in the common way, and plant them both with the same roots, they will soon be convinced of their error, by the success of the flowers. For in the beds which have been prepared of this depth, I have seen one root produce upwards of fifty flowers, each of which grew near a foot high, and were extremely large and fair; whereas in the common method of culture, they are thought to do very well when they produce eight or ten flowers on each root, and these grow six inches high; but if a person will trace the length of the small fibres of these roots, he will find them extend three or four feet downwards. And as it is by these distant fibres that the nourishment is taken in, for the increase and strength of the flowers; so if these meet with a poor barren soil below, they shrink, and the flowers are starved for want of proper nourishment in the spring, when it is most required.

The beds being thus prepared, should lie a fortnight to settle before the roots are planted, that there may be no danger of the earth settling unequally after they are planted; which would prejudice the roots, by having hollow places in some parts of the bed, to which the water would run and lodge, and so rot the roots there. Then having levelled the earth, laying the surface a little rounding, the beds should be marked out in rows by a line, at about six inches distance each way, so that the roots may be planted every way in straight lines; open the earth with your fingers at each cross, where the roots are to be planted, at about two inches deep, placing the roots exactly in the middle, with their crowns upright; then with the head of a rake draw the earth upon the surface of the bed level, whereby the top of the roots will be covered with earth near two inches, which will be sufficient. This work should be done in dry weather, because the earth will then work better than if it were wet; but the sooner after planting there happens to be rain, the better it will be for the roots; for if it should prove dry weather long after, and the earth of the beds be very dry, the roots will be subject to mould and decay; therefore it will be proper to give a little water to the beds, if there should no rain happen in a fortnight's time, which indeed is very rare at that season of the year, so that they will seldom be in danger of suffering that way.

When the roots are thus planted, there will no more be required until toward the end of november, by which time they will begin to heave the ground, and the buds of their leaves appear; when you should lay a little of the fresh earth, of which the beds were composed, about half an inch thick over the beds, which will greatly defend the crown of the root

from frost; and when you perceive the buds to break through this second covering, if it should prove very hard frost, it will be very proper to arch the beds over with hoops, and cover them with mats, but especially in the spring, when the flower-buds will begin to appear; for if they are exposed to too much frost, or blighting winds at that season, their flowers seldom open fairly, and many times their roots are destroyed.

In the beginning of march the flower-stems will begin to rise, at which time you should carefully clear the beds from weeds, and stir the earth with your fingers between the roots, being very careful not to injure them; this will not only make the beds appear handsome, but also greatly strengthen their flowers in blowing; and if the nights prove frosty, the beds should be covered with mats every evening, and shaded from the sun in the heat of the day. When the flowers are past and the leaves are withered, take up the roots, and carefully clear them from the earth; then spread them upon a mat to dry, in a shady place; after which they may be put up in bags or boxes in a dry room, until the october following, which is the season for planting them again.

These Persian sorts are not only propagated by offsets from the old roots, but are also multiplied by seeds, which the semi-double kinds produce in plenty; therefore, whoever is desirous to have these in perfection, should annually sow their seeds, from which new varieties will be every year produced; but in order thereto, you should be careful in saving your seed, or in procuring it from such persons as understand how to save it; that is, who will be careful not to leave any flowers for seeds, but such as have five or six rows of petals at least, and are well coloured; for since these flowers increase plentifully, it is not worth the trouble to sow any indifferent seeds, because there can be but little hopes of obtaining any good flowers from them.

Being prepared with seeds, about the middle of august, which is the proper season for sowing them, you should get some large pots, flat seed-pans, or boxes. These should be filled with light rich earth, levelling the surface very even; then sow the seeds thereon pretty thick, and cover it about a quarter of an inch thick with the same light earth; after which, you should remove these pots, pans, or boxes, into a shady situation, where they may have the morning sun until ten of the clock; and if the season prove dry, you must often refresh them gently with water, being very careful in doing of this, not to wash the seeds out of the ground. In this situation the pots should remain until the beginning of october, by which time the plants will sometimes begin to come up, (though often the seeds will remain in the earth until the end of november, before the plants appear;) but then you should remove the pots into a more open exposure, where they may have the full sun, which at that time is necessary to exhale the moisture of the earth; but toward the middle of november, when you are apprehensive of frost, the pots should be removed under a common hot-bed frame, where they may be covered with the glasses in the night time, and also in bad weather; but in the day, when the weather is mild, they should be entirely opened, otherwise the plants will draw up too weak. The only dangers they are in, are from violent rains and frosts; the first often rotting the tender plants, and the frost will often turn them out of the ground, therefore they should be carefully guarded against both these.

In the spring, as the season grows warm, these pots should be exposed to the open air, placing them at first near the shelter of a hedge, to protect them from the cold winds; but toward the beginning or middle of april, they should be removed again into a more shady situation, according to the warmth of the season; and if it should prove dry, they must be sometimes refreshed with water; but you should be careful not to give it them in great quantities, which is very apt to rot these tender roots; and in the latter end of april or beginning of may, they should be placed where they may have only the morning sun; in which place they

may



may remain till their leaves decay, when they may be taken out of the earth, and the roots dried in a shady place; after which they may be put up in bags, and preserved in a dry place till the october following, when they must be planted in the manner before directed for the old roots.

The spring following these roots will flower, at which time you should carefully mark such of them as are worthy to be preserved, and the single, or bad coloured flowers may be pulled and thrown away, which is the surest method of removing them from the good sorts; for if they are permitted to remain together until their leaves decay, there may be some offsets of the bad sorts mixed with the good flowers. You should not suffer those flowers, which you intend to blow fine the succeeding year, to bear seeds, if they are inclinable so to do, but cut off the flowers when they begin to decay; for those roots which have produced seeds, seldom flower well afterwards; nor will the principal old root, which has flowered strong one year, ever blow so fair as will the offsets, which is what should be principally observed, when a person purchases any of these roots; for a great part of the complaints made by those who have bought these roots at a dear rate, is principally owing to this. For the persons who sold them, being apprised of this matter, have parted with their old roots to their purchasers, and reserved the offsets for their own use; which old roots have so much degenerated from what they were the preceding year, as to cause a suspicion, whether the persons they were purchased from had not changed the roots: and this degeneracy always attends these flowers, after having flowered extremely large and fair, or that they have been permitted to seed; so that it is absolutely necessary to sow seeds every year, in order to preserve a succession of good flowers.

The manner of preparing the beds, and the distance and method of planting the roots, having been already directed, I shall not repeat it here, but only observe, that these flowers being tender, must be protected from hard frosts, and cutting sharp winds, especially after Christmas, when their flower-buds are forming; for if they are neglected at that season, their flowers will rarely prove fair; nor should you suffer them to receive too much wet in winter or spring, which is equally as injurious to them as frost.

In planting these roots you should observe to place the semi-double kinds, from which you intend to save seeds, in separate beds by themselves, and not intermix them with the double flowers, because they will require to be treated in a different manner; for when the flowers of the semi-double kinds begin to fade, you should carefully guard them from too much wet; for if they are permitted to receive hard rains, or are watered at that season, the seeds rarely come to maturity, or they are so weak, that scarce one in fifty of them will grow.

When the seed begins to ripen (which may be easily known by separating from the axis and falling) you should look it over every day, gathering it as it ripens; for there will be a considerable distance in the seeds of the same bed coming to maturity, at least a fortnight, and sometimes three weeks or a month. When you gather the seed, it should not be exposed to the sun, but spread to dry in a shady place; after which, you must put it up where the vermin cannot come to it, until the time of sowing it.

By this method of sowing seeds every year, you will not only increase your stock of roots, but also raise new varieties, which may be greatly mended by changing the seeds into fresh ground; for if a person continually sows his seed in the same garden many years they will not produce near so fine flowers as if he procured his seeds at some distance, which is also the case with most other plants.

It will also be necessary to take away all the earth out of the beds in which the roots were blown the preceding year, and put in new, if you intend to plant Ranunculuses there again; otherwise they will not thrive near so well, notwithstanding you may add some new compost to the beds, and this is what all the curious florists continually observe.

[Ranunculuses may be planted either before or after winter. In cold wet soils this work had better be deferred till january or february; but in dry soils the season that Mr. Miller has directed is to be preferred.

After planting, in case of severe weather, it will be proper to cover the beds with straw or peas-hawlm to guard them against frost: but this covering should be always taken off whenever the weather is favourable.

In spring, the winter's frosts having loosened the ground, on a fine dry day, tread or beat the ground, and press it close to the plants with the fingers, to keep out the cold parching winds. Some long straw placed between the rows, will protect the plants, and keep the ground moist. In default of spring showers, water must be applied gently between the rows.

Those who are curious in these flowers, and value themselves on fine varieties, and on having them flower well and long, must shade them during the season of blooming, with hoops covered with mats, or a frame constructed for the purpose.

Such persons as save the seed for raising new varieties, must suffer it to continue on the plant till it becomes brown and dry, then cut it off, and spread it upon paper, in a dry room, exposed to the sun; when quite dry, put it into a bag, and hang it up in a dry place.

In january or february, these seeds being carefully rubbed out, and cleansed from all extraneous matter, they should be sown under a glass frame, so thick as nearly to cover the surface; the glasses should then be put on, and the frame kept closely covered for two or three days, till the seed begins to swell, and at this time a little light earth should be sifted over it; this sifting should be repeated every week till the seeds are covered; but if they are covered too deep they will not vegetate.

When the sun shines hot, the glasses must be raised to admit fresh air, and the frame must be shaded with mats.

When the seed-leaves appear, the young plants will require more air, and must be regularly but gently watered, except when there are warm showers of rain.

A fine Ranunculus should have a strong straight stem, from eight to twelve inches high. The flower should be of a hemispherical form, at least two inches in diameter, consisting of numerous petals gradually diminishing in size to the centre, lying over each other so as neither to be too close, nor too much separated, but having more of a perpendicular than horizontal direction, in order to display the colours with better effect. The petals should be broad, with entire well-rounded edges; their colours should be dark, clear, rich or brilliant, either of one colour, or variously diversified on an ash, white, sulphur or fire-coloured ground, or else regularly striped, spotted or mottled, in an elegant manner<sup>d</sup>.

RANUNCULUS. See *Adonis*, *Adoxa*, *Alisma*, *Anemone*, *Hydrocotyle*, *Sagittaria*, *Sanguinaria*, *Thalictrum*, *Tridacantha*, *Trollius*.

RAPA. See *Brassica*.

RAPATEA. See *Mnasilum*.

RAPE. See *Brassica*.

RAPHANISTRUM. See *Raphanus*.]

RAPHANUS. (*Ραφανος* or *Ραφανος* of *Theophrastus* and *Dioscorides*: *απο του ρα*, i. e. *ραδιως φαινεσθαι*; from the quickness of its vegetation.)

*Lin. gen. n.* 822. *Reich. n.* 886. *Schreb. n.* 1098.

*Tournef. t.* 114. *Juss.* 238. *Gartn. t.* 143. *f.* 5.

*Raphanistrum. Tourn. t.* 115. *Gartn. t.* 143. *f.* 6.

*Class.* 15. 2. *Tetradynamia Siliquosa*.

*Nat. order of Siliquosae, Cruciformes, or Cruciferae.*

GENERIC CHARACTER.

CAL. *Perianth* four-leaved, erect: *leaflets* oblong, parallel, converging, deciduous, gibbous at the base.

COR. four-petalled, cruciform. *Petals* obcordate, spreading: *claws* a little longer than the calyx.

*Nectariferous glands* four: one on each side, one

<sup>d</sup> Maddock.



between the short stamen and pistil; and one on each side between the longer stamens and the calyx.

STAM. Filaments six, awl-shaped, erect: of these two that are opposite are of the same length with the calyx; and the remaining four are the length of the claws of the corolla. Anthers simple.

PIST. Germ oblong, ventricose, attenuated, the length of the stamens. Style scarcely any. Stigma capitate, entire.

PER. Silique oblong with a point, ventricose with little swellings, subarticulate, cylindrical.

SEEDS roundish, smooth.

Obs. In *Raphanus* of Tournefort, the fruit is spongy, two-celled, not opening; according to Gærtner, many-celled; the cells membranaceous, in a double longitudinal row.

In *Raphanistrum* T. the fruit is jointed, and parts at the joints; or, as Gærtner says, moniliform and many-celled; the cells bony, in a single longitudinal row.

#### ESSENTIAL CHARACTER.

Cal. closed. Silique torose, subarticulate, cylindrical. Glands four; two between each shorter stamen and the pistil; and two between the longer stamens and the calyx.

#### SPECIES.

1. *Raphanus fativus*. Common Garden Radish.  
*Lin. spec.* 935. *Reich.* 3. 284. *hort. cliff.* 340.  
*upf.* 188. *mat. med.* 164. *Thunb. jap.* 263.  
*Gærtner. fruct.* 2. 300. *Blackw. t.* 81.
  - α. *R. fativus*. Long-rooted Radish.  
*Mill. dict. n.* 1. *Ger.* 183. 1, 2. *emac.* 237. 1. 2.  
*Raii hist.* 804. 1. *Mor. hist. f.* 3. t. 13. f. 3.  
*R. minor oblongus.* *Baub. pin.* 96. *Mor. f.* 4.  
*R. vulgaris.* *Park. theat.* 861.
  - β. *R. rotundus*. Small white turnep-rooted or Naples Radish.  
*Mill. dict. n.* 2.
  - γ. *R. orbicularis*. Large turnep-rooted or white Spanish Radish.  
*Mill. dict. n.* 3. *Ger.* 184. 3. *emac.* 238. 3. *Raii hist.* 805. 2, 3.  
*R. major orbicularis, vel rotundus.* *Baub. pin.* 96.
  - δ. *R. niger*. Black Spanish Radish.  
*Mill. dict. n.* 4. *Baub. pin.* 96. *Raii hist.* 804.  
*Mor. f.* 1.—rotundiore radice. *Park. theat.* 861.
  - R. pyriformis.* *Ger.* 184. 4. *emac.* 238. 4. *Mor. f.* 2.
- Siliques cylindrical torose two-celled.
- [2. *Raphanus caudatus*.  
*Lin. syst.* 603. *Reich.* 3. 284. *mant.* 95. *dec.* 3. t. 10.  
Siliques decumbent longer than the whole plant.]
  3. *Raphanus Raphanistrum*. Wild Radish, or Jointed-podded Charlock.  
*Lin. spec.* 935. *syst.* 603. *Reich.* 3. 284. *hort. cliff.* 340. *fl. suec. n.* 612. *amoen. acad.* 6. 451. *Huds. angl.* 289. *Wither. arr. ed.* 3. 596. *Smith, brit.* 723. *Curt. lond.* 4. t. 46. *Lightf. scot.* 362. *Relb. cant. n.* 482. *Sibth. oxon. n.* 573. *Abbot, bedf.* 147. *Fl. rust. t.* 71. *Fl. dan. t.* 678. *Hall. helv. n.* 468. *Sauv. monsp.* 285. *Crantz; austr.* 37. *Neck. gallob.* 286. *Pollich pal. n.* 644. *Krock. fles. n.* 1104. *Villars dauph.* 3. 309.  
*Raphanistrum Lampfana.* *Gærtner. fruct.* 2. 300.  
*R. flore albo striato, fil. artic. striata minore.* *Mor. hist.* 2. 266. f. 3. t. 13. f. 4.  
*Rapistrum arvense.* *Allion. pedem. n.* 942. *Ger.* 179. 2.  
*Rapistrum flore albo, filiqua articulata.* *Baub. pin.* 95.  
*Rapistrum flore albo striato.* *Baub. hist.* 2. 851. 1.  
*Rapistrum flore albo lineis nigris depicto.* *Baub. pin.* 95.  
*Rapistrum flore albo, crucæ folio.* *Lob. ic.* 1. 199. 1.  
*Rapistrum album articulatum.* *Park. theat.* 863. 5.  
*Raii hist.* 805. 2.—item alterum arborum. *Park. theat.* 803. 4.  
*Rapistrum purpureum.* *Tabern.* 407.  
*Raphanus sylvestris.* *Ger.* 185. 1. *emac.* 240. 1.  
*Raphanistrum filiqua articulata glabra, majore &*

minore. *Mor. f.* 3. t. 13. f. 1, 2. *Raii syn.* 296. *Petiv. brit. t.* 46. f. 10.

β. *Lampfana.* *Ger.* 199.—flore melino. *Tabern.* 408. *Rapistrum flore luteo.* *Baub. pin.* 95.—fil. glabra articulata. *Raii syn.* 296. *hist.* 805.

γ. *Raphanus maritimus*, flore luteo, filiquis articulatis, secundum longitudinem eminenter striatis. *Raii syn.* 296.

*Raphanistrum fil. artic. striata maxima.* *Mor. hist.* 1. 266. f. 3. t. 13. f. 5. *Raii hist.* 806. 4.

Pods jointed even one-celled: (many-celled, moniliform. G.)

[4. *Raphanus fibricus.* *Siberian Radish.*

*Lin. spec.* 935. *syst.* 603. *Reich.* 3. 285. *Murr. in nov. comm. gott.* 1775. p. 48. t. 11. *Gmel. sib.* 3. 266. n. 28.

Pods cylindrical torulose villose, leaves linear pinnatifid.

5. *Raphanus Erucoides.*

*Lin. syst.* 603. *suppl.* 299.

Pods ovate gibbous, with the beak the length of the pod.

6. *Raphanus tenellus.* Small Radish.

*Pallas, it.* 3. 741. t. L. f. 3. *Ait. kew.* 2. 405.

Pods awl-shaped jointed two-celled smooth, leaves smooth lanceolate toothed, the lowest pinnatifid.

#### DESCRIPTIONS, &c.

1. Root annual, large, fleshy, fusiform or subglo-bular, white within, red or white or black on the outside. Stem upright, thick, very much branched and diffused, rough with pellucid bristles. Leaves rough, lyrate. Calyx green, rough-haired. Petals pale violet, with large veins running over them. Pod long, with a sharp beak, fungous, white, with distant streaks, many-celled: cells membranaceous, closed, in a double longitudinal row, along the middle septum. Seeds, one in each cell, but in each row from three to twelve; subglo-bular, large, ferruginous, covered with very minute raised dots.

Native of China, CochinChina and Japan; in all which countries it is much cultivated.—It appears from Gerarde's herbal, that it was cultivated here in 1597<sup>2</sup>: and it was probably in our kitchen gardens long before his time.]

From the varieties of the common Radish, Mr. Miller aims at making four sorts, by his usual argument, that from forty years experience he never found any of them to vary; and that by saving the seeds of each carefully without mixture, the produce will always prove the same as the plant which the seeds were saved from.

α. The first variety, or long-rooted Radish, is that which is commonly cultivated in kitchen gardens for its roots. Of this there are several subordinate variations: as the small-topped, the deep red, the pale red or salmon, and the long-topped striped Radish; which differences Mr. Miller allows to have arisen from culture. The small-topped is most commonly preferred by the gardeners near London, because they require much less room than those with large tops; for as forward Radishes are what produce the greatest profit to the gardener, and these are commonly sown upon borders near hedges, walls or pales, the large-topped Radish would be apt to grow mostly at top, and not swell so much in the root as the other, especially if the plants should be left pretty close.

β. The small round-rooted Radish is not very common in England, but in many parts of Italy; it is the only one cultivated; the roots of this are very white, round, small, and very sweet. [It is now frequently brought to the London markets in the spring, generally in bunches, and is sometimes mistaken there for young turneps. If eaten young, it is crisp, mild and pleasant.

γ. The large turnep-rooted or white Spanish Radish has a moderately large, spheroidal white root, and is esteemed chiefly for eating in autumn and the early part of winter. Both these are commonly called indiscriminately Turnep Radishes.

δ. Black turnep-rooted Spanish Radish has a root like the preceding, white within, but with a black skin; and is greatly esteemed by many, for autumn.

<sup>c</sup> Krockner.

<sup>f</sup> Gærtner.

<sup>2</sup> Hort. kew.



and winter eating.] Mr. Miller says, that the two last varieties are commonly cultivated for medicinal use, but that some persons are very fond of them for the table.

[2. This has the stature and appearance of the common garden Radish, but the leaves are sharper, and the stem shorter, diffused and not upright except when it is young, but smooth and purplish with a glaucous bloom. Flowers whitish. Pods two or three feet long, curved, one-celled, with four obsolete futures, two of which are gibbous at the base; the partition receiving the seeds one after another: the length of the pods prevents the stem from growing upright, for they lie winding on the ground, like serpents.

Native of Final. It is an annual plant, and was communicated by Braad in 1764<sup>b</sup>.

3. Root annual, small, simple, pale brown. Stem from a foot to eighteen inches in height, upright, round, branched at top, hispid with transparent hairs pointing backwards, often purple at bottom. Leaves petioled, lyrate, alternate on the stem, rugged: the lowermost having six or eight alternate leaflets, besides the large one at the end; the upper one about four, the uppermost entire or nearly so; all obtusely serrate or toothed; the teeth purple at the tips. Flowers peduncled. Calyx-leaves linear, upright, hispid with white hairs. Corolla varying much in colour, yellow, white or purplish, but always with dark veins: petals inversely heart-shaped, entire, spreading, with the claws a little longer than the calyx. Pods cylindrical, composed of from three to six, grooved, one-celled joints, each containing a single seed, ending in an ensiform, smooth beak. Seeds roundish, ferruginous, very smooth, of the same size with those of common garden Radish<sup>1</sup>.

It is observed by Haller and others, that each joint of the pod has at first two cells, but from one of the seeds being always abortive, and the other filling the whole space, it appears to have only one cell<sup>k</sup>. Gærtner declares that he could never discern this original bilocularity of the pod; which he describes thus:—it is long, acuminate, before its full maturity smooth, cylindrical, very obscurely jointed; but afterwards becomes moniliform or like a necklace of beads; the joints or beads flattened like a lens, grooved, intercepted by an isthmus, one-celled: cells bony, striated, segregate, perforated at top and bottom for transmitting the receptacles, in other parts quite entire, valveless. Receptacle bilateral, filiform, entering the cells themselves, and putting forth alternate umbilical chords. Seeds in each cell one, in the whole ten or twelve, turgidly lenticular, hollow-dotted, saffron-coloured.

It differs so much from *Raphanus sativus*, not only in having a single row of cells, and those bony, but chiefly in the receptacles entering the cells themselves; that Gærtner makes it a distinct genus.

The whole plant is commonly glaucous or of a sea-green cast, and every part is mostly hairy except the pods. It differs from garden Radish in having narrower pods, with the articulations more distinct. Charlock (*Sinapis arvensis*) is usually one third taller than this; the stalks, which in that are finely grooved, hirsute, and commonly tinged of a deep red colour, are in this even, but hispid, and usually glaucous. Charlock has often an unbranched stem, whereas this is frequently branched quite down to the bottom: the calyx is upright and close in this, but in that it is spreading; the corolla also of Charlock is smaller, and always yellow; and when the wild Radish bears yellow flowers, as it most commonly does with us, they are of a very different yellow, namely that which is called ochroleucous; they fade almost to white before they decay; and whatever their colour may be, they are never without the dark purple veins.

Wild Radish is too abundant among spring corn in many places; flowering from June to August; sometimes mixed with Charlock, from which it is not vulgarly distinguished, but more frequently abounding

<sup>b</sup> Linn. mant.

<sup>1</sup> Curtis, Fl. rust. Smith.

<sup>k</sup> Woodw. M. S.

where the other does not occur, or is only in small quantity.

Linneus, in a dissertation in the *Amœnitates Academicæ*, informs us, that in wet seasons this weed abounds among Barley in Sweden, and that being ground with the corn, the common people, who eat Barley bread, are afflicted with violent convulsive complaints, or an epidemic spasmodic disease. Monf. Villars, however, remarks, that this weed is so common in some of the cold moist vallies of Dauphiné, that it must needs make great ravages there, if it were as dangerous as Linneus has represented it; and yet this spasmodic disorder is unknown in that country: nor have I ever heard of it in England; where it abounds shamefully<sup>1</sup>.

Spielmann, Beckmanh, and others have written against Linneus on this subject; Krockner has proved the plant to be harmless by his own experiments, and even recommends it as a nutritious food for domestic quadrupeds; and as very agreeable to bees<sup>m</sup>.

γ. The sea wild Radish has a thick white root; leaves like those of the garden Radish; stems almost three feet high, and very much branched; pods thick, and when ripe almost woody, having three or four joints with one seed in each, resembling those of the garden Radish, but rather smaller. Mr. Stonestreet found it under the cliffs by the sea-side, about half a mile from the fisher-house at Bourn in Suffex. It probably owes these differences to its situation.

4. This is a pygmy plant, with the habit of *Erucæ*: Stems for the most part naked. Both root and stem-leaves pinnatifid, linear. Corollas large, yellow. Pods cylindrical, pedicelled, moniliform, villose like the stem, with an oblong beak. Columna's figure (*ecphr.* 2. 69.) of *Cardamine alpina insipida*, resembles this.—Native of Siberia<sup>n</sup>.

5. Root biennial, simple, scarcely thicker than the stem. Stem a foot and half high, rugged, purplish at the base, with simple branches at top. Leaves petioled runcinate, even: segments acuminate, toothletted on the anterior margin; the terminating one narrower. Flowers in racemes. Calyx spreading a little or gaping, not closed. Petals yellow, emarginate. Stamens the length of the petals. Pod even, not jointed, fleshy, two-valved; with a conical beak, ancipital-four-cornered. Seeds from four to seven on each side, flattened; with a white, membranaceous partition, insinuating itself between the seeds.—Native of Italy<sup>o</sup>.

6. This is an annual plant, native of Siberia, where it was found by Peter Simon Pallas, M. D. He sent it to England in 1780. It flowers here in June and July<sup>p</sup>.]

#### PROPAGATION AND CULTURE.

I. The seasons for sowing the seed of the common Radish are various, according to the time when they are designed for use; but the earliest season is the end of October, or beginning of November, that the gardeners near London sow them to supply the markets; and these, if they do not miscarry, will be fit for use in the beginning of March following, which is full as soon as most people care to eat them. These are commonly sown on warm borders near walls, pales, or hedges, where they may be defended from the cold winds; but there are some who sow Radish-seeds among other crops the middle of September, and, if these are not destroyed by frost, they will be fit for use early in February; but these must be eaten while they are young, for they soon grow sticky and strong.

The second sowing is commonly about Christmas, provided the season be mild, and the ground in a fit condition to work; these are also sowed near shelter, but not so near pales and hedges as the first sowing. If these are not destroyed by frost, they will be fit for use the beginning of April; but in order to have a succession of these roots for the table through the season, you should repeat sowing the seeds once a fortnight, from the middle of January till the beginning

<sup>1</sup> Curtis, Fl. rust.

<sup>m</sup> Linn. suppl.

<sup>n</sup> Krockner.

<sup>o</sup> Linn. spec.

<sup>p</sup> Hort. kew.



of april, always observing to sow the latter crops upon a moist soil and in an open situation, otherwise they will run up and grow sticky before they are fit for use.

Many of the gardeners near London sow Carrot-feed with their early Radish, so that when their Radishes are killed, which sometimes happens, the Carrots will remain: for the seeds of Carrots commonly lie in the ground five or six weeks before they come up, and the Radishes seldom lie above a fortnight under ground at that season; so that these are often up and killed, when the Carrot-feed remains safe in the ground; but when both crops succeed, the Radishes must be drawn off very young, otherwise the Carrots will be drawn up so weak, as not to be able to support themselves when the Radishes are gone.

It is also a constant practice with the kitchen-gardeners to mix Spinach-feed with their latter crops of Radishes. When these are drawn off, and the ground cleaned, the Spinach will thrive greatly, and in a fortnight's time will as completely cover the ground, as though there had been no other crop. If it be of the broad-leaved kind, this Spinach will be larger and fairer than it commonly is when sown by itself; because where there is no other crop, the Spinach-feed is commonly sown too thick, and the plants are therefore drawn up weak; but in this management, the roots, standing pretty far apart, have room to spread; and if the soil be good, the plants will attain a considerable size, before they run up to seed.

When the Radishes are come up, and have five or six leaves, pull them up where they are too close, otherwise they will run to top, and the roots will not increase in bulk. In doing this, some only draw them out by hand; but the best method is to thin them with a small hoe, which will stir the ground, destroy the young weeds, and promote the growth of the plants. For drawing small, leave them at three inches distance; but at six inches, if they are to stand longer.

For saving Radish-feed, at the beginning of may prepare a spot of ground, proportionable to the quantity of seed intended to be saved. Dig it well and level it; then draw up some of the straightest and best-coloured Radishes, and plant them in rows three feet distant, and two feet asunder in the rows; observing, if the season be dry, to water them until they have taken root: after which they will only require to have the weeds hoed down between them, until they are advanced so high as to overspread the ground.

When the seed begins to ripen, guard it carefully against birds. When it is ripe, the pods will change brown: then it must be cut, and spread in the sun to dry; after which it must be threshed, and laid up for use, where no mice can come at it.

The Turnip Radish must not be sown till the beginning of march, and the plants must be allowed a greater distance than the common spindle-rooted sort. The seeds of this are apt to degenerate, unless they are set at a distance from that.

The white and black Spanish Radishes are commonly sown about the middle of july, or a little earlier, and are fit for the table by the end of august, or the beginning of september; they will continue good till frost spoils them. These must be thinned to a greater distance than the common sort, for their roots grow as large as Turneps, and therefore should not be left nearer than six inches.

To have these roots in winter, draw them before hard frost comes on, and lay them in dry sand, as is practised for Carrots, carefully guarding them from wet and frost; thus they may be kept till the spring.

[The ground where any sorts of Radish are to be sown, ought to be well trenched up in ridges, and levelled down at sowing down, the clods broken, and the surface laid even; that the roots may have full scope to run down.

Cos or other Lettuce may be sown with the spring crop of Radishes, along with the Carrots. Sow the seeds all together broad-cast pretty thick in the early sowings; raking them in well with a large rake.

The London gardeners cover the early crops with

straw, suffering it to remain till the plants are fairly come up, and then raking it off lightly every mild day, but putting it on every night, at least when there is any appearance of frost. Dry fern will answer the same purpose; and it is better still to throw mats, supported on wooden pegs or on hoops, over the beds, at night and on severe days.

If very dry weather should happen in march and april, the crop must be watered morning and evening.

Radishes are sown very thick, like Cresses and Mustard, to cut in the seed-leaf, for salads; both in the natural ground and on hot-beds.

From Christmas to Candlemas, Radishes are raised on hot-beds for the root. Eighteen inches depth of dung is sufficient to bring them up; and six or seven inches depth of light rich mould. Sow the seed moderately thick, cover it half an inch thick, and put on the lights: the plants will come up in a week or less; and when they appear, either lift the lights or take them off occasionally, according to the weather: in a fortnight thin them to the distance of an inch and half or two inches: in six weeks they will be fit to draw.

If there are no frames to spare, the beds may be covered with mats over hoops; and the sides secured by boards or straw-bands. Or in want of dung, if the beds be covered with frames, and the lights be put on at night and in bad weather, the plants may be raised for use a fortnight sooner than in the open borders.

RAPHANUS. See *Brassica*, *Bunias*, *Cochlearia*, *Sisymbrium*.  
——— *rusticanus*. See *Cochlearia Armoracia*.

RAPISTRUM. See *Crambe*, *Hesperis*, *Myagrum*, *Raphanus*, *Sisymbrium*.

RAPONTICOIDES. See *Stachelina*.

RAPUM. See *Brassica*, *Campanula Trachelium*, *Orobanche*.

RAPUNCULUS. See *Campanula*, *Columnea*, *Gnidia*, *Hebenstreitia*, *Jasione*, *Linum*, *Lisianthus*, *Lobelia*, *Phyteuma*, *Roella*, *Selago*.

RAPUNCULO AFFINIS. See *Gesneria*.

RAPUNTIO AFFINIS. See *Chironia*.

RAPUNTUM. See *Jasione*, *Lobelia*, *Phyteuma*.

RAPUTIA. See *Sciuris*.

RASPBERRY. See *Rubus*.

RATEGAL. See *Matthiola*.

RATTAN. See *Calamus*.

RATTLE, RED. See *Pedicularis*.

——, YELLOW. See *Rhinanthus*.

RATTLESNAKE ROOT. See *Polygala Senega*.

—— WEED. See *Eryngium*.

RAVA-POU. See *Nyctanthus*.

RAVENALA. See *Urania*.

RAVENSARA. See *Agathophyllum*.]

RAUWOLFIA. (So named by Plumier, in honour of Leonhard Rauwolf, physician at Augsburg, who travelled in France and Italy in 1560, 61, 62, 63, and through Palestine, and other countries of the East, in 1573, 1574, and 1575. His travels were published in German in 1582 and 1583, and were translated into English by Nic. Staphorst, under the revision of Mr. Ray, with additions by him. Joh. Fred. Gronovius published a catalogue of the plants which Rauwolf found in his travels to the East, in 1755, under the title of *Flora Orientalis*, Lugdb. oct. He died in 1596.)

Lin. gen. n. 293. Reich. n. 316. Schreb. n. 411.

Plum. 40. Jacqu. amer. 47. Gartn. t. 52. Juss. 148.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*. *Apocineæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-toothed, very small, permanent.

COR. one-petalled, funnel-form. Tube cylindrical, globular at the base. Border five-parted, flat: segments roundish, emarginate.

STAM. Filaments five, shorter than the tube. Anthers erect, simple, acute.

PIST. Germ roundish. Style very short. Stigma capitate.

PER. Drupe subglobular, one-celled, with a groove on one side.

SEED. Nuts two, convex at the base, attenuated at the top, compressed, two-celled. Gartn.



ESSENTIAL CHARACTER.

Contorted. Berry succulent, two-seeded.

SPECIES.

1. *Rauwolfia nitida*. *Shining Rauwolfia*.  
*Lin. spec.* 303. *syft.* 250. *Reich.* 1. 588. *Willd.*  
1217. *hort. cliff.* 75. *t.* 9. *Gærtn. fruct.* 1. 242.  
*Jacqu. amer.* 47. *n.* 1. *piet.* 28. *Plum. gen.* 19.  
*ic.* 236. *f.* 1.  
*Leaves in fours lanceolate acuminate very smooth shining, flowers terminating.*
- [2. *Rauwolfia glabra*. *Smooth Rauwolfia*.  
*Lin. spec. ed. Willd.* 1218. *Cavan. ic.* 3. 50. *t.* 297.  
*Leaves alternate lanceolate smooth, cymes peduncled few-flowered opposite to the leaves.*]
3. *Rauwolfia canescens*. *Hoary Rauwolfia*.  
*Lin. syft.* 250. *Reich.* 1. 589. *Willd.* 1218. *Gærtn. fruct.* 1. 243. *Brown. jam.* 180. *Plum. gen.* 9.  
*ic.* 236. *f.* 2. *Sloan. jam.* 2. 107. *t.* 211. *f.* 1.  
*Reii dendr.* 75. (Solani fructu, &c.) *Pluk. phyt.*  
*t.* 266. *f.* 2. (Arbor sycophora.)  
*R. subpubescens.* *Lin. spec.* 303.  
*R. hirsuta.* *Jacqu. amer.* 47. *n.* 2. *piet.* *t.* 259. *f.* 17.  
*Leaves in fours oblong-obovate acuminate pubescent, flowers terminating and axillary.*
- [4. *Rauwolfia tomentosa*. *Downy Rauwolfia*.  
*Lin. spec.* 303. *syft.* 250. *Reich.* 1. 589. *Willd.*  
1218. *Jacqu. amer.* 48. *piet.* 29. *t.* 46. *obs.* 2.  
*t.* 35.  
*Leaves in fours oblong attenuated to both ends tomentose, flowers terminating and axillary.*]

DESCRIPTIONS, &c.

1. 3. Both these sorts grow naturally in the warmest parts of America; Mr. Robert Millar sent the seeds of them from Carthagenia in New Spain, where he observed the shrubs growing in great plenty. These rise with several ligneous stalks, which grow seven or eight feet high, sending out a few small side branches, covered with a smooth green bark when young, but as they are older, their bark changes to a gray. The leaves are placed by fours at each joint round the branches; those of the third sort are two inches and a half long, and an inch and a half broad in the middle, a little hairy, of a light green, and have a few slight indentures on their edges; the leaves of the other sort are full as long, but are a third part narrower, of a thinner substance, and much smoother. These differences continue in the plants which are raised from seeds, for I have several times propagated them both from seeds, and have constantly found the seeds produce the same as the plants from which they were taken. The flowers are produced on slender footstalks, which arise from the wings of the leaves; they are tubulous and globular at their base, and are succeeded by roundish berries about the size of those of the Privet, which turn black when they are ripe. These plants flower most part of the summer, and the fruit ripens in autumn and winter; the leaves and stalks have a milky juice, which flows out if they are broken.

[1. This is a small tree, shining all over very much, upright, full of a white glutinous milk, twelve feet high. Leaves at the joints of the twigs in fours, lanceolate, quite entire, sharp, petioled; the two nearest five inches in length, twice as long as the two others. Common peduncles racemed, terminating, half an inch long, two or three together. Flowers small, without scent, having white petals. The fruits are at first yellowish, but at length become very dark purple, are milky, and three times as large as a Pea<sup>a</sup>. They are globular, fleshy, twin, two-seeded. Nuts or stones like those of Grapes, of a bony substance, whitish, wrinkled, swelling at the base, gibbous, drawn to a point at top, compressed; keeled at the back, a little convex or flat on the belly; within bay-coloured; polished very smooth, half-two-celled, with the partition incomplete, fastened to the belly. Seed in each stone one, compressed, attenuated to both ends, doubled, with the lower extremity bent back<sup>r</sup>.

<sup>a</sup> Jacquin.

<sup>r</sup> Gærtner.

Native of South America, of Domingo and other islands of the West Indies. Cultivated by Mr. Miller in 1739. It flowers here from June to September<sup>s</sup>.

2. Native of New Spain. Stem shrubby, branched; all the leaves solitary<sup>t</sup>.

3. This is an upright shrub, the whole of it milky, from a foot to eight feet in height, with all the parts of a corresponding size, according to the soil and situation. The younger branches subtomentose. Leaves in fours, obovate, attenuated to the base, acute, wrinkled, tomentose underneath, quite entire, the two nearest longer than the other two. Petioles hirsute, round. Common peduncles branched, terminating in fours<sup>u</sup>. (Cymes peduncled, several, and two at the forkings of the stem<sup>v</sup>.) Flowers reddish, small, without scent. Calyx five-leaved; leaflets lanceolate. Segments of the corolla squared, emarginate, scarcely oblique: hairs in the throat without order. Drupe obsoletely bifid, first red, then dark-coloured. Nuts wrinkled, flat on one side, convex on the other, two-celled. Kernels solitary, seldom more in a nut, one of the cells becoming abortive<sup>y</sup>. Gærtner describes the fruit as an ovate-globular twin berry, with two stones in it, which are like those of Grapes, wrinkled and two-celled.

Native of the Caribbee islands and the neighbouring continent. Browne informs us, that this little shrub is very common in the Savannas about the town of Kingston in Jamaica, seldom rising there above three or four feet from the ground; that the berries are small, black and succulent, and the leaves very beautifully covered with a light down, which is scarcely perceptible to the naked eye; that the whole shrub is full of milk, and more or less of a deleterious nature.

4. This is a milky upright shrub, three feet high. Leaves in fours, lanceolate, acute, thickish, quite entire, tomentose on both sides, but very much underneath; the two nearest longer than the others. Common peduncles racemed, terminating and axillary. Flowers small, scentless; leaflets of the calyx five, ovate: petals white, with ovate segments. Fruit the size of a pea, at first red, then black<sup>z</sup>.

The tube of the corolla in *R. nitida* is globular-ventricose below the border; the border of the corolla in *R. pubescens* is blunt, in *R. tomentosa* acute<sup>a</sup>. This is a native of Carthagenia, in New Spain, on rocks, and on the walls and gates of the town<sup>b</sup>.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which should be sown in autumn soon after they are ripe; for if they are kept out of the ground till spring, the plants rarely come up the same year; and this is frequently the case with those seeds which are brought to England.

The seeds should be sown in pots filled with fresh earth, and plunged into a hot-bed of tanners bark; for as they are very hard, they frequently remain a long time in the ground; therefore when they are in pots, they may be shifted from one bed to another as their heat decays. When the plants come up, they must be frequently refreshed with water, but it must not be given them in large quantities; for as the plants are succulent and full of a milky juice, they are in danger of rotting with too much moisture. They should also have a large share of fresh air admitted to them in warm weather, and when they are about two inches high, they should be transplanted each into a separate small pot filled with fresh light earth, and plunged into a hot-bed again, observing to shade them from the sun until they have taken new root; after which time they should have free air admitted to them every day, in proportion to the warmth of the season. In this hot-bed the plants may remain till toward Michaelmas, when they should be removed into the stove, and plunged into the tanners bark, where they must be kept warm, and not have too much moisture in cold weather.

<sup>s</sup> Hort. kew.

<sup>t</sup> Willdenow.

<sup>u</sup> Willdenow.

<sup>v</sup> Cavanilles.

<sup>y</sup> Jacquin.

<sup>z</sup> Jacquin.

<sup>a</sup> Jacquin.

<sup>b</sup> Idem.



As these plants are natives of very hot countries, they will not live in the open air in England, therefore they should constantly remain in the stove; and if they are continued in the bark-bed, they will thrive much faster than when they are placed on stands in a dry stove. But in the summer season they should have a large share of fresh air admitted to them, and the leaves of the plants must be now and then washed with a sponge, to clear them from the filth they are apt to contract; which, if suffered to remain, will retard the growth of the plants. Where due care is taken of them, they will thrive very fast, and the second year will produce flowers, and continue so to do for many years, and will perfect their seeds in England. They may also be propagated by cuttings, which should be laid to dry for two or three days before they are planted; and then should be plunged into a moderate hot-bed of tanners bark, observing to shade them until they have taken root, after which time they may be treated as the seedling plants.

[RAYANIA. See *Rajania*.

REAUMURIA. (So named by Hasselquist in honour of René Antoine Ferchault de Reaumur, member of the Academy of Sciences at Paris, London, &c. author of several memoirs; *Histoire des Insectes*, &c. He died in 1757.)

Lin. gen. n. 686. Reich. n. 743. Schreb. n. 936. Juss. 316.

Class. 13. 5. Polyandria Pentagynia.

Nat. order of Succulentæ. Ficoideæ, Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-leaved, squarrose: leaflets awl-shaped, acuminate, permanent, the smaller ones imbricate.

COR. Petals five, oblong, equal, sessile, scarcely larger than the calyx, curved back at the tip.

Nectaries five, at the joinings of the petals, growing from a semilanceolate fold to the lower side of the petals, opposite to the other ciliate margin.

STAM. Filaments numerous, the length of the calyx. Anthers roundish.

PIST. Germ roundish. Styles five, filiform, straight, approximating, the length of the stamens. Stigmas simple.

PER. Capsule ovate, five-celled, five-valved.

SEEDS numerous, oblong, woolly on every side: the wool erect.

Obs. The nectaries are singular, nearly as in *Hydrophyllum*, but at the sides of the petals.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Caps. one-celled, five-valved, many-seeded.

#### SPECIES.

1. *Reaumuria vermiculata*.

Lin. spec. 754. Syst. 506. Reich. 2. 622. Forsk. Egypt. cent. 4. 101.

*Sedum ficulum vermiculatum*, flore saxifragæ albæ, femine villosa. Bocc. sic. t. 6. f. 7. Mor. hist. 3. 481. f. 12. t. 9. f. 6.

*S. minus arborescens vermiculatum*. Lob. ic. 380.

*S. minus fruticosum*. Baub. pin. 284.

*Kali vermiculatum*, albo & amplo fedi rosei flore. Barr. ic. 888.

*K. arabicum primum genus*. Rauw. itin. t. 37. Baub. pin. 289.

#### DESCRIPTION, &c.

Stature of *Salsola* or *Tamarisk*. Leaves scattered, linear, fleshy, convex underneath, acute, sessile, spreading, with dewy dots scattered over them. Flowers terminating, sessile among the leaves, greater towards the top. Corolla white. Lamina or fold ciliate, fastened both ways to the sides of the petals, constituting the nectary. Flowers inferior. Capsule one-celled, five-valved.

It is an annual plant, native of the coasts of Egypt, Syria and Sicily.

REED. See *Arundo*.

— GRASS. See *Arundo*.

—, Indian Flowering. See *Canna*.

— MACE. See *Typha*.

REGINA PRATI. See *Spiræa Ulmaria*.

\* Lin. spec. & syst.

\* Forskahl.

REICHELIA. Schreb. n. 512. Sagona. Aubl. 111. belongs to the genus *Hydrolea*, according to Swartz. Schreb. gen. p. 826.

RELHANIA. (So named by Monf. L'Heritier, in honour of the Rev. Richard Relhan, F.R.S.M.A. of Cambridge, author of *Flora Cantabrigiensis*.)

Lin. gen. Schreb. n. 1304. L'Herit. fert. 22.

Eclupes, Gærtn. t. 169.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of Compositæ Discoideæ.

#### GENERIC CHARACTER.

CAL. common imbricate, oblong: scales oblong, scariose.

COR. compound rayed. Corollets hermaphrodite numerous tubular in the disk: females ligulate in the ray.

Proper of the hermaphrodites funnel-form, with a five-cleft border—of the females ovate-oblong.

STAM. in the hermaphrodites: filaments five, very short. Anther tubular.

PIST. in the hermaphrodites: Germ oblong. Style simple. Stigmas two, reflexed—in the females: Germ oblong, curved in a little. Style simple. Stigmas two, curved back.

PER. none. Calyx unchanged.

SEEDS solitary, angular, crowned with a membranaceous calycle, which is many-cleft and jagged; both in the hermaphrodites and females.

REC. chaffy.

Obs. This genus differs from *Athanasia* in having a ray: from *Leysera* in not having a feathered pappus: from *Osmites* in the ray being fertile. L'Herit.

#### ESSENTIAL CHARACTER.

Cal. imbricate, scariose. Corollets of the ray very many. Pappus membranaceous, cylindrical, short. Recept. chaffy.

#### SPECIES.

\* With aggregate flowers.

1. *Relhania squarrosa*. Cross-leaved *Relhania*.

L'Herit. fert. angl. 22. n. 1. t. 29. Mit. kew. 3. 230.

*Athanasia squarrosa*. Lin. spec. 1180. Reich. 3. 730.

amoen. 4. 329. & 6. afr. 52. Dict. nostr. n. 1.

Leaves oblong acuminate nerveless recurved at the tip.

2. *Relhania genistifolia*. Heath-leaved *Relhania*.

L'Herit. fert. angl. 22. n. 2.

*Athanasia genistifolia*. Lin. syst. 741. Reich. 3. 732.

mant. 464. Dict. nostr. n. 8.

Leaves lanceolate acuminate one-nerved subimbricate.

3. *Relhania microphylla*. Linear-leaved *Relhania*.

L'Herit. fert. angl. 22. n. 3.

Leaves linear nerveless crowded very much together, flowers pedicelled.

4. *Relhania passerinoides*. Passerina-like *Relhania*.

L'Herit. fert. angl. 23. n. 4.

Leaves linear nerveless, flowers subsessile.

5. *Relhania viscosa*. Clammy-leaved *Relhania*.

L'Herit. fert. angl. 23. n. 5.

Leaves linear three-sided somewhat fleshy viscid.

\*\* With solitary flowers.

6. *Relhania laxa*. Loose-flowered *Relhania*.

L'Herit. fert. angl. 23. n. 6.

Leaves linear villose remote, flowers on very long peduncles, stem erect.

7. *Relhania pedunculata*. Long-peduncled *Relhania*.

L'Herit. fert. angl. 23. n. 7.

*Zoegea capensis*. Lin. suppl. 382. syst. 784.

*Athanasia pumila*. Lin. suppl. 362. syst. 741. Dict. nostr. n. 3.

Leaves linear villose, flowers peduncled, stems diffused.

8. *Relhania lateriflora*. Side-flowering *Relhania*.

L'Herit. fert. angl. 23. n. 8.

*Athanasia sessiliflora*. Lin. suppl. 362. syst. 741. Dict. nostr. n. 2.

Leaves linear villose, peduncles lateral shorter than the leaf.

9. *Relhania cuneata*. Wedge-leaved *Relhania*.

L'Herit. fert. angl. 23. n. 9.

*Athanasia uniflora*. Lin. suppl. 362. syst. 741. Dict. nostr. n. 5.

Leaves obovate smooth, flowers sessile.

10. *Relhania virgata*. Twiggy *Relhania*.

L'Herit. fert. angl. 23. n. 10.

Leaves



Leaves linear smooth with a recurved point shorter than the leaf, flowers sessile.

11. *Relbania paleacea*. Chaffy *Relbania*.  
L'Herit. fert. angl. 24. n. 11.  
*Leysera paleacea*. Lin. syst. 771. Reich. 3. 842.  
Dist. nostr. n. 3.  
L. ericoides. Berg. cap. 294.  
Leaves linear three-sided underneath becoming hoary, as do also the tender shoots; calyxes sessile turbinate.
12. *Relbania fantolinoides*. *Santolina*-like *Relbania*.  
L'Herit. fert. angl. 24. n. 12.  
Leaves linear three-sided hoary underneath, as are also the tender shoots, calyxes globular subpetioled.
13. *Relbania pungens*. Prickly *Relbania*.  
L'Herit. fert. angl. 24. n. 13.  
Leaves linear somewhat prickly striated underneath, flowers sessile.
14. *Relbania decussata*. Cross-leaved *Relbania*.  
L'Herit. fert. angl. 24. n. 14.  
Leaves three-sided linear acute decussated, flowers sessile.
15. *Relbania calycina*. Large-cupped *Relbania*.  
L'Herit. fert. angl. 24. n. 15.  
*Osmites calycina*. Lin. suppl. 380. syst. 783. Dist. nostr. n. 3.  
Leaves linear-lanceolate three-nerved acute, flowers sessile.
16. *Relbania Bellidiastrum*. Flax-leaved *Relbania*.  
L'Herit. fert. angl. 24. n. 16.  
*Osmites Bellidiastrum*. Lin. spec. 1285. Reich. 3. 892. Dist. nostr. n. 1.  
*Bellidiastrum subhirsutum linifolium*. Vaill. act. par. 1724. p. 316.  
*Anthemis suffruticosa*, fol. linearibus triquetris tomentosis indivisis, flor. sessilibus. Lin. amoen. 4. 330.  
Leaves linear tomentose, flowers sessile.

## DESCRIPTIONS, &amp;c.

This genus was made up by Monsieur L'Heritier, out of the ruins of *Athanasia*, with the addition of two or three species from *Osmites* and *Leysera*. All the species are natives of the Cape of Good Hope, whence they were introduced by Masson.

1. 2. See the descriptions under *Athanasia*.
4. The leaves and flowers in this species are double the size that they are in the preceding species, *R. microphylla*; the stems are upright, not diffused.
5. This and the preceding species are very nearly allied in their inflorescence and habit; but in this the leaves are as it were three-cornered, and somewhat fleshy, with pedicelled glands scattered over them: these are wanting in *R. passerinoides*.
6. This species is annual; the preceding species are all perennial, and woody at bottom.
7. Root annual. Stem branched both above and below. Leaves alternate, subpubescent. Flowers terminating. Calyx ovate, smooth and even, yellow, Corolla yellow: disk small; ray lanceolate, the length of the calyx. Seeds oblong, with a very short crown of little bristles.
8. 9. See *Athanasia*.
10. Very nearly allied to the preceding, and perhaps only a variety of it.
11. See *Leysera paleacea*.
12. It may be doubted whether this is sufficiently distinct from the preceding. The pappus is tubular and toothed at the tip in both.
13. 14. 15. These three species have the calyx wider than in the rest, with the inner scales larger. It is scarcely the same in *R. paleacea*. For *R. calycina* see *Osmites calycina*.
16. This has no pappus. It is sufficiently foreign to this genus.

## PROPAGATION AND CULTURE.

See *ATHANASIA*.

*RELHANIA*. See *Athanasia*, *Leysera*, *Osmites*.

*RENEALMIA*. (So named by the younger Linneus from Paul Reneaume, a physician at Blois, author of *Specimen historiae Plantarum*, Par. 1611. qu.)

Lin. gen. Schreb. n. 2. Lin. suppl. 7.

\* L'Heritier.

† L'Heritier.

‡ Linn. suppl. sub Zoega.

§ Idem.

¶ Idem.

Class. I. I. Monandria Monogynia.  
Nat. order of *Scitamineæ*. *Canna*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* superior, one-leafed, tubular, breaking out at the top into two or three irregular teeth.

COR. one-petalled: tube straight, cylindrical: border trifid; the two upper segments oblong, rounded, equal; the lower scarcely longer than the upper ones, channelled, oblong.

Nectary fastened along the tube of the corolla, ascending beneath the upper segments, straight, the length of the corolla, oblong, one-toothed on each side at the base, then with an excavated sinus, widening and bluntly three-lobed at the tip.

STAM. Filament none. Anther one, inserted into the throat of the tube, in the sinus of the lower segment of the corolla, opposite to the nectary, straight, linear, emarginate, grooved on the inside, of the same length and breadth with the segment of the corolla.

PIST. Germ. inferior, oblong, obscurely three-sided, smooth. Style filiform, very smooth, erect, the length of the corolla. Stigma peltate; with a flat head; the side verging to the nectary, truncate, perforated with a hole running down into the style.

PER. Berry oblong, three-grooved, cylindrical, smooth, ending in a navel, fleshy, three-celled in the middle. Cells soft, membranaceous.

SEEDS very many, oblong, truncate, four-cornered, very smooth.

## ESSENTIAL CHARACTER.

Cal. trifid. Nect. oblong. Cal. one-leafed, bursting into two or three irregular teeth. Anther sessile, opposite to the nectary. Berry fleshy.

## SPECIES.

I. *Renealmia exaltata*.

Lin. suppl. 79. (excl. syn. Rumphii) syst. 50.  
Willd. 6.

## DESCRIPTION, &amp;c.

I. This is a tree twenty feet in height, with a straight trunk. Leaves five or six feet long, lanceolate, waved about the edge. The raceme or bunch of flowers springs from the trunk above the root.—Native of Surinam, where the inhabitants are fond of the preserved fruit.

*RENEALMIA*. See *Tillandsia*.]

*RESEDA*, (of Pliny: à *resedando dolores*; from its supposed quality of assuaging pain.)

Lin. gen. n. 608. Reich. n. 664. Schreb. n. 331.

Tournef. t. 238. Juss. 245. Gært. t. 76. Luteola.

Tournef. t. 238. *Sesamoides*. Tournef. t. 238.

Class. II. 3. Dodecandria Trigynia.

Nat. order of *Miscellaneæ*. *Capparides*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, parted: parts narrow, acute, erect, permanent; two of which gape more, for the use of the melliferous petal.

COR. Petals some (3. 5. 6.) unequal, some of them always half-three-cleft; the uppermost gibbous at the base, melliferous, the length of the calyx.

Nectary a flat upright gland, produced from the receptacle, placed on the upper side between the stamens and the uppermost petal, converging with the base of the petals.

STAM. Filaments eleven or fifteen, short. Anthers erect, obtuse, the length of the corolla.

PIST. Germ. gibbous, ending in some very short Styles. Stigmas simple.

PER. Capsule gibbous, angular, acuminate by means of the styles, gaping between them, one-celled.

SEEDS very many, kidney-form, fastened to the angles of the capsule.

OBS. There is scarcely any genus, the character of which is so difficult to be determined, for the several species sport both in number and figure.

The essential character consists in the trifid petals, one of them melliferous at the base; and in the capsule not being closed, but always gaping.

\* Willd. & Linn. suppl.



*Luteola* has a four-parted perianth; three petals; the uppermost melliferous and half-six-cleft, the sides opposite and trifid; two very small entire petals are frequently added below the others. Styles three. Stamens very many.

*Alba* has the perianth six-parted; petals six, almost equal, all half-three-cleft; styles four; capsule quadrangular; stamens always eleven.

The other species have the perianth five-parted; five dissimilar trifid petals; three styles; and very many stamens.

## ESSENTIAL CHARACTER.

*Cal.* one-leaved, parted. *Petals* laciniate. *Caps.* gaping at the mouth, one-celled.

## SPECIES.

1. *Refeda Luteola*. Dyer's-weed, Yellow-weed, wild Woad, or Weld.

*Lin. spec.* 643. *synt.* 448. *Reich.* 2. 431. *hort. cliff.* 212. *vir. cliff.* 49. *fl. suec.* n. 424. *Huds. angl.* 207. *Wither. arr. ed.* 3. 445. *Smith, brit.* 512. *engl. bot. t.* 320. *Lightf. scot.* 248. *Relb. cant.* n. 348. *Sibth. oxon.* n. 436. *Fl. rust.* t. 40. *Fl. dan.* t. 864. *Hall. belv.* n. 1058. *Neck. gallob.* 210. *Pollich pal.* n. 453. *Villars dauph.* 3. 820. *Krock. files.* n. 719. *Allion. pedem.* n. 1614. *Willich, obs.* 22. n. 40. *Blackw. t.* 283. *Kniph. cent.* 5. n. 74. *Sheldrake,* 93. *Desfont. atlant.* 373.

*Luteola. Lob. ic.* 353. *Tabern. ic.* 110. *Ger.* 398. 1. *emac.* 494. *Raii hist.* 1054. *syn.* 366. *Petiv. brit.* t. 38. f. 12.

*L. vulgaris. Park. theat.* 603. 1.

*L. herba falicis folio. Baub. pin.* 100. *Tourn. inst.* 423.

*Lutea Plinii quibusdam. Baub. hist.* 3. 465. 2.

*Lutum herba. Dod. pempt.* 80.

*Pseudofruthium. Matth.* 1307. *Camer. epit.* 356.

*Antirrhinum Tragi (362) Dalech. hist.* 1342.

*La Gaude Regnault bot. suppl. ic.*

*Leaves lanceolate entire flat, calyx four-cleft.*

2. *Refeda canescens*. Hoary *Refeda*.

*Lin. spec.* 644. *synt.* 448. *Reich.* 2. 432. *Sauv. monsp.* 48. *Guett. stamp.* 1. 225. *Vahl symb.* 2. 52.

*R. alba minor. Baub. pin.* 100. *Raii hist.* 1054.

*Sesamoides salmanticum parvum, 2. Clus. hist.* 1. 296. t. 295. *Ger.* 396. 2. *emac.* 493. 2.

*Muscipula salmantica minor. Park. theat.* 636. 4.

*Leaves lanceolate waved hairy.*

[3. *Refeda glauca*. Glaucous *Refeda*.

*Lin. spec.* 644. *Reich.* 2. 432.

*R. linariæ foliis. Baub. pin.* 100. *prodr.* 41. *Park. theat.* 822. 3. *Raii hist.* 1054.

*Sesamoides lin. folio, glaucum pyrenaicum, flore stamineo. Mor. hist.* 3. 601. f. 15. t. 1. f. 4. *ord.* 2.

*R. pyrenaica linariæ folio glauco. Pluk. phyt. t.* 107. f. 2. *Raii suppl.* 511.

*Leaves linear toothed at the base, flowers four-styled.*

4. *Refeda dipetala*. Flax-leaved *Refeda*.

*Ait. kew.* 2. 132. *Vahl symb.* 2. 32.

*Leaves linear quite entire, flowers four-styled two-petalled, petals undivided.*

5. *Refeda purpurascens*. Purplish-flowered *Refeda*.

*Lin. spec.* 644. *Reich.* 2. 432.

*R. alba minor 1. Baub. pin.* 100. *Raii hist.* 1054.

*Sesamoides salmanticum parvum, 1. Clus. hist.* 1. 296.

*S. foliis crassis, floribus ex herbaceo purpurascens. Tournef. inst.* 424.

*Leaves linear obtuse, flowers five-styled.*

6. *Refeda sesamoides*. Spear-leaved *Refeda*.

*Lin. spec.* 644. *Reich.* 2. 432. *Allion. pedem.* n. 1618. t. 88. f. 3.

*Sesamoides fructu stellato. Tournef. inst.* 424.

*Leaves lanceolate entire, fruits stellate.*

7. *Refeda fruticulosa*. Shrubby *Refeda*.

*Lin. spec.* 645. *Reich.* 2. 433.

*Leaves pinnate recurved at the tip, flowers four-styled, calyxes spreading five-parted, stem shrubby at the base.]*

8. *Refeda alba*. Upright White *Refeda*.

*Lin. spec.* 645. *Reich.* 2. 433. *hort. upf.* 149.

*cliff.* 212. *Willich, obs.* n. 41. *Allion. pedem.* n. 1616. *Desfont. atlant.* 374.

*R. maxima. Baub. pin.* 100. *Lob. hist.* 110. *Ger.* 216. 2. *emac.* 277. 1.

*R. major. Park. theat.* 822. 1.

*R. alba. Baub. hist. Raii hist.* 1053.

*Leaves pinnate, flowers four-styled, calyxes six-parted.*

9. *Refeda undata*. Waved-leaved *Refeda*.

*Lin. spec.* 644. *Reich.* 2. 433. *Vahl symb.* 2. 52.

*Kniph. cent.* 9. n. 84. *Barr. rar.* 78. t. 588.

*Leaves pinnate waved, flowers three or four-styled.*

10. *Refeda lutea*. Yellow *Refeda*, Base Rocket, Base Dyer's-weed or wild Mignonette.

*Lin. spec.* 645. *synt.* 448. *Reich.* 2. 433. *hort. cliff.* 212. *upf.* 149. *Huds. angl.* 207. *Wither. arr.*

*ed.* 3. 446. *Smith, brit.* 513. *engl. bot. t.* 321.

*Dickf. hort. succ.* 8. 12. *Lightf. scot.* 249. *Relb. cant.* n. 349. *Sibth. oxon.* n. 437. *Hall. belv.*

n. 1056. *Scop. carn.* n. 569. *Pollich pal.* n. 454.

*Jacqu. austr.* 4. t. 353. *Villars dauph.* 3. 820.

*Krock. files.* n. 720. *Allion. pedem.* n. 1615.

*Baub. hist.* 3. 467. *Desfont. atlant.* 374. *Bulliard,*

*herb. t.* 281.

*R. vulgaris. Baub. pin.* 100. *Raii hist.* 1053.

*syn.* 366. *Petiv. brit.* t. 37. f. 11. *Tourn. inst.*

423. *Mill. dict.* n. 1.

*R. minor f. vulg. Park. theat.* 823. 2.

*R. Plinii. Lob. ic.* 222. *Ger.* 216. 1. *emac.* 277. 1.

β. *R. crispa. Mill. dict.* n. 2.—gallica. *Bocc. sic.* 76.

f. 3. *Raii syn.* 366.

*All the leaves trifid, lower pinnate, calyx six-cleft.*

11. *Refeda Phyteuma*. Trifid *Refeda*.

*Lin. spec.* 645. *synt.* 448. *Reich.* 2. 434. *hort. cliff.*

412. *upf.* 150. *Gartn. fruct.* 1. 369. *Hall. belv.*

n. 1057. *Scop. carn.* n. 570. *Neck. gallob.* 210.

*Jacqu. austr.* 2. 20. t. 132. *Villars dauph.* 3. 821.

*Allion. pedem.* n. 1617. *Willich, in nov. act. nat.*

*cur.* 4. p. 107.

*R. minor vulgaris. Tournef. inst.* 423.

*Refedæ affinis Phyteuma. Baub. pin.* 100. *prodr.*

42. *ic. Park. theat.* 823. 5.

*Phyteuma. Baub. hist.* 3. 386. *Raii hist.* 1054.

*Erucago apula trifida quinquefolia. Col. exphr.* 267.

t. 269.

*Valeriana 7. Ger. emac.* 1076.

β. *R. minor vulg. folio minus inciso. Tournef. inst.*

423.

γ. *R. min. vulg. fol. integris. Tournef. inst.* 423.

*Leaves entire and three-lobed, calyxes six-parted very large.*

[12. *Refeda mediterranea*.

*Lin. synt.* 448. *Reich.* 2. 434. *mant.* 564. *Vahl,*

*symb.* 2. 53.

*Leaves entire and three-lobed, calyxes shorter than the flower.]*

13. *Refeda odorata*. Sweet *Refeda* or Mignonette.

*Lin. spec.* 646. *Reich.* 2. 435. *Weig. obs. bot.* 30.

*obs.* 15. *Kniph. cent.* 10. n. 73. *Hall. goett.* 95.

*Zin. goett.* 123. *Mill. fig.* 145. t. 217. *Curt.*

*magaz. t.* 29. *Berg. phyt.* 2. 237. *Plenck, ic.*

t. 371. *Desfont. atlant.* 376.

*Leaves entire and three-lobed, calyxes equalling the flowers.*

## DESCRIPTIONS, &amp;c.

1. [Root annual or biennial, fusiform, small. Stem from a foot to three feet in height, upright, grooved, hollow, leafy, branched. Root-leaves spreading on the ground in a ring, blunt, entire, smooth, bright yellowish green, shining, sessile, from three to five inches in length, and near half an inch in breadth, waving about the edge; they have commonly a minute reddish toothlet on each side of the base: stem-leaves alternate, linear-lanceolate; the upper ones linear. Spikes terminating, upright but bending at the top, very long, sometimes having three hundred and fifty flowers or more; each flower stands single on a short pedicel, and has one awl-shaped yellowish bracte at the base; they are of a pale yellowish colour, about one-sixth of an inch in diameter, and have little smell. Calyx four-cleft; the segments lanceolate, and the two upper wide asunder. Petals three; the upper one four-cleft, the two lateral ones trifid, or



some entire and linear. Nectary at the base of the upper petal, notched. Stamens from twenty to thirty or more, hanging down. Germ wrinkled, pyramidal, three-sided with blunt corners. Styles none, but three stigmas. Capsule three-valved, rolled inwards so as to fold about the seeds, which are small, roundish, and black, in six rows along the angles of the capsule.

This plant is not uncommon in a wild state in pastures, fallow fields, waste places, and on dry banks and walls. Mr. Swayne observes that it is one of the first plants which grow on the rubbish thrown out of coal-pits. It flowers in June and July.

The root and bottom leaves are formed from the fallen seeds before winter; and thus it happens in this, as in many other cases, that the wild plant is biennial, whilst the cultivated plant, growing from seeds sown in the spring, is annual.

It is an observation of Linneus's, that the nodding spike of flowers follows the course of the sun, even when the sky is covered; pointing towards the east in a morning, to the south at noon, westward in the afternoon, and to the north at night.

Cattle do not eat this plant, except that sheep sometime crop it. Dyers make considerable use of it; for it affords a most beautiful yellow dye for cotton, woolen, mohair, silk and linen. Blue cloths are dipped in a decoction of it, in order to become green. The yellow colour of the paint called Dutch Pink is obtained from this plant. The entire plant, when it is about flowering, is pulled up for the use of the dyers, who employ it both fresh and dried.

In various authors it has the names of Dyer's-weed, Yellow-weed, Weld, Would, Woold and wild Woad. The London dyers know it by the name of *Woold*, and it must be carefully distinguished from the true *Woad* or *Isatis tinctoria*<sup>1</sup>.

2. Root perennial. Stem a foot high, almost upright, with white hairs on it. Branches from the upper axils coming out later. Leaves alternate, sessile, hairy along the keel, scarcely ciliate, quite entire without any tooth. Raceme terminating, with white flowers. Anthers eleven, yellow. Germs six, placed on a common stipe<sup>2</sup>.]

From the root arise a few slender woody stalks, a foot and half high, thinly set with linear obtuse leaves, of a grayish colour; the upper part of the stalk has, for a considerable length small flowers of a whitish purple colour, ranged in a very loose spike, fitting close. These appear at the end of May, and the seeds ripen in August. It grows naturally upon the mountains of Spain.

[Vahl doubts whether the *Reseda canescens* of Linneus's Species Plantarum, be the same plant with that of the Systema Vegetabilium, edit. 14. His specimen (which is probably from Forskahl) agrees perfectly with the description given in the Systema; but the specific character given in the species, and Clusius's figure seem to indicate another plant.

3. From a white longish root arises a round branching stalk, with very stiff oblong leaves resembling those of Linaria, and terminated by a long spike of small pale yellow flowers, succeeded by angular bifid capsules, full of small pale seeds<sup>3</sup>.

Native of the South of Europe. It is a perennial plant, and flowers here from May to July. It was cultivated in 1748, by Mr. Miller<sup>4</sup>. Ray had a specimen of it at Montpellier, from Charles Sueiker, of Dantzick<sup>5</sup>.

4. This has the appearance of *R. Sefamoides*. Stem suffruticose, upright, branched: branches round, scattered, smooth. Leaves scattered, thickish, acute, smooth. Raceme terminating: flowers rather remote: calycine leaflets six, minute, edged with white: petals wedge-shaped, quite entire<sup>6</sup>.

Native of the Cape of Good Hope. Introduced from thence by Masson in 1774. It flowers in August, and is biennial<sup>7</sup>.

5. Root thickish, white, hard, perennial. Stems three or four, a long span in height, rod-like, round. Leaves scattered, small, thick, like those of Flax. Flowers many, crowded, of an herbaceous purplish colour. Seeds small, blackish.—Native of the South of Europe<sup>8</sup>.

6. Root perennial. Stems several, prostrate, a palm and half in height, striated, somewhat angular. Root-leaves elliptic-spatulate, of a long tongue-shape: stem-leaves sessile, almost linear, but wider towards the end, obtuse, all smooth, neither sinuate nor toothed. Stems very often simple. Flowers in very long racemes, subsessile. Calyx very deeply five-cleft. From the calyx a receptacle supporting the flower. Petals white. Germs five, distinct, becoming one-seeded capsules. The calyx expands, and turns back, three of the segments pointing upwards, and two downwards<sup>9</sup>.

Native of the South of France. Introduced in 1787, by Mr. Zier. It flowers in July and August<sup>10</sup>. In the Kew catalogue it is marked as annual.

7. Root and stem next the ground perennial, often twice the thickness of the thumb and more, very short; from the top of this spring several ascending stalks, smooth with raised streaks. Leaves pinnate, with five or seven lanceolate, decurrent pinnae, which are waved, even, and curved back at the end. Spikes several, alternate. Stamens eleven. It forms a sort of intermediate link between *R. undata* and *alba*.—Native of Spain<sup>11</sup>.]

8. Lower leaves large, composed of many narrow alternate leaflets, of a grayish colour. Stems two feet and a half high, with leaves like the others, but diminishing in size to the top, terminated by short thick spikes of white flowers.

[This is a very smooth plant. Stems striated, branched, diffused, arched upwards. Pinnules lanceolate, waved, quite entire, decurrent; with smaller ones interposed. Midrib white, convex underneath, striated. Flowers in racemes, crowded, on very short pedicels. Calyx permanent, five-parted, small; the segments linear-subulate, acute, unequal. Petals four or five, white, unequally lacinate, almost equal, longer than the stamens; which are about twelve in number. Styles four, very short. Capsule oblong, four-cornered, wrinkled, one-celled, opening at top. Seeds brown, kidney-form<sup>12</sup>.

It is an annual plant (Miller says biennial) native of the South of France, Spain and Barbary. It flowers from May to October, and was cultivated here in 1633<sup>13</sup>.

9. Root perennial. Stem a foot high, striated and angular, stiff and straight. Leaflets lanceolate, decurrent, acute, waved; the alternate ones smaller and more upright. The uppermost leaves have none of these smaller leaflets. Racemes terminating. Calyx five-parted. Petals five, trifid, white. Anthers ten, yellow. Three pistils in some flowers, in others five. Capsules the largest of any in this genus.—Native of Spain<sup>14</sup>] and Italy.

It is a biennial plant; the lower leaves unequally pinnate, with some of the intermediate leaflets much less than the others, and of a different shape. The stalks rise two feet and a half high, with smaller leaves, indented on their edges. The flowers are produced in slender loose spikes at the top of the stalks; they are small and white, and appear in June; the seeds ripen in September.

10. [Root annual, somewhat woody. Stems several, branching into a thick woody tuft, round, striated, smooth, leafy. Leaves trifid or pinnatifid, the lower ones frequently bipinnatifid; the segments linear, channelled, smooth, more or less waved. Spikes terminating, upright, many-flowered, with a small bracte to each. Flowers ochroleucous or sulphur-coloured. Calyx six-cleft. Petals six, variously lobed. Nectary fringed. Stamens hanging down<sup>15</sup>: as many as twenty. The segments of the calyx are linear, and the uppermost is the smallest<sup>16</sup>. Capsule a triangular prism,

<sup>1</sup> Fl. rust. Withering, Smith, Ray hist. Linn. succ.

<sup>2</sup> Linn. syst. <sup>3</sup> Bauh. prodr. <sup>4</sup> Hort. kew.

<sup>5</sup> Hist. 1054.

<sup>6</sup> Vahl.

<sup>7</sup> Hort. kew.

<sup>8</sup> Clusius.

<sup>9</sup> Allion.

<sup>10</sup> Hort. kew.

<sup>11</sup> Linn. spec.

<sup>12</sup> Desfontaines.

<sup>13</sup> Hort. kew.

<sup>14</sup> Linn. spec.

<sup>15</sup> Smith.

<sup>16</sup> Relhan.



three-celled at bottom, one-celled at top, gaping, terminated by three upright horns<sup>d</sup>:—oblong, sub-trigonal, blunt at the corners, roughened, one-celled, rolled in at the edge. Seeds small, brown, kidney-form, shining<sup>e</sup>.

Ray and Haller observe that it has an oleraceous taste, resembling that of Cabbage.

Native of most parts of Europe, in corn fields and meadows; with us chiefly on a calcareous soil: also on walls. It flowers from June to the end of autumn.]

Mr. Miller makes two species of the common sort, and the curled variety. The latter, he says, is our common sort in England. The lower leaves are winged, and every lobe is cut into three small parts, and curled, having some small indentures on the edges. The stalks rise about the same height as those of the other, but are terminated by longer and looser spikes of flowers, which are paler and approach to a white.

The other, which is common in the South of France, Italy and Spain, is a biennial plant, with a long white root, a little woody. Leaves unequally winged, with entire lobes. Stalks channelled, two feet high. Stem-leaves like those below, but smaller, and terminated by long loose spikes of pale yellow flowers, composed of several unequal petals, of which the two upper are largest, the side ones less, and the lower so small as to be scarcely visible; they are of a singular figure, and appear as if one leaf came out of two others.

[The *R. crispa gallica* of Boccone, was observed by James Sherard, M. D. in barren closes about Roehill and Northfleet in Kent.

Dillenius remarks, that the stalks were permanent, and that there is little doubt of this being perennial and distinct from the other. With due deference to the opinion of this great botanist, I should rather impute the firmness and permanency of the stalks to the dryness of the soil in which the plants grew.

Dr. Withering thinks that it merits farther attention; and adds, that it is not an uncommon plant in Portugal, and that in all the specimens he saw there the leaves were curled, but without any other difference. All foreign authors insist upon the leaves being curled.

Dr. Smith treats the *curled* Rochet as a very trifling variety, having the leaves only a little more curled, and in consequence of a mild climate or season, living through the winter as happens to other species of this genus.]

11. This is an annual plant, which has generally a single fleshy tap root running deep in the ground, sending out several trailing stalks near a foot long, and dividing into smaller branches. Leaves small, some wedge-shaped and entire, others cut into three obtuse segments. The ends of the branches are terminated by loose spikes of flowers, standing upon pretty long peduncles. Calyx large, divided into six segments almost to the bottom; petals white.

[Stems procumbent, angular, branched. Leaves like those of *R. odorata*, smooth, spatulate-lanceolate, blunt, running down into the petiole. Flowers loosely racemed, pedicelled. Calyx permanent, six-parted, longer than the petals, very large after flowering: segments unequal, blunt. Petals six: the four upper finely fringed, with claws at the base and arched; the two lower simple, very narrow. Styles three, very short<sup>f</sup>. Capsule membranaceous ovate-oblong, (inflated,) three-cornered, subhexagonal, *Desf.* having a slight groove on each side, one-celled, three-toothed, (three-cusped, *D.*) at the top, pervious. Seeds about twenty-four, kidney-form and curved in, rugged with very minute wrinkles, of a cinereous bay colour or whitish; fastened in a double row to each angle of the capsule, which is there a little thickened<sup>g</sup>.

Native of the South of Europe (and Barbary, in dry sandy soils.) It was cultivated in 1739, by Mr. Miller; and flowers from June to September.

Dalibard having cultivated this plant, found it after some generations to become like sweet Mignonette. He then sowed the seeds of this which was become sweet by cultivation, in its natural dry soil, and it lost all the smell, returning to its original state.

<sup>d</sup> Krock. <sup>e</sup> Desfont. <sup>f</sup> Ibid. <sup>g</sup> Gartner.

12. Stem a foot high, ascending or upright, branched at top, rugged. Lower leaves lanceolate, alternate, undivided, rugged underneath; upper stem-leaves trifid. Raceme terminating, long, upright. Calyx six-leaved, very short, linear, spreading. Corolla six-petalled, white: the two upper petals three-petalled; the middle one smaller; the two lateral ones two-parted; the lowest smaller; the two lowest linear. Stamens pale. Germ three-cusped, scarcely longer than the calyx. Styles none. Stigmas simple.

Native of Palestine<sup>h</sup>. Vahl remarks that the leaves are waved.]

13. The root of the Sweet Refeda, which is commonly known by the French name, *Mignonette*, is composed of many strong fibres, which run deep in the ground. Stems several, about a foot long, dividing into many small branches. Leaves oblong, about two inches in length, and three quarters of an inch broad in the middle, of a deep green colour. The flowers are produced in loose spikes at the ends of the branches, on pretty long stalks, and have large calyxes; the corollas are of an herbaceous white colour, and smell very like fresh Raspberries.

[It resembles *R. Phyteuma* very much, but the leaves are more waved: the calyxes are not longer than the corolla: the branches are declining, with more bristles scattered over them: the flowers are of a dull colour, but have a high ambrosial scent; they are most commonly four-styled: the lateral segments of the petals in this species, but the middle ones in *R. Phyteuma*, are shorter<sup>i</sup>.]

Mr. Miller remarks, that these two plants are so much alike, as by some persons to be taken for the same; and that such as have been imposed upon, by having seeds of *R. Phyteuma*, which has no scent, given them for those of *R. odorata*, have supposed that the plant was degenerated. [See the account of Dalibard's experiment above.

Desfontaines describes the stems as ascending, striated, branched; the leaves as lanceolate, blunt, simple or sometimes two-parted or three-parted; the flowers in racemes, pedicelled; the calyx permanent, six-parted, the segments linear-awl-shaped. Petals commonly six, but sometimes more, small, white, the two upper ones clawed at the base, arched, covering a rounded buckler, and very finely fringed, the lateral and lower ones very narrow. Anthers saffron-coloured. Styles commonly three, short. Capsule oblong, torulose, three-cusped at top.

The luxury of the pleasure-garden, says Mr. Curtis, is greatly heightened by the delightful odour which this plant diffuses; and as it grows more readily in pots, its fragrance may be conveyed into the house: its perfume, though not so refreshing perhaps as that of the Sweet-Briar, is not apt to offend the most delicate olfactories. It flowers from June to the commencement of winter.]

It is supposed to be a native of Egypt; whence the seeds were brought to the South of France. [Monf. Desfontaines found it in Barbary, in the sands near Mascara.] The seeds were sent to Mr. Miller from Leyden, by Dr. Adrian van Royen, and succeeded in the botanic garden at Chelsea. Soon after, they were brought from the South of France by Lord Bateman<sup>k</sup>. [I have been informed that the Sweet Mignonette had been cultivated at Paris from about the year 1725, and that it was brought to England from thence in 1739 or 1740. It appears from the sixth edition of Mr. Miller's Dictionary, that he cultivated it in 1752; but he probably had it some years sooner from Holland. No mention however is made of the Mignonette, in the second volume of his Dictionary in 1739, in the fourth edition of 1743, or in the fifth edition of 1748:]

#### PROPAGATION AND CULTURE.

None of these plants, except the last, are cultivated in gardens unless for the sake of variety, having very little beauty to recommend them, and not being of any known use; but whoever has a mind to have them, need only sow their seeds in autumn, and when

<sup>h</sup> Linn. mant. <sup>i</sup> Linn. spec. <sup>k</sup> Mill. fig.



the plants come up, if they are thinned and kept clean from weeds, it is all the culture they require; and if their seeds are permitted to scatter, the plants will come up in plenty, and sometimes become troublesome weeds.

The seeds of the last sort should be sown on a moderate hot-bed in march, and when the plants are strong enough to transplant, they should be pricked out upon another moderate hot-bed to bring them forward; but they should have a large share of air in warm weather, otherwise they will draw up weak.

About the end of may the plants may be planted out, some into pots, to place in or near the apartments, and others into warm borders, where they may remain to flower and feed. For the plants which grow in the full ground, often produce more seeds than those which are in pots; but at the time when the seed-vessels begin to swell, the plants are frequently infested with green caterpillars, which, if they are not destroyed, will eat off all the seed-vessels.

If the seeds of this plant are sown on a bed of light earth in april, the plants will come up very well, and when they are not transplanted, will grow larger than those which are raised in the hot-bed, but they will not flower so early, and in cold seasons will scarcely ripen their seeds. [In a warm dry border however, the seeds will come up spontaneously, and grow very luxuriantly: but to have the flowers early in spring, the seeds should be sown in pots in autumn, kept in frames through the winter; or on a gentle hot-bed in spring.] The plants may also be preserved through the winter in a green-house, where they will continue flowering most part of the year, but the second year they will not be so vigorous as the first.

1. The first sort is the Weld, which is accounted a rich commodity for dyeing; where this is cultivated, the seeds are commonly sown with Barley in the spring, and after the Barley is taken off the ground, the Weld begins to make some progress, and the next season is pulled up for use. This has been long practised, and it will be difficult to prevail on the cultivators of this plant to depart from their old customs; but if any persons will follow the directions here given, I can from experience promise them much better success.

Though the Weld will grow upon very poor soil, yet the crop will be in proportion to the goodness of the land; for upon very poor ground, the plants will not rise more than a foot high, whereas upon good ground I have measured them upwards of three feet, and the stalks, leaves, &c. have been in proportion; so that the better the soil is upon which it is sown, the greater will be the produce.

The best way to cultivate this plant, is to sow it without any other crop; if the ground is ready by the beginning or middle of august, that will be a good season; the land should be well ploughed and harrowed fine, but unless it is very poor, it will not require dung; when the ground is well harrowed and made fine, the seeds should be sown; one gallon of the seeds is sufficient to sow an acre of land, for they are small. If rain falls in a little time after the seeds are sown, it will bring up the plants, and in two month's time they will be so far advanced as to be easily distinguished from the weeds; then they should be hoed in the like manner as Turneps, always observing to do it in dry weather, for then the weeds will soon die after they are cut up; at this time the plants may be left about six inches distance; if this is done in dry weather, and the work well performed, the plants will be clean from weeds till the spring; but as young weeds will come up in march, so if in dry weather the ground is hoed again, it may be performed at a small expense while the weeds are young, and then they will soon decay; and if after this there should be many more weeds appear, it will be proper to hoe it a third time, about the beginning of may, which will preserve the ground clean till the Weld is fit to pull. The best time to pull the Weld for use, is as soon as it begins to flower, though most people stay till the seeds are ripe, being unwilling to lose the seeds; but it is much better to sow a small piece of land with this seed, to remain for a produce of new seeds, than to let the whole stand

for seed; because the plants which are permitted to stand so long will be much less worth for use, than the value of the seeds; besides, by drawing off the crop early, the ground may be sown with Wheat the same season; for the plants may be drawn up the latter end of june, when they will be in the greatest vigour, so will afford a greater quantity of the dye.

When the plants are pulled, they may be set up in small handfuls to dry in the field, and when it is dry enough, it may be tied up in bundles and housed dry, being careful to stack it loosely, that the air may pass between to prevent its fermenting.

That which is left for seeds should be pulled as soon as the seeds are ripe and set up to dry, and then beat out for use; for if the plants are left too long, the seeds will scatter. The usual price of the seed is ten shillings a bushel.

[Mr. Miller, in the directions given above, affirms, that though Weld will grow upon very poor soil, yet the crop will be in proportion to the goodness of the land. Dr. Withering, on the contrary, says, that it is cultivated in sandy soils; a rich soil making the stalk hollow, and not so good for use. It is certain that all the Resedas affect a dry soil; and probably a sandy loam suits the Weld best in cultivation: on poor sand the crop will be light, and heavy clays are certainly not proper for it.]

Mr. Marshall, in order to try whether this useful plant be an object of the Norfolk culture, sowed one acre and three-eighths with two pints of Turnep seed and two pints and a half of Weld seed, on the 16th of august.

The soil, which was a lightish sandy loam, had been ploughed three times as a fallow for Wheat. He gave it a fourth ploughing, harrowed and sowed the Turnep seed, harrowed again and sowed the Weld seed; re-harrowed, the horses trotting.

It was hoed at a considerable expense with small Carrot hoes, yet it got full of Poppies and other weeds.

On one end of the piece, where the Turneps were a bad crop, the Weld was very good; but upon the whole, only indifferent.

Mr. Marshall on this remarks, that the Turneps were extremely prejudicial to the Weld; that there was no seed from them worth turning sheep to, until the plants began to run in the spring; and then, in a few days, they started up, and drew the Weld up with them, slender and sickly: that had the Weld been sown alone, and twice hoed, the crop would have been much better, and the soil left cleaner.

Mr. Marshall apprehends that there is no occasion to leave the plants so thick on the ground as is usually done; but that six or eight inch hoes might be used with propriety in setting out the plants: and if so, the expense of hoeing would be little more than for Turneps.

From this and other experiments Mr. Marshall is of opinion, that Weld may be raised with considerable profit in Norfolk; especially in war-time, when it is dear. But he is also clearly of opinion, that it is not the interest of landlords to encourage the culture of it, without some rigid restrictions in their leases, to prevent tenants from carrying off such a quantity of vegetable matter, without laying on a proper quantity of manure, as in the usual covenant relative to hay and straw: for it is not the corn only, but the straw likewise, that is carried off in the shape of Weld; perhaps to the amount of a ton or upwards on an acre<sup>m</sup>.

RESEDA. See *Veratrum*.

RESTA BOVIS and RESTHARROW. See *Ononis*.

RESTIO. (*Signifies a rope, halter or cable, for making which these plants are fit.*)

*Lin. gen. Reich. n. 1204. Schreb. n. 1495. Rottboell. gram. 1. t. 1—3. Thunb. diff. 1788.*

*Thamnochortus. Berg. cap. 353. t. 5.*

*Chondropetalum. Rottb. gram. 10. t. 3.*

*Class. 22. 3. Dioecia Triandria.*

*Nat. order of Calamariæ.*

<sup>1</sup> Flora rustica.

<sup>m</sup> Rural econ. of Norfolk, 2. 26.



## GENERIC CHARACTER.

\* Male.

CAL. Ament ovate or oblong, many-flowered: scales coriaceous, keeled.

Perianth six-leaved, compressed: leaflets nearly equal; three outer, of which two are boat-shaped, the third flat; three inner, lanceolate, thinner, one wider than the others.

COR. none, except the three inner glumes.

STAM. Filaments three, flattish. Anthers oblong.

\* Female.

CAL. and COR. as in the Male.

PIST. Germ three-sided. Style single, rarely double, very rarely triple. Stigma seldom simple, very frequently two, very rarely three, feathered. Thunb.

OBS. Chondropetalum R. differs in having the inner calycine leaflets thick and cartilaginous, longer than the outer ones.

## ESSENTIAL CHARACTER.

Cal. three-leaved, two of the leaflets boat-shaped.

Cor. three-leaved, leaflets lanceolate, one wider.

FEM. Germ three-sided. Style one, seldom two or three. Stigmas one, two, three, feathered.

## SPECIES.

## 1. Restio paniculatus.

Lin. syst. 881. Reich. 4. 236. Rottb. progr. 1772.

p. 10. n. 4. descr. & ic. l. 1. p. 4. t. 2. f. 3.

Thunb. prodr. cap. 16.

Stem frondose, spikes panicled.

## 2. Restio verticillaris.

Lin. suppl. 425. syst. 881. Thunb. prodr. cap. 15.

Branches in whorls jointed, panicle compound contracted.

## 3. Restio dichotomus.

Lin. syst. 881. Reich. 4. 237. Thunb. prodr. cap.

16.

R. vimineus. Rottb. progr. 1772. p. 10. n. 3. descr.

& ic. p. 4. n. 3. t. 2. f. 1.

Schoenus capensis. Lin. spec. 64. amoen. 4. 264.

Scheuch. gram. 352. (Canna). Breyn. cent. 91. Pet.

gez. t. 7. f. 5. mus. 424. Pluk. mant. 109.

Culms dichotomous, spikes solitary.

## 4. Restio vimineus.

Lin. syst. 881. Reich. 4. 237. Rottb. progr. 1772.

p. 10. n. 1. descr. & ic. l. 1. p. 2. t. 1. f. 1.

Culms simple, spikes corymbed.

## 5. Restio triflorus.

Lin. syst. 882. Reich. 4. 237. Rottb. progr. 1772.

p. 10. n. 2. descr. & ic. l. 1. p. 3. Thunb. prodr.

cap. 15.

Culms simple leafy, spikes alternate sessile.

## 6. Restio simplex.

Lin. syst. 882. Reich. 4. 238.

R. distichus. Rottb. progr. 1772. p. 11. n. 10. descr.

& ic. l. 1. p. 6. n. 6. t. 2. f. 5.

Culms simple, spike terminating.

## 7. Restio Elegia.

Lin. syst. 882. Reich. 4. 238.

R. thyrsifer. Rottb. progr. 1772. p. 11. n. 9. descr.

& ic. l. 1. p. 8. t. 3. f. 4.

Elegia juncea. Lin. mant. 297. Thunb. prodr. cap.

14.

Culms simple, spike glomerate, spathes partial vague simple.

## 8. Restio cernuus.

Lin. suppl. 425. syst. 882. Thunb. prodr. cap. 15.

Culm simple leafless, spikes turbinate pendulous—scales blunt with a point.

## 9. Restio testorum.

Lin. suppl. 425. syst. 882. Thunb. prodr. cap. 15.

Culm simple leafless, raceme compound erect.

From Thunberg.

## 10. Restio imbricatus.

Thunb. prodr. cap. 14.

Culm simple leafless, spike oblong compressed.

## 11. Restio vaginatus.

Thunb. prodr. cap. 15.

Culm simple leafless, spikes alternate erect, scales acuminate.

## 12. Restio aristatus.

Thunb. prodr. cap. 15.

Culm simple leafless, spikes terminating obovate erect, scales awned.

## 13. Restio umbellatus.

Thunb. prodr. cap. 15.

Culm simple leafless, spikes umbelled ovate, scales oblong blunt.

## 14. Restio spicigerus.

Thunb. prodr. cap. 15.

Culm simple leafless, spikes oblong hexagonal, scales lanceolate patulous at the tip.

## 15. Restio acuminatus.

Thunb. prodr. cap. 15.

Culm simple leafless, panicle simple erect, scales awned.

## 16. Restio parviflorus.

Thunb. prodr. cap. 15.

Culm simple leafless, panicle erect, scales rounded membranaceous.

## 17. Restio erectus.

Thunb. prodr. cap. 15.

Culm simple leafless, panicle erect involucred, spathes imbricate lanceolate.

## 18. Restio argenteus.

Thunb. prodr. cap. 15.

Culm simple leafless, panicle erect, scales lanceolate scariose.

## 19. Restio scariosus.

Thunb. prodr. cap. 15.

Thamnochortus fruticosus. Berg. cap. 353. t. 5. f. 8.

Culm simple leafy, scales of the spikes lanceolate scariose.

## 20. Restio Thamnochortus.

Thunb. prodr. cap. 15.

Culm simple leafy, panicle spreading, scales lanceolate scariose at the edge.

## 21. Restio fruticosus.

Thunb. prodr. cap. 15.

Culm simple leafy, panicle compound, scales scariose jagged.

## 22. Restio tetragonus.

Thunb. prodr. cap. 15.

Culm and branches four-cornered, spikes alternate.

## 23. Restio triticeus.

Thunb. prodr. cap. 15.

Culm dichotomous leafless erect, branches round, spikes alternate.

## 24. Restio glomeratus.

Thunb. prodr. cap. 15.

Culm dichotomous leafless even, panicle glomerate.

## 25. Restio incurvatus.

Thunb. prodr. cap. 15.

Culm dichotomous leafless striated, spikes imbricate-aggregate.

## 26. Restio digitatus.

Thunb. prodr. cap. 15.

Culm dichotomous leafless, branches round, spikes in threes oblong.

## 27. Restio Scopa.

Thunb. prodr. cap. 15.

Culm dichotomous leafy, branches compressed, spikes of the panicle conglomerate.

## 28. Restio virgatus.

Thunb. prodr. cap. 16.

Culm dichotomous leafy, branches compressed, spikes panicled pendulous.

## DESCRIPTIONS, &amp;c.

These plants are all natives of the Cape of Good Hope, where some of them are used for making ropes, for brooms, or for thatching. Thunberg has a monograph, or dissertation expressly on this genus.

2. This resembles *R. Elegia*, but differs in having the branches in whorls about the stem.

3. This is often barren, and as it were viviparous with very minute leaves which have a few between them.

At the Cape of Good Hope, they make besoms of this species to sweep their floors with.

4. Spikes very many, collected on capillary loose pedicels.

6. This has been found at New Zealand as well as the Cape.

7. This has the appearance of a rush. Culms

<sup>n</sup> Linn. suppl.

<sup>o</sup> Linn. syst.

<sup>p</sup> Thunb. trav. 1. 295, engl. edit.

<sup>q</sup> Linn. syst.

several,



# R H A

several, a foot high, round, even, not hollow, tough, quite simple, scarcely the thickness of a quill, having one knot. Leaves scarcely any. Leafy sheaths two or three, towards the root, imbricate, even, brown, slightly mucronate at the tip with a leafy rudiment. The sheath in the middle of the culm has a similar leafy rudiment. Spathe terminating, unfolding into other inner spathes, and into compound racemes. The fructification is with difficulty extricated in the females. Anthers compressed, brown edged with white.

Thunberg (in prodr. cap.) retains this as a distinct genus.

9. The houses are commonly thatched with this species at the Cape of Good Hope, both in town and country, and sometimes whole huts are built with it. A roof thatched with it will last twenty or thirty years, and would last much longer, if the south-east wind did not blow much dirt into it, which causes it to rot.

RETZIA. (So named by Thunberg, in honour of Anders Jahan Retzius, Professor of Natural History and Oeconomy in the University of Lund in Sweden. Author of Observationes Botanicae. Lipf. fol.)

Lin. gen. Schreb. n. 285. Thunb. act. lund. 1. 55.

nov. gen. 4. Linn. suppl. 18. Juss. 133.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Campanaceae. Convolvuli, Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, unguicular, five-parted: segments unequal, lanceolate, acute.

COR. one-petalled, tubular, cylindrical, villose within and without, five-toothed: segments ovate, blunt, concave, erect, very hirsute at the tip.

STAM. Filaments five, awl-shaped, shorter than the corolla. Anthers compressed, sagittate.

PIST. Germ superior. Style filiform, longer than the corolla. Stigma bifid.

PER. Capsule oblong, two-celled, two-valved, acute, two-grooved.

SEEDS several, minute.

OBS. It agrees with Convolvulus in habit and character; but differs in its tubular corolla, very hirsute on the outside.

## ESSENTIAL CHARACTER.

Cor. cylindrical, villose on the outside. Stigma bifid. Caps. two-celled, many-seeded.

## SPECIES.

1. Retzia spicata.

Lin. suppl. 138. Syst. 196. spec. ed. Willd. 643.

Thunb. act. lund. 1. 55. t. 1. f. 2. Lamarck, encycl. t. 103.

R. capensis. Thunb. prodr. 34.

## DESCRIPTION, &c.

Frutescent, erect, four feet high, somewhat branched. Branches few, thickish, rigid, unequal, short, hairy. Leaves by fours in whorls, crowded, lanceolate-linear, approximating, sessile, blunt, upright, one-grooved above with impressed dots, two-grooved underneath. Flowers lateral, towards the extremities sessile, crowded, upright, almost concealed among the leaves. Bractes lanceolate, wider below, acute, keeled, hirsute, longer than the calyx. Corollas rufescent, on the outside towards the tip hirsute. Stamens inserted below the throat of the tube. It bears a very great affinity to the Convolvuli; C. oenotheroides especially combines this plant with that genus.

Native of the Cape of Good Hope, on the highest mountains.

RHA. See Centaurea Rhapontica.

RHABBARBARUM. See Rheum.

RHACOMA. See Myginda.

RHAGADIOLOIDES. See Hedychnois and Hyoseris.

RHAGADIOLUS. See Lapsana. Gartner and Schreber, following Vaillant and Tournefort, have made this a distinct genus. It is the Koelpina of Pallas, itin. 3. t. L.

RHAGROSTIS. See Corispermum.

RHAMNOIDES. See Hippophae.]

\* Linn. mant.

\* Thunb. trav. 1. 248, engl. edit.

\* Linn. suppl.

# R H A

RHAMNUS (of Pliny; Ραμνος of Theophrastus and Dioscorides.)

Lin. gen. n. 265. Reich. n. 284. Schreb. n. 358.

Tourn. t. 366. Juss. 380. Gært. t. 106.

Fragula. Tournef. t. 383. Cervispina. Dill.

gen. 8. Paliurus. Tourn. t. 387. Juss. 380.

Gært. t. 43. Alaternus. Tourn. t. 366.

Zizyphus. Tourn. t. 403. Juss. 380. Gært.

t. 43.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Dumosae. Rhamni, Juss.

## GENERIC CHARACTER.

CAL. none: unless the corolla be taken for it.

COR. Petal imperforate, externally rude, internally coloured, funnel-form: tube turbinate-cylindrical: border spreading, divided, acute.

Scalelets five, very small, each at the base of each division of the border, converging.

STAM. Filaments as many as there are segments of the corolla, awl-shaped, inserted into the petal under the scalelet. Anthers small.

PIST. Germ roundish. Style filiform, the length of the stamens. Stigma blunt, divided into fewer segments than the corolla.

PER. Berry roundish, naked, divided into fewer parts internally than the corolla.

SEEDS solitary, roundish, gibbous on one side, flattened on the other.

OBS. That part of the flower, which is here called the corolla, is more properly the perianth; and the scalelets placed close to the stamens should be named the petals. Schreb.

Fragula has an emarginate stigma, a four-seeded berry, and a five-cleft corolla.

Rh. catharticus has a four-cleft stigma, a four-seeded berry, and a four-cleft corolla. It is dioecous, and four-stamened.

Paliurus has three styles, a three-celled nucleus, and a five-cleft corolla, with a membranaceous rim surrounding the berry or drupe.

Alaternus has a trifid stigma, a three-seeded berry, and a five-cleft corolla. It is Polygamous Dioecous with males and hermaphrodites. The scalelets of the corollas are wanting.

Zizyphus has two styles, a two-celled nucleus, and a five-cleft corolla. Drupe.

## ESSENTIAL CHARACTER.

Cal. tubular. Cor. scales defending the stamens inserted into the calyx. Berry.

## SPECIES.

Thorny.

1. Rhamnus catharticus. Purging Buckthorn.

Lin. spec. 279. Syst. 232. Reich. 1. 539. Willd.

1092. hort. cliff. 70. fl. suec. n. 202. mat. med. 68.

Woodv. med. bot. 312. t. 114. Hudf. angl. 98.

Wither. arr. ed. 3. 256. Smith, brit. 261. Lightf.

scot. 1092. Relb. cant. n. 183. Sibth. oxon.

n. 254. Fl. dan. t. 850. Hall. helv. n. 824.

Pollich pal. n. 230. Leers, herb. n. 166. Scop.

carn. n. 259. Villars dauph. 2. 536. Allion.

pedem. n. 1761. Krock. fles. n. 347. Hoffm.

germ. 79. Roth. germ. 1. 103. 2. 265. Pallas,

it. 1. 192. fl. ross. 2. 25. t. 61. (var. sibir.)

Gmel. fib. 3. 106. Duham. arb. 1. tom. 2. t. 50.

Blackw. t. 135. Plenck, ic. t. 140. Tournef. inst.

593. Baub. pin. 478. Baub. hist. 1. 55. Raii

hist. 1625. syn. 466.

R. solutivus. Dod. pempt. 756. Ger. emac. 1337. 1.—

f. spina infectoria vulgaris. Park. theat. 243. f. 1.

Spina infectoria. Camer. epit. 82. Matth. 158. Lob.

ic. 181. obs. 599. 1.

Cervispina. Cord. hist. 175.

Spina cervina. Pharmac. lond.

Spines terminating, flowers quadrifid dioecous, leaves ovate, stem erect, berry four-seeded.

2. Rhamnus infectorius. Dwarf or yellow-berried Buckthorn.

Lin. mant. 49. Syst. 233. Reich. 1. 539. Willd.

1093. Ger. prov. 462. 2. Villars dauph. 2. 537.

Allion. pedem. n. 1762. Hoffm. germ. 79. Jacqu.

collect. 3. 17. D'Asse, aragon. n. 199.



- R. minor. *Mill. dict. n. 2.*  
 R. Lycium. *Scop. carn. n. 260. ann. 2. 44.*  
 R. catharticus minor. *Baub. pin. 478. Arduin. mem. 1. 78. t. 14. Dubam. arb. 2. 214. n. 2. Raii hist. 1626. Tournef. inst. 593.—pannonicus. Park. theat. 243. 2.—solutivus minor. Ger. emac. 1337. 2. Lycium gallicum. Baub. pin. 478. Baub. hist. 1. 58. Raii hist. 1626.*  
 L. Dalech. *hist. 151.*  
 Spina infectoria pumila. 1. *Clus. hist. 111.*  
*Spines terminating, flowers quadrifid dioecous, leaves ovate-lanceolate repand-ferrulate, stems procumbent.*  
 [3. Rhamnus lycioides. *Lin. spec. 279. Reich. 1. 540. Willd. 1093. Cavan. ic. 2. 56. t. 182. Desfont. atlant. 198.*  
 R. tertius flore herbaceo, baccis nigris. *Baub. pin. 477. Tournef. inst. 593.*  
 R. tertius. *Dod. pempt. 755. Baub. hist. 1. 35. Tabern. ic. 1081.—forte niger. Clus. hist. 1. 110.*  
 R. primæ speciei 3. *Lob. ic. 2. 129. Ger. emac. 1334. ult.*  
*Spines terminating, leaves linear quite entire blunt.*  
 4. Rhamnus Erythroxyton. *Siberian Redwood. Lin. spec. ed. Willd. 1093. Pallas roff. 2. 26. t. 62. itin. 3. app. n. 78. t. 1. f. 1.*  
 β. R. lycioides. *Pall. roff. 2. 26. t. 63.*  
*Leaves narrower very finely serrulate.*  
*Spines terminating, leaves linear-lanceolate serrate sharpish.*  
 5. Rhamnus oleoides. *Olive-leaved Buckthorn. Lin. spec. 279. Reich. 1. 540. Willd. 1094. Desfont. atlant. 197.*  
 R. hispanicus oleæ folio. *Tournef. inst. 539.*  
*Spines terminating, leaves oblong quite entire.*  
 6. Rhamnus crenulatus. *Teneriffe Buckthorn. Ait. kew. 1. 263. Willd. spec. 1094.*  
*Branchlets spinescent, flowers quadrifid or trifid dioecous, leaves oblong bluntly serrate evergreen.]*  
 7. Rhamnus saxatilis. *Rock Buckthorn. Lin. spec. 1671. syst. 233. Reich. 1. 540. Willd. 1094. Jacqu. vind. 212. austr. 1. 33. t. 53. Hall. helv. n. 822. Villars dauph. 2. 537. Krock. files. n. 348.*  
 Lycium facie pruni sylvestris f. italicum. *Baub. pin. 478. Ic. Arduin. t. 14. Raii hist. 1627. 2.*  
 Spina infectoria pumila 2. *Clus. hist. 1. 111.*  
 R. cathart. minor fol. longiori. *Tourn. inst. 592.*  
 R. longifolius. *Mill. dict. n. 3.*  
*Spines terminating, flowers quadrifid hermaphrodite.*  
 [8. Rhamnus theezans. *Tea Buckthorn. Lin. mant. 207. syst. 233. Reich. 1. 540. Willd. 1094.*  
 R. Thea. *Os. it. 232. 161. engl. edit. 1. 375.*  
*Spines terminating, leaves ovate serrulate, branches divaricating.*  
 \* Unarmed.  
 9. Rhamnus Sarcomphalus. *Bastard Lignum-Vitæ. Lin. spec. 280. Reich. 1. 541. Willd. 1095. amoen. 5. 395. Brown. jam. 179. (Sarcomphalus.)*  
*Leaves oval coriaceous quite entire emarginate.*  
 10. Rhamnus ferreus. *Vahl symb. 3. 41. t. 58. Willd. spec. 1095.*  
*Flowers hermaphrodite umbelled axillary, leaves oblong-ovate emarginate quite entire smooth membranaceous.*  
 11. Rhamnus lævigatus. *Vahl symb. 3. 41. Willd. spec. 1095.*  
*Flowers hermaphrodite axillary subgeminate, leaves oblong quite entire coriaceous smooth.*  
 12. Rhamnus tetragonus. *Square-branched Buckthorn. Lin. suppl. 153. syst. 233. Thunb. prodr. 44.*  
*Leaves ovate entire smooth sessile, branches four-cornered.*  
 13. Rhamnus polifolius. *Vahl symb. 3. 41. Willd. spec. 1095.*  
*Flowers hermaphrodite axillary subsessile, leaves lanceolate quite entire white-tomentose underneath.*  
 14. Rhamnus valentinus. *Valentia Buckthorn. Lin. spec. ed. Willd. 1096.*  
 R. pumilus. *Cavan. ic. 2. 65. t. 181.*  
*Flowers hermaphrodite quadrifid three-styled, capsules three-celled, leaves roundish-ovate subcrenate.*  
 15. Rhamnus cubensis. *Cuba Buckthorn. Lin. spec. 281. syst. 233. Reich. 1. 542. Willd.*

1096. *Jacqu. hort. 3. t. 49. amer. 75. n. 3. pict. t. 75.*  
*Flowers hermaphrodite, capsules three-celled, leaves wrinkled quite entire tomentose.]*  
 16. Rhamnus colubrinus. *Pubescent Rhamnus or Buckthorn. Redwood. Lin. spec. 280. syst. 233. Reich. 1. 542. Willd. 1096. Jacqu. hort. 3. 28. t. 50. amer. 74. n. 2. pict. 40. t. 74. Brown. jam. 172. 2. Comm. hort. 1. 175. t. 90. (Arbor baccifera.)*  
 Ceanothus arborefcens. *Mill. dict. n. 3.*  
*Flowers hermaphrodite one-styled erect, capsules trilocous, petioles ferruginous-tomentose.*  
 [17. Rhamnus volubilis. *Twining Buckthorn. Lin. suppl. 152. syst. 233. Jacqu. ic. 2. t. 336. collect. 2. Walt. carol. 101.*  
 Zizyphus volubilis. *Willd. spec. 1102. arb. 415.*  
*Flowers hermaphrodite one-styled, leaves oblong-ovate nerved somewhat waved, stem twining.*  
 18. Rhamnus dauricus. *Daurian Buckthorn. Pallas itin. 3. app. 721. n. 77. roff. 2. 25. t. 61. Willd. spec. 1097.*  
 Cornus foliis citri angustioribus. *Amm. ruth. 200. t. 33. Gmel. fib. 3. 106. n. 83.*  
*Flowers dioecous quadrifid, leaves oblong-ovate serrate veined.*  
 19. Rhamnus alpinus. *Alpine Buckthorn. Lin. spec. 280. syst. 234. Reich. 1. 542. Willd. 1097. arb. 283. Jacqu. collect. 3. 15. Hoffm. germ. 79. Roth. germ. 1. 103. 2. 267. Hall. alt. gott. 2. t. 16. helv. n. 823. t. 40. Villars dauph. 2. 537. Krock. files. n. 349. Allion. pedem. n. 1767.*  
 Alnus nigra baccifera rugosiore folio f. major. *Baub. hist. 1. 562. Raii hist. 1605.*  
 A. nigra polycarpus. *Baub. pin. 448.*  
 Frangula altera polycarpus. *Baub. prodr. 160.*  
 F. rugos. & ampliore folio. *Tournef. inst. 612. Garid. 191.*  
*Flowers dioecous, leaves oval-lanceolate glandular-crenulate.*  
 20. Rhamnus pumilus. *Dwarf Buckthorn. Lin. mant. 49. syst. 234. Reich. 1. 543. Willd. 1097. Jacqu. collect. 2. 141. t. 11. Turra diar. ital. 120. Hoffm. germ. 79. Villars dauph. 2. 538. D'Affo aragon. n. 203.*  
 R. rupestris. *Scop. carn. n. 262. t. 5.*  
 Alaternus saxatilis. *Quer. fl. espan. 2. 202. t. 27.*  
 Frangula montana pumila saxatilis, folio subrotundo. *Tournef. inst. 612. Segu. veron. 2. 296.*  
 F. minima rupestris pruno sylvestri affinis americanæ foliis. *Raii dendr. 65.*  
*Creeping, flowers hermaphrodite, leaves petioled ovate crenate.]*  
 21. Rhamnus Frangula. *Alder Buckthorn, or berry-bearing Alder. Lin. spec. 280. syst. 234. Reich. 1. 543. Willd. 1098. hort. cliff. 70. fl. suec. n. 203. lapp. n. 60. mat. med. 98. Gartn. fruct. 2. 111. Dubam. arb. 1. t. 100. Du Roi barbecc. 2. 285. Hudf. angl. 98. Wither. arr. ed. 3. 259. Smith, brit. 262. engl. bot. t. 250. Relb. cant. n. 184. Fl. dan. t. 278. Gunn. norv. n. 18. Hall. helv. n. 821. Pollich pal. n. 231. Hoffm. germ. 80. Roth. germ. 1. 103. 2. 263. Neck. gallob. 132. Scop. carn. n. 263. Villars dauph. 2. 538. D'Affo aragon. n. 201. Krock. files. n. 350. Gmel. fib. 3. 307. Pallas, it. 1. 62. Blackw. t. 152. Kniph. cent. 5. n. 75. Ludw. est. t. 82. Plenck, ic. 141.*  
 Frangula. *Dod. pempt. 784. 1. Camer. epit. 978. Matth. 1271. Tournef. inst. 612.*  
 F. Alnus. *Mill. dict. n. 1.*  
 F. f. Alnus nigra baccifera. *Park. theat. 240. Raii syn. 465.*  
 Alnus nigra baccifera. *Baub. hist. 1. 560. 2. Baub. pin. 428. Raii hist. 1604.*  
 A. nigra f. Frangula. *Ger. 1286. emac. 1470.*  
 β. Frangula latifolia. *Mill. dict. n. 2.*  
 A. nigra baccif. rugosiore folio. f. major. *Baub. hist. Raii hist. 1605.*  
 γ. F. rotundifolia. *Mill. dict. n. 3.*



- Flowers hermaphrodite one-styled, leaves quite entire smooth, berry two-seeded.
- [22. *Rhamnus latifolius*. Azorian Buckthorn.  
L'Herit. fert. angl. p. 5. n. 4. t. 8. Ait. kew. 1. 265.  
Willd. spec. 1098.  
Flowers hermaphrodite one-styled, calyxes villose, leaves elliptic quite entire.
23. *Rhamnus glandulosus*. Madeira Buckthorn.  
Ait. kew. 1. 265. Willd. spec. 1098.  
Flowers hermaphrodite racemed, leaves ovate bluntly serrate smooth glandular at the base.
24. *Rhamnus ellipticus*. Oval-leaved Buckthorn.  
Ait. kew. 1. 265. Willd. spec. 1098. Swartz prodr. 50. descr. 497. Brown. jam. 172. 1. t. 29. f. 2.  
*Ceanothus reclinatus*. L'Herit. fert. angl. 6.  
Flowers hermaphrodite subtrigynous axillary subumbelled, leaves elliptic acute quite entire somewhat villose underneath.
25. *Rhamnus Prinoides*. Prinos-leaved Buckthorn.  
L'Herit. fert. angl. 6. n. 5. t. 9. Willd. spec. 1099.  
*R. celtifolius*. Thunb. prodr. 44.  
Celtis. Burm. afr. 242. t. 88.  
Flowers polygamous, styles subtriple, leaves ovate serrate.
26. *Rhamnus myrtacinus*. Wiry Buckthorn.  
Ait. kew. 1. 266. Willd. spec. 1099.  
Flowers hermaphrodite, stigma triple, leaves cordate, branches tendril-bearing.
27. *Rhamnus alnifolius*. Alder-leaved Buckthorn.  
L'Herit. fert. angl. 5. n. 2. Ait. kew. 1. 266.  
Willd. spec. 1100.  
Flowers hermaphrodite, leaves oval acuminate serrate netted underneath.
28. *Rhamnus sphærospermus*. Round-berried Buckthorn.  
Swartz prodr. 50. descr. 499. Willd. spec. 1100.  
Flowers hermaphrodite in racemelets, berries roundish three-celled pellucid, leaves oblong serrate smooth.
29. *Rhamnus hybridus*. Hybrid Buckthorn.  
L'Herit. fert. angl. 5. n. 1. Willd. spec. 1100.  
Flowers androgynous, leaves oblong acuminate scarcely perennial.
30. *Rhamnus lineatus*.  
Lin. spec. 281. syst. 234. Reich. 1. 544. amoen. 4. 308. Obs. it. 219. t. 7. engl. edit. 1. 353. Burm. zeyl. 198. t. 88. Pluk. phyt. 1. 122. f. 4. Lour. cochinch. 159.  
*Zizyphus lineatus*. Willd. spec. 1102.  
Flowers hermaphrodite, leaves ovate marked with lines repand netted underneath, peduncles one-flowered axillary, stem erect.]
31. *Rhamnus Alaternus*. Common Alaternus.  
Lin. spec. 281. syst. 234. Reich. 1. 544. Willd. 1101. vir. cliff. 19. hort. cliff. 70. upf. 47. Willich obs. 5. n. 8. Sauv. monsp. 95. Villars dauph. 2. 539. Krock. siles. n. 351. Allion. pedem. n. 1763. Kniph. cent. 7. n. 75. Desfont. atlant. 198.  
α. *R. A. latifolius*. Ait. kew. 267.  
*A. Phyllica*. Mill. dict. n. 1. fig. t. 16. f. 1.  
*A. major & minor*. Park. theat. 1445. 1, 2. Raii hist. 1608.  
*A. Plinii*. Ger. 1212. 1. emac. 1398. 1.  
*A. 2. Clus. hist.* 1. 50. Park. parad. 603.  
*Phyllica humilior*. Baub. pin. 477.  
Leaves ovate-oblong equally serrate.
- β. *R. A. angustifolius*. Ait. kew. 267.  
*A. angustifolia*. Mill. dict. n. 3. fig. t. 16. f. 2.  
*A. 1. Clus. hist.* 1. 50. Lob. ic. 2. 134. Tabern. ic. 1042. Tournef. inst. 595.  
*A. humilior*. Ger. 1212. 2. emac. 1398. 2.  
*Phyllica elatior*. Baub. pin. 476.  
Jagged-leaved Alaternus.  
Leaves lanceolate deeply serrate smooth.  
Flowers dioecous, stigma triple, leaves serrate.
- [32. *Rhamnus carpinitolius*. Hornbeam-leaved Buckthorn.  
Pallas ross. 2. 24. t. 60. Willd. spec. 1101.  
Leaves oblong-lanceolate equally toothed acute, fruits sessile.]
- \*\*\* Prickly.
33. *Rhamnus Paliurus*. Common Christ's-thorn.  
Lin. spec. 281. Reich. 1. 544. hort. upf. 47. Willich obs. 6. n. 10. Du Roi barbecc. 2. 233. Dukam.

- arb. 2. 59. t. 18. Medic. in obs. soc. econ. latr. 1774. p. 259. Scop. carn. n. 264. Sauv. monsp. 306. Villars dauph. 2. 539. Gmel. fib. 3. 106. Pallas ross. 2. 27. t. 64.
- Zizyphus Paliurus*. Willd. spec. 1103. arb. 415.  
*Paliurus*. Dod. pempt. 756. Ger. 1153. emac. 1336.  
Raii hist. 1708. Bess. eyf. autumn. 3. t. 9. f. 1. Tournef. inst. 616.
- P. f. *Rhamnus 3 Dioscoridis*. Park. theat. 1006. f. ult.
- P. *Spina Christi*. Mill. dict.
- P. *australis*. Gært. fruct. 1. 203.
- P. *aculeatus*. Desfont. atlant. 199.
- Rhamnus f. Paliurus folio jujubino*. Baub. hist. 1. 35.  
Prickles in pairs, the lower reflexed; flowers three-styled; fruit coriaceous winged.
- [34. *Rhamnus Lotus*. The genuine Lotus.  
Lin. spec. 281. Reich. 1. 544.  
*Zizyphus Lotus*. Lamarck, encycl. 3. 304. illustr. t. 185. f. 2. Willd. spec. 1103. Desfont. atlant. 200. acad. 1788. p. 443. t. 21.  
*Z. sylvestris*. Shaw afr. 631. fig. specim. n. 632.  
Prickles in pairs, one of them recurved; leaves ovate crenate; fruit round.
35. *Rhamnus Napaea*.  
Lin. spec. 282. Reich. 1. 545. Willd. 1104. fl. zeyl. n. 87. Pluk. phyt. t. 216. f. 6. Raii dendr. 44. n. 10. (Jujuba.)  
*Zizyphus Napaea*. Willd. spec. 1104.  
*Vidara littorea*. Rumph. amb. 6. 119. t. 37.  
Prickles often in pairs recurved, peduncles corymbed, flowers semidigynous, leaves ovate oblique subcrenate even on both sides.]
36. *Rhamnus Jujuba*. Blunt-leaved Buckthorn.  
Lin. spec. 282. Reich. 1. 545. fl. zeyl. t. 89. Lour. cochinch. 157.  
*Zizyphus Jujuba*. Willd. spec. 1104. Gært. fruct. 1. 203.  
*Z. Oenoplia*. Mill. dict. n. 3.  
*Jujuba indica spinosa, folio & fructu rotundo*. Pluk. alm. 199. Raii dendr. 44. n. 11.  
*Mansana arborea*. Gmel. syst. veg. 1. 580. Sonnerat. it. nov. guin. 134. t. 94.  
*Malum indicum*. Rumph. amb. 2. 117. t. 36.  
*Perim toddali*. Rheed. mal. 4. p. 85. t. 41. Raii hist. 1535.  
Prickles solitary recurved, leaves roundish-ovate blunt tomentose underneath, peduncles aggregate, flowers semidigynous.
- [37. *Rhamnus Xylopyrus*. Sharp-leaved Buckthorn.  
Retz. obs. 2. 11. n. 20.  
*Zizyphus Xylopyrus*. Willd. spec. 1104.  
Prickles solitary recurved, leaves subcordate-ovate sharpish tomentose underneath, corymbs axillary clustered.
38. *Rhamnus Oenoplia*. Pointed-leaved Buckthorn.  
Lin. spec. 282. Reich. 1. 545. fl. zeyl. n. 88. Retz. obs. 2. 11. n. 19.  
*Zizyphus Oenoplia*. Willd. spec. 1105.  
*Jujuba aculeata, nervosis foliis infra serice is vis*. Burm. zeyl. 131. t. 61.  
Prickles solitary recurved, leaves half-cordate acuminate tomentose underneath, peduncles aggregate.
39. *Rhamnus capensis*. Cape Buckthorn.  
Thunb. prodr. 44. Willd. spec. 1101.  
Prickles solitary, leaves ovate cut-out entire smooth.
40. *Rhamnus circuncissus*.  
Linn. suppl. 152. syst. 235. Willd. spec. 1101.  
Prickly, leaves opposite bifarious obcordate, prickles opposite to the leaves.]
41. *Rhamnus Zizyphus*. Shining-leaved Buckthorn or common Jujube.  
Lin. spec. 282. syst. 235. Reich. 1. 546. hort. cliff. 69. mat. med. 68. Scop. carn. n. 265. Sauv. monsp. 59. Thunb. jap. 95. Lour. cochinch. 158. Pallas ross. 2. 24. t. 59.  
*Zizyphus sylvestris*. Mill. dict. n. 2.  
*Z. vulgaris*. Willd. spec. 1105.  
*Jujuba sylvestris*. Baub. pin. 446. Park. theat. 251. 3. Raii hist. 1534. n. 3.
- β. *Zizyphus sativa*. Gært. fruct. 1. 202. Desfont. atlant. 200.  
*Z. Jujuba*. Mill. dict. n. 1.  
*Z. Dod.*



- Z. Dod. pempt. 807. Tournef. inst. 627. Shaw specim. n. 631. Blackw. 569. Plenck, ic. 142.*  
*Z. f. Jujuba major. Park. theat. 251. 1. fig. Raii hist. 1533.*  
*Zizypha. Camer. epit. 167. Matth. 219. Baub. hist. 1. 40.*  
*Jujubæ majores oblongæ. Baub. pin. 446.*  
*J. arabum. Lob. ic. 2. 178.—f. Zizyphus Dodonæi. Ger. 1318. emac. 1501.*  
*Prickles in pairs, one recurved; leaves ovate retuse toothed smooth, flowers two-styled.*  
 42. *Rhamnus Spina Christi. Syrian Christ's-thorn. Lin. spec. 282. Reich. 1. 546. hort. cliff. 63.*  
*Zizyphus Spina Christi. Willd. spec. 1105. Desfont. atlant. 201.*  
*Z. africana. Mill. dict. n. 4.*  
*Oenoplia spinosa. Baub. pin. 477. Clus. hist. 2. 313. Ger. emac. app. 1604. t. 1605. Raii hist. 1534. 4.*  
*Oe. f. Napeca Bellonii forte. Clus. hist. 27.*  
*Nabca Paliurus Athenæi credita. Alp. ægypt. 16. t. 19. 2. p. 10.*  
*Jujube f. Zizyphus africana, mucronatis foliis, spina gemella. Pluk. phyt. t. 197. f. 3.*  
*Prickles in pairs straight, leaves ovate acute toothed smooth—fruits oblong pedicelled.*

## DESCRIPTIONS, &amp;c.

1. The purging or common Buckthorn rises with a strong woody stem to the height of twelve or fourteen feet, sending out many irregular branches: the young shoots have a smooth grayish-brown bark; but the older branches have a darker and rougher bark, and are armed with a few short thorns. Leaves two inches and a half long, by one and a quarter broad, dark green above but pale or light green beneath, having a pretty strong midrib, and several nerves proceeding from it, which diverge towards the sides, but meet again near the point: they stand upon pretty long slender foot-stalks. The flowers come out in clusters from the side of the branches: those of the male have as many stamens as there are divisions in the petal; those of the female (or hermaphrodite) have a roundish germ, which afterwards becomes a pulpy berry of a roundish form, inclosing four hard seeds.

[Branches rigid, alternate, round, smooth, with a thorn at the end. Leaves in bundles, smooth, the serratures glandular: the younger ones pubescent. Stipules awl-shaped, in pairs, the length of the petiole. Flowers from the same bud with the leaves, aggregate on axillary one-flowered peduncles, which are of the same length with the petioles: they are of a pale or yellowish green colour, four-cleft, and dioecous or polygamous commonly, but not always. Stigma four-cleft. Berries black, the size of a small pea, four-celled, four-seeded.—Native of Europe, in hedges and woods: flowering from the end of april to june, and ripening its berries about the end of september.]

According to Pallas, the Buckthorn is common in the champaign and temperate parts of Russia and Southern Siberia, but scarcely beyond the Irtysh. The trunk is often thicker than a man's arm, and the wood very hard, of a reddish colour. The flowers are for the most part hermaphrodite, and clustered; in the gardens fewer and nearly solitary.

The juice of the unripe berries has the colour of saffron, and is used for staining maps or paper: these are sold under the name of French berries. The juice of the ripe berries, mixed with alum, is the sap-green of the painters; but if the berries be gathered late in the autumn, the juice is purple. The bark affords a beautiful yellow dye\*. The inner bark, like that of Elder, is said to be a strong cathartic, and to excite vomiting. The berries operate briskly by stool, but occasion thirst, and dryness of the mouth and throat, accompanied frequently with severe griping of the bowels, unless some diluting liquor be plentifully taken with them. The juice made into a syrup is the officinal preparation. About an ounce is a moderate dose; and it was formerly much employed as a hydragogue, from this quantity to two

ounces: but it is now falling into disuse, and is rarely prescribed except in conjunction with other medicines of this class. It is said that the flesh of birds which feed upon these berries is purgative†.

2. This is a procumbent shrub. The leaves are villose underneath. The calyx goblet-shaped and toothless. Stigmas two, reflexed‡.

It differs from the preceding, according to Gerard, in having the segments of the corolla the length of the tube, never longer.

Scopoli adds, that it differs in the whole habit, its place of growth, the naked spines, the leaves villose underneath, the calyx toothless and goblet-shaped, and the berries having commonly one cell empty§.

The root fixes itself so firmly in the fissures of the rocks, that it cannot be pulled up. The stem divides immediately into branches that are very much subdivided, and form a very close head. Spines both terminating and lateral, naked. Leaves elliptic, serrulate. Flowers abundant, axillary and below the leaves. Calyxes yellowish. Petals minute. Style undivided and truncate. Berry three-celled, with one cell commonly empty¶.

According to Villars, this species forms the link between *R. catharticus* and *saxatilis*; being lower and more branched than the former, and less tufted than the latter.]

Mr. Miller describes it as an humble shrub, seldom rising more than three feet high, sending out many irregular branches, covered with a dark-brown bark. Leaves ending in acute points, three quarters of an inch long, and near the base half an inch broad, of a yellowish green and thin consistence. The flowers come out upon small spurs on the side of the branches, each standing upon a separate short footstalk; they are of a yellowish herbaceous colour, having a short swelling tube, and being cut into five acute spreading segments. They appear in june, but are not succeeded by berries here.

Monf. Duhamel says, that this fruit gathered green is the *Grain d'Avignon*, used in dyeing yellow; but I have been assured by a gentleman of skill, who resided long in the South of France, that the Avignon berries were the fruit of the narrow-leaved *Alaternus*. I therefore gathered a quantity of the berries of this *Alaternus* before they were full ripe, and carried them to two eminent dealers in this commodity, who both assured me, after making trial of them, that they were Avignon berries, and that if I had a large quantity, they would purchase them all. Since then this *Alaternus* is one of the most common shrubs in the South of France, whence the Avignon-berries are brought, we may suppose that Monf. Duhamel has been ill-informed. See n. 7.

[Native of the South of Europe. Cultivated in 1683, by Mr. James Sutherland\*.

3. A shrub of about three feet high, very much branched, the branches spreading and terminated by a spine: the bark of a brown ash-colour and smooth. The leaves are sublinear, obtuse, narrower at the base, very smooth, sessile, fasciculated; the fascicles alternately scattered: several transparent pores are disseminated throughout the whole surface. The flowers arise solitary from the fascicles of leaves, and are two or three, supported on capillary footstalks shorter than the leaves. The calyx is yellow, urceolated, semi-quadrifid, sometimes trifid, and very rarely quinquefid, with broad sharp segments, from the divisions of which proceed small laciniae or scales, which are setaceous, of a red colour, and guard the stamens. There is no corolla, unless you call the calyx such. The filaments of the stamens are equal in number to the scales, and are capillary, upright-recurvate, and situated within the calyx near the germ: anthers globose. Germ globose, reddish; styles two, sometimes three, a little recurved: stigmas thickened and red. Capsule top-shaped, black, bifurcate, sometimes three-cornered, and opening with a two-fold or three-fold division. Seeds two or three, subtriquetrous, pale.

\* Smith brit. and Lyons M.S. in Relh. cant.  
 † Withering.

\* Woodville.

‡ Linn. mant.

§ Scop. iter tyrol. in anno 2.

¶ Scop. carn.

• Hort. kew.



It is a native of calcareous mountains in some parts of Spain, where it grows plentifully.

Cavanilles observes that in Pallas's figure of this species, the leaves are represented serrated, and the fruit globular, which he attributes to the fault of the engraver since it is not the case in such plants as he has examined<sup>d</sup>.

4. This is a shrub, the height of a man, upright but twisted, stiff with few abrupt irregular spreading branches; sometimes unarmed, with short branches, sometimes more branched with thorns at the end of both branches and branchlets. Trunk among the rocks often twisted, covered with a thin brown strigose bark. Wood very hard, rigid, of an orange red colour, but frequently of a deeper red. Branches straight, rigid, alternate, with an ash-coloured brown bark, sometimes dichotomous, with thorns even from the divisions. Branchlets leafy, unarmed, very short, rugged with the scars of leaves, leafy at the end. Leaves very long, attenuated into a sort of petiole, smoothish, with very fine distant serratures; in the more branching shrub, which has the leaves narrower, scarcely visible. Peduncles frequent in bundles among the leaves. Male flowers both on a distinct shrub, and with the females, small, four-cleft, with the segments sharp and yellowish. Female flowers never on the male shrub, similar, greenish; with a superior germ, three styles longer than the calyx, filiform, and a subcapitate stigma. Berry the size of a pea, globose-triconvex, sharply umbilicate. Seeds three, large, ovate-oblong, three-sided convex.

Perhaps it may be a variety of that next to be described, owing to climate and place, but it differs much in habit.

Native of Siberia, by the Selenga and collateral rivers of Mongolia, and in the open pine woods, in warm situations. The Mongols use the wood to make their images, on account of its hardness and colour. The berries yield a deep yellow dye.

β. This is a small bushy tree, very much branched, scarcely ever attaining a fathom in height; the bark brown and even, on the branches of a yellowish-testaceous colour and shining: the branches stiffer, more long and slender, and more abundant than in the preceding, becoming thorny at the tip, having frequent bundles of leaves on them. Leaves on the annual twigs in bundles; but on the branches alternate, sessile, lanceolate-linear, attenuated especially at bottom, scarce apparently serrulate, bluntish, roughish with very fine hairs along the edge and underneath. Flowers among the bundles of leaves, many, peduncled. Calyx four-cleft, small, yellow, with the segments sharp and bent back. Nectaries or petaloid scalelets upright, and so small as hardly to be visible to the naked eye. Stamens shorter by half than the calycine segments, and upright. Stigma commonly bifid, more rarely trifid, longer than the stamens. Flowers always hermaphrodite, sometimes five-cleft and five-styled. The smell of the flowers as in those of *Prunus Padus* or Bird Cherry. Berry oblong, small, black, two-seeded.

Native of Siberia, about the river Terec, &c. The wood is white on the outside, but within of a russet colour with testaceous bands, the hardness of a bone<sup>e</sup>.

5. This is an upright shrub, with branches becoming thorny at the end. Leaves stiffish, perennial, lanceolate or ovate, blunt, even, petioled, paler and netted underneath, having frequently a very short point at the end. Flowers axillary, each on a pedicel shorter than the leaf. Berry juiceless, with a groove on each side, subbilobed, two-valved, two-celled, with one seed in each cell. Seed oblong, convex, subtriquetrous. There are two varieties; one with smaller leaves, ovate or ovate-oblong, like those of Box, the other with linear-lanceolate leaves<sup>f</sup>.

According to Linneus it is less than *R. catharticus*, which it otherwise resembles. Leaves at the buds two or three, like those of the Olive but smaller, even,

of a firm substance, quite entire, edged as it were with veins, on short petioles, bluntish, netted. Fruits solitary, resembling those of the first species.

Native of Spain and Barbary.—Introduced in 1776, by Casimir Gomez Ortega, M.D.

6. Native of the island of Teneriffe, where it was found by Mr. Francis Masson, and introduced in 1788<sup>g</sup>.

7. This species bears so much resemblance to the first, that it might be almost considered as a variety, were not all the flowers hermaphrodite, and some trifid, others quadrifid, in equal numbers, with stamens corresponding to these divisions. The leaves are narrower and much smaller, attenuated to both ends, and of an oval form. The principal branches are procumbent. The spines are more frequent. The berry is roundish, black, and contains three whitish seeds, each inclosed in a dry whitish membrane, separating into two parts with elastic force<sup>h</sup>.

According to Villars, it is a very low shrub, much branched, forming an impregnable bush, by presenting its thorns every way.]

Mr. Miller says, that his *R. longifolia* grows to a larger size than his second, which is the *R. infectorius*, but not so high as the first, or *R. catharticus*. The branches are stronger, and armed with a few long spines; the leaves are like those of the wild Plum, but a little longer and narrower; the flowers are small, of a yellowish colour, and produced from the side of the branches: they appear in June, but are not succeeded by berries in this country.

[Haller, from Duhamel, considers these berries as the *Graines d'Avignon*, which are preferred to those of the common sort in dyeing. The Maroquin or Morocco leather is dyed yellow with them.

Native of Switzerland, Austria, the South of France and Italy. Introduced in 1775, by the Doctors Pitcairn and Fothergill<sup>i</sup>: by which I suppose that the author of the Kew catalogue did not allow the *longifolia* of his master to be the *R. saxatilis* of Linneus.

8. This is a shrub or small tree, creeping by runners. Branches round, striated, alternate, remote, divaricating at an acute angle. Leaves alternate, petioled, bluntish, very finely and acutely serrate, even, alternately veined, at the base of the branchlet often opposite. Spikes terminating simple or alternate, in a naked panicle. Flowers interruptedly glomerate, sessile, clustered, minute. Corolla five-cleft. Stamens five, within the petaloid scale. Style short. Stigma triple<sup>k</sup>.

According to Osbeck, this shrub grows a fathom in height, with leaves like those of the common Tea; the flowers are very small, and rest on the top of the boughs, which are again subdivided into smaller branches. The poor in China, where it is a native, make use of the leaves instead of the true tea. They call it *Tia*.

9. This tree rises generally to a very considerable height: the trunk is often above two feet and a half in diameter, and covered with a thick scaly bark. The wood is hard, of a dark colour and close grain: it is looked upon as one of the best timber-woods in the island of Jamaica, where it grows naturally in many parts<sup>l</sup>.

10. Branches round, scattered, smooth, with an ash-coloured bark. Leaves petioled, alternate, an inch and more in length, very finely nerved and veined, quite smooth on both sides, blunt. Umbels axillary on very short peduncles. Pedicels smooth, a little longer than the common peduncle.

Native of the island of Santa Cruz, whence it was sent by v. Rohr and West.

11. Branches round, scattered, smooth, with an ash-coloured bark. Leaves petioled, alternate, an inch and half long, quite smooth, paler and yellowish at the edge, especially the younger ones, blunt, above scarcely veined, beneath paler, veinless and nerveless. Peduncles two or three together, very short, smooth, one-flowered. Flowers smooth. Germ oblong, smooth.

<sup>d</sup> Cavanilles.

<sup>e</sup> Pallas.

<sup>f</sup> Desfontaines.

<sup>g</sup> Hort. kew.

<sup>h</sup> Jacq. vind.

<sup>i</sup> Hort. kew.

<sup>k</sup> Linn. mant.

<sup>l</sup> Browne.



Style one, with a bifid stigma.—West sent it from the same island<sup>m</sup>.

12. This was found at the Cape of Good Hope by Thunberg<sup>n</sup>.

13. Branches slender, tomentose above, hoary. Leaves petioled, alternate, scarcely an inch in length, gradually less and less upwards, on the upper surface smooth and somewhat wrinkled, mucronate. Petioles very short, tomentose. Flowers subsolitary, scarcely peduncled, ash-coloured, subtrigynous.—Supposed to be a native of New Zealand<sup>o</sup>.

14. This is the *pumilus* of Cavanilles, but it is very different from the *pumilus* (n. 20.) of Jacquin and Linneus's mantissa, both in flower and fruit; the leaves also are smaller, subcrenate, and on very short petioles<sup>p</sup>.

Native of the kingdom of Valentia.

This is a small species, growing in calcareous rocky places, and is never upright, but always repent as it were or spread upon the bare rock; it is very branchy and the branches are tortulous. The twigs are limber, and the wood hard and whitish: the bark of a reddish brown, smooth, but tuberculated here and there with knots and fissures. The leaves on the young branches are scattered and approximated, standing on very short footstalks, and are ovate, scarcely serrated, with distant serratures, and sometimes without any: they are of a glossy or bright green above, and paler beneath: the stipules are short and deciduous. The flowers are axillary, numerous, seated on capillary footstalks, which at length bend, and are furnished with a small reddish deciduous bracte. The calyx is of an herbaceous colour with a cast of yellowish, and is funnel-shaped, with a quadrifid border, with acute divisions, from which proceed so many extremely short stamens, seated rather below. There is no corolla, unless the calyx be so named. The filaments are shorter than the calyx, subulate, and whitish: the anthers ovate, yellow, and twin. Germ ovate, in the bottom of the calyx; styles three: stigmas thickened. The fruit is an ovate trigonal capsule, and the seeds, which are three in number, are three-sided<sup>q</sup>.

This shrub flowers in may in Spain, and perfects its fruit in june, growing in company with the *Rhamnus lycioides* and *Alaternus*, *Arbutus Unedo*, &c. &c.

15. This is a small upright tree, seven feet high, branching, and in habit approaching near to *Viburnum Lantana*. Leaves ovate, very blunt, tomentose on both sides, petioled, alternate, four inches long. The petals, when examined by a magnifier, appear ciliate. It has the flower and fruit of the next species; and abounds in coppices, on the coast of the island of Cuba.

16. This also is an upright tree, with most of the branches spreading out horizontally. The twigs, petioles, peduncles, lower surface of the leaves, and outer surface of the calyx are covered with a slight ferruginous nap. Leaves oblong-ovate, acute, entire, the upper surface smooth and shining, alternate, for the most part distich. Racemes short, corymbed, axillary, seven-flowered or thereabouts. Flowers without scent, all pointing upwards, with greenish scales. Calyx deeply five-cleft. Anthers standing out beyond the scales. Style single, ending in a trifid stigma. Capsule roundish, three-grooved, three-celled, three-valved; the valves opening two ways at the top. Seeds solitary, roundish, flattened a little, emarginate, black and very shining. In high mountain woods it attains the height of twenty feet, whilst in coppices on the coast it is rarely seven feet high, with leaves four inches long: whereas in the former they are half a foot in length. The nap in Cuba is silvery, in the other islands always ferruginous. In the island of Martinico the French know it by the name of *Bois couleuré* or Snake-wood; whence the trivial name.

Native of several islands in the West Indies, where it flowers in january, june and november<sup>r</sup>: probably the greatest part of the year. Here it flowers in june;

and was introduced from the Bahama islands, in the year 1726, by Mr. Mark Catesby<sup>s</sup>.

The petals are lanceolate from the sinuses of the calyx: the stamens within the petals: a transverse nectariferous callus within the base of the stamens: the style three-sided<sup>t</sup>.]

Miller describes his *Ceanothus arborescens* as rising with a shrubby stalk eighteen or twenty feet high, sending out several horizontal branches; the leaves ovate and veined; the flowers axillary, on very short peduncles, of a white herbaceous colour, and succeeded by dry capsules, shaped like those of *Ceanothus americanus*.

[17. Stem shrubby, twining, rufescent, even. Leaves alternate, quite entire, repand, even; on roundish, rufous, inarticulate petioles<sup>u</sup>.

Native of Carolina. Cultivated in 1714, by the Dutchess of Beaufort. It flowers in june and july<sup>v</sup>.

18. This is a small tree, resembling *R. catharticus* very much, but taller, bushy, with thicker branches, less spreading, and never having any thorns. Trunk often the thickness of the human arm; the wood pale red, of a brighter colour than in the common Buckthorn. Branches straight, testaceous-hoary, even: the twigs mostly opposite, leafy at the end. Leaves larger, more oblong, subacuminate, more sharply serrate than in *R. catharticus*, and veined in a different manner; always smooth, and on longer petioles. Flowers greenish-yellow, not larger than in *R. catharticus*: the leaflets acute and deciduous. Stigma twin. Berries among the leaves on peduncles equal to the petioles; they are the size of a large pea, frequently twin, and commonly two-seeded; the rudiment of the third seed being abortive.—Gmelin in Ammann has erroneously described the fruit as red, and the flowers as white. In the *Flora Sibirica* he has set it down as a variety of *R. catharticus*, although it differs from it as much nearly as *R. saxatilis*, which indeed it resembles more in the nervature and circumscription of the leaves.

Native of Dauria, by the river Argun, where it is plentiful; but neither this nor the common Buckthorn occur in other parts of Siberia<sup>w</sup>.

19. This forms a shrub of several feet in height. The rounded leaves, manifestly crenate all about, distinguish it easily from *R. Frangula*<sup>x</sup>, (n. 21.) Their leaves are not doubly-crenate: in the younger ones, the margin, being plaited by prominent veins, has the appearance of doubled notches<sup>y</sup>.

The calyx and stigma are four-cleft, as in *Rb. catharticus*<sup>z</sup>.

Native of the mountains of Germany, Switzerland, the South of France, and Piedmont.

20. This differs from the next species by its stems adhering to the rocks, and by its serrate leaves; from the preceding by its hermaphrodite flowers<sup>a</sup>. The leaves are scarcely villose underneath. The berries are three-seeded. It roots itself in the fissures of the rocks, and covers them like Ivy<sup>b</sup>. Hence Scopoli's trivial name of *rupestris*. He says, that the leaves are scarcely an inch in length, with the edges whitish, somewhat cartilaginous, and obscurely notched; having a ferruginous nap on the nerves underneath. The flowers are four or five-cleft, with the calycine segments somewhat toothletted. Petals and stamens white.

Native of Germany, Carniola, Dauphiné, Monte Baldo, Spain.]

21. The black berry-bearing Alder rises with a woody stem to the height of ten or twelve feet, sending out many irregular branches, covered with a dark bark. Leaves ovate-lanceolate, about two inches long, and an inch broad, having several transverse nerves from the midrib to the sides. The flowers are produced in clusters at the end of the former year's shoots, and also upon the first and second joints of the same year's shoot, each upon a short separate pedicel; they are small, of an herbaceous colour, and are succeeded by small round berries, which turn red, but are black when ripe. The flowers appear in june, and the berries ripen in september.

<sup>m</sup> Vahl.

<sup>n</sup> Linn. suppl.

<sup>o</sup> Vahl.

<sup>p</sup> Willdenow.

<sup>q</sup> Cavanilles.

<sup>r</sup> Jacquin.

<sup>s</sup> Hort. kew.

<sup>t</sup> Linn. syst.

<sup>u</sup> Linn. suppl.

<sup>v</sup> Hort. kew.

<sup>w</sup> Pallas ross.

<sup>x</sup> Villars.

<sup>y</sup> Willdenow.

<sup>z</sup> Linn.

<sup>a</sup> Idem.

<sup>b</sup> D'Affo.



[In its wild state, it is seldom much more than four feet high, with numerous forked branches. Leaves on the young branches only, opposite, petioled, obovate or elliptic-lanceolate, pointed, quite entire, smooth, veined, of a bright pleasant green. Peduncles axillary, two or three together, one-flowered. Calyx cup-shaped, with five reflexed segments, between which stand the little petals, and opposite to them the very minute stamens, with dark-purple anthers. Germ superior, with a very short style, and a bifid stigma. Berry dark-purple, with two hemispherical seeds<sup>c</sup>.

Mr. Relhan remarks that it has deciduous bractes; that the calyx has brown, remote binate and solitary villose hairs; that the style is shorter than the calyx, with an emarginate stigma; and that the berry has two, or sometimes, but rarely, three seeds.

According to Scopoli, the berry is three-celled, and the size of those of Juniper; one seed in each cell, ovate, yellow, compressed; and one of the three sometimes less or even entirely abortive.

Gärtner describes the berry as globular, smooth, dark-coloured, succulent, two-celled, or sometimes, but seldom three-celled, with a very thin partition which almost disappears when the berry is ripe. Seeds solitary, ovate-rounded, plano-convex, or very obtusely angular on the inner side, produced at the base into a cartilaginous and very turgid umbilicus, smooth and rufescent. This structure of the umbilicus occurs scarcely any where except in *Phytica*.

Native of most parts of Europe, in woods, thickets and hedges; also in Siberia: flowering with us early in May, and sometimes in April.

From a quarter to half an ounce of the inner bark, boiled in small beer, is a sharp purge. In dropsies or constipation of the bowels in cattle, it is a very certain purgative. The berries are also purgative, like those of common Buckthorn. These, gathered before they are ripe, dye wool green and yellow—when ripe, blue-gray, blue and green. The bark dyes yellow, and with preparations of iron, black. The flowers are particularly grateful to bees. Goats devour the leaves voraciously; and sheep will eat them. Charcoal prepared from the wood is preferred by the makers of gunpowder<sup>f</sup>.

The berries of this species, and also of the Cornel, are said to be brought to market for those of Buckthorn. They are easily distinguished; the true Buckthorn having four seeds, this two; and the *Cornus* one nut inclosing two kernels<sup>g</sup>.]

β. This has larger and rougher leaves. It grows naturally on the Alps and other mountains of Europe. Perhaps *R. alpinus*.

γ. Is of humble growth, seldom rising above two feet high. It grows on the Pyrenees. [Perhaps *R. pumilus* is here intended.

22. This resembles *R. Frangula* very much, but is larger. The calyxes are villose, whereas in that they are smooth. The petaloid scalelets are sessile; in that they have short claws<sup>h</sup>.

Native of the Azores: where it was found by Mr. Francis Masson, and introduced by him in 1778. It flowers in July.

23. Native of Madeira and the Canary islands. Found by Masson, and introduced in 1785<sup>i</sup>.

24. This is a shrub, becoming in a manner a tree. Branches round, alternate, rod-like, often reclining or spreading, covered with a smooth brown bark. Leaves alternate, blunt, nerved and veined: nerves approximating: petioles round, filiform, longish, smooth. Peduncles shorter than the petioles, round, smooth, many-flowered: flowers pedicelled disposed in a little umbel, whitish-green. There are a few minute scales at the base of the umbels. Calyx cut round at the base: border five-cleft, deciduous; segments ovate, spreading. Petals or scalelets inserted between the segments of the calyx, minute, vaulted. Filaments the length of the petals, and concealed under them. Germ roundish, placed at the base of the calyx or on the receptacle. Style three-parted to the base. Stigmas

blunt. Fruit placed at the base of the calyx, subtrilocous, three-celled, covered with a juiceless skin, and when that bursts, divisible into three parts, like those of a capsule, opening within and at the top; with membranaceous partitions. Seeds solitary, oblong, flattened a little, smooth, black. The fruit, when ripe, and without the skin, being cut transversely above the middle, appears to be trilocular and sex-valvular.

It is very nearly allied to *R. colubrinus*, but that has the branchlets, petioles and peduncles ferruginous-tomentose; the style three-sided, trifid only at the top<sup>k</sup>.

On account of the juiceless fruit, and the vaulted petals, L'Heritier refers this species to the genus *Ceanothus*: but at the same time he thinks that all the *Ceanothi* might better be removed into this genus. On the contrary Swartz will not by any means consent to this plant being considered as a *Ceanothus*; its whole habit being that of *Rhamnus*, and the fruit of several other species in this genus being of the same structure with this.

Browne calls it shrubby *Rhamnus* with bilocular berries: but in the figure, the fruit seems to be trilocous.

Native of the islands of Jamaica, and St. Bartholomew. Cultivated in 1758, by Mr. Miller. It flowers in August.

25. Native of the Cape. Cultivated before 1779, by Robert Edward Lord Petre<sup>l</sup>.

26. Stem shrubby, round, ten feet high, weak, climbing by tendrils. Leaves alternate, on very short petioles, blunt with a minute point, quite entire, smooth above, somewhat hairy underneath, an inch in length. Tendrils from the upper axils, solitary, simple. Stipules at the base of the branchlets, awl-shaped, caducous, three lines in length. Flowers umbelled, axillary. Calyx one-leafed, herbaceous, slightly pubescent on the outside. Tube turbinate, two lines in diameter. Border five-parted; segments from a broad base ovate, acute, spreading very much, a line in length. Petals five, inserted into the margin of the receptacle between the segments of the calyx, whitish, boat-shaped, convolute at the sides, inclosing the stamens, diverging, shorter than the calyx. Filaments five, inserted within the base of the petals, filiform. Anthers roundish, small. Germ immersed in a snow-white receptacle, filling the tube of the calyx. Style three-sided, green, short. Stigma trifid.

Native of Africa, where it was found by James Bruce, Esq. It was introduced in 1775, and flowers in November<sup>m</sup>.

27. In appearance this approaches to *R. alpinus*; but the leaves are more loosely nerved, more netted, and only smooth but not shining as in that<sup>n</sup>. Monf. L'Heritier sets it down as a native of North America; but in the Kew catalogue no place of growth is assigned to it. There it is said to have been introduced in 1778, by Mess. Lee and Kennedy; and to flower in May.

28. Trunk ten or fifteen feet high, with a smooth bark. Branches subdivided, spreading. Leaves alternate, acuminate, unequally serrate, nerved, smooth on both sides, very finely veined. Petioles roundish, smooth. Peduncles axillary, the length of the petioles, short, upright, many-flowered; flowers pedicelled, small, green, or yellowish. Stipules small, acuminate, at the base of the peduncles. Calyx ovate and cut round at the base, permanent, five-cleft: segments acute, spreading, thickish, deciduous. Petals very minute, placed between the divisions of the calyx on very short pedicels, concave. Filaments five, shorter than the calyx. Anthers roundish, three-cornered, covered at the back by the petals. Germ roundish, at the bottom of the calyx. Style shorter than the stamens, trifid. Stigmas blunt, contiguous. Berry spherical, sometimes three-grooved at the top, the size of a small pepper-corn, placed on the calyx, pellucid, pale green, containing from one to three

<sup>c</sup> Smith. <sup>f</sup> Withering. <sup>g</sup> Engl. bot. <sup>h</sup> L'Heritier.  
<sup>i</sup> Hort. kew.

<sup>k</sup> Swartz.

<sup>l</sup> Hort. kew.

<sup>m</sup> Idem.

<sup>n</sup> L'Heritier.



oblong three-cornered seeds.—Native of Jamaica, in the more temperate parts, in mountain coppices; flowering in august, and ripening the berries in october<sup>o</sup>.

29. Monf. L'Heritier informs us, that he obtained this spurious plant above ten years since, (about 1778) from the seeds of *R. alpinus*; that he observed the mother, what was absolutely female, and separated from any males, every year; that *R. Alaternus* was certainly the father; and that seeds sown abundantly in some provinces of France constantly produced this spurious plant, without ever varying. It has something from both parents; as the herb of the mother; the leaves between both, but in substance approaching more to *Alaternus*, and almost perennial; and the androgynous flowers of the father, not dioecous, as in the mother.

30. Stem shrubby, round, very even, smooth, shining, branched, eight feet long, procumbent; with many, scattered, solitary, straight, short prickles. Leaves notched a little, flat, small, smooth, alternate, streaked with many oblique parallel lines. Flowers white, minute, on many-flowered subterminating peduncles. Calyx five-toothed very small. Corolla inferior: petals ten, lanceolate, equal, upright; the five inner ones embracing the stamens. Filaments five, awl-shaped, the length of the corolla; with nodding anthers. Germ ovate, rugged. Style filiform, equal to the stamens. Stigma thickish, concave. Fruit (a Drupe) small, oblong-ovate, rugged, red; containing an oblong, two-grooved, two-celled nut<sup>o</sup>.—Loureiro would give the specific difference thus: prickles solitary, straight; leaves ovate, obliquely marked with lines; peduncles many-flowered.

Burman has given a figure of it from Herman's specimen; which has slender, flexile, subhirsute branches, putting forth smaller branchlets alternately; these latter are simple, and have leaves on each side, which are alternate, smooth, ovate, half an inch long, quite entire, having opposite veins, and on petioles a line in length: at the base of each leaf is a rigid prickly scale. Flowers axillary, solitary, bay-coloured, four-petalled, on peduncles no longer than the petioles. Berry black, three lines in diameter.

Osbeck says, that it often grows to the height of a man, and is remarkable for its small and beautiful leaves, of a yellow-green colour beneath, with red veins. The anthers are black. When he first saw it in China, he supposed that it had escaped the notice of preceding botanists.—Native of China, CochinChina and Ceylon.

31. The *Alaternus* is a shrub with alternate, shining, evergreen leaves, ovate, ovate-lanceolate, or lanceolate, often glandular at the base, having remote serratures about the edge. Flowers small, numerous, axillary, in short blunt racemes. There is a very small bract<sup>e</sup> at the base of each pedicel. Flowers male and female or imperfect hermaphrodites, on the same or different individuals. The calyx in both sorts five-cleft, with the segments ovate, spreading, often bent down, yellow or brownish. Corolla none. In the male flowers, five upright stamens, alternate with the segments of the calyx: in the others, the rudiments of five stamens; the style three-parted; the berry small, round, from red turning blackish when ripe, having two or three seeds, convex on one side, angular on the other<sup>o</sup>.

Willich observes that the *Alaternus* is never perfectly dioecous; but that in some shrubs most of the flowers have perfect stamens, with a single imperfect style; having however a very few flowers mixed with them, which at the bottom of the calyx have an ovate-three-cornered germ, with a femitrifid style, twice the length of the stamens. In other shrubs, most of the flowers have stamens, and a trifid or very rarely a quadrifid style, with a very few flowers mixed with them, having a single imperfect style.—Thus impregnation is frequently carried on in plants supposed to be dioecous, when one of the sexes is presumed to be absent; and on this foundation are some of the best objections to the sexual system supported.

• Swartz,

• Loureiro.

• Desfontaines.

Native of the South of Europe, and of Barbary. The fresh branches or young shoots with the leaves will dye wool a fine yellow. The honey-breathing blossoms, says Mr. Evelyn, afford an early and marvellous relief to the bees. They come out in april.

This gentleman informs us, that he was the first who brought the *Alaternus* into use and reputation in this kingdom, and that he had propagated it from Cornwall to Cumberland.

This boast of Mr. Evelyn's must be understood of his bringing this shrub into general use: for Parkinson, in 1629, had said, that we have growing in our country the tree called *Alaternus*. It was however then rare: for Parkinson adds—"the beauty and verdure of the leaves, abiding so fresh all the year, doth cause it to be of the greater respect, and therefore findeth place in their gardens only, that are curious conservers of all nature's beauties." He calls it *Evergreen Privet*, which name is now lost in the Latin one.—Gerarde says, it is a stranger in England; and Johnson (in 1633) does not contradict it.

Clusius reports, that the fishermen in Portugal dye their nets red with a decoction of the bark; and that dyers there use small pieces of the wood to strike a blackish blue colour.]

Mr. Miller makes four species of *Alaternus*, and has figured two in his plates. These are the only varieties worth considering. The first ( $\alpha$ ) has a variety with variegated leaves, commonly called bloated Phillyrea by the nursery-men: and the third ( $\beta$ ) has the leaves striped with white and with yellow, called silver and gold-striped *Alaternus*.

$\beta$ . has the leaves much longer and narrower, and the serratures on the edges much deeper: this shoots its branches more erect, forms an handsomer bush, and is equally hardy.

The Phillyrea is sometimes confounded with the *Alaternus*, by such as are not botanists; but they may easily be distinguished by the position of their leaves, which are alternate in this, but placed opposite by pairs in that.

The *Alaternus* was much more in request formerly than it is at present; having been planted against walls in court-yards to cover them, as also to form evergreen hedges in gardens; for which purpose it is very improper, for the branches shoot very vigorously, and being pliant are frequently displaced by the wind; in winter, when much snow falls in still weather, the weight of it often breaks the branches; these hedges also must be clipped three times in a season to keep them in order, which is both expensive, and occasions a great litter in a garden.

[This shrub is still sometimes used in towns for concealing walls; but chiefly to make a variety in ornamental plantations.]

32. Stature of the Elm or Hornbeam; and it may perhaps be of the same genus with the latter. Roots horizontal, diffused. Trunk straight, very much branched and forming a kind of bush, with the branches extending frequently to twenty paces, and to a considerable height; two fathoms in circumference. The wood white and brittle; the bark brown, entire, covered with a whitish-gray skin. Branches and branchlets slender, spreading. Leaves alternate, stiffish, on very short petioles, smallish, spreading, ovate, acute, the interstices between the notches rounded, dusky green above, paler and netted underneath, in thickets rugged, very smooth in higher situations. Fruit at the ends of the branchlets, axillary, sessile, solitary, naked, dry, two-celled, globular-acute, more gibbous on one side.

The genus of this tree is yet uncertain, the flowers not having been observed, nor the fruit in a ripe state, by any botanist.—Native of Siberia<sup>o</sup>.]

33. This tree rises with a pliant shrubby stalk to the height of eight or ten feet, sending out many weak slender branches, garnished with oval leaves placed alternately, standing upon foot-stalks near one inch long; these have three longitudinal veins, and are of a pale green. The flowers come out at the

• Pallas.



wings of the stalk in clusters, almost the length of the young branches; they are of a greenish yellow colour, and appear in June, and are succeeded by broad, roundish, buckler-shaped seed-vessels, which have borders like the brims of a hat, the foot-stalks being fastened to the middle; these have three cells, each containing one seed.

[From this singular appearance of the fruit, like a head with a broad-brimmed hat on, the French call it *Porte chapeau*.

According to Pallas, it is a bushy tree, of the same stature with *Prunus spinosa*, very much branched from the bottom. Branches round, spreading, tough, brown, alternately, subdivided, with single or double prickles, recurved and very sharp, at each division and bud. Leaves alternate petioled, rounded ovate, unequal at the base, three-nerved, very obscurely serrulate or entire, smooth. Racemes by the side of the petioles axillary, short, corymbed, divaricating, composed of from eight to thirty flowers, one or two only of which are fertile. Calyx one-leafed, flat, five-cleft, with lanceolate yellow segments. There is a nectariferous crown between the calyx and the germ which is subsinuate, and five petaloid bodies between the stamens and the segments of the calyx. Stamens five, bent back, with oblong anthers. Germ depressed, with three very short styles, terminated by reflexed stigmas. The fruit springs from the augmented crown of the germ, and is discoid, peltate, corticose when ripe: it contains one bony orbicular seed, flat above and conical beneath.

Desfontaines describes it as a very branching shrub; the branches twisted and reclining. Prickles in pairs, one shorter than the other and recurved. Leaves cordate-ovate, three-nerved, serrate, smooth. Flowers yellow, numerous, aggregate, axillary; on short filiform pedicels. Petals bagged, minute, spreading and bent down. Stamens inclosed in the petals. Fruit a juiceless drupe, crowned with a membranaceous, wide, waved, horizontal, permanent margin; three-celled, with one subovate compressed seed in each cell.

Willich remarks, that the segments of the calyx, scalelets or petals and stamens are commonly five, but that nevertheless some flowers have only four; there are however always three styles.

Native of the South of Europe, the Levant, Caucasus and Barbary.]

This is by many persons supposed to be the plant, from which the crown of thorns which was put upon the head of our Saviour, was composed; the truth of which is supported by many travellers of credit, who affirm that this is one of the most common shrubs in the country of Judæa; and from the pliability of its branches, which may easily be wrought into any figure, it may afford a probability.

[Hasselquist is of opinion that it was rather another species (n. 42.); called therefore by Linneus *Rhamnus Spina Christi*: but a modern Right Reverend Commentator inclines to think that the crown was not of thorns, but of the soft *Acanthus*, or *Bear's-foot*; he should have said *Bear's-breech*, for the *Bear's-foot* is the *Hellebore*. I must own that his reasoning does not appear to me to make out his point.

34. The true Lotus of the Lotophagi is a very branching shrub; the branches are reclining and flexuose. Prickles in pairs at the origin of the leaves, one straight, the other shorter and bent in. Leaves alternate, small, blunt, three-nerved, smooth, somewhat rigid, on very short petioles. Flowers solitary or glomerate, axillary, each on a short pedicel. Calyx five-parted; segments small, ovate, spreading, alternate with the petals; which are five in number, minute, half-funnel-form. Stamens five, opposite to the petals. Styles two, short, approximating. Fruit a spherical drupe, the size of a wild plum, sweet and harmless; inclosing a small, round, bony, two-celled nucleus, first green, but when ripe tinged with saffron colour.

Linneus remarks, that the branchlets of this shrub

are round; that one of the prickles is horizontal, the other recurved as in *Paliurus*; and that the leaves are as in *Zizyphus*, with respect to form, nerves, smoothness and size, only the edge is obsolete and very thinly crenate.

Frequent on the banks of the lesser Syrtis near Cassa, Tozzer, Kerwan, &c. flowering early in the spring, and ripening the fruit in autumn. Dr. Shaw found it long before Mons. Desfontaines, in this country, which borders on that of the Lotophagi. Mr. Park discovered it towards the Niger and Senegal rivers; and Mr. Browne in Dar-Foor: so that we have it at the eastern as well as the western extremity of the African desert; and it appears, that it is disseminated over the edge of the great Desert, from the coast of Cyrene, round by Tripoly and Africa proper, to the borders of the Atlantic, the Senegal and the Niger. Major Rennell saw the same kind of shrub and fruit, or what is exceedingly like it, in Bengal, where it is called *Byre*; and on the very banks of the Ganges, in dry situations. The people eat them there, as we may does or wild berries.

Pliny describes two sorts of Lotus; the one found at the Syrtis, and among the Nafamones, &c. which is this; the other in Egypt which is *Nymphaea Lotus*. The former, he says, from Cornelius Nepos, is the fruit of a tree, in size ordinarily as big as a bean, of a yellow colour, sweet and pleasant to the taste. The fruit was bruised, made into a kind of paste, and then stored up for food. A sort of wine was also made from it, resembling mead; but it would not keep many days. Pliny adds, that armies in marching through that part of Africa, have subsisted on the Lotus. Perhaps this may refer to the army of Balbus, which Pliny informs us, had penetrated to Gadamis and Fezzan.

Polybius, who had himself seen the Lotus, being employed by Scipio Africanus the younger, in exploring the coasts of Africa; says, that it is the fruit of a shrub, which is rough and armed with prickles, and in foliage resembles the *Rhamnus*; that when ripe it has the size of a round olive; has a purple tinge, and contains a hard stone; that being pounded it is laid by for use; and that its flavour approaches to that of figs or dates: finally, that a kind of wine is made of it by expression, and diluted with water; that it affords a good beverage, but will not keep more than ten days.

Of modern travellers, Dr. Shaw says that the fruit is common in the deserts, and other parts of Barbary; is still in great repute, and sold in the markets all over the southern districts of those kingdoms. Mons. Desfontaines relates, that it is spread over the southern parts of the kingdom of Tunis, on the borders of the Desert, and in the environs of the Lesser Syrtis; that the fruit is sold in the markets, their cattle fed with it, and a liquor drawn from it, as heretofore.

Mons. Saignier, who was shipwrecked on the coast of Africa in 1784, and was carried captive, along the western border of the Sahara to Morocco; says, that between the Capes Bojador and Nun, the people with him, eat of nothing during the day-time, that is, on the way, but a small wild fruit, resembling the *Jujube*, which is to be found every where. This was about the middle or end of March. Briffon, who was in like manner carried across the Desert, during the latter part of the summer and in autumn, only remarks abundance of prickly shrubs; probably the same, after the season of fruit. Mr. Park mentions February and March as the season, on the south of the Desert; Mons. Desfontaines, says August and September, to the north of the Desert; and Mr. Browne, that the fruit remains dry on the tree, great part of the winter months.

Mr. Park describes the fruit, as small farinaceous berries, of a yellow colour, and delicious taste. The natives, he says, convert them into a sort of bread, by exposing them some days to the sun, and afterwards pounding them gently in a wooden mortar, until the farinaceous part is separated from the stone. This



meal is then mixed with a little water, and formed into cakes, which, when dried in the sun, resemble in colour and flavour the sweetest gingerbread. The stones are afterwards put into a vessel of water, and shaken about, so as to separate the meal which may still adhere to them: this communicates a sweet and agreeable taste to the water, and with the addition of a little pounded millet, forms a pleasant gruel, called *fondi*, which is the common breakfast in many parts of Ludamar, during the months of february and march. The fruit is collected by spreading a cloth upon the ground, and beating the branches with a stick.

Mr. Park says, that the Lotus is very common in all the kingdoms which he visited; but is found in the greatest plenty on the sandy soil of Kaarta, Ludamar, and the northern parts of Bambarra, where it is one of the most common shrubs of the country. He had observed the same species at Gambia, and had an opportunity to make a drawing of a branch in flower. The leaves of the desert shrub are however much smaller, resembling in that particular those represented in the engraving given by Monf. Desfontaines<sup>a</sup>.

Mr. Browne informs us, that the Arabic name of the Lotus is *Nebbek*, and that there are two species of it in Dar-foor; the largest of which is termed *Nebbek-el-arab*. There is a difference in their fruit, as well as in their external appearance. The one is a bush, with leaves of dark green, not very different from those of the ivy, but much thinner. It appeared to be the same with that which he had seen in the gardens of Alexandria. The other a tree, growing to considerable size, but having both the leaves and fruit smaller; and the fruit of darker colour, and somewhat different flavour. Both of them equally thorny. The natives eat the fruit fresh or dry; for it dries on the tree, and so remains great part of the winter months. In that state it is formed into a paste of not unpleasant flavour, and is a portable provision on journies<sup>x</sup>.

Thus by comparing the information to be derived from ancients and moderns, collected with so much diligence, and digested with so much accuracy by Major Rennell, we are no longer left to wander in the wilds of conjecture, but are enabled to ascertain without ambiguity that *Lotus*, the history of which Homer and other ancients mixed with fable; Herodotus mentioned, without having seen it, and Polybius described so well from his own Knowledge.

The *Lotophagi*, as the Greeks called them, possessed a considerable part of the sea coast between the two Syrtes, the island of Meninx, (now Jerba) and the coast beyond it, as far as the lake and river of Tritonis, to the Machlies. Scylax extends the name to the tribes generally, between the two Syrtes. Ptolemy limits them to the neighbourhood of the river Cinyps alone; whilst Herodotus appears to confine them to the west of that river. Strabo places them in the island of Meninx alone: although he calls the adjoining Syrtis, that of the Lotophagi. Pliny, assigns them, in addition to the island, the environs of the Syrtis also.

But the allotment of this confined space, alone, to the eaters of Lotus, was owing to a want of a more extended knowledge of the countries that border on the Desert: for it appears, that the tribes who inhabit them, and whose habits are in any degree known to us, eat universally of this fruit, in a greater or less degree, according to circumstances; and most of them, apparently, as much as they can obtain of it<sup>y</sup>.

This tree cannot be the *Λωτος* of Theophrastus, or the *Lotus* of Virgil; that is more likely to be the *Celtis* or Nettle-tree, which is accordingly named *Lotus* by Bauhin and others. Linneus has given the generic term of *Lotus* to a set of plants, mostly herbaceous, of the leguminous tribe, and of his class Diadelphia. To the true Lotus, and the aquatic Lotus of Egypt, he has this name as a trivial. See the two articles of *LOTUS* and *NYMPHÆA LOTUS*, in this Dictionary. In the former of these articles, distinguish the Lotus

<sup>a</sup> Rennel, Herod. 627, to 630. Plin. l. 13. c. 17. Polyb. ap. Athenæum, l. 14. c. 12. Park. p. 99. Shaw, 226.  
<sup>x</sup> Travels in Africa, p. 270. <sup>y</sup> Rennel, 624.

of Theophrastus and Virgil from this of Homer, Pliny, Polybius, &c. and correct what is there suggested of the Rhamnus Spina Christi being the true Lotus, by what has been detailed above. A very satisfactory account of the aquatic Lotus of Egypt, (*Nymphæa Lotus*) and of that of the East Indies, (*Nymphæa Nelumbo*) is given by Rennell, in his elaborate examination of the Geographical System of Herodotus.

35. This is a tree with subvillose branches. Leaves alternate, narrower towards the base on the hinder side, bluntish, smooth, three-nerved, petioled, yellowish. Corymbs solitary, shorter than the leaf, lateral, next the petiole. Prickles opposite to the peduncle, very short, black, recurved, very sharp, having frequently two points, one below the other<sup>z</sup>.

Willdenow remarks, that the younger leaves are somewhat hairy about the edges; and that the younger branches are pubescent.—Native of the islands of Ceylon, and Amboyna.

36. This is a tree with round branches. Leaves very finely serrate, three-nerved, at the base on one side narrower, retuse, and there more deeply crenate, petioled. Flowers very many, axillary, each on very short pedicels, five-cleft, five-stamened; style bifid. Close to the petioles is a very small recurved prickles; but sometimes this is wanting<sup>a</sup>.

Loureiro describes it as a middle-sized tree, with twisted spreading branches, and recurved prickles usually solitary. Leaves ovate, quite entire, three-nerved, alternate. Flowers pale, axillary; on short, aggregate peduncles. Fruit a middle-sized drupe, ovate, red, sweet, and eatable:—the stone ovate-globular, muricate with tubercles, having at the base a transverse prominent acuminate callus, and constantly two-celled<sup>b</sup>.

Native of the East Indies. Cultivated in China and Cochinchina: here by Mr. Miller in 1731<sup>c</sup>.] He says, that it rises with shrubby stalks ten or twelve feet high, sending out many slender branches, which have a yellowish bark, and are armed with single recurved thorns (prickles) at each joint. Leaves round, heart-shaped, about two inches in length and breadth, and indented at the foot-stalk; they have three nerves, and are covered with a yellowish down on their under side. The flowers come out in clusters from the wings of the branches; they are small, of a yellowish colour, and are succeeded by oval fruit about the size of small olives, inclosing a stone of the same shape.

[37. This is a tree scarcely higher than a man. Branches from a pellicle of whitish cotton, armed very thinly with small solitary recurved prickles under the petiole. Leaves broad-ovate, often approaching to cordate, not seldom oblique, unequally serrate, dusky above, but underneath covered with a very fine white nap. Corymbs peduncled. Calyxes tomentose. Fruit a dry drupe, larger than a Cherry, insipid, subastringent, with an unequal nut or stone<sup>d</sup>.

It resembles the preceding very much, but the fruit is the size of a Cherry or little bigger and insipid. The prickles are fewer<sup>e</sup>.

Native of the East Indies, in deserts at the foot of the mountains.

38. The leaves of this tree are half-cordate, or so on the upper side, but half-lanceolate on the hinder side, three-nerved with the nerves branching, tomentose underneath, glaucous, on the wider side scarce manifestly serrate, petioled. In the axils, on the opposite side are very many small clustered flowers, but on the same side with the petiole behind, a recurved prickles<sup>f</sup>.

This is very distinct from its congeners by the great obliquity of the leaves, which are almost half-cordate, and acuminate<sup>g</sup>.—Native of the island of Ceylon.

39. Native of the Cape of Good Hope<sup>h</sup>.

40. Branches simple, opposite, spreading very much, angular, even. Prickles solitary, fixed, horizontal, recurved, solid. Leaves by the side of the prickles, even, obsolete toothed, on petioles the

<sup>z</sup> Linn. zeyl. <sup>a</sup> Idem. <sup>b</sup> Gærtner. <sup>c</sup> Hort. kew.  
<sup>d</sup> Retz. <sup>e</sup> Willdenow. <sup>f</sup> Linn. zeyl. <sup>g</sup> Willdenow.  
<sup>h</sup> Thuab. prodr.



length of the prickles. Stipules two, very minute. Fructifications lateral, without prickles, umbelled, a little longer than the petioles, simple. Calyx bell-shaped, cut round: border upright, five-parted; with acute deciduous teeth. Petals five inserted into the calyx, obcordate, ciliate, snow-white, involving the anthers. Filaments five, alternate, a little shorter than the calyx. Anthers erect, oblong. Germ superior. Style short, permanent. Stigma emarginate. Fruit globular, clothed at the bottom with the base of the cut calyx. Seeds three obcordate, compressed.

Native of the East Indies, in bushy places; where it was first observed by Koenig<sup>1</sup>.

41. Sometimes both prickles are straight, sometimes the shorter one is recurved. Calyx stellate, with the segments on the upper surface plaited through the middle. Petals deeply hollowed like a snail's shell, upright, but after flowering bent back. Styles two or three<sup>2</sup>. Drupe berried, superior, ovate-oblong, sub-umbilicate or obtuse at both ends, smooth, scarlet: pulp granular, sweet: shell or stone bony, ovate, acuminate at each end, wrinkled with little excavations, having at the base a transverse, prominent, compressed, acuminate callus, like an incomplete future; two-celled, valveless. In each cell is one seed, of a rounded-ovate shape, flattened a little, plano-convex, rufescent and at the umbilicus blackish; fastened to the bottom of the cell<sup>3</sup>.

Thunberg describes the stem as shrubby and branched; the branches and branchlets filiform and smooth; the prickles scattered, solitary or in pairs, commonly erect; the leaves alternate, on very short petioles, scarcely cordate, ovate and ovate-oblong, blunt with a very fine point, sometimes but seldom retuse, ferrate, smooth, pale underneath, three-nerved, an inch long; flowers axillary, two, three or more together, very short and unequally peduncled; styles two very short, with capitate stigmas.

According to Loureiro, it is a middle-sized tree, with twisted branches spreading a little; and very many long straight subsolitary prickles. Leaves oblong-ovate, ferrate, three-nerved, smooth on both sides. Flowers greenish-white, on axillary short peduncles, commonly single. Calyx corolline, wheel-shaped, five-cleft. Stamens five, defended by as many scales. Stigmas two sessile. Drupe middle-sized, ovate-oblong, brownish-yellow, fleshy; inclosing an oblong two-celled nut.

Desfontaines describes it as a branching tree, with prickles in pairs, one straight, the other curved in and shorter; the leaves smooth, shining, ovate-oblong, ferrate, three-nerved; on a very short petiole. Flowers palish yellow, axillary, solitary and aggregate, each on short pedicels: petals alternate with the calycine segments, small, bagged. Drupe shaped like an olive, smooth, when ripe saffron-coloured; inclosing an oblong two-celled nucleus.

Pallas has a shrub, not uncommon in Georgia, and the Persian side of the Caspian sea, which he says appears to be the *Rb. Zizyphus* of Linneus, although the younger branches which were sent him had no prickles on them. According to him, the branches are woody, the thickness of a quill, and testaceous. From one bud spring two or three annual shoots, a span long, filiform, subpubescent, leafed alternately. Leaves on short petioles, ovate-lanceolate, obscurely ferrulate, blunt, three-nerved, often unequal at the base, scarce apparently pubescent underneath. Stipules bristle-shaped, slender. Flowers hermaphrodite from all the axils, three or four, seldom more, forming a sort of subpeduncled corymb, small, five-cleft, greenish-yellow, almost as in *Paliurus*. The berries nearly equal the size of the drupe in *Cornus sanguinea*; they are solitary in the axils, and peduncled. It is figured under the name of *Rb. paliuroides*.

Native of the South of Europe, China, Cochin-China and Japan. The fruit is sold in the market at Canton during the autumn.] In Italy and Spain it is served up at the table in deserts during the winter season, as a dry sweetmeat. [Mr. Ray observed plenty

of the fresh fruit exposed to sale at Venice. He saw abundance of the shrubs wild in Calabria. The Jujube is said to have been first introduced into Italy from Syria by Sextus Pampinius, in the time of Augustus: but I suppose we are to understand this of the variety improved by cultivation; as in the introduction of the Cherry by Lucullus. It was cultivated here in 1640, as appears from Parkinson<sup>m</sup>.

Miller has four species of *Zizyphus*; the third, which he names *Z. Oenoplia*, does not seem to be the *R. Oenoplia*, but the *R. Jujuba* of Linneus: the fourth is the *R. Spina Christi*. The two first belong to this species, and are the Jujube in its cultivated and wild state; according to him.]

*Zizyphus Jujuba*, the common or cultivated Jujube has a woody stalk, dividing into many crooked irregular branches, armed with strong straight thorns, set by pairs at each joint. The leaves are two inches long and one broad, slightly ferrate, on short foot-stalks. The flowers are produced on the side of the branches, two or three from the same place, sessile, small and yellow. Fruit oval, the size of a middling Plum, sweetish and clammy, including a hard oblong stone, pointed at both ends.

The *Z. sylvestris* or wild Jujube, grows about Tunis in Africa. It has slender woody stalks, which send out many weak branches, covered with a grayish bark, and armed with spines in pairs, one longer and straight, the other short and recurved. Leaves small, oval, veined, half an inch in length and breadth, and sessile.

42. This sends up several shrubby stalks, dividing into slender branches, armed with straight spines, (prickles) set by pairs at each joint. Leaves small, ovate, veined, alternate, upon very short foot-stalks. Flowers small, yellow, axillary. Fruit round, about the size of the Sloe.

[Desfontaines describes it as an upright tree. Leaves alternate, perennial, blunt, notched about the edge, three-nerved, on short petioles: the younger ones pubescent underneath. Prickles short; one straight, the other recurved. Drupe oblong, the size of a wild Plum, on a short pedicel, inclosing a roundish nucleus or stone. The fruit is eatable and pleasant.

In all probability, says Hasselquist, this is the tree which afforded the crown of thorns, put on the head of Christ. It grows very common in the East, and was very fit for the purpose; for it has many small sharp spines, well adapted to give pain. The crown might be easily made of these round pliant branches; and what seems to be the greatest proof is, that the leaves much resemble those of Ivy. Perhaps the enemies of Christ would have a plant somewhat resembling that, with which Emperors and Generals were used to be crowned, that there might be calumny even in the punishment<sup>n</sup>.

Native of Ethiopia and Palestine: *Lin.*—of Barbary, in woods of dates near Tozzer: *Desfont.*—Egypt: *Alp. and Vestling.*—Linneus raised it from seeds sent by Hasselquist. Mr. Miller cultivated it in 1759, from seeds.

#### General Observations.

The species of this genus are all either trees or shrubs: which are thorny, prickly, or unarmed; hence a three-fold subordinate division of the genus. One species (*volubilis*, n. 17.) has a twining stem: and one (*myrtacinus*, n. 26.) climbs by means of tendrils. Some have one upright trunk, but more have several shrubby stems, and some are decumbent, and even in a manner attached to the ground. The leaves are commonly alternate; but sometimes almost or quite opposite; never compound, seldom jagged, mostly entire: frequently (5, 6, 31.) of a firm consistence, shining and ever-green. The flowers are axillary, small; and make little appearance, being commonly of a greenish yellow or herbaceous colour. The calyx, which Linneus calls the corolla, is five-cleft or five-toothed, in most of the species; but it is four or five-cleft in some, as in *Rb. Prinoides*, n. 20.;

<sup>1</sup> Linn. suppl.

<sup>2</sup> Willich & Scop.

<sup>3</sup> Gartner.

<sup>m</sup> Hort. kew.

<sup>n</sup> Travels, p. 289. Engl. edit.



three or four-cleft, with three or four stamens in *Rb. saxatilis*, n. 7.; and four-cleft in several; as *Rb. catharticus*, n. 1. *infeſtorius*, n. 2. *Erythroxyton*, n. 4. *crenulatus*, n. 6. *dauricus*, n. 18. *alpinus*, n. 19. The stamens should regularly be five, but in *Rb. catharticus* and *infeſtorius* there are only four, and indeed their number generally corresponds with the divisions of the calyx. Most of the species have one style, corresponding with the order in which they are placed by Linneus: but *Rb. Alaternus*, n. 31. *Lotus*, n. 34. *Napeca*, n. 35. *Fujuba*, n. 36. and *Zizyphus*, n. 41. have two styles, or at least the style cloven half way. *Rb. Erythroxyton*, n. 4. and *Paliurus*, n. 33. have three styles; in *ellipticus*, n. 24. the style is three-parted to the very base: and in *Prinoides*, n. 25. it is subtriple. In many species the style is cloven at top, or is terminated by two or more stigmas. In *Rb. lævigatus*, n. 11. and *Frangula*, n. 21. the stigma is bifid; and in *dauricus*, n. 18. twin. In *cubensis*, n. 15. *colubrinus*, n. 16. *myſtacinus*, n. 26. and *sphaerospermus*, n. 28. it is trifid. In *Rb. catharticus*, n. 1. and *alpinus*, n. 19. it is four-cleft. *Rb. infeſtorius* has two reflexed stigmas.—The flowers in most of the species are hermaphrodite; but in several they are dioecous or polygamous. *Rb. catharticus*, n. 1. has male and female flowers on separate individuals; but sometimes there is a mixture of hermaphrodites, and in Russia, according to Pallas, they are for the most part perfect. *Rb. infeſtorius*, n. 2. is said to be dioecous. In *Erythroxyton*, n. 4. there are male flowers both on a distinct shrub and with the females; but female flowers never occur on the male shrub. In the *lycioides* of Pallas, which is reputed to be a variety of this, the flowers are always hermaphrodite. The flowers are dioecous in *Rb. crenulatus*, n. 6. *dauricus*, n. 18. *alpinus*, n. 19. In *Prinoides*, n. 25. they are said to be polygamous.

The fruit, in the greater part is a Berry, but in some it is a Drupe, and this has given occasion to some botanists to divide the genus.

Mr. Miller, who followed Tournefort in his former editions, treated these plants to the last under the several separate articles of *Alaternus*, *Frangula*, *Paliurus*, *Rhamnus* and *Zizyphus*. Gærtner, who chiefly regards the fruit in his construction of genera, has separated *Paliurus* and *Zizyphus* from *Rhamnus*. Willdenow has made two genera of these plants, those which have a berry for a fruit he places under *Rhamnus*; and such as have a drupe, under *Zizyphus*: the latter comprehending, besides those species commonly known by that name or that of *Fujube*, the *Paliurus*, *Rhamnus lineatus* and *volubilis*. I have given the genus as Linneus left it; being averse, as I have already observed, from dividing natural genera. If we were to attend here to artificial distinctions, or mere differences in the pericarp, we might make almost as many genera as there are species.

The fruit, in the two first divisions is a berry, except in *cubensis*, *colubrinus* and *ellipticus*, in which it is a three-celled or subtrilocous capsule; in *volubilis* and *lineatus*, which have a drupe inclosing a two-celled nut. In *R. catharticus*, n. 1. the berry is four-celled, with one seed in each cell; in *R. infeſtorius* one of the four cells is commonly empty; but that happens not unfrequently in the *catharticus*: in *R. oleoides*, n. 5. and *lycioides* of Pallas, n. 4. β. it is two-celled and two-seeded. Other species have sometimes only two cells and two seeds, as n. 21. 31. and n. 28. has sometimes only one seed, but this is owing to one or two of the germs proving abortive. In *R. saxatilis*, n. 7. *pumilus*, n. 20. *Frangula*, n. 21. *sphaerospermus*, n. 28. and *Alaternus*, n. 31. the natural number of seeds is three: but in *Frangula* there are most frequently no more than two in a berry; in *sphaerospermus* the number varies from one to three: and in *Alaternus* there are often only two; one or two of the germs failing, as is not uncommon in other plants. That the natural number is three, at least in the two last, we may fairly infer from the style being trifid.

The species of this variable genus do not differ so much in the stamens as in the style, the usual number being five: *R. catharticus* and *infeſtorius* follow the divisions of the calyx in having only four stamens;

as does also *R. saxatilis*, n. 7. in having three or four stamens, according as the calyx is trifid or quadrifid.]

## PROPAGATION AND CULTURE.

1. The purging Buckthorn shrub is so common in the hedges of many parts of England, that it is seldom cultivated in gardens. It rises easily from seeds, if they are sown in autumn soon after the berries are ripe; but if they be kept out of the ground till spring, the plants will not come up till the year after. These will require no particular treatment, but may be managed in the same way as young Crabs, or any other hardy deciduous tree or shrub. It may also be propagated by cuttings or layers. If the young shoots be layed in autumn, they will put out roots by the following autumn, when they may be taken off, and either planted in a nursery to get strength for a year or two, or where they are designed to remain. This is not so proper for hedges as the Hawthorn or Crab.

2. 7. These are chiefly preserved in botanic gardens; for not being beautiful few persons cultivate them in England, especially as they do not produce fruit with us. Lay down the young branches in autumn, or plant cuttings in the spring, before the buds begin to swell. Treat them in the same way as the common sort.

16. Sow the seeds upon a hot-bed in the spring, and when the plants are fit to remove, put them separately in small pots, filled with light sandy earth: plunge them into the tan-pit, and shade them till they have taken root; then treat them in the same manner as other tender exotic plants. In the autumn place them in the bark stove, and during the winter water them, but with great caution; for too much moisture at that season will destroy them.

21. Sow the seeds as soon as they are ripe. Keep the plants clean till autumn, and then plant them in a nursery, in rows two feet asunder, and at one foot distance in the rows. Here let them remain two years, and then plant them where they are to remain. This shrub may also be increased by layers or cuttings; but the seedling plants are best.

31. The *Alaternus* is easily propagated by laying the branches down, as is practised for many other trees. The best time for this is in the autumn, and if properly performed, the layers will have made good roots by the autumn following, when they may be cut off from the old stock, and planted either into the nursery, or in the places where they are designed to remain. When they are planted in a nursery, they should not remain there longer than a year or two; for as they shoot their roots to a great distance on every side, so they cannot be removed after two or three years growth, without cutting off great part of them, which is very hurtful to the plants, and will greatly retard their growth, if they survive their removal; but they are frequently killed by transplanting, when they have stood long in a place. They may be transplanted either in the autumn or the spring, but in dry land the autumn planting is best, whereas in moist ground the spring is to be preferred.

The plain sorts may also be propagated by sowing their berries, which they produce in great plenty, but the birds are greedy devourers of them; so that unless the berries are guarded from them, they will soon be devoured when they begin to ripen. The plants which arise from seeds, always grow more erect than those which are propagated by layers, so are fitter for large plantations, as they may be trained up to stems, and formed more like trees: whereas the layers are apt to extend their lower branches, which retards their upright growth, and renders them more like shrubs. They will grow to the height of eighteen or twenty feet, if their upright shoots are encouraged; but to keep their heads from being broken by wind or snow, those branches which shoot irregular should be shortened, which will cause their heads to be closer, and not in so much danger.

All the varieties thrive best in a dry, gravelly, or sandy soil, for in rich ground they are often injured by frost, when the winters are severe, but in rocky dry land they are seldom injured: and if in very hard frost.



frost their leaves are killed, yet the branches will remain unhurt, and will put out new leaves in the spring.

33. Procure the seeds from some of the southern countries of Europe, for they do not ripen in England.

These seeds should be sown as soon as possible after they arrive, on a bed of light earth, and the plants will come up the following spring; but when the seeds are kept out of the ground till spring, they will not come up till the next year, and very often fail; therefore it is much the best way to sow them in the autumn. These seedling plants may be transplanted the following season into a nursery to get strength, before they are planted out for good.

It may also be propagated by laying down its tender branches in the spring of the year, which if carefully supplied with water in dry weather, will take root in a year's time, and may then be taken off from the old plant, and transplanted where they are to remain.

The best time for transplanting this plant is in autumn, soon after the leaves decay, or the beginning of april, just before it begins to shoot, observing to lay some mulch upon the ground about their roots to prevent them from drying, as also to refresh them now and then with a little water until they have taken fresh root, after which they will require but very little care. They are very hardy, and will grow to be ten or twelve feet high, if planted in a dry soil and a warm situation. There is little beauty in this plant, but it is kept in gardens as a curiosity.

36 to 38. 41. 42. These plants are preserved in the gardens of some curious persons only for the sake of variety, for they do not produce fruit in England. The 41st and 42d sorts, which are the most hardy, will scarcely live through the winters in England, even when they are planted against south walls; in which situation I have kept the plants two or three years, when the winters have proved mild, but they were afterwards killed by a sharp frost. They may be propagated by putting their stones into pots of fresh light earth, soon after their fruits are ripe; and in winter they should be placed under a common hot-bed frame, where they may be sheltered from severe frost. In the spring these pots should be plunged into a moderate hot-bed, which will greatly forward the growth of the seeds; and when the plants are come up, they should be inured to the open air by degrees, into which they must be removed in june, placing them near the shelter of a hedge; and in very dry weather they must be frequently refreshed with water.

In this situation they may remain till the beginning of october, when they must be removed into the greenhouse, or placed under a hot-bed frame, where they may be defended from frost, but should have as much free air as possible in mild weather.

During the winter season they should be now and then refreshed with water; but after their leaves are fallen (as they always shed them in winter), they must not be over watered, which would rot the tender fibres of their roots, and cause the plants to decay.

In march, just before the plants begin to shoot, they should be transplanted, each into a separate small pot filled with light fresh earth; and if they are plunged into a moderate hot-bed, it will greatly promote their taking root; but in may they must be inured to the open air by degrees, into which they should be soon after removed.

Thus these plants should be managed while young, at which time they are tender; but when they are three or four years old, some of them may be planted in the full ground, against a warm wall or pale, where, if they have a dry soil, they will endure the cold of our ordinary winters pretty well; but in hard frosts they will require to be sheltered, so it will be proper to keep a plant or two in pots, which may be housed in winter.

[RHAMNUS. See *Gouania*, *Hippophae*, *Lawsonia*, *Lycium*, *Mespilus*, *Plectronia*, *Pisonia*.

*Rhamnus cumanensis*. See *Ebretia*.

----- *ignaneus* & *micranthus*. See *Celtis*.

----- *pentaphyllus*. See *Sideroxylum spinosum*.

RHAPHANUS. See *Raphanus*.

RHAPIS. (From *ῥαπίς*, the same as *ῥαβδος*, a staff or rod.)

*Lin. gen. ed. Schreb. n. 1687. Linn. fil. Aiton kew. 3. 473.*

Appendix Palmæ.—Polygamia Dioecia.—Hexandria Monogynia. *Thunb.*

Nat. order of *Palms*.

GENERIC CHARACTER.

\* *Hermaphrodite flowers.*

CAL. *Spathe* ——— *Spadix* ———  
*Perianth* one-leaved, trifid.

COR. one-petalled, trifid.

STAM. *Filaments* six.

PIST. *Germ.*

PER.

SEED.

\* *Male flowers.*

CAL. COR. STAM. as in the *Hermaphrodites*.

ESSENTIAL CHARACTER.

*Cal.* trifid. *Cor.* trifid. *Stam.* six. *Pist.* one.

SPECIES.

1. *Rhapis flabelliformis. Creeping-rooted Rhapis, or Ground-Ratan.*

*Ait. kew. 3. 473. L'Herit. stirp. nov. tom. 2. t. 100.*

*Chamærops excelsa. Lin. syst. 984. Thunb. jap. 130.*

*Kæmpf. amoen. 5. 898.*

*Fronds palmate plaited, plaits and margins prickly-toothletted.*

2. *Rhapis arundinacea. Simple-leaved Rhapis.*

*Ait. kew. 3. 474.*

*Fronds two-parted, lobes acute plaited, plaits somewhat rugged.*

DESCRIPTIONS, &c.

1. Stem arboreous, lofty. Leaves pale and smooth underneath: lobes cohering at the base, linear, cloven at the end, having rugged veins, placed on three-cornered entire petioles, the length of the leaves. Flowers in a decomposed, spreading panicle, on the outmost pedicels sessile. Besoms are made of the thin netted bark of the trunk.

Native of China and Japan. Introduced about 1774, by Mr. James Gordon. It flowers in august.

2. Native of Carolina. Found there by Mr. John Cree. Introduced in 1765. It flowers in september.

RHAPONTICK. See *Rheum*.

RHAPONTICOIDES. See *Centaurea*.

RHAPONTICUM. See *Centaurea* and *Rheum*.

RHEEDIA. (So named by Linneus, from Plumier, in memory of Henry Rheedee van Draakenstein, editor of that magnificent work—*Hortus Malabaricus*, Amstel. 1768 to 1703, fol. Plumier had named the genus *Vanrheedia*.)

*Lin. gen. n. 641. Reich. n. 698. Schreb. n. 875.*

*Juss. 258. Vanrheedia. Plum. 18.*

Class. 12. 1. Polyandria Monogynia.

Nat. order of *Guttiferae*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. *Petals* four, obovate, concave, spreading.

STAM. *Filaments* very many, filiform, longer than the corolla. *Anthers* oblong.

PIST. *Germ* globular. *Style* cylindrical, the length of the stamens. *Stigma* funnel-form.

PER. small, ovate, succulent, one-celled.

SEEDS three, ovate-oblong, marked with characters, very large.

ESSENTIAL CHARACTER.

*Cal.* none. *Cor.* four-petalled. *Berry* three-seeded.

SPECIES.

1. *Rheedia lateriflora.*

*Lin. spec. 719. syst. 487. Reich. 2. 563. Plum.*

*gen. 45. t. 257.*

DESCRIPTION, &c.

This is a tree, with jointed, compressed, even, pubescent branches. Leaves opposite, lanceolate, quite entire, smooth; on short pubescent petioles. Peduncles axillary, about three together, trifid or three-flowered.

\* Thunberg.

P Hort. kew.

q Linn. spec. and syst.



# R H E

**RHEUM.** (Prov of Dioscorides, from *ρῆον*, *fluo.*)  
*Lin. gen. n.* 506. *Reich. n.* 549. *Schreb. n.* 692.  
*Gærtn. t.* 119. *Juss.* 82. *Rhabarbarum.* *Tournef.*  
*t.* 18.  
*Class.* 9. 2. Enneandria Trigynia.  
*Nat. order of* *Holoraceæ.* *Polygonææ,* *Juss.*

## GENERIC CHARACTER.

**CAL.** none.  
**COR.** one-petalled, narrowed at the base, impervious, with a six-cleft border; the segments blunt, alternately small: shrivelling.  
**STAM.** *Filaments* nine, capillary, inserted into the corolla, and of the same length with it. *Anthers* twin, oblong, blunt.  
**PIST.** *Germ* short, three-sided. *Styles* scarcely any. *Stigmas* three, reflexed, feathered.  
**PER.** none.  
**SEED** single, large, three-sided, acute, with membranaceous margins.

## ESSENTIAL CHARACTER.

*Cal.* none. *Cor.* six-cleft, permanent. *Seed* one, three-sided.

## SPECIES.

1. *Rheum Rhaponticum.* *Rhapontic Rhubarb.*  
*Lin. spec.* 531. *Reich.* 2. 231. *mat. med.* 109.  
*Georgi it.* 1. 210. *Pallas it.* 1 380. *Knorr. del.* 2.  
*t. R.* *Sabb. hort.* 1. *t.* 34. *Regnault bot. Plenck,*  
*ic. t.* 320.  
*R. Lin. hort. cliff.* 155.—*fol. glabris.* *Lin. hort. upf.*  
98:  
*Rhaponticum.* *Alp. rhapont.* 1. *t.* 1.  
*R. folio lapathi majoris glabro.* *Baub. pin.* 116.  
*Hippolapathum sativum* five *Rhabarbarum* *Mona-*  
*chorum.* *Park. parad.* 483. *t.* 485. *f.* 3.  
*Leaves blunt smooth, veins somewhat hairy underneath,*  
*the sinus at the base dilated, petioles grooved above*  
*and rounded at the edge.*
2. *Rheum undulatum.* *Waved-leaved Rhubarb.*  
*Lin. spec.* 531. *amoen.* 3. 212. *t.* 4. *Gærtn. fruct.* 2.  
178. *Kniph. cent.* 2. *n.* 68. *Plenck, ic. t.* 321.  
*R. Rhabarbarum.* *Lin. syst.* 385. *Reich.* 2. 231.  
*hort. upf.* 98. *Pallas it.* 2. 559. *Regnault bot.*  
*Rhabarbarum folio oblongo crispo undulato.* *Geoffr.*  
*mat. med.* 2. 125.  
*R. finense.* *Amm. herb.* 206. *ruth.* 9.  
*Acetosa montana, &c.* *Mefferichm. in Amm. ruth.*  
226.  
*Leaves subvillose waved, the sinus at the base dilated,*  
*petioles flat above acute at the edge.*
3. *Rheum palmatum.* *Official Rhubarb.*  
*Lin. spec.* 531. *syst.* 385. *Reich.* 2. 232. *fasc.* 7.  
*t.* 4. *Philos. transf.* 1765. *p.* 292. *t.* 12. *Lin.*  
*mat. med.* 109. *Woodv. med. bot.* 127. *t.* 46.  
*Gærtn. fruct.* 2. 177. *Medicus in obs. soc. oecon.*  
*lut.* 1771. *p.* 324. *Blackw. t.* 600. *a. b.* *Kniph.*  
*cent.* 12. *n.* 84. *Mill. illustr. Brun. orient.* 192.  
*t.* 73. *Plenck, ic. t.* 322.  
*Leaves palmate acuminate somewhat rugged, the sinus at*  
*the base dilated, petioles obscurely grooved above rounded*  
*at the edge.*
4. *Rheum compactum.* *Thick-leaved Rhubarb.*  
*Lin. spec.* 531. *Reich.* 2. 232. *Gærtn. fruct.* 2.  
178. *Mill. fig.* 145. *t.* 218?  
*Leaves sublobed extremely blunt very smooth shining and*  
*toothletted.*
5. *Rheum Ribes.* *Warted-leaved Rhubarb.*  
*Lin. spec.* 532. *Reich.* 2. 232. *Gron. orient.* 130.  
*Lapathum orientale, &c.* *Dill. elth.* 191. *t.* 158. *f.* 192.  
*Breyn. eph. nat. cur. cent.* 7. *p.* 7. *Pocock orient.*  
189. *t.* 84.  
*Ribes arabum.* *Rauw. itin.* 266. 282. *Raii hist.*  
1487. *Baub. hist.* 2. 100. *Chambers monogr. Lugdb.*  
1724.—*foliis petasitidis.* *Baub. pin.* 455.  
*Leaves very blunt somewhat wartletted, with spinulose*  
*veins underneath, petioles flat above, rounded at the*  
*edge.*
6. *Rheum tataricum.* *Tartarian Rhubarb.*  
*Lin. suppl.* 229. *syst.* 385.  
*Leaves cordate-ovate entire flat very smooth, petioles half-*  
*round angular, panicle grooved.*

# R H E

7. *Rheum hybridum.* *Bastard Rhubarb.*  
*Lin. syst.* 385. *Murr. nov. comm. gott.* 5. *p.* 50.  
*t.* 12. *f.* 1, 2, 3.  
*Leaves smooth above somewhat hairy underneath sublobed*  
*acute, sinus narrowed at the base, petioles obscurely*  
*grooved above, rounded at the edge.]*

## DESCRIPTIONS, &c.

1. This has a large thick root, which divides into many strong fleshy fangs, running deep in the ground; the outside is of a reddish brown colour, and the inside yellow, from which arise several leaves, in number according to the size of the root; these come up folded in the spring, and afterward expand themselves; they are smooth, of a roundish heart-shape, having very thick foot-stalks of a reddish colour, which are a little channelled on their lower part, but flat at the top. When the plant grows in rich land, the foot-stalks of the leaves are near two feet long, and thicker than a man's thumb; the leaves also are often two feet long, and as much in breadth, having several strong longitudinal veins running from the foot-stalk to the borders, of a deep green, and waved on their edges, having an acid taste, but particularly the foot-stalks, which are now frequently used for making tarts. From between the leaves arises the flower-stem, which is of a purple colour, garnished with one leaf at each joint, of the same shape with those below, but smaller, and sitting close to the stalk. The stalks grow from two to three feet high, according to the strength of the ground, and are terminated by thick, close, obtuse spikes of white flowers, which appear the beginning of june, and are succeeded by large, triangular, brown seeds, having a border or wing at each angle; they ripen in august.

When the seeds were first brought to Europe, they were supposed to be those of the true Rhubarb; but upon making trial of the roots, they were found to be greatly inferior to those of the true Rhubarb; and upon farther examination, it was discovered to be the *Rhaponticum* of Prosper Alpinus.

[Native of Asia. It was cultivated in 1629, by Mr. John Parkinson; who informs us, that it was sent him from beyond sea by a worthy gentleman Dr. Matth. Lister, one of the King's physicians; and first grew with him, before it was ever seen or known elsewhere in England\*.]

2. The seeds of the second sort were sent me from Leyden by the late Dr. Boerhaave, by the title of *Rhabarbarum Chinesense verum*, or true China Rhubarb, and succeeded in the Chelsea garden. The root of this sort divides into a number of thick fibres, which run deeper into the ground than those of the first, and are of a deeper yellow within. The leaves appear much earlier in the spring; the foot-stalks are not so much channelled on their under side, and are plain on their upper, not so red nor so thick as those. The leaves are longer, running more to a point, and are much waved on their edges, a little hairy on their upper side, and have many strong veins or ribs on their under. The flower-stem is of a pale brownish colour, rising about four feet high, dividing into several loose panicles or bunches of white flowers, which appear in may, and are succeeded by triangular seeds like those of the first sort, which ripen earlier in the season.

[Seed ovate-pyramidal, three-sided, the sides obscurely striated, and of a ferruginous brown colour; wings of the angles narrow, waved, rufescent-yellow. Albumen farinose, deeply grooved, widely deficient at the place of the radicle†.]

Native of China and Siberia. Cultivated in 1759, by Mr. Miller‡.

3. Root perennial, (as all the other species are) thick, of an oval shape, and sends off long tapering branches; externally it is brown, internally of a deep yellow colour. Stem erect, round, hollow, jointed, sheathed, slightly scored, branched towards the top; from six to eight feet high. Root-leaves numerous,

\* Hort. kew.

† Parad. 484.

‡ Gærtner.

§ Hort. kew.



large, rough, of a roundish figure, deeply cut into lobes and irregularly pointed segments; on long smooth round footstalks. Stem-leaves one at each joint, from a membranous sheath, successively smaller upwards. Flowers surrounding the branches in numerous clusters, and forming a kind of spike. Corolla of a greenish white colour<sup>x</sup>.

Seed ovate-elliptic, emarginate at the top and base, three-sided; the sides wrinkled and somewhat scrobiculate; the angles winged, membranaceous smooth. Integument double, membranaceous: the outer bay, widened into the wings; the inner of a deep rufescent colour, fastened to the albumen. Albumen ovate-pyramidal, three-sided, shorter than the embryo, or deficient at the place of the radicle, farinose, two-parted, snow-white. Embryo inverted, straight, central, white. Cotyledons ovate-oblong, slightly concave. Radicle awl-shaped, extended beyond the albumen, superior<sup>y</sup>.

This species cannot be mistaken, if we attend to its superior height, the ferruginous or reddish brown colour of the stem branches and petioles, the particular palmate form of the leaves, and the elegant looseness of the little panicles of flowers. Linneus adds, that the vernal bud is not red but yellow; and that the leaves are somewhat rugged; and that the segments of the leaves are oblong and sharpish.

Native of China and Tartary. Cultivated before 1768, by Mr. Miller<sup>z</sup>.] In the last folio edition of the Dictionary, which was published in that year, he says that the seeds had been then lately brought to England, from which many plants were raised; but that the plant in the Chelsea garden had not flowered, nor had he seen any plants in that state. [It flowers in april and may.

The Rhaponticum (n. 1.) is supposed to be the *Rheum* or *Rha* of Dioscorides and the ancients. It was long supposed to be the true Rhubarb, till the discovery of the *undulatum*, when that was taken to be the true Rhubarb. In the year 1724, Professor Bradley says, (in his Husbandry and Gardening, vol. 3. 2. p. 64.) I could wish that we could get some of the true Rhubarb, if possible, for this has not yet grown in Europe, as I could ever find; though once, I remember, the late ingenious Mr. Jacob Bobart thought he had got it.

It was not until the year 1732, that botanists became acquainted with any species of *Rheum*, which seemed to afford the officinal Rhubarb, when some plants received from Russia by Jussieu at Paris and Rand at Chelsea, were said to supply this important desideratum, and as such were adopted by Linneus, in his first edition of the Species Plantarum, under the name of *Rheum Rhabarbarum*. (Mr. Miller had the seeds from Boerhaave in 1734.)

This however was not very generally received as the true Rhubarb; and with a view to ascertain this matter more completely, Boerhaave procured from a Tartarian Rhubarb merchant the seeds of the plants which produced the roots that he annually sold, and were admitted at St. Petersburg to be the genuine Rhubarb. These seeds were soon propagated and were discovered by De Gorter to produce two distinct species, namely, the *Rhabarbarum* of Linneus, or as it has since been called, *undulatum*; and another, a specimen of which being presented to Linneus, he declared it to be a new one, and introduced it in his second edition of the Species Plantarum by the name of *Rheum palmatum*. Previous to this, De Gorter had repeatedly sent the seeds to Linneus, but the young plants which they produced constantly perished; at length he obtained the fresh root, which succeeded very well at Upsal, and afterwards enabled the younger Linneus to describe this plant in the year 1767. But two years antecedent to this, Dr. Hope's account of the *Rheum palmatum*, as it grew in the botanic garden near Edinburgh, had been read before the Royal Society in London. The seeds were first introduced into Britain in 1762, by Dr. Mounsey, who sent them from Russia<sup>a</sup>; and these seeds were quickly dispersed over

the island. At the same time that Dr. Hope cultivated them at Edinburgh, I raised abundance of the plants in the botanic garden at Cambridge, from Dr. Mounsey's seeds, which all produced the *R. palmatum*; and I have some of the Dr.'s original packet still by me. No doubt Mr. Miller's plants were raised from the seeds sent by Dr. Mounsey, though he does not mention his name. It appears that the seeds sent from St. Petersburg to this country uniformly and constantly produced the *R. palmatum*, and not sometimes *R. undulatum* also, as De Gorter relates the seeds to have done, which Boerhaave obtained from the Tartarian merchant. This however does not prove, that other species, as the *undulatum* and *compactum*, do not yield the true Rhubarb, as well as the *palmatum*. We have seen that the *undulatum* was sent from Tartary with the *palmatum*, for the genuine plant; and Georgi relates that a Cossack pointed out the same species to him, for the true Rhubarb. Both he and Pallas remark, that possibly the root of *R. undulatum* may be better on the more southern open and dry mountains of Tibet, than on the colder wet mountains of Siberia. Professor Pallas relates that in Bukharia, the *R. palmatum* seems to be unknown, and that as far as he could collect from description, the species they consider there as the true one is the *compactum*; the seeds of which, Mr. Miller informs us, were sent to him from St. Petersburg as the true Tartarian Rhubarb.—See the account of the next species.

For many years I have been of opinion that the true Rhubarb root is taken from several species, and the foregoing account confirms this supposition.

Dr. Lettsom, in the year 1778, says there is every reason to conclude that *Rheum palmatum* is the Turkey or Russia Rhubarb.

Dr. Pulteney, in the year 1783, remarks that Pallas seems to have determined the Russia Rhubarb to be the *R. palmatum*; and that the Chinese Rhubarb is the *R. undulatum*. He farther mentions his having been informed that these two species, planted near each other, will produce a mongrel plant; and suggests that the root of the latter may possibly excel that of the parent plants. See *R. hybridum*.

Dr. Hope says, in 1784, that the Rhubarb which we receive through Russia, formerly called Turkey Rhubarb, is the root of the *palmatum*, and different from that which is received from China.

The Society for the Encouragement of Arts, Manufactures, and Commerce, has exerted itself for many years, in promoting the cultivation of the *Rheum palmatum* in Great Britain, and apparently with much success.

Sir Alexander Dick had the Gold Medal of the Society, for a memoir on the culture and drying of it. Sir William Fordyce, so early as the year 1780, took up three roots, six years old, weighing when washed, ten pounds six ounces avoirdupois. He stripped off the bark from the smaller roots, and cut off most of it from the larger parts; and hung them up in festoons on packthread, three or four inches from each other, at a moderate distance from the fire. From these roots he had one pound four ounces of Rhubarb, as fit for the market as any imported from Russia, Turkey, or China: he obtained likewise, one pound more, fit for private use, or to be powdered. The roots should be cleared entirely of the rind; for the parts which are covered with it, will be apt to turn mouldy. Large pieces should have a perforation made through the middle, that they may dry more perfectly, with less fuel and in less time.

At the end of six or seven years, when the plant seems to arrive at its most perfect state, one pound of Rhubarb may be obtained from every five pounds of the green roots; besides an equal or larger proportion of roots fit for family use, or powder in the shops<sup>b</sup>.

In 1791, the gold medal of the Society was given to this gentleman, for raising above three hundred plants of the true Rhubarb from seed, and transplanting them at four feet distance<sup>c</sup>.

Nathaniel Jarman Esq. of Brenley-house in Kent,

<sup>x</sup> Woodville. <sup>y</sup> Gartner. <sup>z</sup> Hort. kew. <sup>a</sup> Woodville.

<sup>b</sup> Trans. Arts, 2. 76.

<sup>c</sup> Idem, 10. 101.



sowed sixty seeds, being part of those which were sent to the Society by Dr. Mounsey in 1764; and they produced forty-five plants. In 1784 he raised upwards of a hundred and twenty plants in the common ground, from seeds of the preceding year. He had sent to the Society two roots, weighing twenty-eight and thirty pounds: but this year he sent a single root, which weighed, when taken up on the sixteenth of October fifty-six pounds; in a few days it lost four or five pounds, and on the eighth of November, when it was weighed before a Committee, it was found to weigh only forty-eight pounds. The largest root before produced to the Society by Sir Alexander Dick weighed forty-two pounds.

Mr. Robert Davis the younger, of Minehead in Somersetshire, merchant, in the spring of the year 1779, sowed some seed of *R. palmatum*, which he received from Dr. Brocklesby; and planted out seven hundred and twenty of the plants, at the distance of five feet. The soil for the most part was sandy and light, the rest a deep black loamy garden ground. A great number of plants on the first soil died; but those on the latter continued for the most part vigorous, and produced larger roots than the other, although not superior, if equal in quality. It did not appear that the distance of five feet in any respect incommoded or injured the most luxuriant plants.

In the summer of 1783, the whole plantation was taken up, and the number of roots was near, if not quite four hundred. The whole produced three hundred pounds of dried Rhubarb<sup>d</sup>.

The gold medal of the Society was adjudged to Mr. John Ball, surgeon at Williton, in the parish of St. Decuman's, and county of Somerset, for raising in 1788 upwards of four hundred plants of *R. palmatum*, standing six feet asunder each way.

The following year, having by the severity of the winter lost fifty of the four hundred and thirty plants abovementioned, he filled up the vacancies with young plants, and planted upwards of six hundred more at six feet apart, and about two hundred at four feet. For this additional plantation he received another gold medal.

It appears that some of Mr. Ball's roots, of five years old weighed, when fresh, upwards of seventy pounds; and that he used the bark for tinctures, finding it full as good in every respect, as the best part of the root. His practice is to manure or dress them with rotten dung, coal ashes, lime, earth, old mud wall, &c.<sup>e</sup>

In 1792 Mr. Thomas Jones, of Fish-street-hill, London, planted four hundred and twenty plants of *Rheum palmatum*, at six feet distance; at Four-tree-hill, Enfield, Middlesex, and had the gold medal adjudged to him by the Society.

The same year Mr. Halley of Pontefract in Yorkshire had the Silver medal for producing samples of Rhubarb better cured than any that had been produced before. It seems that his father had been in the habit of raising large quantities of the roots, which in war time he disposed of very freely; but in time of peace the druggists procured it from abroad at a lower rate<sup>f</sup>.

In 1793, the gold medal was adjudged to Mr. William Hayward, of Banbury, in Oxfordshire, for raising full eight hundred plants of the true Rhubarb: and a third gold medal to Mr. Ball, for possessing a hundred and fifty eight pounds of it, of his own growth and curing, equal in quality to Turkey or Russia Rhubarb; and communicating his culture of it<sup>g</sup>.

The year following, Mr. Ball had a fourth gold medal adjudged to him for possessing ninety-seven pounds of the true Rhubarb of his own growth; and for communicating the culture and method of cure<sup>h</sup>.

In 1795, Mr. Robert Davis beforementioned, of Minehead in Somersetshire, had the gold medal, for raising nine hundred and thirteen Rhubarb plants, and giving some account of their culture. Also the silver medal to Nicholas Ashton, of Woolton Hall, near Liverpool, Esq. for sending samples of Rhubarb very

well cured. This Rhubarb was planted in 1778 or 1779; and was taken up and cured in October 1795<sup>i</sup>.

In 1797, the gold medal was adjudged to the Rev. James Stillingfleet, of Hotham in Yorkshire, for his culture and cure of Rhubarb, of which he gives an ample detail. Also to Mr. Thomas Jones beforementioned, for raising nine hundred and thirty-five plants, and giving a full account of his method of culture<sup>k</sup>.

The following year, the same Mr. Jones had a reward of thirty guineas from the Society, for having raised and planted three thousand and forty plants of the true Rhubarb; making up the whole number raised by him nearly five thousand, since the year 1792. He here adds many excellent hints respecting its culture<sup>l</sup>.

This account may serve to show, both the ardour of our respectable Society in encouraging the growth of this useful article, and the persevering industry of some gentlemen, in overcoming all the difficulties attendant on introducing a new plant into cultivation, finding out the means of curing it as an article for extensive sale, and overcoming the prejudices of such as cannot persuade themselves that a drug of British growth can bear a competition with what is sent us from foreign countries.

The growth of the *R. palmatum* is remarkably quick. A plant six years old grew, between the month of April, when the stalk first emerged out of the ground, and the middle of July, when it was at the greatest height, to eleven feet four inches. It grew in one day three inches, and in one night above four. Many of the leaves were above five feet long. The root, taken up in October, weighed thirty-six pounds, when clean washed, and deprived of its small fibres<sup>m</sup>.

#### Medical use of Rhubarb.

Rhubarb is cultivated in China, particularly in the province of Xen-si, where it is called *Tai-bo-bang*. It comes over to us in oblong pieces, flattish on one side, and convex on the other; compact, hard, heavy, internally of a dull red colour, variegated with yellow and white, and when recently powdered appears yellow, but on being kept becomes gradually redder.

It is also cultivated in the Russian dominions. The best is said, by Bell, to grow in a long chain of mountains in Tartary, which extend from Selin to the lake Koko-nor near Tibet. This is commonly called Turkey Rhubarb, because it formerly came to us through Turkey. But it may be more properly named Russian or Tartarian Rhubarb. It is more valuable than the other, and is brought to us in roundish pieces, with a large hole through the middle of each; it is more soft and friable than the Chinese, and exhibits, when broken, many streaks of a bright-red colour. The marks of the goodness of Rhubarb are, the liveliness of its colour when cut; its being firm and solid, but not flinty or hard; its being easily pulverable, and appearing when powdered of a fine bright yellow colour; its imparting to the spittle, on being chewed, a deep saffron tinge, and not proving slimy or mucilaginous in the mouth: its taste is subacid, bitterish, and somewhat styptic; the smell lightly aromatic.

The purgative qualities of Rhubarb are extracted more perfectly by water than by spirit: the root remaining after the action of water is almost if not wholly inactive; whereas after repeated digestion in spirit, it proves still very considerably purgative. The quality of the watery infusion, on being inspissated by a gentle heat, is so much diminished, that a dram of the extract is said to have scarcely more effect than a scruple of the root in substance: the spirituous tincture loses less; half a dram of this extract proving moderately purgative.

The purgative quality of this root is so gentle, that it is often inconvenient by reason of the bulk of the dose required, which in adults must be from half a

<sup>a</sup> Transf. Arts, 3. 174. 176.

<sup>f</sup> Idem, 11. 113. &c.

<sup>h</sup> Idem, 13. 178.

<sup>e</sup> Idem, 7. 34. & 8. 66.

<sup>g</sup> Idem, 12. 225.

<sup>i</sup> Transf. Arts, 14. 145. &c.

<sup>l</sup> Idem, 16. 213.

<sup>k</sup> Idem, 15. 157.

<sup>m</sup> Bath papers, 4. 179.



dram to a whole one. When given in a large dose it will occasion some griping, as other purgatives do; but it is hardly ever heating to the system, or shows the other effects of more drastic purges. This purgative quality is accompanied with a bitterness, which is often useful in restoring the tone of the stomach; and for the most part this bitterness makes it sit better on the stomach than many other purgatives. Its operation joins well with neutral laxatives; and both together operate in a less dose than either of them would do singly.

Some degree of stipticity is always evident in this medicine, and as this quality acts when that of the purgative has ceased; in cases of diarrhæa, when any evacuation is proper, Rhubarb has been considered as the most proper means to be employed. The use of Rhubarb in substance for keeping the belly regular is by no means proper, the astringent quality undoing what the purgative had done; unless the Rhubarb be chewed in the mouth, and no more swallowed than what the saliva has dissolved. Analogous to this, is the use of Rhubarb in a solution: for in that the astringent quality is not so largely extracted as to operate with a power equal to that when the Rhubarb is employed in substance.

The officinal preparations of this drug are, a watery and vinous infusion, a simple and compound tincture. It is also an ingredient in different compositions, as *Elixir ex aloë & rheo, pilule stomachicæ, &c.*<sup>a</sup>

Since the true Russia Rhubarb was introduced by Dr. Mounsey in the year 1762 or soon after, and was cultivated by Sir Alexander Dick and Dr. Hope of Edinburgh, with a view to bring it into use as a medicine, it has been a question whether the root could attain the same qualities in our climate, that it has where it is a native. That Britain is not too cold for it, appears clearly from the success with which it has been cultivated in Scotland; if it meets with any difficulty here, it must be from the moisture of our climate, and there can be no doubt but that a dry soil should be chosen for it. The chief obstruction to giving the root here a quality equal to foreign Rhubarb, appears to be the difficulty of curing it properly, but this is in a great measure got over, and no doubt will be fully conquered by farther experience, if encouragement should be given to the more extensive cultivation of this most useful plant at home.

And surely Rhubarb merits some encouragement, if it be true that not less than 200,000*l.* is paid annually for what is imported into this country. Especially if we consider the difficulty there may be of procuring this article from Russia, the inferiority of the Chinese Rhubarb, and the adulterations that are practised to render the foreign drug fair to the eye. There remains only to convince our countrymen, that British Rhubarb is equal to the foreign; or if it be a little inferior, that inferiority is owing merely to a want of skill in curing it, which skill will soon be attained by experience.

The late excellent Dr. Hope, who with Sir Alexander Dick was indefatigable in cultivating the *Rheum palmatum* for medical use, relates in the year 1784, that most of the apothecaries in Edinburgh used no other than what is raised in Scotland; that for several years there has been no other used in the Royal Infirmary; and that when a sound root is well dried, and properly dressed, it is in no respect inferior to what comes from Russia.

Dr. Lettsom, in the same year, having tried British Rhubarb on himself and about forty children concludes, that the exotic plant possesses no one quality which the other does not contain; that the foreign seems to be rather more active, perhaps in the proportion of one third at the utmost; and that its superior activity may depend on circumstances of soil, time of taking up the roots, their age, and the methods of drying, which future enquiries may doubtless determine.

The Dr. adds, that he suspects young plants to have more mucilage, and less of an active resin than

<sup>a</sup> Woodville, Cullen, mat. med.

old ones; but that his observation does not warrant him to decide what is the properest age to take up the roots for medicinal use.

Specimens of English Rhubarb underwent a severe trial at Bath by three eminent physicians there, Drs. Falconer, Parry and A. Fothergill.

Dr. Falconer reports, that the two specimens of English Rhubarb answer in external marks to the characters of the drug when good; that they are rather inferior in delicacy of taste to Turkey Rhubarb, but superior in some respects to the East-Indian; that perhaps they might have resembled the Turkey still more nearly, had they been dug up as long a time, and a careful selection of the best pieces had been made. The red colour is said to be improved by keeping; and Linneus advises it to be kept ten years before it is used. Vogel relates, that an apothecary is sent with the Russian caravan that goes to the borders of China to purchase Rhubarb, to whom all the Rhubarb is delivered, and he is strictly ordered to select carefully the best pieces only, and to burn all the decayed and bad. Upon the return of the caravan to Moscow or Peterburgh, it is again put into the hands of persons skilled in pharmacy, who have the care of its being properly dressed, and of none but the true sort being admitted: so that after all these cautions, none but the choicest and fairest pieces can be exported. If then such a selection were made here, and it were kept a due time, the British Rhubarb might probably equal any of the foreign: especially if other circumstances were attended to, which will be mentioned, when we come to the culture and curing of it.

From the experiments made on the English and foreign Rhubarbs it appears, that they are nearly similar as to the parts which water is capable of dissolving; but that the Turkey appears to contain the largest proportion of matter soluble in water, and to retain most of an aromatic flavour.—That of gum or mucilage, one parcel of English Rhubarb contained the most, and the East-Indian the least. The other parcel of English and the Turkey were nearly alike.—That the foreign Rhubarbs are more abundant in resin, and contain a larger proportion of active soluble matter when digested in brandy.—That the Turkey possesses the largest quantity of the colouring ingredient, and the East-Indian most of what is soluble in rectified spirit.—That the East-Indian possessed the most astringency in the watery infusion; one parcel of the English and the Turkey were nearly alike in this respect, and the other parcel of English was the weakest. In the spirituous tincture, the Turkey was the strongest, next the East-Indian, and the English the weakest.

The experiments tried at the Bath hospital show that the purgative qualities of the English specimens are scarcely so strong as those of the Turkey or even the East-Indian, but the difference is not great. Some think, that about three parts of the Turkey or four of the East-Indian, operate as much as five of the English Rhubarb; but others think the difference is scarcely so great. In point of astringency the English Rhubarbs do not perceptibly differ from the foreign.

Upon the whole, if English Rhubarb should be allowed to be inferior to the foreign, which is perhaps doubtful, it appears probable that this inferiority is owing only to such circumstances as are in the power of attention and industry to obviate; and that this might be done in a great measure by attending to the age of the plant when taken up; to the root being cut transversely, rasped on the outside, having the sappy parts cut out, and being dried quickly; and to its being kept some time before it be used.

From a great number of trials made by Dr. Parry it appears, that one of the specimens of English Rhubarb was fully equal in its purgative quality to the Turkey.

Dr. A. Fothergill remarks, that the Turkey, Russian, and even the East-Indian Rhubarb, being more slightly to the eye, are more marketable than the English; but that much artifice is used to render them such. It therefore behoves the faculty to examine whether Rhubarb may not acquire some noxious quality



lity from a colouring substance employed, and whether the griping effects so frequently complained of, may not sometimes proceed from the Dutch yellow, extracted from Buckthorn berries, with which the root is commonly coloured.

The foreign Rhubarb may acquire some advantage from soil, climate, culture and the mode of drying; but much more probably from its superior age. Bergius says, it is not taken up till it is eleven or twelve years old. The tincture of the Turkey Rhubarb tasted rather more aromatic than the rest, and seemed to possess a somewhat higher degree of astringency than the East-Indian, which rather exceeded the tinctures made with the English specimens, in the same quality. From one experiment it appears, that the East-Indian is a weaker purgative than any of the rest; and yet this is the drug which is most commonly used in the shops, for making the tincture. Two experiments prove that the English Rhubarb possesses the purgative power in a superior degree. From one experiment it appears, that forty-five grains of Turkey Rhubarb contain the purgative quality, nearly equal to sixty of the English; that is, the latter requires to be given to the amount of one fourth more, to produce the same effect. This coincides with the result of trials made some years ago; but later experiments evince, that it approaches nearer to foreign Rhubarb in proportion to its age. On the whole, there seems much reason to believe, that in process of time, we may be enabled not only to supply a sufficient quantity of the genuine drug properly cured for home consumption, but also for foreign markets<sup>o</sup>.

About the year 1783, Mr. Ball, of Williton, already mentioned sold eighty pounds of Rhubarb, of his own raising, to a druggist in Bristol, for six shillings a pound; used no other sort in his shop, and always found it to answer in every respect. He also used the bark for tinctures, and found it full as good, for that purpose, as the best part of the root. He is satisfied that we grow Rhubarb equal to the Turkey, but have not yet been able to cure it to that perfection<sup>p</sup>.

Mr. James Stillingfleet, of Hotham in Yorkshire, in 1796 relates, that for fifteen years and upwards he has used the English Rhubarb, as a constant physic for the poor of his parish and neighbourhood, and never found it to fail of its proper effects, especially if a tea-spoonful of Magnesia alba be added to each dose of twenty or twenty-five grains<sup>q</sup>.

Mr. Jones, of Fish-street hill, before mentioned, who has cultivated English Rhubarb with great spirit at Enfield, is of opinion that the prevailing prejudice for foreign commodities is of infinitely more consequence than any obstacle that can impede its general cultivation. But if the cultivator will endeavour as much as possible to give his root the appearance of the foreign, and be moderate in his price, there can be little danger of its rising in the public estimation. All accounts agree, that British Rhubarb, at six or seven years growth, properly cured will possess all the virtues the most sanguine can desire.

At the instigation of Alexander Champion, Esq. one of the governors, Mr. Jones sent several pounds of British Rhubarb to Guy's hospital; and at an interview with the physicians, presented them other improved specimens. They were unanimous in their approbation of them, and gave Mr. Jones an order for as much as he could produce<sup>r</sup>.

These accounts may suffice to give us hopes of British Rhubarb superseding the necessity of importing this drug from abroad; a consideration of no small importance at all times, but especially when the ports of Russia are shut against us, and not only our merchant ships detained contrary to the faith of treaties, but our sailors driven up into the country and made prisoners in time of profound peace with that power.

If it be objected that we must wait at least four years, or as some think six or seven, before the roots

will be fit for use; it may not be amiss to observe that it may be administered with success when younger in its fresh state, that is undried: by bruising half an ounce of the root, and boiling it in half a pint of water, till it is reduced to one quarter of a pint. This has effects similar to the true shop Rhubarb<sup>s</sup>. The Tartars are said to hold the recent root in high estimation<sup>t</sup>. Dr. Hope remarks, that the succulent root is more purgative than the dried, and therefore the more recent it is the better<sup>u</sup>.

The root may probably be useful, not only as a medicine, but a dye, as may appear from the following trial. Infuse a portion of the root in water, and to the infusion, when strained, add a few grains of salt of tartar: this will produce a very beautiful red tincture, such as would be valuable for the purposes of dyeing a colour, which at this time (1778) is so very expensive; and which, by this means, may probably be amply provided for by the use of this root, when it is more generally cultivated<sup>v</sup>.

Not only the root, but other parts of the plant are useful. Mons. Thouin, superintendant of the exotic plants at Versailles, informs us that the recent stem is converted into a marmalade, which is considered as a mild and pleasant laxative, and highly salubrious.

They prepare it by stripping off the bark, and boiling the pulp with an equal quantity of honey or sugar. The leaves are employed in their soups, to which they impart an agreeable acidity, like that of Sorrel.

The seeds have the same medicinal property with the root, in an eminent degree<sup>w</sup>. The late Dean of Gloucester, Dr. Tucker, having dropped a hint of this to Dr. A. Fothergill of Bath, he determined to try them. From his trials it appears that twelve grains of the seeds operate on some persons nearly as much as twenty on others, of the same age. On some they act gently, on others more roughly, such is the difference of constitution. In general it appears that twenty grains of the seeds are equal to thirty of the root, as to the purgative power. That the residuum of the seeds is nearly equal in this respect to their powder, according to what has been discovered concerning the residuum of the root; but the proof spirit extracted less from the seeds, than from the root by way of tincture. That the seeds appear to be more aromatic than the root, but to contain less astringency than even its residuum, when treated in the same manner<sup>x</sup>.

A selenitic salt has been lately discovered to be a constituent principle in Rhubarb, among other astringent vegetables. Sheele pronounces it to be a combination of the acid of wood-sorrel with a calcarious earth<sup>y</sup>.

Some writers affirm, that the distilled water of Rhubarb contains a purgative quality, but this stands in need of confirmation. The chemical and medicinal properties of the residuum; the elastic fluid extricated by distillation; the essential salt just mentioned, and the astringent principle, may all deserve the attention of a curious observer, and perhaps throw new light on the qualities of this important drug<sup>z</sup>.

4. The seeds of the fourth sort were sent me from Peterburgh, for the true Tartarian Rhubarb. The roots are large, and divide into many fangs; they are yellow within; the leaves appear early in the spring; the foot-stalks of these are of a pale green, and almost as large as those of the first sort; they have scarcely any channels, and are flat on their upper side; the leaves are smooth, heart-shaped, and do not run out to so great length in a point as those of the second, but are longer than those of the first, they are very broad towards their base, and have very large pale green ribs on their under side; they are a little waved on their edges, and have a sharp acid flavour. The flower-stalk is of a pale green; it rises five or six feet high, and is as large as a common walking cane, having at each joint one leaf of the same shape with those

<sup>o</sup> Bath papers, vol. 3. app. p. 391, &c.

<sup>p</sup> Trans arts. 8. 68.

<sup>q</sup> Idem, 15. 161.

<sup>r</sup> Idem, 16. 217.

<sup>s</sup> Bath papers, 1. 204.

<sup>t</sup> Idem, 4. 176.

<sup>u</sup> Idem, 1. 290.

<sup>v</sup> Idem, 1. 205.

<sup>w</sup> Idem, 4. 176.

<sup>x</sup> Idem, 3. 433.

<sup>y</sup> Idem, 4. 177.

<sup>z</sup> Idem, 3. 435.



below, but smaller, sitting close to the stalk; the upper part of the stalk divides into small branches, each sustaining a panicle or spike of white flowers standing erect, which appear the latter end of May, and are succeeded by large triangular bordered seeds, like those of the first sort, ripening in August.

The roots of this approach nearer to those of the foreign Rhubarb than either of the other, both in shape and quality; and as these seeds which were sent to Petersburg, were gathered from the plants growing on the spot where the Rhubarb is taken up, so there is little reason to doubt of its being the true sort, though the roots which have grown in England have not been equal in quality with those of the foreign; but this may have been occasioned for want of age, or by being taken out of the ground at an improper season; therefore farther trials may improve it; and as the plants produce great plenty of seeds here, they may be propagated with great ease. Linnaeus seemed first to think the second sort was the true Rhubarb, but the roots of that which have grown here are very little better than those of the Rhapontick, and I have reason to doubt if it is not a variety of it; for it is certain, these plants when growing near each other, are impregnated by each other's farina; for from the seeds of the Rhapontick, which grew close to the second sort, I had a mixture of plants of both sorts produced, though the plant of the second sort did not produce any seeds, for the stalk decayed soon after the flowers faded; and the seeds of the Rhapontick were gathered by myself from one plant, and were sown in his Grace the Duke of Bedford's garden at Wooburn Abbey, where there had not been any of these plants before growing, so that there could be no mixture of seeds, and yet a third part of the plants proved to be of the second sort.

Mr. Miller has more fully described this species in his Figures of Plants.—The root is very thick and fleshy, and divides into several thick taper fangs, as large as a man's finger, covered with a reddish-brown bark: it is of a yellowish red colour within. The root strikes pretty deep into the ground, and early in the spring sends up many leaves, which at their first appearance are closely folded up, but afterward expand, to the length of near two feet, and the breadth of a foot and half at the base, where they are rounded to the footstalk; their borders are sinuated and a little waved, and they are somewhat downy on their under side. The footstalks are seven or eight inches long, rising immediately from the root; they are as large as a man's finger, flattened and channelled on their upper side, but convex on their lower, of a purplish red colour. The flower-stalks arise from the root, among the leaves, and are three feet and a half high, having a smaller leaf at each joint, the ears of which almost embrace the stalk.

[Linnaeus says, that the leaves are more coriaceous or compact than in the other species, whence his trivial name; that the lobes are rounded, more obscure, crenate with the margin cartilaginous and the toothlets acute; that they are very smooth on both sides, and have stouter veins. The branches of the panicle are nodding.

The seed is rounded cordate and three-sided; the sides besprinkled with raised dots, of a brownish-green colour, and shining; the angles membranaceous, striated, ferruginous.

Native of Tartary. Introduced in 1779, by Chevalier Thunberg<sup>d</sup>. Mr. Miller's plant described above, not being the true *compactum* of Linnaeus, but more probably his *undulatum*.]

5. The fifth sort grows naturally on mount Libanus, and other mountainous parts of Syria. This has a thick fleshy root, which runs pretty deep in the ground, from which arise several leaves in the spring, which come up folded together, and afterwards expand; they have very short foot-stalks, so spread near the ground; but during the spring, their borders are erect, and form a sort of hood having several folds, and are curled and waved on their edges; they are of a purplish

green, and have purple veins and borders; their surface appears studded with rough protuberances, and when the leaves are fully expanded in summer, they are a foot long, and above two feet broad; their under side is paler than the upper, and their borders appear fringed. I have not seen this plant in flower, but the seeds of it were brought from mount Libanus, by the Right Rev. Dr. Pocock, the late Bishop of Ossory; these were larger than those of the other species, and covered with a succulent pulp, of a deep red colour, and very astringent taste; this succulent covering may have occasioned its being taken for a berry, by many of the old writers; the shape of the seed is like that of the other species.

[Dillenius says, that William Sherard procured it from mount Libanus, eight years before he writ; and if that be understood of the publication of the Hortus Elthamensis in 1732, it agrees with what is said in the Kew catalogue from Knowlton's manuscript, that it was cultivated in 1724, by James Sherard, M.D.—Dillenius adds, that it had not then appeared in any of the European gardens, except in that of Leyden, after the time of Vorstius, and in that of Eltham in his own time. Bellonius, Rauwolfius and Guilandinus had observed it growing naturally; and since their time Pocock and other travellers; not only on mount Libanus and Antilibanus, but on mount Sinai and Carmel, and in Persia. Dr. Russel informs us, that it was raised at Aleppo from seeds that came from the neighbourhood of Balbeck; and also by Mr. Gordon, of Mile-end, before the year 1781.

The stalks, as Rauwolfius informs us, from those which he saw brought to Aleppo, in order to make the Rob Ribes of Serapio, are near a cubit in height, an inch thick, hirsute, green, tinged with purple towards the bottom. It has never flowered in Europe, owing probably to its being so much out of place in our gardens, for it grows naturally in moist places on the mountains, and is covered with snow during a great part of the year.

6. Leaves large, those next the root lying on the ground, on red petioles; the nerves very much widened. Inflorescence scarcely higher than the leaves. Native of Lesser Tartary<sup>e</sup>.

7. This is extremely allied in its appearance to the *Rheum palmatum*; being of similar height, and having the same kind of leaves, stipules, &c. the leaves however are not so deeply lacinated nor so much pinnatifid as those of the former species.

The first or radical leaves are generally cordate, and pointed, but not palmated, and the plant as it advances in age seems to become more palmated from year to year.

It was considered by Professor Murray as a hybrid plant, produced by the mixture of *Rheum palmatum* with some other species, which had been impregnated by its pollen<sup>f</sup>.

Not known where it is a native, but cultivated in 1778, by John Fothergill, M.D.<sup>g</sup>

There seems to be a disposition in the Rheums to produce hybrid or mule plants. Mr. Miller has hinted it. A gentleman near Norwich, says that a near relation of his who is a physician, had some plants of *R. palmatum* and *compactum*, standing so near together, four or five years ago, that the seeds saved from them produced only mule plants; and that they were then growing in his garden within a mile of Norwich<sup>h</sup>. This account being dated, Sept. 16, 1778, carries the cultivation of a hybrid Rheum to 1773 or 1774:

The physician gives this particular detail of these mule plants. In the summer of 1771, I had a plant of *R. palmatum* growing about four yards from a plant of *R. compactum*, both in full flower. The first being generally allowed to be the true Turkey Rhubarb, I gathered the seeds of it, and sowed them early in spring 1772. In about five weeks the plants appeared in great plenty, and were in the beginning of the winter following transplanted. The leaves were neither

<sup>e</sup> Linn. suppl.

<sup>f</sup> Murray.

<sup>g</sup> Hort. kew.

<sup>h</sup> Bath papers, 1. 191.

<sup>d</sup> Gærtner.

<sup>e</sup> Hort. kew.



those of palmatum or compactum, very large and broad like the latter, but terminating in long sharp points, and in some degree indented and resembling the former. In 1775 these plants were all in flower: when their seeds were ripened, they were gathered, as they have been every year since, and sowed every spring, but without having ever produced a single plant. Many botanical gentlemen have viewed these plants, and have pronounced them to be mules. The root does not appear to have been at all affected in quality or appearance, on being compared with that of *R. palmatum*<sup>1</sup>.

Dr. Pulteney writes, in 1783, that he had been informed, that palmatum and undulatum planted near each other will produce a mongrel plant, the seeds of which are not fertile<sup>2</sup>.

Probably there may be other mongrel sorts produced. There are several species now cultivated in the botanic garden at Cambridge, different from any of those described above, but not yet sufficiently ascertained to be registered here. Some of these may be mule plants; but as they all stand very near each other, such no doubt would be produced if the seeds of the several species were collected and sown.]

#### PROPAGATION AND CULTURE.

These plants are all propagated by seeds, which should be sown in autumn soon after they are ripe, and then the plants will come up the following spring; but if they are kept out of the ground till spring, the plants seldom come up till the next spring, so that a whole year will be lost. The seeds should be sown where the plants are designed to remain; for as their roots are large and fleshy, when they are transplanted, they do not recover their removal soon; nor will the roots of those plants which are transplanted, ever grow so large and fair, as those which remain where they were sown. When the plants appear in the spring, the ground should be hoed over, to cut up the weeds; and where the plants are too close, some should be cut up, leaving them at the first hoeing six or eight inches asunder; but at the second, they may be separated to a foot and half distance or more. As soon as any weeds appear, scuffle the ground over with a Dutch hoe in dry weather. When the plants cover the ground with their broad leaves, they will keep down the weeds of themselves.

In autumn, when the leaves decay, clean the ground, and in the spring, before the plants begin to put up their new leaves, dig the ground between the plants, or at least hoe and clean them. The second year, many of the strongest plants will produce flowers and seeds, but the third year most of them will do so. Gather the seeds carefully when ripe, and do not permit them to scatter, lest they should grow to injure the old plants. The roots will remain many years without decaying; and it is said that the old roots of the true Rhubarb are much preferable to the young ones. They delight in a rich soil, not too dry, nor over moist; and where there is a depth in such land for their roots to run down, the leaves and roots will attain a great size.

The first sort is now frequently cultivated in gardens for the footstalks of the leaves, which are peeled and made into tarts in the spring.

The true Rhubarb is now sown in many gardens, and may probably succeed so well in time, that a sufficient quantity of that valuable drug may be raised to supply our consumption.

[Dr. Mounsey's directions for the culture of the Turkey Rhubarb, are to sow the seeds in april or may, three or four in a pot, which should be plunged in a hot-bed until the seeds vegetate. When the plants are about two months old, transplant them where they are to remain, in a fine light soil. Keep some of the plants in the pots until october, and some to the spring following, and then plant them out. When by these precautions you have secured a sufficient number of plants, you may venture to sow the seeds in the open air. If they vegetate late in the season, cover them

with mulch or moss, to preserve them in winter. When transplanted, set the plants at least four feet asunder, hoe them, keep them clean, and turn up the ground yearly between the rows, taking care not to touch the roots. In the second or third year the plants will begin to bear seeds. The earliest period at which the roots are useful, is at four year's growth, but even then they will be soft and spongy: they had better therefore remain eight years undisturbed; and even more years will add greatly to their perfection<sup>1</sup>.

Mr. Davis, of Minehead, recommends the seeds to be sown on a very gentle hot-bed in march, and when the roots are about the size of a crow's quill, they should be drawn up carefully to preserve the tap-root, and planted in fine rich earth in a deep soil: if the weather should prove dry, they must be watered. When the plants are once in a growing state, all farther care and trouble, but that of keeping them free from weeds, is at an end.

The distance of the plants should be eight feet; and as they disappear above seven months in the year, the ground may be usefully employed in many articles of gardening, from the middle of august to the beginning of april<sup>m</sup>.

The seeds however do not require a hot-bed to make them vegetate; but if sown in the natural ground during the spring, when the weather is open, soon come up and thrive very fast. This plant delights most in a rich light deep soil, and warm exposure, but will thrive in almost any soil or situation. If the roots be covered with litter, or the earth be drawn over them in winter, they will rise the stronger in the following spring. The seeds should be sown where the plants are to remain, and when they appear, the ground should be kept clean from weeds. When thinned out, the distance of the plants should be eight feet<sup>n</sup>.

Sir William Fordyce, who sowed the seeds at first upon a hot-bed; on the whole, found that they succeeded best when sown in the open ground, in an east or south-east exposure, during the last half of march, or in april, or even so far as the end of may; if the spring proved cold and dry. It may be transplanted during the whole course of the summer<sup>o</sup>.

If the ground be stirred about a seeding plant, the seeds falling will produce plenty of young plants, both in the autumn and the following spring: these may be transplanted about midsummer<sup>p</sup>.

Mr. William Hayward, of Banbury, sows the seed about the beginning of february, on a bed of good soil, if rather sandy the better, exposed to an east or west aspect, in preference to the south; a full sun being prejudicial to the vegetation of the seeds, and to the plants whilst young. Sow broadcast moderately thick, treading the seeds regularly in, and raking the ground smooth. In a wet season, it is best to make a bed two feet thick, with new dung from the stable, covering it near one foot thick with good soil. The intent of this bed is not so much for the sake of warmth, as to prevent the rising of earth-worms, which in a moist season will frequently destroy the young crop.

If the seed be good, the plants often rise too thick; if so, when they have six leaves, take them carefully up, where too close, leaving the standing crop eight or ten inches apart: plant those that are taken up at the same distance, in a fresh spot of ground, in order to furnish other plantations. When the plants in general are grown to the size that Cabbage plants are usually set out for a standing crop, plant them where they are to remain, in beds four feet wide, one row along the middle of the bed, leaving two yards distance between the plants, allowing an alley between the beds about a foot wide, for conveniency of weeding the plants.

In the autumn, when the decayed leaves are removed, if the shoveling of the alleys be thrown over the crowns of the plants, it will be found of service<sup>q</sup>.

<sup>1</sup> Idem, 1. 188.

<sup>m</sup> Idem, 1. 185.

<sup>n</sup> Idem, 1. 193.

<sup>o</sup> Pamphlet on Rhubarb, 1796. 8vo. p. 16.

<sup>p</sup> Transf. arts. 2. 79.

<sup>q</sup> Idem, 8. 79.

<sup>1</sup> Bath papers, 1. 202. 205.

<sup>k</sup> Idem, 2. 248.



Mr. John Ball, surgeon of Williton, sows the seeds the second week in february, in drills six inches apart, and one inch deep, upon beds three or four feet wide. If the weather should prove mild, the plants will appear in a fortnight or three weeks; and in a dry season they must be moderately watered. If too thick, thin them from two to three inches; and when about four inches high, transplant them where they are to stand, from four to six feet from each other, in a deep soil, well manured with good rotten dung, sifted coal ashes, and lime flaked and mixed with mud or waste from a mill-pond, or with earth from the gutters of meadows. Keep them clean from weeds, and if occasion, water them moderately, and look over the plantation every evening, to pick off the slugs, which are exceedingly fond of the young plants, and will soon destroy them.

The seeds may be sown also in september, or the first week in october, and they will be fit to transplant in february or the beginning of march.

The Rev. James Stillingfleet, of Hotham in Yorkshire, sows the seed early in the month of april, on a sandy loam, in a south-east aspect; sheltering the young plants from the sun till they have obtained strength.

When about the size of young cabbages or smaller, he transplants them into beds four or five feet wide, at the distance of five or six feet asunder: but the plants which remain in the seed-bed, when well thinned, are larger and better than the others. It will conduce to their strength and growth to raise the bed somewhat above the alleys, that the plants may be kept dry; for Rhubarb will not bear much wet; though a very dry sand will not suit it. Much dung tends to canker the plants: a good free soil, in a moderate state of cultivation, seems to suit them best; or if mulch be used, it should be thoroughly rotten, and almost reduced to mould. The young plants in the end of autumn should have the scrapings of the alleys thrown over them, and also in spring, when the plants are about an inch above ground.

Mr. Thomas Jones, of Fish-street hill, London, sows the seeds in march and april, or during the autumn in august and september; the former to be transplanted in autumn, the latter in spring. Instead of placing the seedling plants where they are to remain, as is usually recommended, beds should be prepared resembling those which are made for Asparagus, of fine mould, from twelve to eighteen inches deep. When the young plants are four or five inches high, and have thrown out as many leaves, transplant them upon those beds at eight inches asunder; selecting first the largest, carefully drawing them out, so as to destroy or even disturb the fibres as little as possible. Watering the bed previous to the removal, will greatly facilitate the operation. In the culture of Rhubarb, the whole difficulty consists in bringing the plants through their first season: if the weather be hot and sultry, they must be shaded, and at all events they must be continually watered. For transplanting, a wet or cloudy day should be preferred; and if the weather should continue so for two or three days successively, not more than four or five in a hundred will probably be lost. In a month the roots will have made fresh shoots, and new leaves will have succeeded the former, which commonly, notwithstanding all our care, will wither away. The plants may now remain in these nursery-beds till the ensuing spring, or if the summer be favourable, and the land intended for the plantation be well trenched three feet deep, it may be completed without delay. It is a good way to sow the ground with Carrots, the surface by this means being preserved from weeds, and rendered finer by repeated hoeings, and the bottom kept light and open. At different periods during the summer, when the plants are of a proper size, and the weather is cloudy or showery, with a transplanter or circular spade, remove them with a ball of earth adhering, at the prescribed distances, into the midst of the Carrots, destroying such as might obstruct the growth of the Rhubarb; and if the weather should prove unusually hot, the

foliage of the Carrots will preserve the young plants from the sun, till they have acquired a sufficient growth. After this, it remains only to keep the plantation clean, and the trenches open.

In the choice of a situation, the aspect is not very material, provided it be not shaded too much on the south or west. The indispensable points are the depth and good quality of the soil, which should be light, loamy and rich, but not too much so, lest the roots should be too fibrous: it can scarcely be too dry, for more evil is to be expected from a superabundance of moisture, than from any actual want of it. If with these advantages, the plantation can be placed on a gentle declivity; such a situation may be said to be very eligible.

The injuries which the young plants are most liable to, are from slugs and other small vermin, from inattention to the season and manner of planting, and from too great an exposure to frost. Little damage is to be feared from heat; and in general they are hardy and easy of cultivation, when arrived beyond a certain term.

If the ground destined for the plantation be a green-sward, no time will be lost by a little delay. Suffer a season or two to elapse, by growing Oats, Potatoes, &c. before the plantation be attempted, that the turf may be entirely rotted, and the wire worms, which always infest old grass land, be completely destroyed.

Sow liberally, not thick on a small piece of ground, but in sufficient quantity; it being impossible to foretell what may happen, from an unusually wet or severe winter, &c. Never let a season be omitted, lest a supply should fail, and a succession be lost.

Provided the weather be open, the best time for sowing is the end of february or the beginning of march; and if the seed should not vegetate in three weeks, let the sowings be repeated till they do. In cold soils a moderate hot-bed may be sometimes required, but very seldom; and ought never to be used but when absolutely necessary, those plants being strongest that are raised in the open ground. It is better to sow broad-cast than in drills.

The nursery-bed must be diligently attended to. The pains bestowed by constant waterings, and protecting the young plants from the ravages of insects, will amply repay the planter. Roots that thrive well here, will in three years arrive at an equal size with others, that have not succeeded so well, at the end of five. When a plantation is to be formed, or a vacancy filled up, select the finest and most thrifty plants. No plant will come to any thing, when it has lost its principal bud.

When a plantation does not possess the natural advantage of being on a declivity, narrower beds, and deepened trenches, are among the artificial means that should be adopted; but most situations will require some care to prevent the ill effects of water remaining on the crowns of the plants: therefore when the feed-stalks are cut off, which ought always to be done immediately upon the withering of the radical leaves, they should be covered with mould in form of a hillock. This process will answer two good purposes, that of throwing off the rain, and keeping open the trenches by taking the earth from them.

Till the plants have blown, the medical qualities of the roots scarcely come into existence; and at the same period the danger of decay commences likewise. When the buds from the roots have grown up and flowered, a cavity is formed in the centre of the plant, in which rain will make a lodgement, to the inevitable destruction of those parts that, on this account, year after year, become unprotected.

These portions of the crown whence the feed-stalks arise, prove ever the most valuable; and every succeeding year producing other feed-stalks, would add to the stock of useful root, if experience did not tell us, that hitherto the latter have increased no faster than the former have been diminished.

Every spring and autumn the plants should undergo a general examination. The young ones will presently

<sup>1</sup> Transf. Arts. 13. 179.

<sup>2</sup> Idem, 15. 157.

<sup>3</sup> Idem, 15. 167.



discover their real situation, for either their leaves will wither as fast as they are produced, or their growth will become stunted: but with regard to the older ones, or those that have blown, as in most cases there will be found enough sound root to produce a luxuriant foliage, their state can only be discovered by pressing a finger into the centre of the crown: the least unsoundness will soon be perceptible by this means.

In both cases the plants should be removed, and the vacancies filled with others; for in the former much time will be saved, and the bad situation of the latter, by remaining, will only be aggravated, whilst it furnishes the cultivator with an opportunity of examining into the occasion of the several defects, and may lead to future prevention<sup>a</sup>.

Respecting soil, the general voice is, that such an one as is fit for Carrots, will suit Rhubarb. Dr. Lettsom says it delights in a sandy soil, on a somewhat elevated situation:—Dr. Hope, that the roots raised in a dry soil are preferable to those raised in a moist one: Another physician, that the soil in which his plants were raised is very light for about twelve inches deep, and under that a stratum of red sand of great depth<sup>x</sup>.

Mr. Hayward's plants grew on a strong red loam, on a gentle declivity towards the west:—Mr. Davis's on a light black soil, in a situation quite open, and without any declivity:—Mr. Stillingfleet's on a sandy loam, which he finds to be the best soil; he prefers a south-east aspect, but thinks an east aspect might possibly be still better<sup>y</sup>.

Mr. Bell, in his travels among the Tartars, relates that where there are ten or twenty plants of Rhubarb growing, you are sure to find several burrows of the Marmot under the shade of their broad spreading leaves. For when the seed happens to blow among the thick grass, it can very seldom reach the ground; whereas what falls among the loose earth thrown up by the Marmots immediately takes root, and produces a new plant. Mr. Bell farther says, that he dug up as much of the root as he wanted, with a stick<sup>z</sup>.

It is plain from this account, that the soil there is light and dry; two properties which appear to me indispensable to have the Rhubarb root of a good quality: a poor sand is bad, but a stiff clay is worse; good sandy loams, fit for Carrots, as was before observed, are the best.

It may be doubted whether manure should be used or not. Mr. Ball, in his sandy soil, used one part good rotten dung, and two parts rich earth from the gutters in watered meadows, thrown together two years and often turned, two parts of old cobb or mud wall, and two parts of sifted coal ashes. The second year he gave the plants a fresh dressing of good rotten dung. He used also one part rotten dung, one part sifted coal-ashes, and two parts lime previously flaked, and mixed with mud or waste from a mill pond and often turned.

Mr. Hayward, on his strong red loam, manured at a considerable expense with well rotted horse-dung; his land being in a very impoverished state from a bad tenant.

Mr. Stillingfleet does not advise much dung, as it tends to canker the plants; and thinks that a good free soil in a moderate state of cultivation, seems to suit them best; or if mulch be used, it should be quite rotten, and almost reduced to mould<sup>a</sup>.

Sir William Fordyce remarks, that ground unmanured, or not too rich, is least apt to breed the fly, to which this plant is more subject than even the Turnep<sup>b</sup>.

I have no doubt but that dung injures the quality of the root, and that it will be best on good fresh sound land, well worked.

The distance most generally recommended at which the plants should finally stand for a crop, whether hoed

out or transplanted is four feet; and the Society of Arts recommended that the plants should stand that distance at least. Mr. Jones remarks, that although the foliage will frequently meet at a much greater distance, the roots never occupy so large a space<sup>c</sup>. This gentleman had when he began to cultivate Rhubarb, set the plants at the distance of six feet. Mr. Ball's plants also stood six feet asunder every way<sup>d</sup>.

Rhubarb may be propagated not only from seeds, but from offsets. Mr. Thomas Hayes, surgeon at Hampstead, having found himself disappointed in raising plants from seed, separated some of the eyes or buds, which shoot out on the upper parts of the root, together with a small part of the root itself, having some of the fibres to it. These offsets may be taken from roots of three or four years old, without any injury to the plant. By this method a year is saved, the plants are not in such danger of being devoured by vermin as those from seed, nor so uncertain in growing; they are not so tender, neither do they need transplanting, or any other care than keeping the ground clear of weeds. There is no difference in the size of the roots thus raised, from those which grow from seeds<sup>e</sup>.

Mr. Hayward also slipped several offsets from the heads of large plants in the spring, and set them with a dibble about a foot apart. In autumn they had made great progress, and furnished his beds with forty plants in the most thriving state<sup>f</sup>. Four years after he took up these roots, and found them to be very large, and of excellent quality. On farther experience, when he took up his roots, either in spring or autumn, he divided the head into many parts; these he planted directly, at two feet distance, if intended for future removal; but if to remain for a crop, he allowed four feet and a half<sup>g</sup>.

There is a difference of opinion respecting the age at which the roots ought to be taken up for use. According to Dr. Mounsey, the earliest period at which the roots are useful, is at four years growth, but even then they will be soft and spongy. They should remain therefore eight years undisturbed; though still more years will add greatly to their perfection<sup>h</sup>.

Sir William Fordyce is also of opinion, that though Rhubarb may be taken up at the end of four years, it will not, how properly soever managed, possess that solidity which is necessary for its excellence. It will be found in its most perfect state at the end of seven years, but it will continue good after that age, if it has been carefully cultivated, and is skilfully cured<sup>i</sup>.

A physician in the Bath memoirs, assigns eight years as the meridian of perfection for the roots<sup>k</sup>.

Mr. Stillingfleet says the best time for taking up the roots, is when they are five or six years old, according to the size of the plants: if younger, they are defective in strength and efficacy; if older, they are strong in taste, and more rough in their operation<sup>l</sup>.

All accounts agree, says Mr. Jones, that Rhubarb so cultivated as to arrive at six or seven years growth, and properly cured, will possess all the virtues the most sanguine can desire<sup>m</sup>.

And yet Dr. Hope and some others are for taking up the roots at four years old<sup>n</sup>.

The same gentleman describes the season for taking them up to be from the end of July to the first of January; after the weather has been some time dry.

Dr. Lettsom says, it may probably be of little consequence, as to the vigour of the roots, whether they are taken up in summer or autumn; but as warm weather is best for drying them, the former seems most eligible<sup>o</sup>.

Bergius advises the roots to be taken up in autumn, and to be eleven or twelve years old. Dr. Pulteney is inclined to be in favour of the spring, before the plant begins to push its leaves; though he is sensible that this will not hold in those bulbous or tuberous

<sup>a</sup> Transf. Arts. 16. 220. <sup>x</sup> Bath papers, 1. 198, 200, 205.

<sup>y</sup> Transf. Arts. 12. 226. 14. 145. & 15. 157.

<sup>z</sup> Fordyce, p. 4. &c.

<sup>a</sup> Transf. Arts. 7. 34. 36. 8. 72. 12. 227. 15. 158.

<sup>b</sup> Pamphlet, p. 16.

<sup>c</sup> Transf. Arts. 12. 226. 14. 147. 15. 166.

<sup>d</sup> Idem, 8. 72. 11. 124. & 15. 165. <sup>e</sup> Bath papers, 4. 178.

<sup>f</sup> Transf. Arts. 8. 81.

<sup>g</sup> Idem, 12. 227.

<sup>h</sup> Bath papers, 1. 189. <sup>i</sup> Pamphlet, p. 17. <sup>k</sup> Vol. 1. p. 204.

<sup>l</sup> Transf. Arts. 15. 159.

<sup>m</sup> Idem, 16. 218.

<sup>n</sup> Bath papers, 1. 199.

<sup>o</sup> Idem, 1. 198. 200.



kinds, which form a new root annually, as soon as the plant is perfected.

The Chinese get up their Rhubarb in winter<sup>p</sup>. Pallas says that the Tartars take up theirs in april and may; but in Bell's account, this is said to be done in the autumn. Forster, in his history of voyages to the north, affirms that the roots are dug up there in winter, before they put forth leaves, because they then contain the entire juice and virtue of the plant; those that are taken up in summer being of a light spungy texture, and unfit for use.

Mr. Jones, prefers taking up the roots as near to the winter solstice as he can; for though the powers of nature might be more active in february, yet the roots dry better and shrink less than in the spring. He generally finds them to lose about four fifths in drying<sup>q</sup>.

The roots, in the judgment of Mr. Hayward, may be taken up either early in the spring, or in autumn when the leaves are decayed; in dry weather, if possible<sup>r</sup>.

Mr. Ball takes up the roots, when the stalks are dying away<sup>s</sup>.

The greatest difficulty in this business seems to be drying and curing the root.

In Tartary, the root, being thoroughly cleaned, and the smaller branches cut off, is cut transversely into pieces of a moderate size; these are placed on long tables or boards, and turned three or four times a day, that the yellow viscid juice may incorporate with the substance of the root. If this juice be suffered to run out, the roots become light and unserviceable; and if they be not cut within five or six days after they are dug up, they become soft, and decay very speedily. Four or five days after they are cut, holes are made through them, and they are hung up to dry exposed to the air and wind, but sheltered from the sun. Thus in about two months the roots are completely dried, and arrive at their full perfection. The loss of weight in drying is very considerable; seven loads of green roots yielding only one small horse-load of perfectly dry Rhubarb<sup>t</sup>.

The Chinese, after having cleaned the roots, by scraping off the outer bark, as well as the thin yellow membrane underneath, cut them in slices, an inch or two in thickness, and dry them on stone slabs, under which large fires are kindled. They keep continually turning these slices on the warm slabs; but as this operation is not sufficient to dry them thoroughly, they make a hole through them, and suspend them on lines, in a place exposed to the greatest heat of the sun, till they are in a condition to be preserved without danger of spoiling<sup>u</sup>. Rochon on the contrary asserts, that they are hung in the open air and in the shade<sup>v</sup>.

Sir William Fordyce directs, that as soon as a root is dug up, it should be washed till it is thoroughly clean. Let the fibres be taken away, and not the smallest particle of bark left on the larger roots. Cut these into square pieces, as nearly as they will admit, of four inches in breadth, and an inch and half in depth. Make a hole in the middle of each, about half an inch square. Then string them on a packthread, with a knot on each, and at such a distance as to keep them from rubbing or entangling. Thus secured, hang them up in form of festoons, in the warm air of a kitchen, laundry or stove, till the superfluous moisture is exhaled, to prevent their becoming mouldy or musty. They may be afterwards dried more at leisure, and when quite dry may be wrapped separately in cotton, and kept in wide mouthed bottles. The tap-roots and parings will make excellent tinctures<sup>w</sup>.

Mr. Davis recommends, that after dividing the root into proper parts, the outer rind should be sliced off, and then it should be hung up on a string exposed to sun and air, but defended from wet: each piece hanging separately, and care taken that it does not grow

mouldy. When hardened on the outside, remove it to the kitchen chimney-corner, where a moderate fire is constantly kept, till it is perfectly dry. It may then be rasped, and all the discoloured outside taken off<sup>z</sup>.

Dr. Hope is of opinion that the entire root should be hung up in the open air for two, three, or more weeks, and then cut into marketable pieces, before it be put into the drying. The cuticle should be rubbed off as soon as possible<sup>a</sup>.

Mr. Hayward's method is, to clear the roots from dirt, without washing, to cut them into pieces, with a sharp knife to free them from the outer coat, and then expose them to the sun and air for a few days, to render the outside a little dry.

In order to accelerate the curing of the largest pieces, a hole may be scooped out with a penknife: these and the smaller parts are then to be strung on packthread, and hung up in a warm room (as over a baker's oven) where they are to remain till perfectly dry. Each piece may be rendered more tightly by a common file, fixing it in a small vice during that operation: afterwards rub over it a very fine powder, which the small roots furnish in perfection, for this and every other purpose where Rhubarb is required<sup>b</sup>.

Mr. Thomas Halley, of Pontefract, who produced samples to the Society of Arts, superior to any Rhubarb hitherto cured in England; having thoroughly divested the roots of the adhering earth, placed them for some weeks on the floor of a cool warehouse: the fibres were then taken off, they were cut up, and dried on the flue of a green-house. The prime roots were severed in small pieces, peeled clean, and cleared of every particle of unsoundness. Part was separately laid in sieves, and the remainder perforated, strung, and suspended in festoons from the ceiling of a warm kitchen. The manner of dressing consists in paring off the external coat with a sharp knife, as thin and clean as possible, and then finishing it off by a piece of fish-skin, with its own powder; which powder may be procured from the chips and small pieces, either by grinding or pounding it in a large mortar<sup>c</sup>.

Mr. Ball, so often mentioned, cleans the earth from the roots with a dry brush, cuts them in small pieces of four or five inches in breadth, and about two in depth, taking away all the bark, making a hole in the middle, and stringing them so as to keep every piece apart. If the weather be clear and fine, he places them in the open part of his garden, on stages erected by fixing small posts about six feet high in the ground, and six feet asunder, into which he puts horizontal pegs about a foot apart, beginning at the top; and the Rhubarb being stringed crosswise on small poles, he places them on these pegs; so that if it should rain, he can easily remove each pole with the suspended pieces into a covered place. He never suffers them to be out at night, as the damps would be apt to mould them, and if at any time he perceives the least mould, he rubs it off with a dry cloth. In some of the pieces he made holes in the middle about half an inch diameter, and found that they dried better than the others. He likewise hung several strings in the kitchen, without ever exposing them to the open air, and found them to dry much better. Some years since he dried a quantity on a malt-kiln, keeping up the thermometer to eighty degrees, which answered well, but he thinks dried rather too quick<sup>d</sup>. Finally, he preferred hanging his stringed roots to the ceiling of a kitchen, where there is a constant fire<sup>e</sup>.

Mr. Stillingfleet, after divesting the roots of the earth, washes them in water, working them round with a birch broom, scrubbing them afterwards with a hard brush; nor does he find any inconvenience in this, if done immediately, and the roots not suffered to remain in the water. He then wipes them with a coarse cloth, and lays them in the sun or wind to dry, cutting them into pieces, as may best suit the farther process. The rind is then pared off rather thin, the

<sup>p</sup> Bath papers, 2. 249.

<sup>q</sup> Transf. Arts. 15. 159.

<sup>r</sup> Idem, 8. 81.

<sup>s</sup> Idem, 12. 232.

<sup>t</sup> Fothergill in Bath papers, 4. 175. Foster and Bell's travels.

<sup>u</sup> Grolier.

<sup>v</sup> Memoire.

<sup>w</sup> Pamphlet, p. 18.

<sup>z</sup> Bath papers, 1. 186.

<sup>a</sup> Id. ib. 199.

<sup>b</sup> Transf. Arts, 8. 82.

<sup>c</sup> Idem, 11. 130.

<sup>d</sup> Idem, 12. 232.

<sup>e</sup> Idem, 13. 180.



pieces are strung together, and hung up in the kitchen. He thinks that warmth fully sufficient, and that the more gradually the roots are dried, the better they are for use. His were fully dried in half a year or less. He does not scoop out the middle, regarding that as the most useful part, though not the strongest. He quarters the large pieces, that they may dry more thoroughly<sup>f</sup>.

Dr. Falconer, of Bath, is of opinion, that if the following circumstances were attended to, British Rhubarb might equal any of the foreign.

First, a selection of the best pieces is indispensably necessary.

Secondly, the central part of every piece should be cut out; for it is found by experience that this, perhaps from its proximity to the sap, is moistest and most subject to decay; and when any part comes into this state, the infection soon spreads and damages the whole piece. Doubtless it is to avoid this, that the pieces of Russian Rhubarb have all holes, and those pretty large, cut through their centre, which have been generally thought only to serve the purpose of hanging them up, but appear to answer this material purpose besides. The holes made in English Rhubarb, when there are any, are not sufficiently large to clear away the spongy and decaying parts.

Thirdly, the outside should be scraped or rather rasped, as the foreign Rhubarbs are. The want of this not only gives it a shrivelled and mean appearance and colour, but is really of great disservice, by obstructing the quickness of drying, from the pores not being laid open for the herbaceous moisture to exhale. Though the bark be stripped off, the larger pores running mostly longitudinally, do not open laterally, and of course the watery fluid is confined, and exudes very slowly.

Fourthly, it is probable, that great improvement might be made in the preparation of English Rhubarb, by accelerating its drying. It was formerly thought that plants were best dried in a slow and gradual manner, which is now found to be a mistake, and that as quick drying as is consistent with the safety of the vegetable substance, best preserves the efficacious qualities of the plant.

Too much light indeed is thought to do injury, as it impairs the colour, and perhaps, though that is dubious, dissipates some of the finer parts; but culinary heat is free from that objection, and at the same time possesses all the advantages of quick drying<sup>g</sup>.

Dr. Hope says, on the subject of Rhubarb, I have thought much, made many experiments, and received much useful information: after all, it is a very difficult and uncertain attempt to dry Rhubarb successfully<sup>h</sup>.

Certainly much of the true Rhubarb produced in England has not been cured so well as the foreign. But it may be hoped that attention to the directions here given, followed up by practice, may at length give complete success.

The Duke of Athol has raised Rhubarb in Scotland, which was thought by eminent druggists, and gentlemen of the medical profession in London, to be nearly, if not quite equal to the Russian, in smell, taste, and effect. By paying a little more attention to the curing, they conceived that its beauty might be increased. Upon which, the year after, his Grace sent up specimens of still superior quality<sup>i</sup>.

Its having braved the climate of St. Petersburg, and succeeded well in Scotland, is a sufficient proof of its hardiness. Dr. Robertson informs us that it grows luxuriantly in Perthshire (Lat. 56°): that gardeners and others raise it there in great perfection; and that there is a constant demand for it as a medicine: but that there is such a rage for every thing foreign, that Rhubarb of Scottish growth is generally rejected in the shops, knowing it to be such; which may have prevented its cultivation<sup>k</sup>.

I have been very diffusive upon this article, because it appears to be of national importance. And I have

<sup>f</sup> Trans. Arts. 15. 159.

<sup>g</sup> Bath papers, 3. 402.

<sup>h</sup> Id. ib. 440.

<sup>i</sup> Id. ib. 445.

<sup>k</sup> Survey, 138.

given the opinions of different cultivators, rather than decisive rules, because the propagation, culture and curing of Rhubarb in Britain, have not been practised long enough, and to a sufficient extent, to admit of certainty and precision. It were much to be wished that it might be tried on a large scale, on some of our best Carrot soils, such as those about Woodbridge in Suffolk and Sandwich in Kent. Where, with due attention to the age of taking up and the curing, there is no doubt but the crop would amply repay the cultivators, and be a considerable saving to the nation.]

RHEXIA (of Pliny; from *ῥήξω*, ruptura; from *ῥήσω*, rumpo, to break or burst.)

Lin. gen. n. 468. Reich. n. 504. Schreb. n. 636.

Juss. 330. Gronov.

Class. 8. 1. Oëandria Monogynia.

Nat. order of Calycanthemæ. Melastomæ, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, ventricose at bottom, oblong, with a four-cleft border, permanent.

COR. Petals four, roundish, inserted into the calyx, spreading.

STAM. Filaments eight, filiform, longer than the calyx and inserted into it. Anthers declining, grooved, linear, blunt, versatile.

PIST. Germ roundish. Style simple, the length of the stamens, declining. Stigma thickish, oblong.

PER. Capsule roundish, four-celled, four-valved, within the belly of the calyx.

SEEDS numerous, roundish.

#### ESSENTIAL CHARACTER.

Cal. four-cleft. Pet. four, inserted into the calyx.

Anthers declining. Caps. four-celled, within the belly of the calyx.

#### SPECIES.

1. Rhexia virginica.

Lin. spec. 491. Reich. 2. 146. Gron. virg. 41.

Pluk. amalb. 8. (Alifanus.) phyt. t. 202. f. 8.

Raii hist. 3. 426. n. 5. (Lyfimachia.)

Leaves sessile serrate, calyxes smooth.

2. Rhexia mariana.

Lin. spec. 491. Reich. 2. 146.

R. glomerata. Rottb. in aët. litt. Hafn. 1778. p. 276. t. 4.

Lyfimachia non papposa, &c. Pluk. mant. t. 428. f. 1.

L. lutea marilandica filiquosa, &c. Raii hist. 3. 426. n. 10.

Leaves ciliate.

[3. Rhexia trichotoma.

Vahl, symb. 2. 48. Rottb. diff. pl. rar. 9. t. 5.

Flowers solitary axillary and terminating, leaves sessile opposite lanceolate hirsute.

4. Rhexia Acisanthera.

Lin. spec. 491. Reich. 2. 146. amoen. 5. 396.

Brown. jam. 217. t. 22. f. 1. (Acisanthera.)

Flowers alternate axillary peduncled five-cleft.

5. Rhexia Jussoides.

Lin. syst. 357. suppl. 215.

Leaves alternate ribbed rugged at the margin.

6. Rhexia glutinosa.

Lin. syst. 357. suppl. 216. Mutis amer. 1. t. 6.

Leaves opposite three-nerved even, flowers thyrsoid.

7. Rhexia leucantha.

Swartz prodr. 61.

Leaves opposite cartilaginous-toothletted coriaceous shining, branchlets four-cornered, flowers terminating ten-stamened.

8. Rhexia purpurea.

Swartz prodr. 61.

Leaves opposite toothletted coriaceous, branchlets round, flowers axillary ten-stamened.

9. Rhexia uniflora.

Vahl, symb. 2. 48.

Leaves petioled ovate serrate, flowers axillary solitary ten-stamened, stem dichotomous.

10. Rhexia inconstans.

Vahl, ecl. 1. 37.

Melastoma ornata. Swartz prodr. 69.

Leaves ovate hispid with close-pressed bristles hoary three-nerved, peduncles terminating one or two-flow-ered.

11. Rhexia



11. *Rhexia bivalvis*.*Vahl, ecl. 1. 38.**Melastoma bivalvis. Aubl. guian. 404. t. 155. f. a. Smooth, ten-stamened, leaves oblong sessile obscurely crenate blunt, peduncles terminating one-flowered.*12. *Rhexia trivalvis*.*Vahl, ecl. 1. 39.**Melastoma trivalvis. Aubl. guian. 406. t. 155. f. b. Smooth, ten-stamened, leaves linear-lanceolate sessile dotted above quite entire, peduncles one-flowered.*13. *Rhexia longifolia*.*Vahl, ecl. 1. 39.**Hairy, ten-stamened, leaves lanceolate quite entire five-nerved, peduncles axillary and terminating dichotomous shorter than the leaves.]*

## DESCRIPTIONS, &amp;c.

1. This rises with an erect stalk, near a foot and half high, four-cornered and hairy. Leaves lanceolate, hairy, about two inches long, and half an inch broad, entire and opposite. The stalk has two peduncles coming out from the side opposite to each other at the upper joint, and is terminated by two others; these each sustain two or three red flowers with heart-shaped petals, spreading open in form of a cross, and appear in June.

[The corners of the stalk are membranaceous. The leaves are longer than the internodes, three-nerved, somewhat hispid with scattered hairs, subserrate with setaceous serratures. Peduncle terminating, dichotomous. Flowers solitary from the divisions, subsessile. Anthers sickle-shaped, yellow<sup>1</sup>.

Native of North America. Cultivated in 1759 by Mr. Miller<sup>m</sup>:] who says, that it was discovered by Mr. Banister in Virginia. [Ray adds that Krieg brought it from Maryland.]

2. This sends up an erect stalk about ten inches high. Leaves lanceolate, about an inch long, and a third part of an inch broad, set on by pairs; and from every joint of the stalk two short shoots come out opposite, with small leaves of the same shape; the whole plant is thick set with stinging iron-coloured hairs. The stalk divides at the top into two peduncles, spreading from each other, having one or two reddish flowers on each, with a single subsessile flower between them; they have four heart-shaped petals, which spread open as in the preceding. It flowers about the same time. [Capsule within a ventricose calyx terminated by a four-cleft funnel-form border, membranaceous, very thin, subglobular, produced at top into a short knob, four-celled, opening four ways at the top: partitions membranaceous, inserted into the middle of the valves. Receptacles four, somewhat crescent-shaped, fungose, excavated, inserted by a thick lateral peduncle into the internal angles of the cells below the middle; the other parts quite free. Seeds small, with raised dots in rows, pale, almost cylindrical, with a single turn like a snail's cell, terminated by a wide concave navel. Skin single, thickish, subero-crustaceous, brittle<sup>n</sup>.

[Native of Maryland, Brasil, Surinam, in meadows<sup>o</sup>. Vernon and Krieg brought it from Maryland<sup>p</sup>;] whence Mr. Miller also received the seeds. [He cultivated it in 1759.

Linneus remarks, that the calyx has bristles scattered over it, which are stellate at the top.

Ray describes the stem as round, slender, hispid: the leaves alternate at moderate distances, longer, wider and sharper than those of *Hypericum*: from the sinuses of these spring branchlets, having very small narrow sharp leaves towards their upper part, and sustaining large flowers at top, which in the dried specimens seemed to be yellow. It is not certain that Ray's plant is the same with Plukenet's and Linneus's.

3. Stem frutescent. Branches four-cornered, with the corners rough-haired, trichotomous at bottom, dichotomous at top. Leaves an inch long, quite entire. Peduncles short, at the forks and ends of the branches. Petals ovate, ciliate<sup>q</sup>.

4. This seldom rises above fourteen or sixteen inches

in height. The stem is pretty firm and square, and emits many square branches towards the top. The leaves are small, three-nerved, ovate, crenate and opposite. The flowers spring singly from the alternate axils or bosoms of the leaves. The calyx is deeply five-cleft at the mouth. Petals five, obovate, inserted into the throat of the calyx. Filaments ten; shorter than the corolla. Anthers oblong, sagittate and subarcuate, versatile. Germ crowned with the calyx. Style short. Stigma sharp. Capsule two-celled, filled with two little placentas. Native of Jamaica<sup>\*</sup>.

5. This is a shrub four feet in height, pubescent, as are also the peduncles and fruit. Leaves subsessile, somewhat clustered, lanceolate, scarcely a finger's length, rather directed all one way, rugged on the edge with very minute serratures, the nerves prominent a little underneath. Flowers axillary, solitary, peduncled, scarcely the length of the leaves; yellow. Perianth almost superior, lanceolate, acute, spreading. Petals subovate, double the length of the calyx, sessile. Filaments shorter: anthers incumbent, the length of the calyx or longer than the filaments. Germ inferior, the length of the calyx, a little prominent: style cylindrical: stigma warted. Capsule obovate, four-cornered, the length of the calyx; with four small laminae at top.—This plant is singular by its naked, warted, undivided, ovate stigma, girt as it were by a four-toothed margin; and by its capsule prominent within the calyx, marked as it were by four agglutinated laminae. It is allied to *Epilobium* and *Oenothera*, but without a tubular calyx.—Native of Surinam, where it was found by C. G. Dalberg.

6. This is a small and very leafy tree, resembling the *Melastomas*, with jointed branchlets, alternately channelled. Leaves petioled, somewhat clustered, elliptic, quite entire, an inch long. Flowers scarcely longer than the leaves, peduncled. Calyx bell-shaped, spreading a little. Capsule inferior, four-parted or four-celled, shorter than the calyx, blunt. The ends of the branchlets and the calyxes are glutinous, whence the trivial name.—Found by Mutis in New Granada<sup>r</sup>.

7. 8. Natives of Jamaica<sup>s</sup>.

9. Stem herbaceous, four-cornered with four decurrent wings, having hairs glandular at the tip scattered over it, and viscid. Branches filiform. Leaves very small, acute, having a few hairs pressed to the surface scattered over them, obscurely three-nerved, ciliate at the edge with glandular hairs: the uppermost narrower and sub lanceolate. Petiole shorter than the leaf, ciliate also with glandular hairs. Peduncles axillary, and at the forks of the branches, solitary, very short. Calyxes hairy. Petals lanceolate. Stamens ten, longer than the petals. Capsules subbilobed; the size of Coriander seed.—Found by von Rohr in Cayenne<sup>t</sup>.

10. This is a small low shrub, with diffused ascending branches, the lower ones towards their base rooting, four-cornered, hispid with frequent ferruginous hairs pressed close: branchlets axillary, opposite like the branches, shorter than the leaf. Leaves opposite, bluntish, ciliate; on the upper surface marked with three lines and veinlets, having yellowish flattened bristles scattered over them; underneath hoary, marked with three nerves, besides those that run along the edge, hispid with whitish bristles along the nerves and midrib. Petiole short, hispid. Peduncles commonly three or four, and sometimes a fifth central one shorter than the others, hispid, ferruginous, one-flowered; but often one of the lateral ones two-flowered. Bractes two on each peduncle, a little above the middle, opposite, sessile, ovate, ciliate about the edge, in other parts smooth, small. Calyx four or five-cleft, obovate having many bristles scattered over them, which are whitish with the tips purplish and glandular. Segments lanceolate, attenuated, ciliate with bristles. Petals four or five, obovate-roundish, rose-coloured, ciliate along the outer edge, with remote hairs, appearing to be terminated by a minute gland when examined with a magnifier. Stamens eight or ten;

<sup>1</sup> Linn. spec.<sup>m</sup> Hort. kew.<sup>n</sup> Gartner.<sup>o</sup> Linn. spec.<sup>p</sup> Ray.<sup>q</sup> Vahl.<sup>\*</sup> Browne.<sup>r</sup> Linn. suppl.<sup>s</sup> Swartz.<sup>t</sup> Vahl symb.



upright, half the length of the corolla. Anthers oblong, blunt, sulphur-coloured, a little curved in at the base, undivided on the lower tip, shorter by half than the filaments. Style a little shorter than the stamens. Capsule globular, smooth, shorter than the calyx in which it is enveloped.

It has many things in common with *R. villosa* of Aublet, which differs only, so far as we can discern from the figure, in having the segments of the calyx bristle-shaped, and much larger anthers with the lower tip two-horned.

Ryan remarked that this species varies much in the number of stamens, he reckoned from seven to twelve, and from this circumstance he named it *inconstans*. He found it in Montserrat, upon lava covered with moss.

11. This is an annual plant, smooth all over, and of an ash colour. Stem ascending, simple, four-cornered, the corners membranaceous, jointed, the lowest joints rooting; having one or two branches at top, opposite, quite simple, axillary, longer by half than the leaf, one or two-jointed, winged. Leaves opposite, thickish, veinless, obscurely three-nerved, the lower shorter, the upper a little longer than the internodes. Peduncles sometimes three together; on the branches solitary, short. Segments of the calyx five, lanceolate. Stamens ten. Capsule the size of a Coriander-seed, two-valved.—Native of Guiana.

12. This also is annual and smooth all over. Stem ascending, from a span to a foot in height, at bottom the size of a pigeon's quill, jointed, four-cornered, the corners membranaceous; having a branch or two at top. Leaves opposite, the upper surface greenish ash-colour, having numerous minute dots scattered over it, not visible without a magnifier, the under surface is not dotted; they are obscurely three-nerved, acute, three times narrower than in the preceding species, the lower ones a little shorter than the internodes, the upper ones equal to them. Peduncles in the upper axils and at the top of the stalk, solitary, the length of the leaf. Segments of the calyx awl-shaped. Stamens ten. Capsule the size of a Coriander seed.—Native of Guiana.

13. Stems herbaceous, loose, angular, of a yellowish ash-colour from long dense hairs pressed close to the surface. Leaves opposite, remote, three or four inches long, and an inch wide, gradually smaller upwards, having long hairs that are close pressed scattered over them on both sides, paler underneath, soft, three-nerved, with the two lateral nerves dividing above the base into two parallel branches. Petiole scarcely an inch long, hairy, yellowish ash-colour. Peduncles twice-bifid, with a pedicelled flower in each division, ash-coloured with hairs, the axillary ones opposite, the terminating ones in threes, the length of the petioles: the partial ones equalling the general peduncle: the pedicels very short. Calyx oblong, gray with rough hairs: segments five, awl-shaped, coloured within, smooth. Petals five, oblong, half as long again as the calyx, ciliate. Stamens ten, scarcely longer than the corolla: filaments subflexuose, toothless: anthers the length of the filaments, sharpish, a little curved in at the base. Capsule subglobular, shorter than the calyx, rough-haired at the tip, five-valved: valves ovate, acute. Receptacles of the seeds five, curved in, free at top, excavated, black. Seeds abundant, very minute. It seems to approach to *R. hispida* in *æst. soc. hist. nat.* at Paris, (i. p. 108.) but it is not clear from the description whether it be a different species or not.—Native of South America<sup>a</sup>.

These plants are all found wild in America. Linneus constructed the character of the genus from the two first species: in most of the rest (4. 7. 8. 9. 11. 12. 13.) the calyx is five-cleft; the petals five; and the stamens ten; in n. 10. the stamens are inconstant, from seven to twelve, the calyx four-cleft or five-cleft, the petals four or five. In n. 4. the capsule is two-celled; in n. 9. subbilobed; in n. 11. two-valved; in n. 13. five-valved. But notwithstanding these anomalies, they are evidently of the same natural genus.

<sup>a</sup> Vahl, ecl.

There is a plain alliance of this genus to *Osbeckia* and *Melastoma*. It differs from the first chiefly in its anthers, which are declined in a singular manner, almost as in *Melastoma*, from which it differs in having a capsular fruit; in that it is a berry. In the fruit and number of stamens *Rhexia* and *Osbeckia* agree: but the latter are frequently so in *Rhexia* as in *Melastoma*.]

#### PROPAGATION AND CULTURE.

1. 2. These plants are propagated by seeds, which must be procured from the places where they grow naturally. If the seeds arrive before the spring, and are sown soon after, in pots filled with good fresh earth, and placed under a frame, to guard them from frost, the plants will come up the following spring; but when the seeds are sown in the spring, the plants rarely come up the first year. When they are fit to remove, plant part of them in an east border, and others in pots, to be sheltered under a frame in winter. The second year the plants will flower, and with care may be continued three or four years.

The other species, coming from hotter parts of America, require more tender treatment, but have not yet been cultivated here.

**RHINANTHUS.** (*From ρη, the nose or snout: and ανθος, a flower, which is ringent, or like a snout.*)

*Lin. gen. n. 740. Reich. n. 798. Schreb. n. 997. Gertn. t. 54. Juss. 101. Pedicularis species. Tournef. 77. B.F.M.N.O.P. Elephas. Tournef. 482.*

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Pediculares*, Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leaved, roundish, inflated, compressed, four-cleft, permanent.

**COR.** one-petalled, ringent: *tube* subcylindrical, the length of the calyx: *border* gaping, compressed at the base; *upper lip* galeate, compressed, emarginate, narrower: *lower lip* spreading a little, flat, half-three-cleft, blunt; the middle segment widest.

**STAM.** *Filaments* four, about the length of the upper lip, under which they lie concealed; two of them shorter. *Anthers* incumbent, bifid on one side, hirsute.

**PIST.** *Germ* ovate, compressed. *Style* filiform, in the same situation with, but longer than the stamens. *Stigma* blunt, bent in.

**PER.** *Capsule* blunt, erect, compressed, two-celled, two-valved, opening at the edges: *partition* contrary.

**SEEDS** several, compressed.

**OBS.** *Elephas* Tourn. has the margin of the capsule blunt, the seeds simple, the calyx unequal, two-lipped.

*Crista galli* Riv. has the margin of the capsule augmented, the seeds membranaceous, clothed with wool, the calyx equal, four-cleft.

#### ESSENTIAL CHARACTER.

**Cal.** four-cleft, ventricose. **Caps.** two-celled, blunt, compressed.

#### SPECIES.

1. *Rhinanthus orientalis*.

*Lin. spec. 840. Reich. 3. 106.*

*Elephas orientalis*, flore magno, proboscide incurva. *Tournef. cor. 48. itin. 2. 299. ic.—edit. lugd. 8°. 3. 151. ic.*

*The corollas with the upper lip awl-shaped and curved in.*

2. *Rhinanthus Elephas*.

*Lin. spec. 840. Reich. 3. 106. Lerche in nov. æst. A.N.C. 5. app. 183.*

*Elephas italica*, flore magno proboscide surrecta. *Tournef. cor. 48.*

*E. campoclarensum.* *Col. ecphr. 1. 186. t. 188.*

*Euphrasia lutea*, &c. *Mor. hist. 3. 432. f. 11. t. 24. f. 14.*

*Scordio affinis Elephas ob florem.* *Bauh. pin. 248.*

*Raii hist. 776. Park. theat. 112. n. 6.*

β. *Elephas orientalis*, flore parvo, proboscide surrecta. *Tournef. cor. 48. itin. 3. 54. edit. lugd. 3. 59.*

*The corollas with the upper lip awl-shaped straight.*

3. *Rhinanthus*



3. *Rhinanthus Crista galli*. *Yellow Rattle* or *Cock's comb*.  
*Lin. spec.* 840. *Reich.* 3. 106. *fl. lapp.* n. 248.  
*Juec.* n. 542. *hort. cliff.* 325. *Gertn. fruct.* 1.  
 255. *Huds. angl.* 268. *Wither. arr. ed.* 3. 542.  
*Smith, brit.* 649. *engl. bot.* t. 657. *Lightf. scot.*  
 322. *Curt. lond.* 5. t. 43. 320. *Relb. cant.*  
 n. 453. *Sibth. oxon.* n. 544. *Fl. dan.* t. 981.  
*Neck. gallob.* 263. *Pollich pal.* n. 579. *Villars*  
*dauph.* 2. 413. *Krock. files.* n. 968. *Kniph.*  
*cent.* 12. *Fl. rust.* t. 148.  
*Alectorolophus glaber*. *Allion. pedem.* n. 206. *Hall.*  
*helv.* n. 313.  
*Mimulus Crista galli*. *Scop. carn.* n. 751.  
*Crista galli*. *Dod. cer.* 219. 220. *pempt.* 556. 1.  
*Lob. obs.* 285. 2. *ic.* 1. 529. 2. *Ger.* 912. *emac.*  
 1071. 1. *Riv. mon.* t. 92. f. 2.  
*C. galli femina*. *Baub. hist.* 3. 436. 3. *Dill. giff.*  
*app.* 44.  
*Pedicularis f. Crista galli lutea*. *Park. theat.* 713. 2.  
*Raii hist.* 769. *syn.* \*284. *Petiv. brit.* t. 36. f. 2.  
 (Yellow Rattle.)  
*P. pratensis lutea f. Crista galli*. *Baub. pin.* 163.  
*Mor. hist. f.* 11. t. 23. f. 1.  
 β. *Crista galli angustifolia montana*. *Baub. pin.* 163.  
*prodr.* 86.  
*Pedicularis major angustifolia ramosissima, flore*  
*minore luteo, labello purpureo*. *Dill. in Raii*  
*syn.* \*284.  
 γ. *R. Alectorolophus*. *Pollich pal.* n. 580.  
*Alectorolophus hirsutus*. *Allion. pedem.* n. 205.  
*Hall. helv.* n. 314.  
*Mimulus Alectorolophus*. *Scop. carn.* n. 752.  
*Crista galli mas*. *Baub. hist.* 3. 436. *Raii hist.* 769.  
*Dill. giff.* 80.  
*Upper lip of the corolla arched, calyx smooth, leaves lan-*  
*ceolate serrate.*  
 [4. *Rhinanthus Trixago*.  
*Lin. spec.* 840. *Reich.* 3. 107. *Bartlia, edit.* 1.  
 602.  
*Trixago apula unicaulis*. *Col. ecphr.* 1. 199. t. 197.  
*Raii hist.* 770. *Mor. hist.* 3. 427. f. 11. t. 24. f. 8.  
*Crista galli spicata, flore luteo magno, messanensis*.  
*Raii hist.* 769.  
*Chamaedrys unicaulis spicata*. *Baub. pin.* 248.  
*Antirrhinum folio dissecto*. *Baub. pin.* 211.  
*Calyxes hirsute-tomentose, leaves opposite bluntly serrate,*  
*stem quite simple.*  
 5. *Rhinanthus capensis*.  
*Lin. syst.* 549. *Reich.* 3. 107.  
*Buchnera africana*. *Lin. spec.* 879. *amoen.* 6. *af.* 18.  
*Pluk. phyt.* t. 310. f. 3. (Pedicularis.)  
*Calyxes tomentose, bractes ovate, leaves lanceolate toothed.*  
 6. *Rhinanthus trifida*.  
*Vahl symb.* 1. 44.  
*Pedicularis orientalis supina, folio trifido, flore magno*  
*flavescente*. *Tournef. cor.* 9.  
*P. annua Chamaepityos facie*. *Buxb. cent.* 1. 5. t. 8.  
*Corollas spreading at the throat, leaves trifid.*  
 7. *Rhinanthus indica*.  
*Lin. spec.* 841. *syst.* 549. *Reich.* 3. 108. *fl. zeyl.*  
 n. 238. *Burm. ind.* 131. t. 39. f. 1.  
*Hyssopus zeylanicus tenellus pratensis*. *Burm. zeyl.*  
 122.  
 β. *Veronica affinis indica tenuifolia, &c.* *Pluk. phyt.*  
 t. 114. f. 2.  
*Leaves sublanate hairy quite entire.*  
 8. *Rhinanthus virginica*.  
*Lin. spec.* 841. *syst.* 549. *Reich.* 3. 108. *Gron.*  
*virg.* 192.  
*Corollas spreading at the throat, leaves sinuate-toothed.*  
 DESCRIPTIONS, &c.

1. Stems a foot and half high, hollow, four-cornered, hairy. Leaves opposite, on short foot-stalks, about two inches long, and half an inch broad, crenate, hairy, veined. On the upper part of the stem the flowers grow opposite from the axils: their tube is curved: the under lip is an inch long, broad, and cut into three obtuse parts; the upper lip longer than the lower: the corolla is yellow, with a spot of feuillet-mort colour on the lower lip, and the upper lip has two red spots on the top. The flowers have an agreeable scent.

[The first segment of the calyx, under the beak of the corolla, is ovate, the lateral segments are bent back on each side, the fourth is straight and blunt.]

Found by Tournefort on the confines of Persia; flowering in July. He speaks of it as one of the most beautiful plants that the Levant produces.

2. This has the habit of the preceding, but the calyx is trifid, with two of the segments bent back, and the third larger, erect, plaited, acute. It is an annual plant, a native of Italy, in shady places, and of Siberia.

Columna called this plant *Elephas*, from the resemblance of the flower to the proboscis of that animal; and Tournefort adopted the name.

β. The plant which Tournefort found, in a fat soil and shady places, on the coast of the Black Sea, flowering in May, is supposed to be a variety of this.

These were both cultivated by Mr. Miller in 1759, but seem since to have been lost in England.

3. Root annual, small, with few fibres. The whole plant is smooth. Stem a foot or more in height, four-cornered, even, upright, rigid, sometimes single but commonly branched, mostly stained with dark purple. Leaves in pairs, sessile, lanceolate, cordate at the base, having parallel nerves terminating in the serratures, which are deep and acute; the upper surface is dark green and rugged, the lower gray with a curious network of green veins. Spike terminating, leafy. Bractes like the leaves, only broader at the base and more deeply cut in. Flowers not always strictly opposite, on short peduncles. Calyx remarkably large, inflated, of a pale greenish yellow colour, with strong ribs and a net-work of veins, smooth; the orifice contracted and four-toothed. Corolla twice as long as the calyx, yellow except the tube, which is white, and the anterior edge of the upper lip, which is dirty blue on each side; this lip is arched, flattened and notched at the end; the lower lip is trifid, the three segments equal. Anthers awnless, but very hairy. Germs smooth, surrounded at the base by a membranaceous nectary, and having in front a short thick crooked horn-shaped gland: style in an early state shorter than the corolla, afterwards often longer; white, but just below the stigma dark blue: stigma yellow-green, slightly notched. Capsule rounded, wider transversely, emarginate at top, membranaceous-compressed at the sides, lenticular in the middle, two-celled, two-valved: partition very narrow, contrary to the valves. Seeds from eight to twelve in each cell, compressed, kidney-shaped, in the middle of a cinereous bay colour and somewhat rugged, girt round the edge with a whitish membranaceous rim. Cover double, both thin and membranaceous.

Yellow Rattle is common in pastures, and flowers early in June. It has this name from the rattling of the seeds, when ripe, in the capsule: for the same reason in Ireland it is called Rattle-boxes. It is known in some counties by the name of Penny-grass, and in Yorkshire by that of Henpenny; from the shape and size of the seed-vessel, like a silver penny. Its other appellation of Cock's-comb is derived from the appearance of the upper leaves or bractes which accompany the flowers. Horses, sheep and goats are said to eat it, and kine to refuse it. Others affirm that domestic quadrupeds in general, when at liberty, refuse it, but that they will eat it in the stall or stable; others again, that they will eat it when fresh, but reject it when dry among hay. As it comes early, except perhaps near London, it is usually far advanced when grass is mowed, and the leaves dropping off, nothing remains but the stalk and the membranaceous seed-vessels. The rattling of the seeds in these, indicates to the Swedish peasant, as Linneus informs us, the time of cutting his grass for hay. In England we have better indications, such as the flowering-heads of wild red Clover beginning to fade, and the predominant grasses of the crop opening their glumes and displaying their anthers. The growth of this plant is remarkably quick, and is supposed in some

\* Linn. spec.

γ Smith, Curtis, Withering, Fl. rust.

² Gartner.



foreign countries to be very injurious to the crop of Rie. With us it abounds only in poor pastures, and some woods<sup>a</sup>.]

Mr. Miller says, that the Dutch carry on a trade with the seeds and seed-vessels of one species of this genus to Germany. They call it *Semen Savadillos*, and it appears very like the seed-vessel of this sort. The use they make of it is to kill vermin, especially bugs. They boil a quantity of the seeds and capsules in common water, with which they wash their wainscot, bedsteads, &c. and it is said effectually to destroy the insects.

[ $\beta$ . Dillenius, on the authority of Dr. Richardson, gives a variety, with smaller flowers, and the lower lip purple. The plant is said to be larger, and very much branched, with the leaves narrower. It was found in corn fields between Wetherby and Catall in Yorkshire, and West Newton in Northumberland; but does not appear to have been observed since.]

$\gamma$ . Haller and other foreign writers make two species of this, the smooth, which is ours, and is described above, and the hairy. The illustrious Swiss says, that the stem of the latter is more branched and higher, being a foot and half in height; the leaves wider, more ovate, less serrate; the leaves and bractes smooth, but the calyxes hirsute; the corolla paler, with a spotted beard or lower lip; the appendixes of the galea or upper lip, sometimes blue, sometimes pale; and that the difference is not owing to dryness only, because about Gottingen and Bienne the smooth sort grows in dry pastures. He adopts the name of *Alectrolophus* from Pliny, who calls it so from the resemblance of its leaves to the comb of a cock.

Scopoli adopts another name from Pliny, that of *Mimulus*; and distinguishes this from the smooth sort by the calyxes being villose; the auricles or appendixes of the upper lip truncate, whereas in the other they are bifid; and the nectary rounded, which is acuminate in the smooth sort. These differences, according to him, are constant, and sufficient to constitute a distinct species.

Pollich retains Linneus's name of *Rhinanthus*, and gives that of *Alectrolophus* to this as a trivial. According to him, the calyx is constantly hirsute, the flower pale yellow, the stem higher, the leaves wider and larger.

4. Root annual, though throwing out runners. Stem a cubit high or more, straight, firm, square, somewhat lanuginose. Leaves commonly opposite, long, narrow, pale green, with few but very large teeth, as it were jagged. Spikes of flowers heaped at the end, large, square, lanuginose, and even somewhat viscid. Flowers yellow, large<sup>b</sup>.

Ray says that Columna's Trixago, which resembles this very much, and probably is not a different species, is shorter, the stems and sometimes the edges of the leaves are red, the flowers smaller and of a different colour, the cowl or upper lip being red, the lower lip white in the middle, but pale red towards the middle. He found them both on the sides of the mountains impending over Messina in Sicily, in full vigour during the month of May. This species is also a native of Italy, the South of France and Palestine.

5. This plant has the appearance of the preceding, and becomes wholly black in drying. The leaves have three or four teeth on each side. Spike oblong, with tomentose bractes a little acuminate. Calyxes four-cleft, blunt, as in the third species, but tomentose.—Native of the Cape of Good Hope<sup>c</sup>.

6. Root annual. Stem herbaceous, ascending, quite simple, subtomentose, round, a span high. Leaves opposite, sessile, approximating, pubescent, nerved, deeply trifid: segments linear, divaricating, quite entire, acute, an inch long. Flowers from all the axils, from the bottom to the top, solitary, opposite, sessile. Bracte linear, villose on both sides, at the base of each flower, of the same length and form with the segments of the leaves. Calyx ovate, pubescent, inflated, membranaceous, marked with four

raised lines, four-cleft; the segments linear-lanceolate, the length of the leaves. Corolla a little shorter than the calyx, somewhat villose on the outside: upper lip entire, acute, stretched out; lower longer, with three lanceolate lobes. Filaments smooth. Anthers cloven at the base, mucronate, two-celled, open below. Germ ovate-acuminate. Style the length of the corolla, linear, subvillose. Stigma truncate. Capsule ovate, acuminate; very like that of *Bartsia*, but it has the calyx of *Rhinanthus*.—Native of Armenia<sup>d</sup>.

7. A span high. Stem upright, quite simple, four-cornered, hispid. Leaves opposite, small. Flowers from the upper axils, sessile, solitary, opposite, turned to one side. Calyx half-four-cleft, acute. The rest as in the generic character<sup>e</sup>.—Native of Ceylon.

8. Anthers rough-haired. Native of Virginia. It seems allied to *Gerardia flava*<sup>f</sup>, and is doubtless a *Gerardia*.]

#### PROPAGATION AND CULTURE.

These plants disliking culture, are with difficulty kept in gardens. Being annual, they can only be propagated by seeds, which should be sown soon after they are ripe, where they are to remain, for they will not bear removing. They require a moist rich soil and a shady situation. When the plants come up, thin them and keep them clear from weeds. If the seeds be permitted to scatter, the plants will come up better than when sown by hand; but they thrive best among grass.

The common Rattle (n. 3.) is a very troublesome weed among Grass, inasmuch that in many water meadows, there is more of this plant than of herbage. The seeds ripening by the time these meadows are commonly mowed, the seeds scatter, and fill the ground with young plants the following spring. In order to destroy this annual weed, the grass should be cut as soon as the flowers appear.

When persons buy Grass-seeds, they should be very careful, that none of this seed is mixed with it.

[RHIZOBOLUS. (From  $\rho\iota\zeta\alpha$ , a root: and  $\epsilon\omicron\lambda\lambda\omicron$  from  $\epsilon\alpha\lambda\lambda\omega$ , to throw. A plant throwing out many roots.)

Lin. gen. Schreb. n. 932. Gertn. t. 98.

Pekea. Aublet. t. 238.

Class. 13. 4. Polyandria Tetragynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, fleshy, tomentose, half-five-cleft: segments roundish, concave.

COR. Petals five, ovate, rounded, concave, fleshy, inserted below the divisions of the calyx, and much larger than it.

STAM. Filaments very numerous, filiform, longer than the corolla, inserted into the receptacle. Anthers roundish.

PIST. Germ four-cornered, at the bottom of the calyx. Styles four, filiform, longer than the corolla. Stigmas blunt.

PER. Drupes four, kidney-shaped, compressed, inserted by the internal wedge-form margin into a conical receptacle, one-celled with a fleshy rind, and a buttery soft pulp.

SEEDS. Nuts solitary, kidney-shaped, with a brittle shell covered with prickles. Kernels solitary, kidney-shaped.

#### ESSENTIAL CHARACTER.

Cal. half-five-cleft. Pet. five. Germ four-lobed, superior. Nuts four, one-celled, one-seeded.

#### SPECIES.

1. *Rhizobolus butyrosus*.

R. foliis digitatis utrinque glabris. Lin. Syst. Nat. Gmel. p. 840.

Pekea butyrosa. Aubl. pl. gui. 594. t. 238.

With fingered leaves, smooth on both sides.

2. *Rhizobolus tuberculatus*.

R. foliis digitatis, subtus tomentosis. Lin. Syst. Nat. Gmel. p. 840.

Pekea tuberculosa. Aubl. pl. gui. p. 597. t. 239.

With fingered leaves, downy beneath.

#### DESCRIPTIONS, &c.

1. This is a tall tree, the trunk of which is three feet in diameter: the bark is gray, and the wood reddish and compact. This tree is much branched at

<sup>a</sup> Fl. rust.

<sup>b</sup> Ray hist.

<sup>c</sup> Linn. syst.

<sup>d</sup> Vahl.

<sup>e</sup> Linn. zeyl.

<sup>f</sup> Linn.



the top, the branches growing in an opposite direction, and the leaves growing exactly opposite also: they are about seven inches long, of a bright green, the leaflets being entire, oval and pointed. The flowers grow in large bunches at the extremities of the branches, and are of a white colour, large, with numerous stamens, and yellow anthers.

It is a native of Guiana, and is cultivated at Cayenne, where it flowers in the month of July.

2. This differs from the preceding in having the leaves downy beneath: they are also thicker; and the fruit is larger, and tuberculated; juiceless, and without the butyraceous quality of the former.

It grows in Guiana and produces its fruit in July.

**RHIZOPHORA.** (From  $\rho\iota\zeta\alpha$  and  $\phi\epsilon\rho\omega$ , root-bearing.)

Lin. gen. n. 592. Reich. n. 646. Schreb. n. 806.

Gartn. t. 43. Juss. 213. Mangles. Plum. 15.

Class. 11. 1. Dodecandria Monogynia.

Nat. order of *Holoraceæ*. *Caprifolia*, Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leaved, four-parted or many-parted, patulous: segments oblong, acuminate, permanent.

**COR.** *Petals* four or more, oblong, rather shorter than the calyx.

**STAM.** *Filaments* scarcely any, alternately shorter. *Anthers* four to twelve, small, acuminate.

**PIST.** *Germ* superior, roundish. *Style* awl-shaped, semibifid, grooved on each side. *Stigmas* acute.

**PER.** fleshy, subovate, inclosing only the base of the seed.

**SEED** single, club-oblong, acuminate, fleshy at the base.

**OBS.** *The stamens differ in number, as do the calyx and corolla.*

#### ESSENTIAL CHARACTER.

*Cal.* four-parted. *Cor.* four-parted. *Seed* one, very long, fleshy at the base.

#### SPECIES.

##### 1. *Rhizophora conjugata*.

Lin. spec. 634. Reich. 2. 413. fl. zeyl. n. 181.

Leaves ovate-oblong bluntish quite entire, calyxes sessile, fruits cylindric-subulate.

##### 2. *Rhizophora gymnorhiza*.

Lin. spec. 634. Reich. 2. 413. Wachend. ult. 89.

Gartn. fruct. 1. 213. Lour. cochinch. 297. ed. Willd. 364.

*Mangium celsum*. Rumph. amb. 3. 102. t. 68.

Candel. Rheed. mal. 6. 57. t. 31, 32. Raii hist. 1769. Burm. ind. 108.

Leaves ovate-lanceolate quite entire, root placed upon the ground.

##### 3. *Rhizophora Candel*.

Lin. spec. 634. Reich. 2. 413.

Tsiferou-Kandel. Rheed. mal. 6. 63. t. 35. Raii hist. 1770. Burm. ind. 108.

Leaves obtuse, peduncles bigeminate longer than the leaf, fruits awl-shaped.

##### 4. *Rhizophora Mangle*. *The Mangrove Tree*.

Lin. spec. 634. Syst. 442. Reich. 2. 414. Gartn.

fruct. 1. 212. Jacqu. amer. 141. t. 89. pist. 70.

t. 132. Brown. jam. 211. Wachend. ult. 90.

Pluk. phyt. t. 204. f. 3. Plum. gen. 13. Bauh.

hist. 1. 415. Sloan. jam. 2. 63. Raii hist. 1772.

(Mangle.) Plenck, ic. t. 359.

*Candela americana foliis laurinis*. Catesb. car. 2. t. 63.

*Mangium calendarium*. Rumph. amb. 3. 108. t. 71, 72.

Peekandel. Rheed. mal. 6. 61. t. 34. Raii hist. 1770.

*Mangue Guaparaibi*. Piso, bras. l. 4. c. 87.

Leaves acute, fruits subulate-clavate.

##### 5. *Rhizophora cylindrica*.

Lin. spec. 635. Reich. 2. 414.

Karil-Kandel. Rheed. mal. 6. 59. t. 33. Raii hist. 1770.

*Mangium minus*. Rumph. amb. 3. 106. t. 69. Burm. ind. 108.

Fruits cylindrical blunt.

##### 6. *Rhizophora sexangula*.

Lour. cochinch. 297. ed. Willd. 363.

Leaves ovate-lanceolate opposite, fruits hexangular, petals ten, stamens twenty.

#### DESCRIPTIONS, &c.

These are maritime trees, extending far and wide by their many-times rooting branches, which are frequently opposite. The leaves also in most of the species are opposite, entire and coriaceous; the younger ones revolute, and bracted after the manner of the Fig, with caducous bractes. Peduncles axillary or terminating, often dichotomous and two-flowered; in the forks jointed and two-bracted. Fruits hanging down. In *R. gymnorhiza* the calyx is cloven into ten or twelve parts; the petals or scalelets are also ten or twelve, folded together and as it were two-valved, each having two stamens within. *R. Mangle* has a four-cleft calyx, and four petals villose within and flat, each having two anthers. The fruit (which is the same with the disk of the calyx) in most of the species, is prominent within the calycine segments and half superior, in a few it is entirely inferior. The mode of germination in all is particular. Loureiro remarks, that in all the species which he has seen there are twenty stamens or more, always placed on the calyx; whence he would have this genus removed into the class Icosandria.

They are all natives of the East Indies. *R. Mangle* is found in the West Indies also.

1. Leaves petioled, smooth. Calyxes in pairs, subsessile. Fruits very long, nodding<sup>h</sup>. Native of the East Indies.

2. This tree is above the middle size, with a lofty straight trunk: the bark is thick, cloven, of a brown-red colour: with many large bowed roots spreading upon the cone that is covered with sea-water. Leaves smooth, scattered, frequently heaped together at the top and petioled. Flowers solitary, scattered: calyx from ten to thirteen-parted; segments awl-shaped, erect: petals from ten to thirteen, red, nearly equal to the calyx, linear, soon falling off. Stamens from twenty to twenty-six, or double the number of the petals, and corresponding with the segments of the calyx. Drupe long, subcylindrical-subulate: nucleus round, softish becoming horny<sup>i</sup>.

Gartner thus describes the fruit.—The calyx when ripe is coriaceous, thick, divided into twelve or fourteen parts, which are linear-acuminate, and curved in: shell of the seed fleshy-coriaceous, inversely parabolical, regularly truncate at top, detached on all sides, wholly immersed in the belly of the calyx. Embryo inverted, of a greenish bay colour: cotyledons four, convex on one side, angular on the other, leafy, twisted together, converging into a globe, grass green: radicle detached every way from the integuments, clavate-cylindrical, obscurely angular, very smooth, shining, from three inches to a foot and more in length, bluntish or acuminate.

The bark of this tree is very useful in dying rufous or chestnut colour; which is easily changed into a very fine permanent black<sup>k</sup>.

Native of the East Indies; the coast of Malabar, the straits of Malacca, Amboyna, &c. On the shores to the south of Cochin China and Cambodia there are vast tracts of it. The fruit becomes no less hard than the Areca nut, and is not eatable in Cochin China<sup>l</sup>.

Our circumnavigators found it on the island of Namoka in the South Seas<sup>m</sup>.

3. This does not exceed the height of seven feet. Leaves opposite, on short petioles, of the same texture as in *R. Mangle*, but longer, and with round edges. Petals whitish, thick, stiffish. The flowers have a weak, but not unpleasant smell. The fruit much resembles that of *R. Mangle*.

Native of the East Indies, in salt shallow water<sup>n</sup>.

4. The Mangrove tree commonly attains the height of fifty feet; the wood is white, but becomes red when macerated in water; the bark is thick and rust-coloured. Leaves ovate, slightly attenuated at the end, blunt, quite entire, shining, coriaceous, deep green on the upper surface, on the lower yellowish green with blackish dots, petioled, opposite, from three to six inches long; on the younger branches,

<sup>g</sup> Jussieu.

<sup>h</sup> Linn. zeyl.

<sup>i</sup> Loureiro.

<sup>k</sup> Idem.

<sup>l</sup> Idem.

<sup>m</sup> Forster.

<sup>n</sup> Ray.



which have no flowers, they are about two inches asunder, and in young trees the internodes are even six inches long; but on the old and flowering branches they are nearer, and very old ones are almost covered with leaves. Each pair of leaves, before it is unfolded, is rolled up in two oblong convoluted erect stipules, which soon fall off, leaving two scars on the branch, alternate with the leaves. Common peduncles axillary, solitary, an inch long, compressed, marked with a longitudinal groove, two-flowered, bifid, sometimes three-flowered and obscurely three-cornered: pedicels round and half an inch long; but in the fruit they are lengthened out two inches or more. The flowers are commonly without scent, but sometimes they are a little sweet. Calyx deeply four-cleft, yellowish. Petals four white. Anthers constantly eight, separating elastically into two parts at the base, and hence very caducous<sup>o</sup>. Browne says, that the number of filaments varies from four to twelve, but that eight is the most common number.

Jacquín has given a description of the fruit, and the extraordinary mode in which the seed germinates, but it is much too long to insert in a general work. According to Gærtner, there is no pericarp, unless the belly of the calyx be admitted as such, the seed being closely fastened to it: and this is what Jacquín considers as the pericarp. Receptacle none, except the inner surface of the calyx. Seed one, ovate, gibbous at the base, somewhat rugged, brown, terminated by the style, finally burst open at the top by the radicle growing out: cover single, thick, fleshy-coriaceous, never separating from the calyx. Albumen at the bottom of the seed, veil-shaped, glandular-fleshy, orange-coloured. Yolk (vitellus) subcylindrical, fibrous-fleshy; at bottom rounded with a little head, plunged in the cavity of the albumen; at top fistular and united with the radicle of the embryo: these are the *calyptra* and *crus* of Jacquín. Embryo inverted, green, germinating within the seed, and bursting its integument by its radicle: cotyledons four or six, leafy, plaited and convoluted, converging into a slender subulate cone: radicle when mature very long, subulate-clavate, bay-coloured, having callose dots here and there scattered over it, superior.

The fruit of this tree, says Browne, germinates within the cup, and grows from the top downwards, until it acquires a due degree of weight and perfection: then it falls off; and as the root is always thickest, and hangs lowest, it drops in that direction, and is thus received in its natural position in the mud below: the leaves immediately unfold, and in a few minutes a perfect plant is seen, sometimes of ten or twelve inches in length, which soon begins to shoot its roots, and push its growth like the parent stem, for the germ is frequently a foot in length before it falls, and has always two leaves at the top; but these are folded up, and inclosed within the cup whilst it continues on the tree.

The Mangrove is generally found on the borders of the sea, in whose waters alone it seems to thrive; and there only in such places as have a soft and yielding bottom. Its larger branches frequently emit soft and weakly appendices, that have the appearance of so many slender leafless branches, and bend always downwards: but as these are softer, and furnished each with a large column of a lax spongy pith in the centre, they grow more luxuriantly than the other parts of the tree, and reach the mud in a short time, where they throw out a numberless series of slender fibres, which in time become roots, to supply the stem more copiously with nourishment, whilst they become so many props or limbs to the parent tree. Thus it continues to enlarge its bulk, as its weight increases, or its branches spread; these constantly throwing out new appendices as they multiply their shoots, and so forms those interwoven groves we so frequently meet with on the sea shore in the tropical climates, which serve to stop the mould that is constantly washed down by those rapid floods that come from the inland parts, and thereby in time turn what might have other-

• Jacquín.

wise continued useless ponds or open creeks, into rich and fertile fields<sup>p</sup>.

The quantity of mosquitoes that frequent these maritime forests make it impossible for an European to live or even pass a night near them: they are inhabited by innumerable sea birds and crabs, and the matted roots enable the savage to walk about the ooze and shallow waters to hunt for them<sup>q</sup>.

The trunk of the Mangrove seldom grows to any considerable thickness, but the wood is very tough and hard, bears the water well, and is much used for knees and ribs in long-boats, and other small-craft; for which the arches and angles of its limbs most naturally adapt it. Jacquín says, it is fit for nothing but to burn. The lower branches frequently become the supporters of the American oyster, which has given rise to the fabulous account of the growth of this shell-fish on trees, as a fruit. Piso says, that a piece of the root roasted, and applied warm to the painful wounds inflicted by the sting of the fish *Nigui*, soon quiets the pain<sup>r</sup>.

The bark is most excellent for tanning leather; it performs this operation more perfectly in six weeks than oak-bark will do in ten; and the leather tanned with it is the most firm and durable of any for soles. The decoction of it is a most powerful astringent<sup>s</sup>.

According to Dampier, there are three sorts of Mangrove trees, black, red, and white. The black is the largest, the body as big as an Oak, and about twenty feet high. It is hard and serviceable timber, but extraordinary heavy. The red grows commonly by the sea side, or by rivers or creeks. The body is not so big as that of the black, but always grows out of many roots about the bigness of a man's leg, which at about six, eight or ten feet above the ground, join into one trunk, which seems to be supported by so many artificial stakes. The timber is hard, and good for many uses. The inside of the bark is red, and is used for tanning of leather very much all over the West Indies. The white never grows so big as the other two, neither is it of any great use. Of the young trees they make handles for their oars, for it is commonly straight, but not very strong. Neither the black nor white grow towering up from stilts, as the red does, but the body grows immediately out of the ground, like other trees.

The Mangrove is a native both of the East and West Indies, of the Society and Friendly islands, the new Hebrides and new Caledonia in the South Seas. The Spaniards call it Mangle; the French, Mangle and Paletuvier.

5. This tree agrees with the *gymnorhiza*, except that it is above three times the height of a man, and is not divided into so many trunks. The leaves are of the same form, but much smaller, being only four or five inches long at most, and on shorter petioles. Flowers white, axillary, three together, or sometimes but more seldom two. Petals eight, acuminate. Filaments whitish, with red anthers. Fruit as in *R. gymnorhiza*, except that it is the breadth and thickness of the little finger, with a green rind when young, but when older reddish-blue.

Native of Malabar, in salt marshes. The fruit is eaten when young and tender<sup>t</sup>.

Gærtner considers this, which is the *Mangium minus* of Rumphius, and also the *M. digitatum* of the same author, (*p.* 107. *t.* 70.) as varieties of *R. gymnorhiza*, *n.* 2.

6. This is a middle-sized tree, with twisted spreading branches. Leaves quite entire, flat, smooth. Flowers subterminating, solitary: calyx bell-shaped, continuing in the same form, large, ten-parted, with sharp spreading segments: petals red, oblong, emarginate, ciliate, nearly equal to the calyx. Filaments longer than the calyx, on which they are placed, with oblong standing anthers. Germ oblong, superior: style equal to the stamens. Drupe oblong, prismatical, regularly hexagonal, straight, blunt, with a co-

<sup>p</sup> Browne.

<sup>q</sup> Jacquín.

<sup>r</sup> Browne.

<sup>s</sup> Long, 811.

<sup>t</sup> Ray, ex hort. malab.

riaceous



riaceous smooth rind, and a woody, round, simple nucleus\*. Loureiro, regarding the outer coat of the seed as the rind of the nut, calls it a drupe\*.

RHIZOPHORA. See *Dioscorea*.

————— calearis. See *Sonneratia acida*.

————— corniculata. See *Ægiceras*.

RHODIA RADIX. See *Rhodiola*.]

RHODIOLA. (*Dimin. from Rhodia; so named from the smell of the root like Roses*)

Lin. gen. n. 1124. Reich. n. 1229. Schreb. n. 1532.

Juss. 307.

Class. 22. 7. Dioecia Oständria.

Nat. order of *Succulentæ*. *Sempervivæ*, Juss.

GENERIC CHARACTER.

\* Male.

CAL. Perianth four-parted, concave, erect, obtuse, permanent.

COR. Petals four, oblong, obtuse, from erect-spreading, double the length of the calyx, deciduous.

Nectaries four, erect, emarginate, shorter than the calyx.

STAM. Filaments eight, awl-shaped, longer than the corolla. Anthers simple.

PIST. Germs four, oblong, acuminate. Styles and Stigmas obsolete.

PER. abortive.

\* Female.

CAL. Perianth as in the male.

COR. Petals four, rude, erect, obtuse, equal with the calyx, permanent.

Nectaries as in the male.

PIST. Germs four, oblong, acuminate, ending in simple straight Styles. Stigmas obtuse.

PER. Capsules four, horned, opening inwards.

SEEDS very many, roundish.

OBS. Dahl observed hermaphrodite flowers with ten stamens and five styles. This genus therefore may with the greater confidence be associated with the Sedums.

ESSENTIAL CHARACTER.

MALE. Cal. four-parted. Cor. four-petalled. Nect. four.

FEM. Cal. four-parted. Cor. four-petalled. Nect. four. Pist. four. Caps. four, many-seeded.

SPECIES.

1. *Rhodiola rosea*. Common or Yellow Rosewort.

Lin. spec. 1465. Reich. 4. 264. fl. lapp. n. 378.

suec. n. 912. mat. med. 215. hort. cliff. 470.

Huds. angl. 434. Wither. arr. ed. 3. 389. Lightf.

scot. 619. Fl. dan. t. 183. Gunn. norv. n. 103.

Allion. pedem. n. 1757. Gmel. sib. 4. 174. Black.

t. 586. Kniph. cent. 2. n. 69.

*Sedum roseum*. Scop. carn. n. 560. Villars dauph.

3. 677. Hall. helv. n. 953.

*Rhodia Radix*. Bauh. pin. 286. hist. 3. 683. Clus.

hist. 2. 65. Dalech. hist. 982. Dod. pempt. 347.

2. Matth. 1024. Ger. 426. emac. 532. Park.

theat. 727. Raii hist. 690.

*Anacampseros radice rosam spirante major*. Tourn.

inst. 264. Raii syn. 269. Petiv. brit. t. 42.

f. 2.

*Telephium roseum*. Mor. hist. 3. 468. f. 12. t. 10.

f. 8.

β. *Rhodiola minor*. Mill. dict. n. 2.

*Anacampseros radice rosam spirante minor*. Tournef.

inst. 264.

Leaves ovate serrate towards the top, stem upright.

[2. *Rhodiola biternata*.

Lour. cochinch. 627. ed. Willd. 770.

Leaves biternate gashed, stem twining.]

DESCRIPTIONS, &c.

1. This has a very thick fleshy root, which when bruised or cut, sends out an odour like Roses; it has many heads, whence in the spring come out thick succulent stalks like those of Orpine (*Sedum Telephium*) about nine inches long, closely garnished with thick succulent leaves of a gray colour, an inch long, and half an inch broad, indented on their edges towards the top, and placed alternately on every side the stalk; which is terminated by a cluster of yellowish

\* Loureiro.

\* Willdenow.

herbaceous flowers, appearing early in may. They have a very agreeable scent, but are not of long continuance.

[Root white. Stems numerous, simple, upright, leafy, cylindrical, smooth, hollow, from four to twelve feet high. Leaves numerous, growing without order, ovate, ovate-lanceolate, and in the younger plants lanceolate, upwards distantly serrate, towards the base entire, fleshy, sea-green, sometimes tinged with purple. Flowers terminating, yellow. Stamens much longer than the corolla; according to Fabricius, six, eight or twelve, and five nectaries. Styles very short, pointing outwards, permanent. It has the habit of *Sedum Telephium*<sup>y</sup>; and is ranked by many among the Sedums: but the number four is prevalent in this, whereas five prevails in the Sedums. The flowers are male and female on distinct plants; but sometimes they are said to be hermaphrodite, with ten stamens and five styles: if this be frequent, the Rosewort may very properly be associated with the Sedums. Linneus cultivated a female plant by itself during many years; and it had only small unproductive seeds. There were none but male plants in the botanic garden at Cambridge for a long time; nor did I ever see any hermaphrodite flowers.

The root is sweetest when dried; in this state a fragrant water may be distilled from it. Cultivated in a garden, it loses most of this sweetness. Goats and sheep are said to eat the plant; but cattle and swine to refuse it. The inhabitants of the Farro islands use it as a remedy for the scurvy. In Greenland they eat it as garden-stuff. A cataplasm of the fresh roots applied to the forehead, is said to relieve the head-ach, and to heal malignant ulcers<sup>z</sup>.

Native of Lapland, Denmark and Norway, Great Britain, Austria, Silesia, Switzerland, Dauphiné, Piedmont, Siberia, on mountains. With us it is found only in the northern counties of Westmoreland, Cumberland and Yorkshire; in Scotland and in Wales.]

β. The roots of this are smaller; the stalks are small, and not above five inches long; the leaves are small, and end with a purple point; the petals are purplish, and the stamens are little longer than the petals. It flowers later. Mr. Miller says that he cultivated both in the same soil above thirty years, and never found either of them vary: but the differences, except the colour of the flowers, are such, as may fairly be attributed to an alpine situation.

[2. Stem herbaceous, round, slender, grooved, branched. Leaflets lanceolate, tomentose. Flowers axillary. Male subumbelled, on a long common peduncle, with two opposite horn-shaped stipules: calyx deeply four-parted, two opposite segments of these twice the size of the others, all acute: petals four, white, turbinate, equal, spreading: nectaries four, upright, two of them shorter: filaments eight, hairy, unequal, upright, longer than the corolla. Anthers ovate, incumbent. The female has not been seen.

Native of Cochinchina, in ill-cultivated gardens, but not frequent<sup>a</sup>.]

PROPAGATION AND CULTURE.

1. Plant cuttings the beginning of april, soon after they come out from the head, in a shady border; covering them close down with a glass, and keeping them dry: they will put out roots in about six weeks; but the cuttings should be laid in a dry room at least a week before they are planted, otherwise they are subject to rot.

Or part the roots in the beginning of september, when their stalks begin to decay; and if the fleshy parts are cut or broken, lay them to dry, a few days before they are planted. They require a shady situation, and a dry undunged soil, in which they will continue many years.

RHODODENDRUM. (*Pododendron* of *Dioscorides*. From *podon*, a Rose, and *dendron*, a tree.)

Lin. gen. n. 548. Reich. n. 592. Schreb. n. 746.

Gartn. t. 63. Juss. 158. *Chamærhododendros*.

Tournef. t. 373.

<sup>y</sup> Withering.

<sup>z</sup> With. and Lightfoot.

<sup>a</sup> Loureiro.

Class.



Class. 10. 1. Decandria Monogynia.  
Nat. order of Bicornes. *Rhododendra*, Juss.

## GENERIC CHARACTER.

- CAL. Perianth five-parted, permanent.  
COR. one-petalled, wheel-funnel-form: border spreading, with rounded segments.  
STAM. Filaments ten, filiform, almost the length of the corolla, declined. Anthers oval.  
PIST. Germ five-cornered, retuse. Style filiform, the length of the corolla. Stigma obtuse.  
PER. Capsule ovate, subangular, five-celled, divisible into five parts.  
SEEDS numerous, very small.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. somewhat funnel-form. Stam. declined. Caps. five-celled.

## SPECIES.

1. *Rhododendrum ferrugineum*. Rusty-leaved *Rhododendron*.  
*Lin. spec.* 562. *syst.* 405. *Reich.* 2. 289. *Jacqu. obs.* 1. 26. *t.* 16. *austr.* 3. 31. *t.* 255. *Scop. carn.* n. 479. *Hall. helv.* n. 1015. *Villars dauph.* 3. 591. *Allion. pedem.* n. 445.  
*Chamaerhodendros alpina glabra*. *Tournef. inst.* 604. *Hall. ad Scheuchz. app.* 4. 72.  
*Ch. alpigena*. *Ger.* 1221. *emac.* 1407.  
*Rosa alpina*. *Gesn. hort.* 277.  
*Ledum alpinum*, foliis ferrea rubigine nigricantibus. *Bauh. pin.* 468. *Raii hist.* 1005.  
*Euonymus Theophrasti*. *Dalech. hist.* 27.  
*Montana Allobrogum lentiscifolia*. *Lob. ic.* 366.  
*Leaves smooth leprous underneath, corollas funnel-shaped.*
- [2. *Rhododendrum dauricum*. Dotted-leaved *Rhododendron*.  
*Lin. spec.* 562. *syst.* 405. *Reich.* 2. 290. *Gmel. fib.* 4. 124. n. 10. *Pallas roff.* 1. 47. *t.* 32.  
*Chamaerhodendros folio glabro majusculo*, amplo flore roseo. *Amm. ruth.* 181. *t.* 21.  
*Leaves smooth dotted naked, corollas wheel-shaped.*
3. *Rhododendrum chrysanthum*.  
*Lin. syst.* 405. *suppl.* 237. *Pallas, it.* 3. 369. *app.* 729. n. 87. *t.* N. f. 1, 2. *roff.* 1. 44. *t.* 30. *Woodv. med. bot.* 403. *t.* 149. *Plenck, ic.* 339.  
*Leaves oblong undotted, above rugged and very much veined, corolla wheel-shaped irregular, flowering-bud ferruginous-tomentose.]*
4. *Rhododendrum hirsutum*. Hairy *Rhododendron*.  
*Lin. spec.* 562. *syst.* 405. *Reich.* 2. 290. *Jacqu. austr.* 1. 61. *t.* 98. *Scop. carn.* n. 480. *Hall. helv.* n. 1016. *Villars dauph.* 3. 592. *Krock. fles.* n. 624.  
*Ledum alpinum*. *Clus. hist.* 1. 82.—*hirsutum*. *Bauh. pin.* 468. *Raii hist.* 1005.—*f. Rosa alpina*. *Park. theat.* 77.  
*Nirium alpinum quibusdam, aliis Ledum hirsutum*. *Bauh. hist.* 3. 21, 22.  
*Cistus Ledum alpinum Clusii*. *Ger.* 1107. 14. *emac.* 1290. 14.  
*Balsamum alpinum*. *Lob. ic.* 468.  
*Chamaerhodendros alpina villosa*. *Tournef. inst.* 604.  
*Leaves ciliate naked, corollas funnel-shaped.*
5. *Rhododendrum Chamæcistus*.  
*Lin. spec.* 562. *syst.* 405. *Reich.* 2. 290. *Jacqu. austr.* 3. *t.* 217. *Scop. carn.* n. 481.  
*Ledum foliis serpylli ad margines ciliis instar pilosis*, flore purpureo. *Mich. gen.* 225. *t.* 106.  
*Chamæcistus hirsuta*. *Bauh. pin.* 466. *Park. theat.* 656. n. 6.  
*Ch. 8. Clus. hist.* 1. 76.  
*Cistus pumilus montis Baldi*. *Bauh. hist.* 2. 19. *Raii hist.* 1005. *Pluk. phyt.* *t.* 23. *f.* 4.  
*C. humilis austriaca Clusii*. *Ger.* 1096. 12. *emac.* 1278. 12.  
*Leaves ciliate, corollas wheel-shaped.*
6. *Rhododendrum ponticum*. Purple *Rhododendron*.  
*Lin. spec.* 562. *Reich.* 2. 201. *Pallas roff.* 1. 43. *t.* 29.  
*Chamaerhodendros pontica maxima*, folio Laurocerasi, flore cæruleo purpurascens. *Tournef. cor.* 42. *itin.* 2. 99.  
*Leaves lanceolate shining smooth on both sides, racemes terminating.*

7. *Rhododendrum caucasicum*.

*Pallas roff.* 1. 46. *t.* 30.

*Leaves ovate rugged bent in at the edge, umbels terminating, bractes elongated.*

8. *Rhododendrum Camtschaticum*.

*Pallas roff.* 1. 48. *t.* 33.

*Chamaerhodendron Berberis folio*, flore amplo roseo, *Stelleri*. *Gmel. fib.* 4. 126. n. 13.

*Leaves ciliate nerved, corollas wheel-shaped, calyxes leafy.]*

9. *Rhododendrum maximum*. Broad-leaved *Rhododendron*.

*Lin. spec.* 563. *syst.* 405. *Reich.* 2. 291. *Gartn. fruct.* 1. 304. *Thunb. jap.* 181.

*Chamaerhodendros lauri folio sempervirens floribus bullatis corymbosis*. *Catesb. car.* 3. *t.* 17. *f.* 2.

*Ledum laurocerasi folio*. *Lin. amoen.* 2. 200.

*Kalmia fol. lanceolato-ovatis nitidis subtus ferrugineis, corymbis terminalibus*. *Mill. fig. t.* 229. *Dict. ed.* 7. n. 1.

*Leaves oval shining blunt veined with an acute reflex margin, peduncles one-flowered.*

## DESCRIPTIONS, &amp;c.

1. This rises with a shrubby stalk near three feet high, sending out many irregular branches, covered with a purplish bark. Leaves lanceolate, an inch and half long, and half an inch broad in the middle, entire, with reflexed borders, lucid green on their upper surface, and rusty-coloured underneath, placed all round the branches without order. The flowers are produced in round bunches at the ends of the branches: the corolla is funnel-shaped with a short tube, and is cut into five obtuse segments at the brim, spreading a little open, and of a pale rose-colour.

[It is an irregular, distorted, ever-green, branched shrub, eighteen inches in height and more; the lower branches lying on the ground, put out fibres, and hence it may easily be increased, without the principal root, which being fixed deep in the fissures of rocks, is not pulled up without much difficulty. Leaves in clusters at the ends of the branchlets, dry, coriaceous, ovate, narrowed to both ends, bent back at the edge, on short petioles; underneath they are ferruginous, with innumerable little dark-coloured dots; if this be wiped off they are yellowish; sometimes there are a few ciliate hairs on young leaves, especially towards the base, but these soon disappear. Flowers in an upright raceme at the end of every branchlet. Peduncles one-flowered, upright, dotted. Corollas nodding, of a beautiful rose-colour with ash-coloured or yellowish dots, having little or no scent. It varies, but not commonly, with a white flower. The two lower segments of the corolla are a little narrower and longer than the three others. Filaments whitish red, hairy at bottom, the lower ones gradually shorter, not exceeding the tube, inserted into the receptacle itself by an attenuated toothlet: anthers oblong, erect, yellow. The stamens commonly fall before the corolla. Germ superior, green: style nearly the length of the stamens: stigma capitate-five-cleft<sup>b</sup>.

Native of high mountains in Switzerland, Austria, Savoy, Piedmont, Dauphiné. Where this and the *hirsutum* terminate ligneous vegetation as we ascend, and furnish the shepherds with their only fuel. The grous are said to eat it; and the white hares sometimes gnaw the bark in hard weather; but animals do not seem to feed on it, except from want of other food; and it is suspected of being in a small degree poisonous. The galls of some small insect are frequent on it.

Mr. Miller cultivated it in 1739. It flowers from May to July<sup>c</sup>: but seldom produces them with luxuriance in a garden.

2. Root tuberous-knobbed, thick, deeply bound down by rootlets striking into the ground, or into the fissures of rocks. Trunks very short above ground, twisted and knobbed; these and the roots put out many shoots or runners, which are stiffly upright, two ells high at most, round, covered with a gray bark, which throws off yearly an ash-coloured skin: the

<sup>b</sup> Jacquin, Haller.

<sup>c</sup> Hort. kew.



wood is white, with a slender russet pith. Branches frequent, stiffish, wand-like: the annual ones tenderly pubescent. Leaves alternate, ovate-acute, subcoriaceous, very smooth, dotted, very obscurely crenulate on the edge, on petioles very finely pubescent: before they are completely unfolded they are rolled back at the edge: in cold weather they become of a dusky purple. The flowers come out before the leaves at the ends of the branchlets of the former year, from a bud that continues the branch, composed of ferruginous, subpubescent, concave scales: they nod a little, and have some smell. The calyx is only the margin of the receptacle slightly five-toothed. Corolla large, purple, half-five-cleft; the three upper segments scarcely wider. Stamens unequal, purplish: anthers purple, emitting a greenish-livid pollen. Germ superior: style declined, longer than the stamens, purple: stigma fungus-shaped, twin. Capsule ripening in autumn, at the base of the year's shoots, solitary, convex, five-cornered, acute, fastened by naked peduncles to an oblique rugged receptacle, five-celled, opening at top. Seeds ferruginous, irregular like sawdust<sup>d</sup>.

Stem naked, proliferous, leafy at the end. Leaves petioled, oblong, naked above, dotted on both sides in clusters, ferruginously dotted underneath very closely. Corollas violet-coloured, wider than the leaves. Stamens spreading, the length of the corolla. Style blood-red. It resembles *Azalea lapponica*<sup>e</sup>.

Native of Siberia; peculiar to the subalpine tracts of eastern Asia; it appears first at the jaws of the river Jenisea, and beyond that, especially from the river Uda, in the pine woods, it begins to be common, but about Baikal it is most abundant, and extends through the deserts of the Mongols to China and Tibet: at the Lena it becomes more rare, and beyond that it is much lower with a more slender flower and narrower leaves<sup>f</sup>.

It was introduced here in 1780, by Anthony Chamer, Esq.<sup>g</sup>

3. This shrub, in alpine situations is less than a foot in height, in lower grounds it grows to a foot and half, sending out abundance of decumbent branches, having their ends emerging from the moss, subdivided, bearing both leaves and flowers. Trunk seldom the thickness of two or three fingers, commonly an inch thick. Leaves terminating, few, alternate, ovate, usually sharpish, attenuated to the petiole, the upper surface netted and very rugged, the under pale or subferruginous, levigated, very smooth, the margin quite entire and bent in, of a stiff consistence. The flowering-buds at the ends of the last year's branches, are made up of gray-testaceous subtomentose scales, the outer of which are ovate, the inner oblong and whiter. Among these scales issue the peduncles, placed alternately at the end of the branches, so close as to resemble an umbel; they are commonly six or fewer, but sometimes ten, upright and hairy. Flowers handsome, large, nodding. Calyx none, except the receptacle of the flower, and especially of the fruit, slightly margined and oblique. Corolla yellow, spreading-bell-shaped, with five rounded nearly equal segments, the three upper ones being only a little larger than the other two, towards the tube striated with livid dots, the lower ones unspotted. Stamens unequal, bent in downwards, with oblong pale anthers. Style longer than the stamens, declined: stigma five-lobed. When the flower falls, the peduncle becomes stiffly upright, to bear the capsule; which is of an oblong-pentagon form, slightly curved, subtomentose, testaceous, five-valved, opening at top; valves boat-shaped, contracted at both edges. Seeds irregular like sawdust, gray.

Native of Siberia, in the highest mountains<sup>h</sup>.

The younger Linneus remarks, that it resembles the preceding species so much, as to be perhaps no more than a variety<sup>i</sup>.

This plant and its effects were first described in 1747 by Gmelin and Steller, who mention it as used in Siberia for the cure of rheumatism. Little atten-

tion however was paid to it till the year 1779, when it was recommended by Koelpin not only in rheumatism and gout, but even in venereal cases; and it is now generally employed in chronic rheumatism, in various parts of Europe. The leaves, which are the part directed for medicinal use, have a bitterish subastringent taste, and, as well as the bark and young branches, manifest a degree of acrimony. Taken in large doses they prove a narcotic poison.

Dr. Home, who tried this shrub unsuccessfully in some cases of acute rheumatism, says that it appears to be one of the most powerful sedatives which we have, as in most of the trials it made the pulse remarkably slow, and in one patient reduced it thirty-eight beats. In other cases, wherein the *Rhododendron* has been used at Edinburgh, it has been productive of good effects, and accordingly it is now introduced into their pharmacopœia.

The manner of using the plant by the Siberians, is by putting two drams of the dried leaves in an earthen pot, with about ten ounces of boiling water, keeping it near a boiling heat for a night: this they take in the morning, and by repeating it three or four times, generally effect a cure. It is said to occasion heat, thirst, a degree of delirium, and a peculiar sensation of the parts affected<sup>k</sup>.

This medicine should be taken with caution, and the patient should begin with small doses, increasing them gradually: but it is not probable that it will ever be a favourite remedy in this country.]

4. This shrub seldom rises two feet high, and sends out many short woody branches, covered with a light brown bark. Leaves ovate-lanceolate, about half an inch long, and a quarter of an inch broad, sitting pretty close to the branches; they are entire, and have a great number of fine ferruginous hairs on their edges and under side. The flowers are produced in bunches at the ends of the branches. The tube of the corolla is about half an inch long: the five segments of the brim are obtuse, spread half open, and are of a pale red colour.

[It bears great resemblance to the first species, but the leaves are shorter, blunter and ciliate at the edges, of a brighter colour, not rust-coloured underneath, but having larger and fewer dots; the dots of the recent leaves are round lamellæ with a more lucid margin; they are also more evidently petioled. The flowers are smaller, of a paler rose colour, with pale pustules: these are observed on the calyx, corolla and germ<sup>l</sup>.

Native of the mountains of Switzerland, Austria, Styria, Dauphiné. In august 1779, I found it in great abundance on mount Scheidegg, in crossing from Berne to Grindelwald.

It was cultivated here in 1739, by Mr. Miller<sup>m</sup>.

Trials have been made on its medicinal effects, which have been found to be similar to those of the preceding species<sup>n</sup>.

5. This is a small shrub, very much branched, the extreme branches leafy. Leaves oblong, hard, on short, reddish petioles. Peduncles one, or more, an inch long, villose, reddish brown, terminating. Calyx deeply five-cleft, of the same colour with the peduncle; the segments acute. Corolla purple; the segments ovate. Stamens longer than these. Style longer than the stamens<sup>o</sup>.

Native of Austria, Carniola, Monte Baldo, and near Saltzburgh.

6. Trunk upright, shrubby, commonly the height of a man, but sometimes only half so high, frequently thicker than the human arm, very much branched from the bottom irregularly; the wood white, the bark ash-coloured. Branches round, scarred, with a smoothish testaceous bark. Leaves alternately scattered, coriaceous, large, quite entire, very smooth, becoming ferruginous underneath, scarcely nerved except the midrib, having a longitudinal streak on the upper surface, of a wide-lanceolate form, more attenuated towards the thick petiole. Flowering-buds formed in

<sup>d</sup> Pallas.

<sup>e</sup> Linn. syst.

<sup>f</sup> Pallas.

<sup>g</sup> Hort. kew.

<sup>h</sup> Pallas.

<sup>i</sup> Suppl.

<sup>k</sup> Woodville.

<sup>l</sup> Haller, Scopoli.

<sup>m</sup> Hort. kew.

<sup>n</sup> Villars.

<sup>o</sup> Scopoli.



autumn for the year following, and consisting of ferruginous, ovate-acute, concave, very smooth, imbricate scales. Flowers in a short raceme at the end of the branchlets, about ten, and very handsome. Calyx minute, five-toothed, somewhat cartilaginous. Corolla purple, large, spreading, deeply five-cleft; the segments ovate, acute, one a little wider than the rest. Stamens the length of the corolla, purplish, converging in a bow. Germ superior, with a purplish, declining style, longer than the stamens, and a twin stigma. Capsules cylindrical, grooved along the sutures of the valves, opening at top by five or six linear valves, channelled within, inclosing the middle pillar, which is the continuation of the style. Seeds irregular like sawdust<sup>p</sup>.

Leaves like those of the Laurel (*Prunus Laurocerasus*) perennial, acute, on short smooth petioles. Raceme the length of the pedicels or leaves. Pedicels alternate, naked. Calyx very minute. Corolla bell-shaped, the size of Oleander, (*Nerium*) purple. It bears a resemblance to *Azalea pontica*; but differs in the number of stamens<sup>q</sup>.

Native of the Levant and Gibraltar; also of Georgia, in the southern subalpine tracts of Caucasus, &c. where it affects wet places in Beech and Alder coppices, on rocky mountains, but not on high alps<sup>r</sup>. Pallas doubts whether the Gibraltar plant be the same with that of the Levant and Caucasus.

Tournefort has related that the flowers of this plant were reputed to impart a noxious quality to honey; this Guldenstadt contradicts, and imputes it to *Azalea pontica*<sup>s</sup>. Introduced in 1763. It flowers in May and June<sup>t</sup>.

7. Root creeping among moss, thick, woody. Trunk arborescent, eighteen inches high, diffused and procumbent, scarred, ascending at the end, and there leafy and flowering. Leaves clustered at the ends of the branches, ovate-lanceolate, coriaceous, quite entire, rolled back at the edge, obscurely nerved; the upper surface dusky green, netted and rugged, the lower covered with a very short nap, of a whitish yellow colour. Petioles short, thick, wrinkled. Flowers in an umbel-shaped corymb, having from six to nine erect peduncles, the length of the leaves, hairy, one-flowered. Bractes remaining from the flowering-bud, larger than in *R. chrysanthum*, ovate-lanceolate, ferruginous, subtomentose. No calyx, except the receptacle of the flower margined, oblique, five-notched; the two upper notches larger. Corolla nodding, very large, white or reddish, spreading bell-shaped, half-five-cleft; the segments nearly equal, a little waved, the three upper ones with livid spots at the base. Stamens for the most part ten, but sometimes eight, seven, six or five, little more than half the length of the corolla, unequal, even; with ovate, two-grooved anthers; the filaments adhere to the receptacle and bottom of the corolla. Germ pyramidal, five-cornered, superior, hirsute: style thick, declining in a bow, longer than the stamens: stigma headed, lobed. Capsule an oblong pentagon, blunt, scarcely curved, five-celled, opening at the top; subtomentose. Seeds like sawdust brown.

Native of the higher rocks of Caucasus, near the perpetual ice, in the highest range of shrubby vegetation, with *Myrtillus* and *Vitis idæa*.

8. This is a very elegant undershrub. Root woody, dry, the size of a quill, creeping by prostrate runners, of a brown testaceous colour. Branchlets rising, leafy, frequent. Leaves clustered, alternate, sessile, ovate attenuated to the base, five-nerved, somewhat acute, quite entire at the edge, and ciliate with remarkable hairs. Peduncles from few only of the branchlets two or three inches long, accompanied at the base by smaller leaves, and commonly by two sessile ovate leaves, two-flowered (seldom one or three-flowered,) very hairy. The partial peduncles have one or two lanceolate leaflets, and a nodding flower. Calyx from five foliaceous, three-nerved, ciliate leaflets, like the rest of the leaves, two of them more approximating

than the others. Corolla wheel-shaped, irregular, purple, with a very short tube, and a deeply five-cleft border: segments lanceolate, pubescent at the edge, unequal, the three upper ones being a little smaller, and less deeply cloven, spotted with red at the base, and somewhat erect like a helmet; the lower ones spreading very much and unspotted. Stamens from the bottom of the flower, declined, purple, unequal, the upper ones short, the lower double their length, but not so long as the corolla; anthers ovate, twin, dark purple. Germ superior, five-cornered: style as long as or longer than the corolla, declining in a bow, purple: stigma fungus-shaped, thick, three-lobed. Capsule within the leafy calyx now augmented and converging, ovate, five-cornered, five-celled. Seeds brown.—It agrees with *R. Chamæcistus* in its ciliate leaves, and wheel-shaped flowers; but differs widely from it in the nervature and size of the leaves; its leafy two-flowered solitary peduncles; leafy calyxes; the whole form of the flower, and the manner of growth.

It was first discovered by Steller, and grows abundantly in the peninsula of Kamtschatka and Bering's island, in muddy places on the mountains. It begins to flower at the end of July, and ripens its seeds towards the end of September<sup>u</sup>.

9. This rises, in its native soil, fifteen or sixteen feet high, with a shrubby stalk, sending out a few branches towards the top. Leaves stiff, smooth, six inches long and two broad, of a lucid green on their upper side, and pale on their under, whilst young, but afterwards changing to the colour of rusty iron: they have short thick footstalks, and are placed without order round the branches: between these the buds are formed for the next year's flowers; these swell to a large size during the autumn and spring months till the beginning of June, when the flowers burst out from their covers, forming a roundish sessile bunch or corymb. The corolla is of a pale colour, and cut almost to the bottom into five blunt roundish segments, one of which is studded with yellow green and purplish protuberancies. [The branches and leaves are of the same size and consistence with the Laurel (*Prunus Laurocerasus*), the latter have reticulated veins, and are bent back at the edge. The lowest segment of the corolla is spotted<sup>x</sup>. Capsule oblong, rounded-pentagonal, pubescent, viscid, ferruginous, five-celled, five-valved: partitions doubled, formed of the margins of the valves bent in. Receptacle columnar, fungous, five-lobed, lobes flattened a little, prominent between the cells. Seeds linear-oblong, somewhat chaffy, acuminate at both ends, smooth, fulvous or deeply rufescent<sup>y</sup>.]

Native of North America, upon rocks and in barren soils, where it continues flowering great part of the summer, and is a great ornament to the barren rocks.

[It was introduced here in 1736, by Peter Collinson, Esq. and flowers from June to August<sup>z</sup>.] Mr. Miller says, the only person who succeeded well in raising it, was Mr. James Gordon of Mile-end, who possessed many of the plants, which grew with him from seeds. He adds, that the shrub from which the drawing was made (about 1756) for his figures of plants, was the first which had flowered in England.

#### PROPAGATION AND CULTURE.

These shrubs are propagated by seeds, but these are so very small, that if they are covered deep, they will not grow. They should be sown as soon as possible after they are ripe, either in a shady border, or in pots filled with fresh loam, and very lightly covered with a little fine earth. Plunge the pots up to their rims in a shady border, and in hard frost cover them with bell or hand-glasses; taking them off in mild weather. If these seeds be sown early in autumn, the plants will come up the following spring. These must be kept shaded from the sun, especially the first summer, and duly refreshed with water: in the autumn following transplant them to a shady situation, and on a loamy

<sup>p</sup> Pallas. <sup>q</sup> Linn. spec. <sup>r</sup> Pallas. <sup>s</sup> Idem. <sup>t</sup> Hort. kew.

<sup>u</sup> Pallas. <sup>x</sup> Linn. <sup>y</sup> Gartner. <sup>z</sup> Hort. kew.



foil, covering the ground about their roots with moss, to guard them from frost in winter, and keep the ground moist in summer.

They may also be increased from suckers or offsets, which they produce plentifully where they grow naturally, but they seldom produce suckers in England, nor do the seeds come to maturity.

[RHODODENDRUM. See *Nerium Olander*.

RHODORA. (Подаров f. родорон, rosy: the colour of the Rose, applied to the colour in the skin of a young person in health.)

Lin. gen. n. 547. Schreb. n. 745. Dubamel. Juss. 159.

Class. 10. 1. Decandria Monogynia.

Nat. order of Bicornes. *Rhododendra*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-toothed, permanent.

COR. Petals three, unequal: the two upper ones lanceolate, equal; the lowest concave, oblong, subtrilobate; the middle lobe smaller, concave.

STAM. Filaments ten, filiform, declined, the length of the corolla. Anthers roundish, twin.

PIST. Germ ovate. Style filiform, declined, a little longer than the stamens. Stigma five-cleft, thickish.

PER. Capsule ovate, five-celled.

SEEDS very many, minute.

OBS. The description is borrowed from Dubamel.

ESSENTIAL CHARACTER.

Cal. five-toothed. Pet. three, unequal. Stam. declined. Caps. five-celled.

SPECIES.

1. *Rhodora canadensis*.

Lin. spec. 561. L'Herit. fl. nov. 141. t. 68.

Chamærhododendros. Dubam. sem. app. 10. t. 27. f. 2.

DESCRIPTION, &c.

It is chiefly distinguished from the *Rhododendrons* by its three-petalled corolla, and appears to be generically distinct from them: but has nothing of the herb of *Rhododendron*. It has the habit rather of *Azalea*. The stem is upright, somewhat branched, round, ash-coloured, two feet high. Leaves alternate, oblong, almost entire, scarcely nerved, with the midrib prominent underneath; the upper surface almost naked, bright green, the lower pubescent, glaucous, spreading, two inches long, one inch wide; on round petioles, flattened on one side, pubescent, eight times shorter than the leaf. Flowers in umbels, on short pedicels, purple, the upper lip with darker spots.

*Rhodora* agrees with the foregoing genus in having the calyx inclined; the filaments villose at the base, ascending a little at the end, inserted into the receptacle; the anthers biperforated; the style a little declined; the capsule fastened obliquely to the calyx; the receptacle of the seeds five-cornered: but the corolla is absolutely three-parted in *Rhodora*, whereas it is bell-wheel-shaped, with an inclined five-parted nearly equal border in *Rhododendrum*; the seeds are margined all round in this, but in that they are scarcely augmented at each end.

Native of Newfoundland; whence it was introduced by Sir Joseph Banks.

PROPAGATION AND CULTURE.

It is raised with great difficulty from seeds, like other shrubs in which they are so very small. It may be propagated by slips or cuttings; and thrives best in a good moist sandy loam.

RHOEAS. See *Papaver*.

RHOIS. See *Rhus*.

RHOMPHAL. See *Arum*.

RHOPALA. See *Rupala*.

RHOPIUM. Schreb. gen. n. 1382. is *Meborea* of Aublet, t. 323.

RHUBARB. See *Rheum*.

Monk's. See *Rumex alpinus*.]

RHUS (of Pliny. Ροϋς of Dioscorides, a tree or shrub used for tanning leather; by contraction from ροος, and that from ρω; *Rhus a colore coccineo acinorum*. Bod. a Stapel:—but the derivation, as that of many others, is uncertain.)

\* L'Heritier.

Lin. gen. n. 369. Reich. n. 399. Schreb. n. 502.

Tournef. t. 381. Juss. 369. Gært. t. 44.

Toxicodendron. Tournef. t. 381. Cotinus:

Tournef. t. 320.

Class. 5. 3. Pentandria Trigynia.

Nat. order of Dumosæ. Terebintaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, inferior, erect, permanent.

COR. Petals five, ovate, from upright spreading.

STAM. Filaments five, very short. Anthers small, shorter than the corolla.

PIST. Germ superior, roundish, the size of the corolla.

\* Styles scarcely any. Stigmas three, cordate, small.

PER. Berry roundish, one-celled:

SEED one, roundish, bony.

OBS. *Rhus T.* has a villose berry, with a globular nucleus.

*Toxicodendron* has a smooth striated berry, with a compressed grooved nucleus.

*R. Vernix*, radicans & *Toxicodendron* are dioecous plants.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Berry one-seeded.

SPECIES.

\* With pinnate leaves.

1. *Rhus Coriaria*. Elm-leaved Sumach.

Lin. spec. 379. Reich. 1. 727. Willd. 1477. arb.

287. mat. med. 87. hort. cliff. 110. upf. 68:

Sauv. monsp. 227. Gron. orient. n. 91. Desfont.

atlant. 266. Roth. germ. 2. 367. Allion. pedem.

n. 1775. Kniph. cent. 3. n. 74. Blackw. t. 486.

Ludw. eët. t. 122. Ehrh. Beitr. 6. 88. Plenck;

ic. t. 232. Regnault, bot. ic. (Le Sumac).

*Rhus*. Matth. 215. Camer. epit. 121. Park. theat.

1450. 1.

*R. folio ulmi*. Baub. pin. 414. Tournef. inst. 611.

Shaw, spec. 509.

*R. f. Sumach*. Baub. hist. 1. 555. Raii hist. 1590.

*R. obsoniorum* f. *coriariorum*. Lob. ic. 2. 98. Clus.

hist. 17.

*R. coriaria*. Dod. pempt. 779. Ger. 1291. 1. emac.

1474. 1.

Leaves pinnate, leaflets elliptic bluntly toothed villose underneath.

2. *Rhus typhinum*. Virginian Sumach.

Lin. spec. 380. Syst. 293. Reich. 1. 727. Willd.

1478. arb. 288. amoen. 4. 311. cent. 139. Du

Roi barbk. 2. 291.

*R. virginianum*. Baub. pin. 517. Raii hist. 1591.

Dill. elth. 323. Dubam. arb. 2.

Sumach f. *R. virg.* Park. parad. 609. f. 6.

Leaves pinnate, leaflets lanceolate acuminate sharply serrate tomentose underneath.

[3. *Rhus javanicum*. Java Sumach.

Lin. spec. 380. Reich. 1. 727. Willd. 1478.

Thunb. jap. 121. Lour. cochinch. 183. ed. Willd.

228. Osb. it. 1. 375. engl. edit.

Leaves pinnate ovate acuminate serrate tomentose underneath.]

4. *Rhus glabrum*. Scarlet Sumach.

Lin. spec. 380. Reich. 1. 727. Willd. 1478. Ait.

kew. 1. 365. Kalm. it. 2. 211. engl. edit. 1. 66.

75. Giseck. ic. fasc. 1. t. 5. Gron. virg. 148.

Cold. noveb. 63. Dill. elth. 323. t. 243. f. 314.

Catesb. car. 3. t. 4. Plenck, ic. 237.

*R. angustifolium*. Baub. pin. 414. Raii hist. 1591.

Dubam. arb. 4.

Sumach angustif. Baub. prodr. 158.

Leaves pinnate lanceolate serrate naked on both sides,

flowers hermaphrodite.

5. *Rhus elegans*. Carolina Sumach.

Lin. spec. ed. Willd. 1478. Ait. kew. 1. 366.

*R. carolinianum*. Mill. dict. n. 4.

*R. glabrum panicula speciosa coccinea*. Catesb. car.

app. 4. t. 4.

Leaves pinnate lanceolate serrate naked on both sides,

flowers dioecous.

6. *Rhus Vernix*. Varnish Sumach.

Lin. spec. 380. Syst. 293. Reich. 1. 728. Willd.

1479. mat. med. 87. hort. cliff. 210. upf. 68.

Gært. fruct. 1. 205. Du Roi barbecc. 2. 306.

Gron. virg. 148. Cold. noveb. 64. Wangenb.

amer.



- amer. 290. Thunb. jap. 121. Kalm. it. 2. 211.  
 engl. edit. 1. 68. 77. Plenck, ic. 234. Pluk.  
 phyt. t. 145. f. 1.  
 Toxicodendron pinnatum. Mill. dict. n. 4. Dubam.  
 arb. 2. 99. Dill. elth. 390. t. 292. f. 377.  
 Poison-wood Tree. Philos. transf. n. 367. p. 145.  
 Sits f. Sits-dsju, vulgo Urus no Ki. Kämpf. amoen. 5.  
 791. ic. 792.  
 Leaves pinnate quite entire annual opaque, petiole entire  
 equal.  
 7. Rhus succedaneum. Red Lac Sumach.  
 Lin. syst. 293. Reich. 1. 728. Willd. 1479. mant.  
 221. Ait. kew. 1. 366. Thunb. jap. 122.  
 Fasi no Ki. Kämpf. amoen. 5. 794. t. 795.  
 Toxicodendron altissimum. Mill. dict. n. 10.  
 Leaves pinnate quite entire perennial shining, petiole entire  
 equal.  
 [8. Rhus semialatum. Half-winged Sumach.  
 Lin. syst. 293. spec. ed. Willd. 1479. Murr. in  
 comm. gott. 6. 1784. p. 27. t. 3.  
 Leaves pinnate ferrate, petioles on the outmost internodes  
 membranaceous.]  
 9. Rhus Copallinum. Lentiscus-leaved Sumach.  
 Lin. spec. 380. Reich. 1. 729. Willd. 1480. mat.  
 med. 88. Gärtn. fruct. 1. 205. Du Roi barbecc. 2.  
 298. Gron. virg. 149. Fabric. helmst. 409.  
 Wangenb. amer. 96. Dubam. arb. 7. Pluk. phyt.  
 t. 56. f. 1. Plenck, ic. 223.  
 R. virginianum lentisci foliis. Raii hist. 1799.  
 Copalli Quahiutl. Hernand. mex. 45.  
 Leaves pinnate quite entire, petiole membranaceous jointed.  
 [10. Rhus alatum. Winged Sumach.  
 Lin. spec. ed. Willd. 1480. Thunb. prodr. cap. 52.  
 Leaves pinnate, leaflets ovate ferrate at the end, petioles  
 on all the internodes winged.  
 11. Rhus pauciflorum. Few flowered Sumach.  
 Lin. syst. 293. spec. ed. Willd. 1480. suppl. 185.  
 Thunb. prodr. cap. 52.  
 Leaves pinnate, leaflets alternate decurrent wedge-shaped  
 ferrate at the end, panicle sessile few-flowered.  
 12. Rhus Metopium. The Hog Gum Tree.  
 Lin. spec. 381. Reich. 1. 729. amoen. 5. 395.  
 Brown. jam. 177. t. 13. f. 3. (Metopium.) Sloan.  
 jam. 2. 90. t. 199. f. 3. Raii dendr. 51. (Tere-  
 binthus.) Plum. ic. 61. (Borbonia.)  
 Leaves pinnate quinate quite entire roundish smooth.  
 13. Rhus digitatum. Finger-leaved Sumach.  
 Lin. syst. 293. spec. ed. Willd. 1481. suppl. 184.  
 Scandent, leaves pinnate, leaflets oblong quite entire very  
 smooth.  
 14. Rhus pentaphyllum. Five-leaved Sumach.  
 Desfont. atlant. 267.  
 Rhamnus pentaphyllus. Lin. syst. 233. Reich. 1. 541.  
 Jacqu. obs. 2. 17.  
 R. ficulus. Lin. syst. 3. 229.—pentaphyllum. Bocc.  
 sic. 43. t. 21. Raii hist. 1626.  
 Thorny, leaves digitate, leaflets linear-lanceolate, wider  
 upwards, blunt, toothed or entire at the end.  
 \* With ternate leaves.  
 15. Rhus cirrhiflorum.  
 Lin. syst. 294. Willd. 1481. suppl. 184. Thunb.  
 prodr. cap. 52.  
 Scandent, leaves ternate, leaflets quite entire smooth.  
 16. Rhus tridentatum.  
 Lin. syst. 294. Willd. 1481. suppl. 184. Thunb.  
 prodr. cap. 52.  
 Scandent, leaves ternate, leaflets hoary ferrate, serratures  
 three to five.]  
 17. Rhus radicans. Rooting Poison-oak or Sumach.  
 Lin. spec. 381. syst. 293. Reich. 1. 729. hort. cliff.  
 110. Gron. virg. 33. Kalm. it. 2. 296. 214.  
 engl. edit. 1. 67. 177. Fabric. helmst. 409.  
 Wangenb. amer. 93. Plenck, ic. 236.  
 a. R. radicans opacum. Ait. kew. 1. 367.  
 Common upright Poison-oak or Sumach.  
 Toxicodendron vulgare. Mill. dict. n. 1.  
 T. triphyllum glabrum. Tournef. inst. 611. Dubam.  
 arb. 2. t. 98.  
 T. amplexicaule, foliis minoribus glabris. Dill. elth.  
 390.  
 b. R. radicans lucidum. Ait. kew. 1. 367.  
 Small-leaved Poison-oak or Sumach.

- Toxicodendrum glabrum. Mill. dict. n. 3.  
 T. rectum, foliis minoribus glabris. Dill. elth. 389.  
 t. 291.  
 Leaves ternate, leaflets petioled ovate naked quite entire,  
 stem rooting.  
 18. Rhus Toxicodendron. Trailing Poison-oak or Sumach.  
 Lin. spec. 381. syst. 293. Reich. 1. 730. Willd.  
 1481. Kalm. it. 2. 318. Du Roi barbecc. 2. 303.  
 Kniph. cent. 2. n. 71. Wangenb. amer. 94. Gron.  
 virg. 149. Plenck, ic. 235.  
 Toxicodendron pubescens. Mill. dict. n. 2.  
 T. triphyllum folio sinuato pubescente. Tournef. inst.  
 611. Dubam. arb. 2.  
 Vitis canadensis. Munt. phytogr. t. 60.  
 Edera trifolia canadensis. Cornut. canad. 95. t. 97.  
 Barr. ic. 228.  
 Hedera trifolia Virginensis. Park. theat. 679. 5.  
 Arbor trifolia venenata virginiana, folio hirsuto. Raii  
 hist. 1799.  
 Leaves ternate, leaflets petioled angular pubescent, stem  
 rooting.  
 [19. Rhus aromaticum. Aromatic Sumach.  
 Lin. spec. ed. Willd. 1482. Ait. kew. 1. 367.  
 Leaves ternate, leaflets sessile ovate-rhomboided gash-ferrate  
 somewhat hairy.  
 20. Rhus suaveolens. Sweet Sumach.  
 Lin. spec. ed. Willd. 1482. Ait. kew. 1. 368.  
 Leaves ternate, leaflets sessile wedge-rhomboided gash-ferrate  
 smooth.  
 21. Rhus dentatum. Toothed Sumach.  
 Lin. spec. ed. Willd. 1482. Thunb. prodr. cap. 52.  
 Leaves ternate, leaflets obovate mucronate-toothed smooth,  
 stem rugged.  
 22. Rhus sinuatum. Sinuate-leaved Sumach.  
 Lin. spec. ed. Willd. 1482. Thunb. prodr. cap. 52.  
 Leaves ternate, leaflets ovate blunt sinuate villose under-  
 neath.  
 23. Rhus cuneifolium. Wedge-leaved Sumach.  
 Lin. syst. 294. Willd. 1482. suppl. 183. Thunb.  
 prodr. cap. 52.  
 Leaves ternate, leaflets sessile wedge-shaped very smooth  
 seven-toothed, teeth mucronate.  
 24. Rhus incisum. Gash-leaved Sumach.  
 Lin. syst. 294. Willd. 1483. suppl. 183. Thunb.  
 prodr. cap. 52.  
 Leaves ternate, leaflets sessile wedge-shaped gash-pinna-  
 tised, underneath tomentose veined, calyxes tomentose.]  
 25. Rhus tomentosum. Woolly-leaved Sumach.  
 Lin. spec. 382. Reich. 1. 731. Willd. 1483. hort.  
 cliff. 111. vir. cliff. 25. Pluk. phyt. t. 219. f. 7.  
 Vitex trifolia minor indica ferrata. Comm. hort. 1. 279.  
 t. 92.  
 Leaves ternate, leaflets subpetioled rhomboided angular to-  
 mentose underneath.  
 26. Rhus villosum. Hairy-leaved Sumach.  
 Lin. syst. 293. Willd. 1483. suppl. 183. Thunb.  
 prodr. cap. 52. Ait. kew. 1. 368. Pluk. phyt.  
 t. 219. f. 8.  
 R. incanum. Mill. dict. n. 8.  
 Leaves ternate, leaflets obovate quite entire sessile hairy  
 on both sides.  
 [27. Rhus pubescens. Hairy-branched Sumach.  
 Lin. spec. ed. Willd. 1484. Thunb. prodr. cap. 52.  
 Leaves ternate, leaflets obovate mucronate smooth, branches  
 villose.  
 28. Rhus viminalis. Willow-leaved Sumach.  
 Lin. spec. ed. Willd. 1484. Vahl symb. 3. 50. Ait.  
 kew. 1. 368.  
 R. lanceum. Lin. suppl. 184? Thunb. prodr. 52?  
 Leaves ternate, leaflets linear-lanceolate quite entire smooth  
 attenuated at the base the middle one subpetioled.]  
 29. Rhus angustifolium. Narrow-leaved Sumach.  
 Lin. spec. 382. Reich. 1. 731. Willd. 1484. hort.  
 cliff. 111. Thunb. prodr. cap. 52. Pluk. phyt.  
 t. 219. f. 6.  
 R. argenteum. Mill. dict. n. 12.  
 Leaves ternate, leaflets petioled linear-lanceolate quite en-  
 tire tomentose underneath.  
 [30. Rhus rosmarinifolium. Rosemary-leaved Sumach.  
 Lin. spec. ed. Willd. 1484. Vahl symb. 3. 50. Burm.  
 afr. 251. t. 91. f. 1.  
 Leaves



*Leaves ternate, leaflets sessile linear revolute ferruginous underneath.*

31. *Rhus lævigatum*. *Smooth-leaved Sumach*.  
*Lin. spec.* 1672. *syft.* 293. *Reich.* 1. 731. *Willd.* 1485. *Thunb. prodr. cap.* 52.

*Leaves ternate, leaflets sessile lanceolate even.]*

32. *Rhus lucidum*. *Shining-leaved Sumach*.  
*Lin. spec.* 382. *Reich.* 1. 731. *Willd.* 1485. *vir. cliff.* 25. *hort. cliff.* 111. *upf.* 78. *Fabric. helmst.* 40. *Cavan. ic.* 2. 27. *t.* 132. *Thunb. prodr. cap.* 52. *Pluk. phyt. t.* 219. *f.* 9. *Burm. afr.* 252. *t.* 91. *f.* 2.

*Vitex trifolia minor indica rotundifolia. Comm. hort.* 1. 181. *t.* 93.

*Leaves ternate, leaflets sessile wedge-shaped even.]*

\*\*\* *With simple leaves.*

33. *Rhus Cotinus*. *Venice Sumach*.  
*Lin. spec.* 383. *syft.* 294. *Reich.* 1. 732. *hort. cliff.* 111. *Hall. belv. n.* 827. *Villars dauph.* 2. 546. *Jacqu. austr.* 3. 6. *t.* 210. *Allion. pedem. n.* 1776. *Pallas it.* 3. 590. *Kniph. cent.* 2. *n.* 70. *Mill. fig. t.* 270. *Plenck, ic.* 238.

*Cotinus Coccygria. Scop. carn. n.* 368. *Gron. orient.* 92. *Lob. ic.* 99.

*C. coriaria. Dod. pempt.* 780. *Dubam. arb.* 1. *t.* 78. *Tournef. inst.* 610.

*Cotinus. Camer. epit.* 123.

*Cocconilea f. Coccygria. Bauh. pin.* 415. *Clus. hist.* 1. 16.

*Coccygria f. Cotinus putata. Bauh. hist. Raii hist.* 1696.

*C. Theophrasti vel Cotinus coriarius Plinii. Ger.* 1293. 1, 2. *emac.* 1476, 1, 2.

*C. f. Cotinus coriaria. Park. theat.* 1450. *n.* 4. 1451. *f.* 4.

*Leaves simple obovate.*

34. *Rhus atrum*.  
*Lin. spec. ed. Willd.* 1486. *Forst. prodr. n.* 142.  
*Leaves simple ovate-oblong, flowers polygamous.]*

#### DESCRIPTIONS, &c.

1. The common or elm-leaved Sumach has a strong woody stem dividing into many irregular branches, and rises to the height of eight or ten feet; the bark is hairy, and of an herbaceous brown colour whilst young. The leaves are composed of seven or eight pairs of leaflets terminated by an odd one: these leaflets are about two inches long, and half an inch wide in the middle, and are of a yellowish green colour. The flowers grow in loose panicles at the end of the branches, each panicle being composed of several thick spikes of flowers sitting close to the footstalks: they are of a whitish herbaceous colour, and appear in July, but are not followed by seeds in England.

It grows naturally in Italy, Spain, [the South of France, the Levant, about Aleppo Rama, &c.; near Algiers in Africa.—From the catalogue of the botanic garden at Oxford it appears that it was cultivated there in 1648<sup>b</sup>.]

The branches are used instead of Oak bark for tanning leather, and it is said that Turkey leather is all tanned with this shrub. The leaves and seeds are used in medicine, and are esteemed very restraining and stiptic. [The Tripoli merchants sell the seeds at Aleppo; and they are in common use there at meals to provoke an appetite<sup>c</sup>.]

2. This has a woody stem, from which are sent out many irregular branches, generally crooked and deformed. The young branches are covered with a soft velvet-like down, resembling greatly that of a young stag's horn both in colour and texture, whence it has vulgarly the name of the Stag's-horn tree. The leaves have six or seven pairs of leaflets, terminated by an odd one; their under surface and the midrib are hairy. The flowers are produced in close tufts at the end of the branches in July; and are followed by seeds, inclosed in purple woolly succulent covers, so that the bunches are of a beautiful purple colour in autumn: the leaves also then change first to a purplish, and before they fall, to a feuilemort colour. This shrub, as

well as the preceding, is used for tanning leather; and the roots are prescribed in medicine, where it grows naturally; that is in almost every part of North America, [particularly Virginia and Carolina. It was cultivated here in 1629, as appears from the *Paradisus terrestris* of Parkinson<sup>d</sup>; who says, that it was then only kept as a rarity and ornament to a garden or orchard.

3. This is a large tree with spreading branches. Leaves unequally pinnate; with from five to seven pairs of leaflets; these are parallel-nerved; smooth above, but ferruginous-tomentose underneath; an inch long, the upper ones gradually larger. Petiole below the leaflets round, smooth; between them, winged on each side. Flowers small, in a compound, tomentose, terminating panicle. Corolla white, bell-shaped, longer than the calyx, striated. Anthers sessile, very small. Styles three short.

Native of China and Japan, where it flowers in September<sup>e</sup>.

The Chinese extract an oil from the berries by bruising them and boiling them in water; they use it as a varnish, which is beautiful, but does not keep its polish so well as the true sort<sup>f</sup>.

4. This is not so high as the common Virginian Sumach, the branches are much more spreading and smooth, the leaflets are wider and less serrate, they are of a deeper green, and have only a hoary cloud or bloom on the under surface, which may be wiped off with the fingers; whereas in that they are covered with a hoary pubescence; the panicle is more diffused in this<sup>g</sup>.

Native of North America, in woods, high glades, and old corn fields. It is like a weed in some parts of the country, and if a field be left a few years uncultivated, this shrub overruns it, from berries which are brought by birds; and when the ground comes again into tillage, the roots stop the plough very much. The fruit remains on the shrub during winter; but the leaves drop very early in autumn. It seldom grows above three yards high. The wood burns well, without much crackling. On cutting the stem, a yellow juice comes out between the bark and the wood; one or two of the outer circles are white, but the innermost are of a yellowish green: it contains a pith frequently half an inch in diameter or more, of a brown colour, and so loose that it is easily pushed out by a stick. The branches boiled with the berries afford a black ink-like tincture. The berries are eaten by children with impunity, but they are very sour: they are red, and are made use of for dyeing the same colour<sup>h</sup>.

It was cultivated in 1726, by James Sherard, M. D. in his garden at Eltham<sup>i</sup>.

There are many species or perhaps varieties of *Sumach* in North America. Mr. Miller has two which seem to belong to this, namely his *glabrum*, *n.* 3. and *canadense*, *n.* 5. To the former he gives as a synonym the same which Linneus has given from Dillenius; to the latter Tournefort's name of *Rhus canadense folio longiori utrinque glabro*.]—The former, he says, is commonly called by the gardeners New England Sumach. The stem is stronger, and rises higher than that of the *typhinum*; the branches spread more horizontally, they are not quite so downy, and the down is of a brownish colour; the leaves are composed of many more pairs of leaflets, and they are smooth on both sides: the flowers are disposed in loose panicles, and are of an herbaceous colour.

*R. canadense* has smooth branches of a purple colour, covered with a gray pounce. The leaves are composed of seven or eight pairs of leaflets, which are four inches and a half long, and one inch broad in the middle, terminating in acute points, and a little serrate; they are of a lucid green on their upper surface, but hoary on their under, and are smooth. Panicle large, composed of several smaller, each on separate footstalks, the whole covered with a gray pounce: the flowers are of a deep red colour. It grows natu-

<sup>d</sup> Hort. kew.

<sup>e</sup> Loureiro and Thunberg.

<sup>f</sup> Loureiro.

<sup>g</sup> Dillenius.

<sup>h</sup> Kalm.

<sup>i</sup> Hort. kew.

<sup>b</sup> Hort. kew.

<sup>c</sup> Rauwolf.



turally in Canada, Maryland, and several other parts of North America.

5. This rises commonly to the height of seven or eight feet, and divides into many irregular branches, which are smooth, of a purple colour, and pounced over with a grayish powder; as are also the petioles, which are of a purplish colour. The leaves have seven or eight pairs of lobes, not always exactly opposite; they are three or four inches long, and almost an inch broad in the middle; above they are of a dark green, underneath hoary but smooth. Flowers of a bright red colour, in very close thick large panicles; appearing in July and August, and continuing till autumn.

Native of South Carolina, whence it was brought by Mr. Catesby.

[Introduced in 1726<sup>k</sup>.

6. Trunk straight. Leaflets four or five pairs, sometimes more, the upper surface green and smooth, the lower paler and pubescent, entire about the edge or sometimes slightly sinuate, with oblique superficial veins, and the midrib inclining to the inner side, except in the odd leaflet which it divides into equal parts. Petioles oblong, purple. From the base of these come out the peduncles, which are green, and bear many flowers in a racemed spike; these are small and herbaceous<sup>l</sup>. Fruit a juiceless drupe, slightly compressed, or as Gærtner expresses it, turgidly lenticular, ovate or round-rhomboid, with the top acuminate, oblique, excentric: rind thick, on the outside highly polished and shining, within of a fibrous and fungous substance, or at first pulpy but not succulent, becoming dry when ripe, with a fibrous net, in which the stone lies; shell bony, transversely elliptic, obscurely wrinkled, thickish, of a pale testaceous colour without; in that, its figure and polish resembling the fruit of Job's tears (*Coix Lacryma Jobi*). Seed obliquely elliptic, pale, fastened by an umbilical chord, which ascends from the bottom of the shell to the top of the seed<sup>m</sup>.

According to Cutler, the blossoms are whitish; the panicles open; the fruit yellowish, small and pear-shaped. It is common in swamps in North America, whence it is called Swamp-Sumach, and flowers in June.

It flowers here in July, and was cultivated in the botanic garden at Chelsea in 1713<sup>n</sup>.] Mr. Miller says, that he received seeds and plants of it from Virginia, Pennsylvania, New England and Carolina; and that it grows also in Japan.

[The milky juice stains linen a dark brown. The whole shrub is, in a high degree, poisonous; and the poison is communicated by touching or smelling any part of it. In forty-eight hours inflammation appears on the skin, in large blotches, principally on the extremities, and on the glandulous parts of the body: soon after, small pustules rise in the inflamed parts, and fill with watery matter, attended with burning and itching. In two or three days the eruptions suppurate; after which the inflammation subsides, and the ulcers heal in a short time. It operates however somewhat differently in different constitutions; and some are incapable of being poisoned with it at all. Persons of irritable habits are most liable to receive it.

The leaves of some of our Poison-wood trees are entirely similar to Kämpfer's figure of the true Japan Varnish tree.

The Abbé Sauvages stained linen black with the juice of *R. Vernix*, which it retained after a great number of washings in lye. The Abbé Mazeas made trial of *R. Toxicodendron*. The instant, he says, the cloth was exposed to the sun, it became the finest black he had ever seen<sup>o</sup>.

Kalm gives much the same account of the American Poison Tree or Swamp Sumach. An incision being made, a whitish-yellow juice, which has a nauseous smell, comes out between the bark and the wood: it is noxious to some persons, but does not in the least affect others. On himself it had no effect, except

once, in a hot day, when being in some perspiration he cut a branch, and carried it in his hand for half an hour, smelling at it now and then. It produced a violent itching in his eyelids and the parts thereabouts, during a week, his eyes were very red, and the eyelids very stiff: but the disorder went off by washing the parts in very cold water.

Thunberg affirms that the very best Japan varnish is prepared from the *Rhus Vernix*, which grows in great abundance in many parts of that country, and is likewise cultivated in several places, on account of the great advantage derived from it. This varnish, which oozes out of the tree on its being wounded, is procured from stems that are three years old, and is received in some proper vessel. When first caught, it is of a lightish colour, and of the consistence of cream; but grows thicker and black on being exposed to the air. It is so transparent, that when laid, pure and unmixed, upon boxes or furniture, every vein of the wood may be clearly seen. For the most part a dark ground is spread underneath it, which causes it to reflect, like a mirror; and for this purpose recourse is frequently had to the fine sludge, which is caught in the trough under a grind-stone, or to ground charcoal: occasionally a red substance is mixed with the varnish, and sometimes leaf-gold ground very fine. This varnish hardens very much, but will not endure any blows, cracking and flying almost like glass; though it can stand boiling water without receiving any damage. With this the Japanese varnish over the posts of their doors and windows, their drawers, chests, boxes, scymitars, fans, tea-cups, soup-dishes, their portable stools, and most articles of household furniture, which are made of wood<sup>p</sup>. It far exceeds the Chinese and Siamese varnish; and the best is collected about the town of Jassino. It is cleared from impurities, by wringing it through very fine thin paper; then about a hundredth part of an oil called Toi, which is expressed from the fruit of *Bignonia tomentosa* is added to it; and being put into wooden vessels, either alone, or mixed with native Cinnabar, or some black substance, it is sold all over Japan. The expressed oil of the seed serves for candles<sup>q</sup>.]

Mr. Miller thus describes the North American Sumach or Poison Ash. Where it grows naturally, this tree rises with a strong woody stalk to the height of twenty feet or more; but in England it is seldom more than five or six feet high. The trunk is covered with a light brown bark inclining to gray. The leaves have only two or three pairs of leaflets, varying greatly in shape, but for the most part lanceolate, three or four inches long, and an inch and half broad in the middle, sometimes rounded at the base, but always acute at the end; their upper surface is smooth, and of a pale lucid green, but their under side is pale and a little hairy. The petioles change to a bright purple, especially towards the end of summer, and in autumn the leaves are of a beautiful purple colour before they fall off. The male flowers are produced in loose panicles from the axils; they are small and of an herbaceous white colour; the petals are roundish. The female flowers are on a separate tree, in loose panicles, shaped like the males, but somewhat larger, and have in their centre a rounding germ, supporting three very short styles, crowned with globular stigmas. The berry is variable in shape, being almost oval, or shaped like a small Pear; but the most general form is roundish, with a protuberance almost like the Cicer. In warm seasons the female plants produce fruit; but it does not ripen here.

This is undoubtedly Kämpfer's *Sitz*, or true Varnish tree, with a walnut leaf, and a fruit in a raceme, like Cicer. The dried specimens also brought from Japan agree with the American Poison Tree; and the milky juice of both have the same quality of staining.

7. [This is certainly distinct from the preceding, to which it is allied, but differs from it particularly in the size of the leaves. In this species these are somewhat rigid, shining on both sides, very seldom equal on both margins. In *Rh. Vernix* the leaves are of an

<sup>k</sup> Hort. kew.

<sup>l</sup> Dillenius.

<sup>m</sup> Idem and Gærtner.

<sup>n</sup> Hort. kew.

<sup>o</sup> Cutler in mem. acad. amer. vol. 1.

<sup>p</sup> Travels, vol. 4. p. 62.

<sup>q</sup> Fl. japon. 121.



opaque green. The fruit in this species is the size of a Cherry, and not white: in that it is only the size of a Pea, and white.

Native of Japan and China<sup>a</sup>. Introduced in 1773, by John Blake, Esq. It flowers in June<sup>a</sup>.

The oil of the seeds expressed whilst warm, acquires the consistence of suet, and serves for making candles. The trunk yields a varnish, but in so small a quantity as not to be worth collecting<sup>a</sup>.

Osbeck informs us that the Chinese call the Rh. javanicum *Tay-sha*, and the Rh. Chinense, by which I suppose he means this species, *Monkhi*.

The true Chinese Varnish or Lacker Tree, is named in China *Sat Shu*, and not *U Tong Shu*. In collecting the varnish, they make an incision in the bark, and insert a tube for the juice to run into a little pot; which is taken in every morning before sun-rise. The juice blisters the skin<sup>a</sup>.]

Mr. Miller's *Toxicodendron altissimum*, to which he puts the synonym of *Fasi no ki* from Kämpfer, grows to a large size, sending out many branches on every side, with very long pinnate leaves, having fifteen or sixteen pairs of sessile leaflets. He raised it from seeds sent him from China; these seeds were pretty much like those of the Beech tree, but smaller, being thick on one side and narrow on the other, in shape of a wedge.

[8. Observed near Macao. Described by Chevalier Murray in the Gottingen Commentaries.]

9. This seldom rises more than four or five feet high, dividing into many spreading branches, which are smooth, of a light brown colour, and pretty closely furnished with pinnate leaves; these have four or five pairs of narrow leaflets, which are entire, two inches long and half an inch broad, ending in acute points; they are of a light green on both sides, and in autumn change to purple: the petiole has on each side a winged or leafy border, running from one pair of leaflets to another, ending in joints at each pair. The flowers are produced in loose panicles at the end of the branches; they are of a yellowish herbaceous colour, and appear in July, but the seeds do not ripen in England.

[The fruit, which is called a Berry, by Linneus, is a small Drupe, of a rhomb-globular figure, blood-red, pubescent. Rind thin, becoming loose by age. Shell very hard, testaceous. Seed kidney-shaped, pale; with a fetaceous, brown umbilical chord. Cotyledons oblong, yellowish. Radicle bent in<sup>a</sup>.

Native of North America. Cultivated here in 1697, by the Dutchess of Beaufort<sup>a</sup>.

10. 11. Natives of the Cape of Good Hope.

12. This tree seldom rises to more than twenty-five or thirty-five feet, and is very spreading towards the top. It is surrounded with round pinnate leaves, which have seldom above five leaflets on every rib; and the flowers, which grow in clusters, are succeeded by so many reddish succulent capsules. It yields a great quantity of a gummy-resin, which, when pure, is of a yellow colour, and after a short time, acquires a hard brittle consistence. It is daily used in strengthening plaisters, for which it is deservedly much recommended. It is of a warm discutient nature, and may be used in all swellings arising from colds, &c. both externally and internally. The gum dissolved in water is an easy purgative, and thought to be an extraordinary diuretic.

Native of America. In Jamaica it is frequent enough, and the hogs are said to have recourse to it when wounded in the woods<sup>a</sup>.

13. Native of the Cape of Good Hope.

14. This tree is very much branched, and has stout floriferous thorns: the bark is gray. Leaves alternate, perennial, smooth, except the younger ones, which are somewhat villose: leaflets three to five: petiole winged, almost the length of the leaves. Flowers dioecous. Segments of the calyx ovoid. Petals spreading, ovate, pale yellow. Berry roundish, with three tubercles at the top, red when ripe, subacid, and

not unpleasant to the taste. The bark dyes red, and is fit for tanning leather.

Native of Barbary, near Arzeau, on uncultivated hills<sup>a</sup>.

15. 16. Natives of the Cape of Good Hope.]

17. This has a low shrubby stalk, which seldom rises more than three feet high, sending out shoots near the bottom, which trail upon the ground, putting out roots from their joints; whereby it multiplies and spreads greatly. If it be near a wall, the fibres will strike into the joints, and support the stalks when severed from the root. When it is thus supported, the stalks become more woody, and rise much higher, than when it trails on the ground. The petioles are near a foot long: the three leaflets are ovate-cordate, five inches long, three inches and a half broad, each on a short petiole; the two side ones oblique to the petiole; but the middle one equal; they have many transverse veins running from the midrib to the borders. The flowers come out from the side of the stalk in loose panicles; they are small and of an herbaceous colour, male and female on distinct trees: the latter are succeeded by roundish, channelled, smooth berries, of a gray colour, inclosing one or two seeds. It grows naturally in many parts of North America, and flowers in July.

[Having in common with Ivy, the quality of not rising without the support of a wall, tree or hedge, it is called in some parts of America *creeping Ivy*. It will climb to the top of high trees in woods, the branches every where throwing out fibres that penetrate the trunk. When the stem is cut, it emits a pale brown sap of a disagreeable scent; and so sharp that letters or marks made upon linen with it cannot be got out again, but grow blacker, the more it is washed.

Like Rhus Vernix it is poisonous to some persons, but in a less degree. Kalm relates, that of two sisters, one could manage the tree without being affected by its venom, whilst the other felt its exhalations as soon as she came within a yard of it, or even when she stood to windward of it, at a greater distance; that it had not the least effect upon him, though he had made many experiments upon himself, and once the juice squirted into his eye; but that on another person's hand, which he had covered very thick with it, the skin, a few hours after, became as hard as a piece of tanned leather, and peeled off afterwards in scales<sup>b</sup>.

β. Trunk straight and stout, with a brownish ash-coloured bark. Leaves smooth, veined, bright green above, somewhat paler underneath, pendulous and somewhat bent back: in the male plant the leaves are rather wider and longer, and are drawn more to a point; in the female they are shorter and blunter, and the petioles are reddish, whereas in the other they are green. Flowers axillary, in racemes; the males larger, whitish yellow; the females smaller, herbaceous, on the germ instead of the style there are two, sometimes three black dots. Fruits round, the size and form of Coriander seeds, streaked with five lines, remaining on the tree till new flowers come out; when the outer rind comes off, and a cretaceous substance comes into view, in which an ash-coloured, hard, horny seed is involved, slightly divided on the upper part, and in a manner kidney-shaped.

The corolla is sometimes divided only into four parts to the base; in the male the parts do not fall separate; but in the female they are quite distinct. The former have a sweet scent, like Lily of the valley; but the latter have no smell.

It differs from the next species, which is a less robust plant, with a trunk not so stout, the bark dotted and ash-coloured: from that and from the root itself runners and suckers come out, and frequently rooting fibres, as in Ivy: the leaves also are much wider, less smooth, having a slender lanugo underneath, and the petioles are much longer than in this species. The leaves also in that are commonly sinuated here and there; and the fruit is larger.

<sup>a</sup> Linn. mant. <sup>b</sup> Hort. kew. <sup>c</sup> Thunberg. <sup>d</sup> Blake, M.S.  
<sup>e</sup> Gärtner. <sup>f</sup> Hor. kew. <sup>g</sup> Browne.

<sup>h</sup> Desfontaines.

<sup>i</sup> Travels, 1. 177. engl. edit.

<sup>j</sup> Differs



a. Differs no otherwise from this than in having more stems and suckers from the same root, and the branches lying over each other and twisted together<sup>c</sup>.

It was cultivated in 1727, by James Sherard, M.D.<sup>d</sup>

18. The stalks of this sort rise higher than those of the preceding; the branches are slender but woody, and have a brown bark. Leaves on pretty long petioles: leaflets oval, two inches long, one inch and a half broad, indented angularly, and hoary on their under side. The male flowers, which are produced on separate plants from the fruit, come out from the side of the stalks in close short spikes, and are of an herbaceous colour. The females are produced in loose panicles, agree in shape and colour with the males, but are larger, and have a roundish germ supporting three very short styles.

Native of many parts of North America.

[It appears from Parkinson that it was cultivated here in 1640<sup>e</sup>. It was one of the rare trees and shrubs that adorned Bishop Compton's garden at Fulham<sup>f</sup>.

19. Native of Carolina, where it was found by Mr. John Bartram. Introduced in 1772. It flowers in may.

20. Native of North America. Cultivated in 1759, by Mr. Miller. It flowers in may<sup>g</sup>.

21. 22. 23. Native of the Cape of Good Hope, where they were observed by Thunberg.

24. Leaflets small and very finely divided, like the leaves of *Myrica quercifolia*.—Native of the Cape<sup>h</sup>.]

25. This rises with a woody stalk to the height of seven or eight feet, covered with a brown bark, and having many irregular branches. Leaves on long petioles. Leaflets angular, near two inches long, and one inch broad, dark green above, downy underneath. The flowers comes out in slender bunches from the side of the branches; they are of a whitish herbaceous colour, and soon fall away.

Native of the Cape of Good Hope. [It was cultivated in 1694, by Mr. Jacob Bobart<sup>i</sup>.

26. This is easily distinguished from the other species by the hoary down on the stem and leaves, but it often puts off this down, and becomes only subvillose<sup>k</sup>.]

It has a strong woody stalk ten or twelve feet high, covered with a gray bark, with many smooth branches on every side. Leaves upon pretty long footstalks. Leaflets about an inch long, and three quarters of an inch broad, of a lucid green above, but hoary underneath. Flowers axillary in small panicles, of an herbaceous colour, appearing in july.

Native of the Cape of Good Hope. [Cultivated in 1714<sup>l</sup>, in the botanic garden at Chelsea.

27. Native of the Cape of Good Hope, where it was found by Thunberg<sup>m</sup>.

28. The whole of this plant is smooth. The branches are spreading. The leaflets an inch long, the side ones smaller, paler underneath, mucronate, veined. Raceme terminating, superdecompound, spreading. Flowers small. Allied to *R. angustifolium*<sup>n</sup>.

Leaflets mucronate. Panicle subterminating, shorter than the leaves. Peduncles long, capillary. *R. lanceum* of the supplement and Thunberg's prodromus seems not to be different from this<sup>o</sup>.

Native of the Cape of Good Hope, where it was observed by Masson, and introduced in 1774<sup>p</sup>.]

29. This rises with a woody stalk seven or eight feet high, dividing into several irregular branches, covered with a dark brown bark. Leaves on pretty long footstalks. Leaflets two inches long, and half an inch broad in the middle, ending in acute points, lucid green above, but downy underneath. The flowers are produced in small loose bunches from the side of the branches; they are small and herbaceous.

Native of the Cape of Good Hope. [Cultivated in 1714<sup>q</sup>, in the Apothecaries botanic garden at Chelsea.

30. Branches smooth. Leaves on very short petioles. Leaflets very narrow, an inch and half long, mucronate, smooth above, scored with a line along the middle, having a longitudinal groove underneath from the revolute margins of the leaves. Panicles terminating and axillary. Linneus does not seem to have distinguished this from the preceding, but they are evidently different. This was remarked at the Cape by Bulow<sup>r</sup>.

31. This resembles the next succeeding species, but the leaflets are lanceolate, less lucid, even on both sides. Panicle long and very slender<sup>s</sup>.

Native of the Cape of Good Hope, and cultivated by Mr. Miller in 1758<sup>t</sup>. Perhaps it may be his *R. africanum*, n. 11.]

32. This rises with a woody stalk like the villosum, dividing into many branches, covered with a brown bark. Leaflets of a lucid green.

Native of the Cape of Good Hope. [Cultivated in 1697, by the Dutchess of Beaufort. It flowers in july and august<sup>u</sup>.]

Mr. Miller (1759) says, that he had then possessed some of the plants almost forty years, but they had not flowered.

33. This rises with an irregular shrubby stalk to the height of ten or twelve feet, sending out many spreading branches covered with a smooth brown bark, garnished with single, obovate leaves about two inches long, and of the same breadth, rounded at their points, and stand upon long footstalks; they are smooth, stiff, and of a lucid green, having a strong midrib, whence several transverse veins run towards the border. The flowers come out at the end of the branches upon long hair-like footstalks, which divide, and branch into large hair-like bunches of a purplish colour; they are small, white, and composed of five small oval petals, which spread open. They appear in july, but are not succeeded by seeds in England. The root is used for dyeing: the leaves and young branches dye black: and the bark is used for tanning leather.

[The bractes of the panicle are filiform, hairy, and longer than the pedicels. Berries smooth, resembling half the fruit of Shepherd's Purse (*Thlaspi Bursa Pastoris*).

Native of the South of France, Spain, Italy, Austria, Carniola, Hungary, Bohemia, Switzerland, the Levant, and Siberia. It was cultivated in 1656, by Mr. John Tradescant, junior<sup>x</sup>.

Dr. Smith found this shrub cultivated for tanning leather near Valcimara in the Apennines: it is called there *Scotino*<sup>y</sup>; which is evidently from Pliny's *Cotinus*. Gerarde says, "divers would have it named *Scotinus*, which name is not found in any of the old writers." He adds, "that the leaves of Venice or filken Sumach are sold in the markets of Spain and Italy for great sums of money unto those that dress Spanish skins, for which purpose they are very excellent." The French call it *Fustet*.

34. Native of New Caledonia<sup>z</sup>.

#### General Observations.

This genus consists of trees and shrubs: the flowers are in panicles or close racemes, in some hermaphrodite; in others (5. 14. 17. 18.) male and female on separate plants; in the two last polygamous, having males mixed with the hermaphrodites. From this distinction of the sexes, Mr. Miller has divided the genus into *Rhus* having hermaphrodite flowers, and *Toxicodendron* having dioecous flowers. Tournefort had made the same division before, but on different principles: *Rhus* with unequally pinnate leaves, and a villose berry with a globular nucleus; *Toxicodendron* with ternate leaves, a striated berry and compressed nucleus. In *Cotinus* the leaves are simple, and the berry more compressed.

*Sumach* is an Arabic word. *Toxicodendron* is greek, and signifies *Poison-wood*.

<sup>c</sup> Dillenius. <sup>d</sup> Hort. kew. <sup>e</sup> Idem. <sup>f</sup> Ray.  
<sup>g</sup> Hort. kew. <sup>h</sup> Linn. suppl. <sup>i</sup> Hort. kew.  
<sup>k</sup> Linn. suppl. <sup>l</sup> Hort. kew. <sup>m</sup> Prodr. cap. <sup>n</sup> Vahl.  
<sup>o</sup> Willdenow. <sup>p</sup> Hort. kew. <sup>q</sup> Idem.

<sup>r</sup> Vahl. <sup>s</sup> Linn. spec. <sup>t</sup> Hort. kew.  
<sup>u</sup> Idem. <sup>v</sup> Idem. <sup>w</sup> Travels, 2. 308.  
<sup>x</sup> Forster.



## PROPAGATION AND CULTURE.

1. 2. 4. 5. 9. These are hardy plants, and will thrive in the open air in England. The first and fifth sorts not being quite so hardy as the others, must have a better situation, otherwise their branches will be injured by severe frost in the winter; they are easily propagated by seeds, obtained from the countries where they grow, if these be sown in autumn, the plants will come up the following spring; but if sown in the spring, they seldom come up till the next spring; they may be either sown in pots, or the full ground. If they are sown in pots in autumn, the pots should be placed under a common frame in winter, where the seeds may be protected from hard frost, and, if in the spring the pots are plunged into a very moderate hot-bed, the plants will soon rise, and have thereby more time to get strength before winter. When the plants come up, they must have a large share of air, and should be gradually hardened to bear the open air, into which they should be removed as soon as the weather is favourable, placing them where they may have the morning sun, and keeping them clean from weeds; in dry weather, if they are supplied with water, it will greatly promote their growth; but towards autumn it will be proper to stint their growth by keeping them dry, that the extremity of their shoots may harden; for if they are replete with moisture, the early frosts in autumn will pinch them, which will sometimes cause their shoots to decay almost to the bottom, if the plants are fully exposed. If the pots are put under a common frame again in autumn, it will secure the plants from injury, for while they are young, and the upper part of the shoots are soft, they will be in danger of suffering if the winter proves very severe; but in mild weather they must always enjoy the open air, therefore should never be covered but in frost.

The spring following, just before the plants begin to shoot, they should be shaken out of the pots, and carefully separated, so as not to tear the roots, and then transplanted into a nursery in rows three feet asunder, and about one foot distance in the rows. In this nursery they may stand two years to get strength, and then may be transplanted where they are to remain.

The seeds which are sown in the full ground, may be covered the first winter with some old tanner's bark to keep out the frost, and in the spring it may be drawn off again after the danger of the hard frost is over; and when the plants come up, they must be kept clean from weeds, which is all the care they will require the first summer; but as the plants in the full ground are apt to grow luxuriant, and continue growing late in autumn, they should be covered to screen them from the early frost, which will otherwise kill their tops, and this often occasions them to die down a considerable length, and frequently almost to the ground in hard winters. In the spring following the plants may be taken up carefully, and transplanted into a nursery at the same distance as before directed.

This method of propagating the plants from seeds is seldom practised after a person is once possessed of the plants, for they are very subject to send up a great number of suckers from their roots, whereby they are easily propagated. The suckers of all the sorts may be taken up and planted in a nursery for a year or two to get strength, and then may be planted where they are to remain.

These shrubs are generally planted in plantations of flowering shrubs in large gardens, where they make a fine variety in autumn, especially the second, fourth, and fifth sorts, with their large purple, or red panicles, which have a good effect; but where these are planted, their suckers must be every year taken off, otherwise they will grow up to a thicket and destroy the neighbouring plants.

The 6th, 17th, 18th, 19th, 20th sorts propagate in plenty by their creeping stalks and roots, or by laying down their branches, which will put out roots in one year, and may then be taken off and transplanted, either in the places where they are to remain, or in a nursery, to grow two or three years to get strength before they are planted out for good; they are also

propagated by seeds, which should be sown on a bed of light earth, and when the plants come up they must be kept clean from weeds the following summer; and before the frost comes on in autumn, the bed should be hooped over, that the plants may be covered with mats, for otherwise the early frosts will kill their tops, which frequently causes their stalks to decay to the ground; for as the plants are tender, and generally shoot late the first year, they are in much greater danger than when they get more strength. In spring the plants may be transplanted into nursery-beds to grow a year or two, and may then be transplanted for good.

These plants are preserved by the curious in botany for the sake of variety, but as there is little beauty in them, there are not many of the sorts cultivated in England. The wood of these trees, when burnt, emits a noxious fume, which will suffocate animals when they are shut up in a room where it is burnt: an instance of this is mentioned in the Philosophical Transactions by Dr. William Sherard, which was communicated to him in a letter from New England by Mr. Moore, in which he mentions some people who had cut some of this wood for fuel, which they were burning, and in a short time they lost the use of the limbs, and became stupid; so that if a neighbour had not accidentally opened the door, and seen them in that condition, it is generally believed they would soon have perished.

10. 11. 13. 15. 16. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. All these African sorts being too tender to live through the winter in the open air in England, are planted in pots or tubs, and housed in autumn, and during the winter they must be treated in the same way as other hardy green-house plants. They all retain their leaves through the year, and make a good variety when intermixed with other plants in the green-house in winter. They may be propagated by cuttings, which should be planted in pots filled with loamy earth the beginning of april, and plunged into a very moderate hot-bed, covering them close with hand or bell-glasses, and screening them from the sun in the heat of the day. The cuttings should be now and then refreshed with water, but it should not be given in too great a quantity. With this management they will put out roots in about two months, and when they begin to shoot, they should have air admitted to them, and be gradually hardened to bear the open air, into which they must be removed, placing them in a sheltered situation; and when the cuttings have filled the pots with their roots, they should be shaken out of the pots, and parted carefully, planting each into a separate small pot, placing them in the shade till they have taken new root, when they may be intermixed with other exotic plants in a sheltered situation for the summer, and in autumn removed into the green-house.

33. Venice Sumach is propagated by layers in autumn; by the autumn following these will have taken root, when they may be taken off, and transplanted into a nursery: there let them grow a year or two to acquire strength, and then plant them out where they are to remain. This shrub is so hardy, as not to be injured by frost in England, where it is cultivated for ornamental plantations.

[RHUS. See *Connarus*, *Coriaria*, *Euonymus*, *Fagara*, *Myrica*.

RHUS COBBE. See *Schmidelia*.

—— COMINIA. See *Allophylus*.]

RIBES. (*An Arabic name*.)

*Lin. gen. n.* 281. *Reich. n.* 301. *Schreb. n.* 390. *Juss.* 310. *Ribesum*. *Dill. elth.* 246. *Grossularia*. *Tournef. t.* 409. *Gertn. t.* 28.

*Class.* 5. 1. Pentandria Monogynia.

*Nat. order of Pomaceæ.* *Casti*, *Juss.*

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, half-five-cleft, ventricose: *segments* oblong, concave, coloured, reflex, permanent.

COR. *Petals* five, small, obtuse, erect, growing to the margin of the calyx.



STAM. Filaments five, subulate, erect, inserted into the calyx. Anthers incumbent, compressed, opening at the margin.

PIST. Germ roundish, inferior. Style bifid. Stigmas obtuse.

PER. Berry globular, umbilicated, one-celled: receptacles two, lateral, opposite, longitudinal.

SEEDS very many, roundish, somewhat compressed.

ESSENTIAL CHARACTER.

Petals five, inserted with the stamens into the calyx. Style bifid. Berry many-seeded, inferior.

SPECIES.

\* Unarmed. Ribesia or Currants.

1. Ribes rubrum. Common Currant.

Lin. spec. 290. Reich. 1. 564. Willd. 1153. arb. 293. hort. cliff. 82. vir. cliff. 21. hort. upf. 51. fl. suec. n. 205. lapp. n. 68. mat. med. 99. Woodv. med. bot. 207. t. 74. Hudf. angl. 99. Wither. arr. ed. 3. 264. Smith, brit. 263. Lightf. scot. 146. Relb. cant. n. 186. Sibth. oxon. n. 260. Fl. dan. t. 967. Hall. belv. n. 818. Roth. germ. 1. 107. 2. 275. Hoffm. germ. 80. Pollich pal. n. 233. Neck. gallob. 125. Leers, herb. n. 169. Krock. files. n. 354. Villars dauph. 2. 541. Allion. pedem. n. 1787. Pallas roff. 1. 2. 35. Gmel. fib. 3. 173. Du Roi barbecc. 2. 309. Blackw. t. 285. Ludw. est. t. 92. Kniph. cent. 2. n. 73. Knorr. del. 1. t. I. 5. Berg. phyt. t. 67. Plenck, ic. 146.

Grossularia rubra. Scop. carn. n. 269.

a. G. multiplici acino, f. non spinosa hortensis rubra. Baub. pin. 455. Dubam. arb. 272. t. 1.

Ribes vulgaris. Matth. 168.—fructu rubro. Ger. emac. 1593. 1. Raii hist. 1485. syn. 456.

R. vulgaris acidus ruber. Baub. hist. 2. 97.

R. fructu rubro. Park. theat. 1561. parad. 558. t. 559. f. 2. Dod. pempt. 749. 1.

β. R. vulgaris fructu dulci. Clus. hist. 1. 120. Raii syn. 456.

Grossularia vulgaris fructu dulci. Baub. pin. 455. Sweet Currant.

γ. R. fructu parvo. Merr. pin. Dill. in Raii syn. 456.

δ. R. fructu rubro majore. Park. theat. 1562. f. 1. Raii hist. 1486.

Grossularia hortensis fructu majore rubro. Baub. pin. 455.

Great Red Currant.

ε. R. vulgaris fructu albo. Ger. emac. 1593. 2. Park. theat. 1562. 2.

R. vulg. acidus albas baccas ferens. Baub. hist. Raii hist. 1486.

Grossularia hortensis fructu margaritis simili. Baub. pin. 455.

White Currant.

Racemes smooth nodding, flowers flattish, petals obcordate—leaves obtusely five-lobed, stem erect.

[2. Ribes petraeum. Rock Currant.

Lin. syst. 243. spec. ed. Willd. 1553. Jacqu. ic. 1. t. 49. misc. 2. 36. Lamarck, encycl. 3. 46. Smith, brit. 265.

R. montana oxyacanthæ sapore 1. Baub. prodr. 160.

R. vulg. rubro flore. Clus. hist. 1. 119.

Racemes somewhat hairy erect, when fruiting pendulous, petals obtuse, bractes shorter than the flower—leaves acuminate-lobed gash-toothed, stem erect.

3. Ribes procumbens. Trailing Currant.

Lin. spec. ed. Willd. 1154. Pallas roff. 2. 35. t. 65. Gmel. fib. 3. 173. Amman. ruth. 197.

Racemes erect, flowers flattish, leaves obtusely lobed, stem procumbent.

4. Ribes glandulosum. Glandulous Currant.

Lin. spec. ed. Willd. 1154. Ait. kew. 1. 279. Weber, dec. pl. min. cogn. p. 2.

R. prostratum. L'Herit. stirp. nov. 3. t. 2. Lamarck, encycl. 3. 48.

Racemes erect with glandular hairs, flowers flattish, leaves acuminate-lobed toothed, stem ascending rooting.]

5. Ribes alpinum. Tasteless Mountain Currant.

Lin. spec. 291. syst. 243. Reich. 1. 565. Willd. 1154. arb. 294. hort. cliff. 82. fl. lapp. n. 97. suec. n. 206. Hudf. angl. 99. Wither. arr. ed. 3. 264. Smith, brit. 264. Lightf. scot. 146. Dickf. hort. succ. 15. 13. Fl. dan. t. 968. Gunn.

norv. 2. t. 2. f. 1, 2. Hall. belv. n. 817. Hoffm. germ. 80. Roth. germ. 1. 107. 2. 279. Pollich, pal. n. 234. Leers, herb. n. 171. Krock. files. n. 355. Jacqu. austr. 1. 29. t. 47. Villars dauph. 2. 542. Allion. pedem. n. 1786. Gmel. fib. 3. 173. Pallas roff. 1. 2. p. 36. Du Roi barbecc. 2. 213. Retz. obs. 2. 11. n. 17.

R. alp. dulcis. Baub. hist. 2. 98. Raii hist. 1486. syn. 456.

R. montana oxyacanthæ sapore 2. Baub. prodr. 160.

Grossularia vulgaris fructu dulci—item distinctis baccis. Baub. pin. 455.

Racemes erect, bractes longer than the flower, leaves shining underneath.

[6. Ribes spicatum. Acid Mountain Currant.

Robson in Linn. trans. 3. 240. t. 21. Wither. arr. ed. 3. 265. Smith, brit. 264. Sym. syn. 62.

Spikes erect, petals oblong, bractes shorter than the flower.

7. Ribes fragrans. Fragrant Currant.

Lin. spec. ed. Willd. 1155. Pallas nov. act. acad. Petrop. 10. 377. t. 9.

Racemes erect, corollas bell-shaped, leaves bluntly three-lobed, stem ascending.

8. Ribes triste.

Lin. spec. ed. Willd. 1155. Pallas nov. act. acad. Petrop. 10. 378.

Racemes pendulous, corollas flattish, leaves five-lobed.]

9. Ribes nigrum. Common Black Currant.

Lin. spec. 291. syst. 243. Reich. 1. 565. Willd. 1156. hort. cliff. 269. upf. 51. fl. lapp. n. 99. suec. n. 207. mat. med. 69. Woodv. med. bot. 209. t. 75. Hudf. angl. 99. Wither. arr. ed. 3. 265. Smith, brit. 265. Relb. cant. n. 187. Abbot, bedf. 53. n. 180. Fl. dan. t. 556. Hoffm. germ. 81. Roth. germ. 1. 107. 2. 279. Pollich pal. n. 235. Leers, herb. n. 170. Krock. files. n. 356. Villars dauph. 2. 542. Allion. pedem. n. 1788. Gmel. fib. 3. 173. Pallas roff. 1. 2. 34. Du Roi barbecc. 2. 315. Ludw. est. t. 91. Kniph. cent. 2. n. 72. Knorr. delic. 1. t. I. 6. Blackw. t. 285. Plenck, ic. t. 147. Berg. phyt. t. 153.

R. nigrum vulgo dictum folio olente. Baub. hist. 2. 99. 1. Raii hist. 1486. syn. 456.

R. fructu nigro. Park. theat. 1562. 2. 3. Ger. emac. 1593. Dod. pempt. 749. 2.

Grossularia non spinosa fructu nigro. Baub. pin. 455.

Racemes loose hairy pendulous, peduncle simple at the base, flowers bell-shaped, bractes shorter than the pedicels—leaves dotted underneath.

10. Ribes floridum. American Black Currant.

L'Herit. stirp. nov. 4. Ait. kew. 1. 280. Lin. spec. ed. Willd. 1156.

R. americanum. Mill. dict. n. 4.—nigrum. Moench. hort. weissenst. 104. t. 7. Medic. soc. oecon. palat. 1764. p. 268. Pallas roff. 2. 1. 34.

R. nigrum β. Lin. spec. 291.

Ribesium nigrum pensilvanicum, floribus oblongis. Dill. elth. 324. t. 244. f. 315.

Grossularia amer. fructu nigro. Dubam. arb. n. 23.

Racemes pendulous, flowers cylindrical, bractes longer than the germ (scarcely longer than the flower)—leaves dotted on both sides.

\*\* Prickly. Grossulariæ or Gooseberries.

[11. Ribes Diacantha. Two-spined Gooseberry.

Lin. syst. 243. Willd. 1157. suppl. 157. Pallas roff. 2. 36. t. 66. itin. 3. app. n. 79. t. 2. f. 2. Amm. ruth. 198. (Grossularia).

Prickles in pairs stipular, flowers in racemes, leaves wedgeform-three-parted toothed.

12. Ribes saxatile. Mountain Gooseberry.

Lin. spec. ed. Willd. 1157. Pallas nov. act. acad. Petrop. 10. p. 376.

Prickles scattered, leaves wedgeform obtusely three-lobed, racemes erect.]

13. Ribes reclinatum. Procumbent Gooseberry.

Lin. spec. 291. Reich. 1. 566. Willd. 1158. hort. cliff. 82. upf. 51. Hall. belv. p. 365.

G. fructu obscure purpurascens. Clus. hist. 120.

Grossularia spinosa fativa altera, foliis latoribus. Baub. pin. 455.

G. reclinata.



- G. reclinata.* Mill. *dict.* n. 1.  
Branches somewhat prickly reclining, bracte of the peduncle three-leaved.
14. *Ribes Grossularia.* Rough-fruited Gooseberry.  
Lin. spec. 291. Reich. 1. 566. Willd. 1158. arb. 296. hort. cliff. 82. vir. cliff. 31. Wither. arr. ed. 3. 266. Smith, brit. 266. Sym. syn. 62. Krock. files. n. 358. Villars dauph. 2. 543. Allion. pedem. n. 1789. Plenck, ic. 148.  
*R. Uva crispa.* Fl. dan. t. 546.  
*Grossularia hirsuta.* Mill. *dict.* n. 2.  
*G. fructu maximo hispido margaritarum fere colore.* Raii hist. 1484.  
Branches prickly, petioles hairy, peduncles one-flowered, bractes two, fruit hairy.
15. *Ribes Uva crispa.* Smooth-fruited Gooseberry.  
Lin. spec. 292. syst. 243. Reich. 1. 566. Willd. 1158. hort. cliff. 82. fl. suec. n. 208. Wither. arr. ed. 3. 266. Smith, brit. 266. Relb. cant. n. 188. Sibth. oxon. n. 261. Cullum, 88. Sym. syn. 62. Hall. helv. n. 820. Hoffm. germ. 81. Roth. germ. 1. 108. 2. 299. Pollich pal. n. 236. Krock. files. n. 357. Villars dauph. 2. 543. Allion. pedem. n. 1790. Neck. gallob. 125. Blackw. t. 277. Berg. phyt. 155. Plenck, ic. 149.  
*Grossularia Uva crispa.* Mill. *dict.* n. 3. Gærtner. fruct. 1. 143. Schmidel, anal. t. 1. Grew, anat. t. 69. f. 3. 4. 5.  
*G. simpliciacino vel spinosa sylvestris.* Baub. pin. 455. Dubam. arb. 1. t. 109.  
*Uva crispa.* Fuchs. hist. 187. Dod. pempt. 748. Ger. 1143. emac. 1324. Park. theat. 1560. 1.  
*Uva spina.* Matth. 167.  
Branches prickly, peduncles one-flowered, bractes connate-tubulous, fruit smooth.
16. *Ribes oxycanthoides.* Hawthorn-leaved Currant.  
Lin. spec. 291. Reich. 1. 567. Willd. 1159. hort. upf. 51.  
*Grossularia oxycanthoides.* Mill. *dict.* n. 4.  
*G. oxycanthæ foliis amplioribus, ex sinu Hudsonio.* Pluk. amaltb. 212. Dill. elth. 166. t. 139. f. 116.  
Branches prickly on every side.
17. *Ribes cynosbati.* Prickly-fruited Currant.  
Lin. spec. 292. syst. 243. Reich. 1. 567. Willd. 1159. Jacq. hort. 2. 56. t. 123.  
*Grossularia cynosbati.* Mill. *dict.* n. 5.  
Prickles subaxillary, fruit prickly in racemes.

## DESCRIPTIONS, &amp;c.

[This genus consists of well known shrubs, some of which are prickly others not; hence Tournefort and Miller have divided it, under the names of *Ribes* and *Grossularia*. Jussieu and Gærtner prefer the latter name for the whole genus. In the prickly division the prickles are commonly simple, but sometimes they are parted. The leaves are alternate, with the petiole widened at the base and half embracing, in the unarmed division ciliate, or sometimes even spinulose. Peduncles axillary, or bursting from the gems; in the prickly species from one to three-flowered, in the unarmed many-flowered in racemes. The flowers have each one bracte: in *R. alpinum* they are dioecous. The fruit is an esculent berry. The perisperm in *R. rubrum* is horny, as in the Ranunculaceæ, not farinaceous. Is that the case in the other species?]

1. Branches smooth. Leaves on longish petioles, doubly ferrate, subpubescent. Racemes simple, nodding, when in fruit pendulous. Bracte ovate, small, shorter than the pedicels. Corolla yellowish green, with obcordate petals. Berries acid, shining<sup>b</sup>.

Native of Europe, chiefly in the northern parts, in hedges and woods; flowering in May. Undoubtedly wild in the northern counties of England, Yorkshire, Durham and Westmoreland, as on the banks of the Tees, &c. and in Scotland, in the island of Ila: but in other parts of our island it occurs only in hedges accidentally.

The fruit of the Currant is generally acceptable, either as nature presents it, or made into jelly. If equal weights of picked Currants and pure sugar are

put over the fire, the liquor that separates spontaneously is a most agreeable jelly. The juice is a pleasant acid in punch<sup>c</sup>; and was a common beverage, in the coffee-houses at Paris, when I was there in the year 1763.

This fruit being considered as alimentary, was not received into the *Materia Medica* here, till the last edition of the London Pharmacopœia in 1788.

The medicinal qualities of red Currants appear to be similar to those of other subacid fruits, which are esteemed to be moderately refrigerant, antiseptic, attenuant and aperient. They may be used with considerable advantage to allay thirst in most febrile complaints; to lessen an increased secretion of bile, and to correct a putrid and scorbutic state of the fluids, especially in sanguine temperaments: but in constitutions of a contrary kind, they are apt to occasion flatulency and indigestion<sup>d</sup>.

This shrub is very apt to be infested by the *Aphis Ribes*, and then the green leaves become red, pitted and puckered<sup>e</sup>.]

The Currant has been long cultivated in our gardens and greatly improved. At present we have the following varieties. The common sort with small red fruit; the same with white fruit; another with pale fruit, commonly called the Champaign Currant, differing only in being of a pale red or flesh-colour; the taste is the same, but the colour makes a variety for the table. But since the white and red Dutch Currants have been introduced and become common, the old sorts have been almost banished, and are rarely to be found in the English gardens.

[β. Sweet Currant was observed by Bobart in Lord Ferrers's garden at Stanton, brought out of the neighbouring woods. Dr. Richardson also found it near Settle in Yorkshire.

γ. Small-fruited Currant was remarked by Meiret in many parts of Lancashire, also at Wimbleton in Surrey; where Mr. James Sherard found it since plentifully<sup>f</sup>. But this could only be the common garden Red Currant in a wild state, carried there probably by birds.]

A variety with blotched leaves is kept in some plantations; but as the variegation is apt to go off when the plant is vigorous, it scarcely deserves notice.

[This wholesome and agreeable fruit does not seem to have been known to the ancient Greeks and Romans. The southern nations of Europe do not seem to have an appropriate name for it even at this day. The Italians have only the diminutive *Uvettà*. At Geneva they call it *Raisin de Mars*. In France it has no appellation distinct from the Gooseberry, but is named if I mistake not *Grofeilles en grappes*. The shrub of both has the name of *Grofeiller*, with the epithets *commun* and *epineux*. The Germans call them both *Johannisbeere*, with the epithet *gemeine* for the Currant, and *glatte* for the Gooseberry. The old French name *Grofeilles d'outre mer*, and the Dutch *Beskins over zee*, proclaim their having been strangers imported. The Northern nations have separate appellations for these fruits: in different provinces of Sweden the Currant is called *Winbar*, *Reps* and *Risp*; and the Gooseberry *Krusbar* and *Steckelbar*. Our English name of *Currant* is evidently from the similitude of the fruit to that of the *Uva corinthiaca*, the small Grape of Zante, or the common grocer's *Corinths* or *Currants*.

2. Height three or four feet. Bark blackish red, finally ash-colour. Racemes scattered all over the trunk and branches, solitary, when in flower always upright, and even when in fruit sometimes so, if there be only one or two berries. Flowers elegant, relatively large, scattered on short pedicels, which have a still shorter bracte at their base. Germ green; but the calyx on the top of it rose-coloured or sometimes blood-red, shaped like a dish, half-five-cleft, with a wheel-shaped border, having five plaits of a deeper red. Petals small, white, rounded at the edge and entire, sessile on the plaits of the calyx. Berries large,

<sup>c</sup> Withering.<sup>d</sup> Woodwille.<sup>e</sup> Withering.<sup>f</sup> Ray syn.<sup>a</sup> Juss. gen.<sup>b</sup> Smith.



very deep red, extremely acid, and not losing their acidity by culture, and full of juice, but less glutinous than in *R. alpinum*. The leaves grow mostly at the ends of the branches, so as to conceal the bunches of flowers and fruits: they are much larger than those of *R. alpinum*, and usually three-lobed, the lobes more or less acute, and ferrate; they are naked, at first bright green, but becoming afterwards very dark; the petiole is ciliated with longer hairs. This species and the common garden Currant have been inoculated on each other, but without changing their nature. The *R. petraeum* has been cultivated many years without changing its acidity or acerbity; but it once produced white fruit<sup>a</sup>.

It is distinguished from *R. spicatum*, by the flowers being in racemes. The fruiting racemes are pendulous; and it is entirely different from *R. alpinum*<sup>b</sup>. Dr. Smith remarks, that it has altogether the appearance of *R. spicatum*, and doubts whether it be distinct, as a species, from that.

Native of Carinthia, Styria, Silesia, Bohemia, England. The Rev. Mr. Harriman found it near Egleston, and Mr. Robson near Concliffe, in the county of Durham<sup>c</sup>.

3. Stems concealed in the moss, scarcely thicker than a swan's quill; branches filiform, procumbent also in the moss, till within a span of the end, where they rise up and are herbaceous. Leaves on long petioles, three-lobed, much broader than they are long, entire at the base, which is almost straight; the lobes are ferrate, the side ones somewhat gashed; the lower surface and the petioles are slightly hairy. Racemes axillary, five, six, or seven-flowered, naked, in flowering-time upright. Flowers of the same shape and structure with those of *R. rubrum*, but smaller, spreading with five, livid-purple, pubescent, acute segments. Anthers scarcely prominent from the calyx. Berries often larger than those of the Black Currant, hanging down from almost erect racemes, yellowish green, or when ripe rufescent, very pleasant to the taste, and therefore in much request in Dauria, where the shrub grows wild.

In Demidoff's garden at Moscow, this shrub raised from seed grew taller and more robust<sup>d</sup>.

4. Stem a foot and half in length, ash-coloured. Branches alternate, longer than the stem, when bruised smelling stronger than the black Currant. Leaves spreading, cordate, five-lobed, the upper lobes less divided, unequally ferrate, rolled back at the edge, acute, five-nerved, veined, wrinkled, when young pubescent, but afterwards smooth, void of scent, from three to four inches in length and breadth; petiole round, scarcely shorter than the leaf. Racemes lateral, on the year's shoots before the leaves come out, solitary, erect, becoming pendulous when fruiting, hispid. Flowers spreading, purplish, on purplish-hispid pedicels, at the base of each a linear-lanceolate, concave, subhispid bracte, much shorter than the pedicel and permanent. Calyx bell-shaped, with purple pedicelled glands. Petals wedge-form or deltoid, truncate, shorter than the calyx. Anthers purple. Germ truncate, pedicelled-glandular. Styles two, approximating as if united, distinct at top, reflexed, the length of the stamens. Berry hispid. Seeds from six to eight. Fruit eatable, but not good.

It differs by its creeping branches and pedicelled glands on all the outer parts of the inflorescence; from all the thornless species in having hispid fruits. The buds, especially when the leaves are fallen, are more divaricate, and red, not pubescent, as in *R. nigrum*<sup>e</sup>.

Native of North America. Introduced in 1777, by John Fothergill, M.D. It flowers in april and may<sup>f</sup>.

L'Heritier says Le Monnier first cultivated it in France.

5. Leaves smaller than in the common Currant, (*R. rubrum*) three-lobed, ferrate, smoothish, shining, especially underneath; the segments lanceolate, pointed. Racemes always erect, with the flowers on short

pedicels, yellowish green. Calyx tubular, bluntly five-sided. Bractes lanceolate, longer than the flower. Stamens shorter than the petals. Pistil as long as the calyx. Berries elliptic, red, mucilaginous and insipid; or with a flat sweetish taste, agreeable only to children. The wood being hard and tough, makes good teeth for rakes<sup>g</sup>.

Native of Europe and Asia, in woods, thickets and hedges. In England only in the northern parts: as in Yorkshire, (Dodsworth) especially about Bradford; (Richardson) about Darlington, Durham; (Robson) Edgbaston, and Ilam in Staffordshire, (Withering and Sneyd.) Flowering in april and may.

It has been observed both here and abroad to be sometimes dioecous. Jacquin and Leers have remarked this. Grimm says it is constantly so: but Pallas thinks it proceeds from a weakness in garden plants. The female flowers, as found in Staffordshire, had five imperfect stamens, and formed a shorter and more thinly set bunch, than the male flowers, which had five perfect stamens, and two styles, but no germ<sup>h</sup>.

6. This has the leaves of *R. rubrum*, but with sharper lobes and serratures, and more tomentose underneath. Spikes always erect, with the flowers on very short pedicels, of a reddish-brown colour. Bractes ovate, small, scarcely exceeding the pedicel, but by no means the flower, in length, reflex at the tip. Petals wedge-oblong. Berries like those of the Black Currant in colour and taste<sup>i</sup>.

It is not a hybrid plant, for its seeds are fertile. It approaches *R. petraeum* in some respects, but the fruit of that is pendant. The upright spikes are sufficient to distinguish it from all its brethren. The shortness of the bractes will prevent it from being taken for *R. alpinum*<sup>j</sup>.

It was first discovered and described by Mr. Robson, who had the first shrub from the neighbourhood of Richmond in Yorkshire; and afterwards found it by the Tees between Piersbridge and Gainford in the county of Durham<sup>k</sup>.

7. This shrub is a foot and half in height, with the bark inclining to a testaceous colour; branches alternate, those of the year dotted with a very yellow resin that exudes from them. Leaves on long petioles, smooth, coriaceous, obsolete five-cornered, three-lobed, or sometimes five-lobed ferrate, underneath very much veined and more glaucous: from this surface they exude, in very frequent little yellow drops, a very fragrant balsamic resin, having a strong smell approaching a little to that of the Black Currant, which it resembles much in its whole appearance. Racemes short, composed of about ten flowers; clustered, stiffly upright. Flowers bell-shaped, white, deeply five-cleft, smelling very strong: petals lanceolate, acute, spreading. Bractes deciduous, smaller than in *R. procumbens*. The racemes, when in fruit, are elongated, but continue upright, except in a few instances when they bend with the weight of the fruit. Fruit at most the size of the Black Currant; red; and very sweet.

Native of Siberia, on mountains bordering on Mongolia, where there are no woods.

8. From a creeping root this rises two or three feet high with several upright shoots: at the end of these are a few leaves of the same shape as in *R. rubrum*. The flowering and fruiting racemes are pendulous and smooth. Corollas flattish, red without and yellowish within; the petals rolled back. Berries small, black, insipid, full of a blackish red juice, very excellent for colouring wines.

Native of Siberia, in the same parts with the preceding, and on the summits of the Jablennoi ridge<sup>l</sup>.

9. The common Black Currant is distinguished by its more humble habit, its strong-smelling leaves glandular underneath, its hairy racemes, tubular calyx, and black fruit, but especially by its solitary, one-flowered peduncle at the base of the raceme, and distinct from it<sup>m</sup>.

<sup>a</sup> Wulfen in Jacq. misc.

Smith.

<sup>k</sup> Pallas.

<sup>b</sup> Harriman in Smith brit.

<sup>c</sup> L'Heritier.

<sup>d</sup> Hort. kew.

<sup>g</sup> Smith and Withering.

<sup>h</sup> Smith from Robson.

<sup>i</sup> Withering.

<sup>j</sup> Withering.

<sup>k</sup> Withering from Robson.

<sup>l</sup> Willdenow from Pallas.

<sup>m</sup> Smith.



The buds are glandular: the bractes woolly and as long as the pedicels; the flowers villose; the petioles also subvillose and glandular<sup>a</sup>.

The petals are blunt; the style simple, scarcely half-divided by a groove; the stigma bifid<sup>x</sup>.

Flowers turban-shaped. Segments of the calyx often of a rich brown red colour. Stamens sometimes more than five, and then there are fewer petals, so that when there are ten stamens there are no petals: this change of the petals into stamens is just the reverse of the process by which single flowers are known to become double; but it is the only fact of the kind that has been hitherto observed<sup>y</sup>.

Native of most parts of Europe, especially the more northern parts; also of Siberia, especially the subalpine regions, by river sides and in woods; where the bunches and berries are very large and rapid; and of woods in the northern parts of Russia<sup>z</sup>. In Britain it is found in wet hedges, on the banks of rivers, in alder-swamps, and sometimes in woods; flowering in may.

The berries of the Black Currant have a very peculiar flavour, which many persons dislike; they are however commonly eaten in puddings in some parts of England, and make a tart little inferior to the Cranberry. The juice is frequently boiled down to an extract, with the addition of a small proportion of sugar; in this state it is called Rob, and is much used in sore throats, but chiefly of the inflammatory kind, in the same intention as gargles. The fruit from their efficacy in this way have acquired the name of Squinancy berries. The jelly in common domestic use for this purpose, is rendered less efficacious by having too much sugar in its preparation<sup>a</sup>. The officinal preparations in the London Pharmacopœia are, Syrupus ribis nigri, and succus ribis nigri inspissatus, the jelly and rob<sup>b</sup>. Some put the berries into brandy, for the same purpose as others put black Cherries<sup>c</sup>. The Russians make a wine of the berries alone, or fermented with honey, with or without spirits; or they mix the expressed juice with spirit drawn from wheat. They make a drink also of the leaves in Siberia<sup>d</sup>. The leaves when young tinge common spirits so as to resemble brandy: an infusion of them is said to have the taste of green tea, and is to some people peculiarly agreeable. They have been likewise recommended for their medicinal virtue, as cleansing, pellent and diuretic<sup>e</sup>. An infusion of the young roots is useful in fevers of the eruptive kind, and in the dysenteric fevers of cattle. Goats eat the leaves<sup>f</sup>; and bears are fond of the berries<sup>g</sup>.

10. In this, as well as in the preceding, the leaves are covered with yellow or fulvous shining glandular dots, visible only in the microscope<sup>h</sup>; in this they are on both sides, but in the common Black Currant only underneath. Bractes linear, longer than the pedicel, produced half way the flower; whereas in *R. nigrum* they are very small, and shorter than the pedicel. Buds cinereous, not red. Racemes numerous, conspicuous, villose, hanging down very much. Flowers sulphur-coloured, ventricose-cylindrical; segments longer, revolute. Berries black<sup>i</sup>.

According to Pallas, it agrees exactly with *R. nigrum* in its form and manner of growth, but differs in having the racemes a long span in length, erect, not pendulous; and the leaves, bark and berries without any smell.

Dillenius says that the stems are from a foot and half to three feet in height, covered with a bay-coloured bark, rather more slender than in the preceding, and with smaller leaves, divided into narrower lobes, more like those of Merret's *R. fructu parvo* (n. 1. γ.); when rubbed they smell somewhat like Savin, less strong than those of the common Black Currant, and of a paler green. Flowers oblong, pale, divided into longer segments than in the other sorts, upright, not spread out as in them. Berries black, oblong; the pulp purplish, having a vinous smell, and a taste like Strawberries, hardish and not viscid. Seeds small, roundish, brownish, somewhat wrinkled.]

<sup>a</sup> Linn. fœc.    <sup>x</sup> Leers.    <sup>y</sup> Withering.    <sup>z</sup> Pallas.  
<sup>a</sup> Withering and Woodville.    <sup>b</sup> Woodville.    <sup>c</sup> Withering.  
<sup>d</sup> Pallas.    <sup>e</sup> Woodville.    <sup>f</sup> Withering.    <sup>g</sup> Pallas.  
<sup>h</sup> Willdenow.    <sup>i</sup> L'Heritier.

The shoots are much smaller and more compact than in the common Black Currant; the bark is of a darker colour; the leaves are smaller, thinner, smoother, and have not a rank smell. The flowers are smaller, bell-shaped, and grow in thinner bunches; the fruit is smaller and not so round. The plants do not produce much fruit here, and therefore are kept only by way of curiosity.

Native of Pennsylvania, whence it was sent to Mr. Peter Collinson, [who gave it to Dr. James Sherard, and it was cultivated in his garden at Eltham before 1732. It flowers in april and may<sup>k</sup>.

11. This is a sort of intermediate species between the Currants and Gooseberries; it has a pair of prickles only at the buds; in other parts it is unarmed<sup>l</sup>.

It has the habit of *R. alpinum*, but it is abundantly distinct both in the leaves and prickles<sup>m</sup>.

This shrub is an ell and half in height, upright, and rod-like. Branches stiffly upright, with a whitish-gray bark, and somewhat subdivided. Prickles diverging, straightish or a little curved in, on the older branches and trunk obliterated. Leaves in bundles, three-lobed-gashed. Racemes among the leaves solitary, upright, many-flowered, with a linear bracte to each flower. Flowers flattish, small, greenish-yellow, with oblong, bluntish, spreading segments. Berries the size of *R. alpinum*, reddish, more dusky red when ripe, of a sweetish acid flavour, having four, or sometimes five, biggish, flattened seeds.

Native of Siberia; flowering in may. The berries dried are used there as we do the Currants of Zante<sup>n</sup>. Introduced in 1781, by Mr. John Bush<sup>o</sup>.

In Demidoff's garden at Moscow, this species raised from seed, produced widish leaves, more rounded, and gashed: and some of the shrubs, as Jacquin observed in the Vienna garden, produced barren flowers, of which there are none in the wild plants.

A variety has been discovered in the high rocks of Mongolia, with leaves three times as big, deeply gashed, having several smaller prickles scattered round the axillary; but it had neither flower nor fruit<sup>p</sup>.

12. This is an intermediate species between *alpinum* and *Diacantha*, with the habit of *Grossularia* and a fruit like the true *Ribes* or Currant. It is nearly upright. Prickles on the branches scattered, solitary, like stiff bristles, straight, remote from the buds, worn off on the old wood. Leaves on long petioles, having a gash or two on the lobes. Both flowering and fruiting racemes upright, having seven or eight flowers, on longish pedicels, with linear bractes the length of the pedicel. Petals small, patulous, of a livid-green colour. Berries globular, when ripe red and somewhat acid, scarcely so big as the common red Currant. Native of Siberia<sup>q</sup>.

13. The leaves are not only wider, but of a darker colour; prickles to each leaf one or two, but sometimes there are none; they are short and much weaker than in the common Gooseberry, besides others that are harmless and much shorter scattered over the branches. Fruit when ripe commonly dark purple, but sometimes red or even yellow<sup>r</sup>.

Native of Germany; common in hedges all over Switzerland; fond of cold situations. It flowers in april, and the fruit is ripe in june and july. Clusius says that he first saw it at Leyden in 1594.

14. This is a branching shrub. Prickles under the buds one, two, or three. Leaves three-lobed, gashed, subpubescent. Petioles hairy, commonly longer than the leaves. Peduncles one-flowered, nodding, having one, two or three opposite ovate ciliate bractes in the middle. Germ villose. Berries pendulous, hairy<sup>s</sup>.

If the bractes will not distinguish this from *R. Uvacrispa*, the roughness or smoothness of the berries will hardly do it, for Mr. Robson has observed, that seeds from the same plant will produce both rough and smooth fruit<sup>t</sup>. I cannot regard them as different species; and in other cases there seems to be a disposition to multiply species in this genus. Ray does not dis-

<sup>k</sup> Hort. kew.    <sup>l</sup> Linn. suppl.    <sup>m</sup> Willdenow.  
<sup>n</sup> Pallas.    <sup>o</sup> Hort. kew.    <sup>p</sup> Pallas.    <sup>q</sup> Idem.  
<sup>r</sup> Clusius.    <sup>s</sup> Smith.    <sup>t</sup> Withering.



tinguish the Gooseberries, but comprehends them all under the general terms of *Uva crispa*, *Grossularia*, or Gooseberry-bush.

Native of several parts of Europe. According to Mr. Robson, it is common in woods and hedges about Darlington.

15. Buds woolly. Calyx bent back. Peduncle woolly. Bracte ovate, embracing, generally with three divisions. Flowers solitary, pendant. Stipules ciliate with knobbed hairs. A triple thorn beneath the buds\*. Berry crowned with the permanent calyx, peduncled, pulpy, subdiaphanous, pale, amber-coloured, red or purple, smooth; the pulp watery and sweet. Receptacles formed of the skin of the berry thickened, oblong, narrow; with filiform umbilical chords, the length of the seeds, and inserted into their inner and blunter extremity. Seeds as far as thirty, ovate-oblong, with a pellucid jelly about them, rufescent.

This differs from the preceding only in the smoothness of the berries, in having the bractes united into a tube at the base, and the hairs of the petioles glandular; all fallacious and uncertain marks\*.

Native of Europe, especially the northern parts. It is common in Cambridgeshire, Norfolk and other counties of England, but only in hedges, on walls and old buildings and decaying trees, where the seeds have been deposited by birds: or it be found sometimes in woods, it has got there by the same chance. I am of opinion with Dr. Smith, that the Gooseberry-bush is apparently not truly indigenous.

Villars says that *Ribes Grossularia*, in Dauphiné is five or six feet high, with wide leaves, that are villose as well as the fruit; and that it is common every where in the champain, in hedges. But that *R. uva crispa*, which he calls *Le petit Groseiller epineux ou sauvage*, is only a foot or two in height, straight, and wholly covered with yellowish stiff prickles, and is found in the mountains. This is evidently the Gooseberry-bush in its wild state; and the other as it appears in cultivation: as to the smoothness or hairiness of the fruit, it is merely accidental. I believe that the Gooseberry is a fruit not esteemed in the southern countries of Europe. Mons. De La Lande was surprised at the excellence of our English Gooseberries, and assured me that they had not an appropriate name at Paris; I suppose he meant, distinct from the Currant, both being called *Groseille*. Allioni says they are eatable, but somewhat astringent and neglected—"solent a nostratibus negligi." In Piedmont they are called *Grifelle*, which is the same with the French. Our name *Gooseberry* is probably derived from its being used as a sauce with young, commonly called green Geese, at least I know not any better reason for the name. Parkinson says, that the berries whilst they are small, green and hard, are much used to be boiled or scalded to make sauce, both for fish or flesh of divers sorts.

Gerarde says, it is called Fea-berry bush in Cheshire my native country. It has the same name in Lancashire and Yorkshire. In Norfolk, it is abbreviated into *Feabes*, or as they pronounce it, *Fapes*. I do not know the origin of this, any more than of *Carberry*, which is said to be another name.

The varieties in Parkinson's Paradisus, are "besides the common kind, which is of three sorts, small, great and long; three red Gooseberries, a blue and a green."

Johnson upon Gerarde has "the long green, the great yellowish, the blue, the great round red, the long red, and the prickly Gooseberry."

Ray has no English name but *the Pearl Gooseberry*.

Rea mentions the Red of three sorts, the Blue, the Yellow of several sorts, the White Holland, and the Green.]

Miller only says, there are several varieties obtained from seeds, most of them named from the persons who raised them, as Lamb's, Hunt's, Edwards's Gooseberry, &c. but as there are frequently new ones obtained, it is needless to enumerate them.

[It seems to have been a fruit in very little esteem; but it has received so much improvement that it is now

\* Linn.

\* Smith.

become valuable, not only for tarts, pies and sauces, both fresh and preserved in bottles, but as an early desert fruit, and preserved in sugar for winter use, to answer the same purpose.

The varieties now best known, are of the Red; the hairy, smooth, deep red, damson or dark-red bluish, red raspberry, early black-red, Champagne, &c.

Green; hairy, smooth, Gascoigne, Raspberry, &c.

Yellow; great Oval, great Amber, hairy Amber, early Amber, large Tawney or Great Mogul, &c.

White; common, white-veined, and large crystal.

Besides these, there is the Rumbullion, large Ironmonger, smooth Ironmonger, hairy Globe, and innumerable others, some of very large size, annually raised from seed; weighing from ten to fifteen pennyweights, but there are small ones better tasted. There are said to be upwards of two hundred, at least in name.

16. This has more frequent and milder prickles than the common Gooseberry; the leaves are smooth and more deeply cut; the fruit small and round, the size and shape of a Currant; colour at first purple, but when ripe dark purple with a blue bloom; it is smooth, on a short slender peduncle; the pulp subacid, dusky purple, with one or two brown seeds, of a round form slightly angular.

The stems are ash-coloured, with frequent slender brownish prickles, like the Burnet Rose, but less rigid; the young shoots are pale green and have green prickles. Leaves somewhat paler underneath, the petioles beset with harmless prickles; those at the ends of the branches larger than the others. Flowers one or two from an axil, white and yellowish white\*.

Native of Canada. Cultivated, according to Plukenet, by Mr. Reynardson, in 1705. It flowers in april and may\*.

17. This has the appearance of the other species, but the leaves are little gashed. Prickle like a thorn under the axils. Peduncles generally three-flowered. Germ in the flower hairy, but not prickly. It has the corolla of *R. grossularia*. Berries the size of a hazelnut, armed all over with stout prickles\*.

Native of Canada. Cultivated by Mr. Miller in 1759. It flowers in april\*.]

#### PROPAGATION AND CULTURE.

These are propagated either by suckers taken from the old plants, by layers, or by cuttings; the latter of which I prefer to the former, because those plants which are produced from suckers are always more disposed to shoot out a great number of suckers from their roots, than such as are raised from cuttings, which generally form much better roots.

The best season for planting these cuttings is in autumn, just before their leaves begin to fall; observing always to take the handsomest shoots, and from such branches as generally produce the greatest quantity of fruit; for if you take those which are produced from the stem of the old plants (which are commonly very luxuriant) they will not be near so fruitful as those taken from bearing branches: these cuttings should be from six or eight to ten or twelve inches long, and must be planted in a border of light earth, exposed to the morning sun, about three inches deep, observing to water them gently when the weather proves dry, to facilitate their taking root; and in the summer, when they have put out branches, you should rub off all the under shoots, leaving only the uppermost or strongest, which should be trained upright, to form a regular stem. In october following these plants may be removed; at which time you should prepare an open spot of fresh earth, which should be well dug, and cleansed from all noxious weeds, roots, &c. and being levelled, you should proceed to take up your plants, trimming their roots, and cutting off all side branches; then plant them at three feet distance row from row, and one foot asunder in the rows, observing to place some short sticks to the plants, in order to train their stems upright and regular. In this place they may remain one or two years, being careful to keep them clear from weeds, as also to trim off all lateral shoots which are produced

\* Dillenius.

\* Hort. kew.

\* Linn.

\* Hort. kew.



below the head of the plant, so that the stem may be clear about a foot in height above the surface of the earth, which will be full enough; and as the branches are produced commonly very irregular in the head, you must cut out such of them as cross each other, or thin them where they are too close, whereby the head of the plant will be open, and capable of admitting the air freely into the middle, which is of great use to all kinds of fruits.

After these plants have remained in this nursery one or two years at most, they will be fit to transplant to the places where they are designed to remain; for it is not so well to let them grow in the nurseries too large which will occasion their roots to be woody, whereby the removing of them will not only hazard the growth of the plants, but such of them as may take very well will remain stunted for two or three years, before they will be able to recover their check. The soil in which these plants thrive to the greatest advantage, is a rich light earth; though they will do very well upon middling soils, which are not too strong or moist, and in all situations; but where the fruit is cultivated; in order to procure it in the greatest perfection, they should never be planted in the shade of other trees, but must have a free open exposure. The distance they ought to be planted is eight feet row from row, and six feet asunder in the rows. The best season for transplanting them is in october, when their leaves begin to decay; observing, as was before directed, to prune their roots, and trim off all lateral shoots, or such as cross each other, shortening all long branches, so as to make the head regular.

In the pruning these shrubs common gardeners are apt to make use of garden-shears, observing only to cut the head round, as is practised for Evergreens, &c. whereby the branches become so much crowded, that what fruit is produced, never grows to half the size as it would do were the branches thinned, and pruned according to art; which should always be done with a pruning-knife, shortening the strong shoots to about ten inches, and cutting out all those which grow irregular, thinning the fruit-bearing branches where they are too thick, observing always to cut behind a leaf bud. With this management your fruit will be near twice as large as those which are produced upon such bushes as are not thus pruned, and the shrubs will continue in vigour much longer; but you must observe to keep the ground clear from weeds, and dig it at least once a year; and every other year you should bestow a little rotten dung upon it, which will greatly improve the fruit.

It is a common practice with the gardeners near London, who have great quantities of these bushes in order to supply the markets, to prune them soon after michaelmas, and then to dig up the ground between the rows, and plant it with Coleworts for spring use, whereby their ground is employed all the winter, without prejudicing the bushes; and in hard winters these Coleworts often escape, when those which are planted in an open exposure are all destroyed; and these are generally pulled up for use in february or march, so that the ground is clear before the shrubs come out in the spring; which is a piece of husbandry well worth practising where ground is dear, or where persons are confined for room.

Currants, whilst they remain in the nursery, must be pruned and trained for the purposes to which they are designed; that is, to clear stems about one foot high, if for standards, but if they are to be set against walls or pales, they must be trained up flat: but the best method is to train them against low espaliers, in which manner they will take up much less room in a garden, and their fruit will be much fairer. For this purpose they should not be planted less than eight or ten feet distant, that their branches may be trained horizontally, which is of great importance to their bearing.

If they are planted against a south-east wall or pale, their fruit will ripen at least a fortnight or three weeks sooner than those in the open ground; and against a north wall or pale it will be later: thus the fruit may be continued in use during six months, especially if those to the north be covered with mats.

Currants produce their fruit upon the former year's wood, and also upon small snags which come out of the old wood; in pruning therefore, these snags should be preserved, and the young shoots shortened in proportion to their strength: observing not to lay the shoots too close; and never to prune the snags to make them smooth.

These shrubs will thrive in almost any soil and situation, and are often planted under the shade of trees; but the fruit is always best when they are planted in the open air, and upon a light loamy soil.

[RIBESIOIDES. *Lin. zeyl.* is *Embelia Ribes*, *Burm. ind.* 62. and is referred by Gærtner (1. 189.) to *Antidesma*.

RIBESIIUM. See *Ribes*.

RICCIA. (So named by Micheli, in honour of Pietro Francisco Riccio, Senator of Florence, and President of the Order of St. Stephen.)

*Lin. gen. Schreb. n.* 1666. *Mich. gen. t.* 57. *Schmid. ic. t.* 44, 45. *Hedw. theor.* 116. *t.* 29.

Class. 24. 4. Cryptogamia Hepaticæ.—Algæ ed. prior.

#### GENERIC CHARACTER.

\* *Male Flowers?* sessile on the surface of the frond.

CAL. and COR. none.

STAM. *Anther?* conical, truncate, sessile, opening at the top?

\* *Female Flowers* on the same, or according to Micheli on a distinct plant.

CAL. none, except a vesicular cavity, within the substance of the leaf.

COR. none.

PIST. *Germ* turbinate. *Style* filiform, erect, reaching the surface of the frond or exceeding it. *Stigma* simple.

PER. *Capsule* sessile, globular, one-celled, at the apex of the leaf, crowned with the style.

SEEDS very many, (twenty to thirty) hemispherical.

OBS. *The little bodies which Micheli takes for the anthers, seem to Schreber not to be different from the other papillæ on the surface of the frond, except in size. He conjectures that the tube on the germ is the anther, and the little granules within it, the pollen. He recommends the examination to be made before the germ becomes spherical.*

Linneus has five species, all natives of Europe; Withering has also the same number, natives of Britain, one of which, namely *R. fruticulosa*, is the same with *Jungermannia furcata* of Linneus. Swartz has added another species (*R. reticulata*) from Jamaica; figured by Dillenius as a *Lichenoides*, in *t.* 19. *f.* 21. These plants were formerly known under the names *Lichen*, *Lichenastrum* and *Hepatica*.

RICE. See *Oryza*.

RICHARDIA. (So named by Linneus, from Richardson, placed by Linneus among the *Nomina Commendata*: Boehmer says, *a quo multa speraverat Linneus, frustra*.)

*Lin. gen. n.* 439. *Reich. n.* 472. *Schreb. n.* 591. *Houft. reliqu. t.* 9. *Gærtner. t.* 25. *Juss.* 198.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Stellatæ*. *Rubiaceæ*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, six-parted; erect; acuminate; shorter by half than the corolla.

COR. one-petalled, cylindric-funnel-shaped: border six-cleft, acute, erect.

STAM. *Filaments* six, very short. *Antthers* roundish; small, at the incisures of the corolla.

PIST. *Germ* inferior. *Style* filiform, the length of the stamens, three-parted at top. *Stigmas* blunt.

PER. none.

SEEDS three, round on one side, angular on the other, at top wider, gibbous.

OBS. *It varies, according to Gærtner, with the calyx and corolla eight-cleft, and eight stamens.*

#### ESSENTIAL CHARACTER.

Cal. six-parted. Cor. one-petalled, subcylindric. Seeds three.

#### SPECIES.

1. *Richardia scabra*.

*Lin. spec.* 470. *Juss.* 341. *Reich.* 2. 103. *Willd.* 222. *Gærtner. fruct.* 1. 124.

*Ricardia*. *Houft. reliqu.* 5.



## DESCRIPTION, &amp;c.

Stem high, brachiate, somewhat jointed, obsoletely four-cornered, hispid with stiffish scattered reflex hairs. Leaves lanceolate-ovate, alternately nerved, quite entire, subpetioled, rugged. Flowers in terminating heads, and also heaped into whorls; the former radiate with four or more leaves, alternately larger and smaller. Corollets as in *Asperula*, slender and long, but six-cleft; and the fruit consisting of three seeds: thus it differs from *Spermacoce* in number and other circumstances<sup>c</sup>.

The calyx is sometimes eight-parted, and such flowers have eight stamens; it is hispid and the length of the fruit: which Gærtner considers as a Capsule, because the seeds have an outer crust of a different colour, and separable from them. He describes this Capsule as inferior, compound, tricoccous, inversely conical, subtrigonal, three-celled, tripartite, the three component parts (cocculi) are coriaceous, valveless, oblong but thicker upwards, on one side convex and rugged, on the other smooth, angular, prominent into a longitudinal ridge. Seeds in each part one, obovate, rufescent, on one side convex and smooth, on the other having two grooves with a raised streak between them, fastened at the base<sup>d</sup>.—Found by Houstoun at Vera Cruz.

**RICHERIA.** (So named by Vahl, in memory of Pierre Richer de Belleval, Professor of Botany at Montpellier.)  
Vahl ecl. 1. 30.

Class. 22. 5. Dioecia Pentandria—or 23. 2. Polygamia Dioecia.

## GENERIC CHARACTER.

## \* Male Flower.

**CAL.** Perianth one-leafed, permanent, inferior, four-cleft or five-cleft: clefts ovate, acute, subtomentose: (three-leaved, very small, Ryan.)

**COR.** Petals four or five, roundish, the length of the calyx:—(one-petalled, with five concave segments, Ryan.)

**NECTARY** four or five glands at the base of the germ.

**STAM.** four or five (sometimes six, Ryan.) between the glands of the nectary, erect, longer than the calyx, (length of the corolla, Ryan.) Anthers oblong, erect, (twin, Ryan.)

**PIST.** Germ conical, villose. Style none. Stigma none.

## \* Female Flower.

**CAL.** and **COR.** as in the Male.

**NECTARY** a rim round the base of the germ.

**STAM.** none.

**PIST.** Germ superior, ovate. Style very short. Stigmas three, revolute, channelled above. (Stigma bicapitate, Ryan.)

**PER.** Capsule corticate, subovate, smooth and even, three-celled, having six valves opening from the base.

**SEED** one in each cell, berried, pendulous below the tip of the columella.

**OBS.** According to Ryan, the fruit is a capsular berry, or a berried capsule.

## ESSENTIAL CHARACTER.

**Caps.** corticate, six-valved, three-celled. Seeds solitary, pendulous below the tip of the columella. Style trifid.

## SPECIES.

1. *Richeria grandis*.

Vahl, ecl. 1. 30.

## DESCRIPTION, &amp;c.

This is a large Tree, having the habit of *Mammea americana*. Branches round, the thickness of a goose quill, rigid, angular at the end, warted; smooth. Leaves mostly at the ends of the branches, alternate, frequently six or seven inches in length, on a short petiole convex underneath and channelled above, elliptic or obovate, attenuated at the base, acute, commonly blunt at the end, but sometimes sharpish, quite entire, somewhat coriaceous, smooth on both sides, almost veinless on the upper surface, but veined underneath and paler. Spikes axillary, solitary, three times shorter than the leaf, commonly simple, but sometimes having a spreading branch at the base. Flowers frequent, scattered, sessile; each has a concave ovate bracte, almost the length of the calyx. Peduncle angular, appearing

<sup>c</sup> Linn. spec.

<sup>d</sup> Gærtner.

villose when examined by a microscope. Capsule the size of a hazel nut, having six obscure longitudinal futures; the outer valves are suberous, the inner subcartilaginous and flexible: partitions membranaceous and thin: columella woody, three-cornered, gradually a little thicker upwards, curved at the tip, after the valves are opened unequally three-winged from the remains of the partitions adhering. Seeds inverted, oblong, three times shorter than the cell, flattish on the inner side, obovate, convex: integuments four; the first a subcartilaginous diaphanous pellicle, the second pulpy, the third a crustaceous shell, the fourth a thin membrane: albumen the same figure with the shell and whitish; embryo the size of the albumen, radicle superior roundish, cotyledons cordate-roundish, leafy, of a pale yellowish colour. Besides the male and female flowers, Ryan saw some that were hermaphrodite. He discovered this very rare tree in Montserrat, in one place only, where fifteen or twenty trees all together filled up a small valley among the high mountains<sup>e</sup>.

**RICINELLA.** See *Adelia*.

**RICINO AFFINIS.** See *Croton*.

**RICINOCARPOS.** See *Acalypha*, *Croton*, *Mercurialis*, *Tragia*.]

**RICINOIDES.** See [*Ceanothus*, *Croton*,] *Jatropha*.

**RICINUS.** (So named from the similitude of the seed to a tyke or tick, which in latin is *Ricinus*. Dioscorides calls it *Κικίς* or *Κροταν*, for the same reason; but *Κικίς* is an eastern word, to be met with in the prophet *Jonah*, the signification of which is uncertain. Ray.)

Lin. gen. n. 1085. Reich. n. 1184. Schreb. n. 1464.

Tournef. t. 307. Juss. 388. Gærtner. t. 107.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Tricocceae*. *Euphorbiæ*, Juss.

## GENERIC CHARACTER.

## \* Male.

**CAL.** Perianth one-leafed, five-parted: segments ovate, concave.

**COR.** none.

**STAM.** Filaments very numerous, filiform, branchingly collected below into various bodies. Anthers twin, roundish.

## \* Females on the same plant.

**CAL.** Perianth one-leafed, three-parted: segments ovate, concave; deciduous.

**COR.** none.

**PIST.** Germ ovate, covered with subulate corpuscles. Styles three, two-parted, from erect spreading, hispid. Stigmas simple.

**PER.** Capsule roundish, three-grooved, prickly all over, three-celled, three-valved.

**SEEDS** solitary, subovate.

## ESSENTIAL CHARACTER.

**Cal.** five-parted. **Cor.** none.

**MALE.** Stamens numerous.

**FEM.** Styles three, bifid. **Caps.** three-celled. Seed one.

## SPECIES.

1. *Ricinus inermis*. Smooth-fruited *Palma Christi*.

Lin. syst. 865. Jacqu. misc. 2. 362. icon. rar. Mill. dict. n. 6.

Leaves peltate subpalmate serrate, petioles glandular, fruits unarmed.

2. *Ricinus communis*. Common *Palma Christi*.

Lin. spec. 1430. syst. 865. Reich. 4. 194. hort. cliff. 450. upf. 289. fl. zeyl. n. 339. mat. med. 208.

Woodv. med. bot. 171. t. 61. Gærtner. fruct. 2.

116. Desfont. atlant. 355. Brown. jam. 350.

Thunb. jap. 270. Lour. cochinch. 584. ed. Willd.

716. Gron. orient. 299. Ludw. ecl. t. 7.

Regnault, bot. (Le Ricin.)

*Ricinus*. Camer. epit. 959. Dod. pempt. 367. Tabern. ic. 776. Lob. ic. 688. Matth. 862. Fuchs. hist.

340. Ger. 399. emac. 496.

*R. vulgaris*. Bauh. pin. 432. Bauh. hist. 3. 642.

Raii hist. 166. Tournef. inst. 532. Blackw. t. 148.

Mill. dict. n. 1. Mor. hist. 3. 347. f. 10. t. 3. f. 1.

ord. 3.

*R. f. Cataputia major vulgator*. Park. theat. 182.

<sup>e</sup> Vahl.



- R. major & minor. *Besl. exst. est.* 8. t. 11. & 12. f. 1.  
 R. albus. *Rumph. amb.* 4. 92. t. 41.  
 β. R. americanus. *Great American Palma Christi.*  
*Mill. dict. n.* 2.  
 R. amer. major. *Baub. pin.* 432. *Mor. f.* 15.  
 R. amer. *Ger.* 399. 2. *emac.* 496. 2. *Park. theat.*  
 182. 4. & 183. 4. *Raii hist.* 166.  
*Lobes of the leaves wider, green on both sides.*  
 γ. R. urens. *Green-stalked American Palma Christi.*  
*Mill. dict. n.* 3. *fig. t.* 219.  
 R. amer. major, caule virecente. *H. R. Par. Raii hist.* 1855.  
*Leaves unequally ferrate, stem green.*  
 δ. R. rugosus. *Wrinkled-capsuled Palma Christi.*  
*Mill. dict. n.* 4. *fig. t.* 220.  
*Capsules wrinkled not prickly.*  
 ε. R. africanus. *Red-stalked African Palma Christi.*  
*Mill. dict. n.* 5.  
 R. afr. maximus, caule geniculato rutilante. *Tournef. inst.* 542. *Lin. spec. β.* *Raii hist.* 1855.  
 R. major afric. syriacus vel ægyptiacus. *Park. theat.*  
 183. 2. *Raii hist.* 167.  
 R. ruber. *Rumph. amb.* 4. 97.  
*Lobes of the leaves very large, stem reddish jointed.*  
 ζ. R. minor. *Small American Palma Christi.*  
*Mill. dict. n.* 7.  
 R. americanus minor. *Baub. pin.* 432.  
 R. minor. *Park. theat.* 183. 3. *Raii hist.* 167.  
*Leaves very deeply divided.*  
 [η. R. lividus. *Livid-leaved Palma Christi.*  
*Jacqu. misc.* 2. 360. *icon. rar.*  
*Leaves peltate subpalmate ferrate, fruits prickly.*  
 3. Ricinus Tanarius.  
*Lin. spec.* 1430. *Reich.* 4. 194. *Lour. cochinch.* 584.  
*ed. Willd.* 717.  
 Tanarius minor. *Rumph. amb.* l. 5. c. 37. t. 121. L.  
*Leaves peltate repand.*  
 4. Ricinus Mappa.  
*Lin. spec.* 1430. *Reich.* 4. 194. *Forst. prodr. n.* 356.  
*Burm. ind.* 307.  
 Folium mappæ. *Rumph. amb.* 3. 172. t. 108.  
*Leaves peltate undivided.*  
 5. Ricinus Apelta.  
*Lour. cochinch.* 585. *ed. Willd.* 718.  
*Leaves petioled at the base, conical, quite entire.*  
 6. Ricinus dioicus.  
*Forst. prodr. n.* 357.  
*Dioecous, leaves cordate acuminate.*

## DESCRIPTIONS, &amp;c.

1. This is stouter than the common sort at the same age. Stem the first year red and shining very much; afterwards ash-coloured with dusky-purple spots. Leaves green on both sides, the larger ones almost a foot and half in diameter, on a petiole a foot in length. Glands the same in number and situation as on the common sort, but either wholly green, or else reddish with a green top. Calyx reddish green. Germ somewhat wrinkled, dark purple. Fruit ovate, larger, shining, dark green, somewhat wrinkled, but without the least appearance of prickles<sup>f</sup>.

It can scarcely be regarded as a distinct species. Miller has two species without prickles: *rugosus*, n. 4. which is undoubtedly the same with this of Jacquin's, and *inermis*, n. 6. The former native of both Indies; the latter of the Spanish West Indies.]

2. The common Palma Christi of Europe rises with a strong herbaceous stalk to the height of ten or twelve feet; the joints are at a great distance from each other; the stalk and branches are of a gray colour; the leaves are large, and on long foot-stalks; they are deeply divided into seven lobes, and are gray on their under side. The flowers are disposed in long spikes, which spring from the division of the branches: the males are placed on the lower part of the spike; the females, which occupy the upper part, have prickly calyxes.

[The root is biennial, long, thick, whitish, and beset with many small fibres. Stem round, thick, jointed, channelled, glaucous, of a purplish red colour towards

the top<sup>g</sup>. The capsule is subglobular, corticate, echinated all over with small spines, tricoccus: rind herbaceous, thin: the three component parts or cells (cocculi) ovate, papery, on one side convex with a dorsal streak, on the other angular and perforated with a cordate hole below the tip, two-valved but seldom or ever opening, at least in Europe. Receptacle columnar, three-cornered, widening above, entering by a triple blunt end the ventral perforations of the cells. Seeds solitary, biggish, ovate, convex on one side, very bluntly angular on the other, smooth, somewhat shining, sometimes livid with cloudy spots, sometimes variegated like the abdomen of the spider with white lines, dots and stains on a testaceous or brown ground; on the top is a fungous thick white umbilicus or navel<sup>h</sup>.

Loureiro describes the stem as eight feet high, upright, round, of an even surface, with a few spreading branches. Leaves eight-parted; the segments lanceolate, ferrate, spread out in a ring: petioles very long, straight, smooth, hollow, scattered. Flowers in terminating racemes: the males below, with a five-parted calyx, and about one hundred oblong white anthers in different bundles; females at the top, having the calyx commonly five-parted, and three red filiform bifid stigmas. Capsule roundish, villose-echinate. Seeds ovate, shining, black dotted with white. There are two varieties of it with the stem and petioles whitish, and with the same parts red.

This plant, which in our gardens is annual and herbaceous, in Africa becomes a tree<sup>i</sup>. In Candia it continues many years, and according to Belon, requires a ladder to come at the seeds. Clusius relates, that he observed it in Spain, of the size of the human body, and the height of three men. And Ray saw it in Sicily, frequent in the hedges, as big as our common Elder trees, woody, and long-lived<sup>k</sup>.

The several varieties are natives of the East and West Indies, China, CochinChina and Japan, about Tripoli in Syria; Africa, and the South of Europe.

It was cultivated in England in 1562, as appears from Turner's herbal. It flowers here in July and August<sup>l</sup>.

An oil extracted from the seeds of this plant, and known by the names of oleum Ricini, Palma Christi or Castor oil, has lately come into frequent use, as a quick but gentle purgative. The London College direct this oil to be expressed from the seeds in the same way as that of Almonds, and without the assistance of heat, by which method it would seem to be obtained in the purest state: but we have some reason to believe that this method is seldom practised, and that the oil usually employed here is imported from the West Indies, where it is commonly prepared by freeing the seeds from the husks, bruising them in a mortar, tying them up in a linen bag, throwing them into a large pot, with about eight gallons of water to one gallon of seeds, and boiling them till the oil is risen to the surface, when it is carefully skimmed off, strained and kept for use. Thus prepared, the oil is entirely free from acrimony, and will stay upon the stomach even when it loaths most other medicines; but its mildness seems to be chiefly owing to the action of the fire; for the expressed oil, as well as the mixt juices of the seeds, is far more active and violent in its operations<sup>m</sup>. Mr. Long affirms, that the oil intended for medicinal use is more frequently cold-drawn, or extracted from the bruised seeds by means of a hand-press; but remarks, that it is thought more acrimonious than what is prepared by boiling. It is well known however, that the oil obtained by boiling becomes much sooner rancid than that by expression. The best oil is limpid, and destitute of taste or smell.

Dr. Cullen observes, that Castor Oil, when the stomach can be reconciled to it, is one of the most agreeable purgatives we can employ. It has these advantages, that it commonly operates in two or three hours, seldom gripes, and is generally moderate in its operation: it is particularly suited to cases of costiveness,

<sup>g</sup> Woodville.<sup>k</sup> Ray hist.<sup>h</sup> Gartner.<sup>l</sup> Hort. kew.<sup>i</sup> Desfontaines.<sup>m</sup> Browne.<sup>f</sup> Jacquin.



and even of spasmodic colic; is one of the most certain remedies in the dry belly-ach or colica pictonum; has been experienced to be useful in various febrile complaints, in bilious colics, nephritic cases, worms and especially the tape-worm. It is not heating or irritating to the rectum, and is therefore suited to hæmorrhoidal persons. The only inconvenience attending this medicine is, that it is nauseous to those who dislike oil, and that when the dose is large, it occasions sickness at the stomach. The most effectual means to obviate this, is to take it in a little ardent spirit. In the West Indies they use rum for this purpose, but compound tincture of fenna is much better. This, in the proportion of one part to three parts of the oil, intimately mixed by being shaken together in a phial, makes the oil less nauseous and therefore fit better on the stomach. The common dose of Castor Oil is a table spoonful or half an ounce, but many persons require a double quantity. It is remarkable, that if this medicine be frequently repeated, the dose may be gradually diminished; insomuch that persons of a costive habit, who at first required half an ounce or more for a dose, have afterwards found two drams enough, at least to keep the belly regular<sup>n</sup>.

The Ricinus is called Oil-nut tree in our West Indian islands, and the oil is burned in the boiling-house lamps, by many of the sugar-planters. The roots are looked upon as strong diuretics, and the leaves are generally used to dress blisters, of which they make too frequent use in that part of the world<sup>o</sup>.

In China, the oil is rendered esculent and palatable, but is seldom used in medicine<sup>2</sup>.

In Japan, the seeds pounded with Moxa and Touche (Japan ink) together, are put into a little box or case, over which a piece of silk is stretched, and that is besmeared with oil, that the powder underneath may be moistened by it. Whenever a Japanese has occasion to put his seal, which is often curiously wrought in horn, to any thing, he first dips the seal into this box, and then impresses it upon the writing. Thus this powder supplies the place of printer's ink, and it is therefore necessary, that the silk should be moistened afresh with oil, as fast as it dries<sup>3</sup>.]

#### Varieties.

β. This has brown stalks, which divide into two or three branches, and rise six or seven feet high, the leaves are broader, and not so deeply divided; they are of a deep green on both sides, and are unequally ferrate. The spikes of flowers are shorter, the seed-vessels rounder and of a brownish colour, and the seeds are much less and brown.—Native of the West Indies.

γ. Stem thick, herbaceous, and of a grayish green, with the joints not so far asunder as in the two preceding. It rises about four feet high, and divided at the top into three or four branches, which spread out almost horizontally. The leaves are large, of a deep green on their upper side, but grayish on their under; they are deeply cut into six or seven (sometimes eight) lanceolate segments, which are unequally ferrate. The petioles spread out more horizontally than those of the common sort, and are much shorter. The principal stalk and branches are terminated by loose spikes of flowers. The covers of the capsules are green, and closely armed with soft spines. The seeds are smaller and lighter coloured than those of the preceding.—This also is a native of the West Indies.

δ. This rises with an herbaceous stalk about four feet high, the lower part is purplish, and the upper deep green, the joints are pretty far asunder. The leaves are of a deep green on their upper side, but paler underneath; they are not so deeply divided as some of the others, and are more regularly ferrate. The spikes of flowers are large: the males have more stamens, with yellow anthers. The capsules are oval and wrinkled, but have no prickles. The seeds are small and brown. It is a native of both Indies. [This having no prickles on the capsules, probably belongs to the

first species, if that be really distinct, as well as n. 6. of Miller, which he says] is in every respect like the African variety (ε, or n. 5.) except that the capsules are smooth. It is a native of the Spanish West Indies, whence Mr. Robert Millar sent the seeds.

ε. This rises with a large reddish stalk to the height of ten or twelve feet, with many joints, and dividing into several branches. Leaves very large, some measuring more than two feet and a half in diameter; they are of a dark green, unequally ferrate, and not so deeply cut as in some of the varieties. The spikes of flowers are large, the calyxes brown, the anthers whitish. Capsules large, oval, and closely set with soft prickles. The seeds are very large and beautifully striped.—Native of Africa and both Indies.

ζ. Of this there are two varieties, one with a red, the other with a pale green stalk, distinguished in America by the names of red and white Oil-feed. The stems seldom rise more than three feet high, sometimes dividing at the top into two or three branches. The leaves are much smaller and more deeply divided than in the other varieties, their borders are unequally ferrate, and the segments of the leaves are frequently cut on the sides. The spikes of flowers are smaller and more compact. The capsules are also smaller, rounder, of a light green, and closely set with soft prickles. Seeds small, and finely striped.—Native of Carolina and other parts of America.

η. This becomes an evergreen tree, ten feet in height, and more. The trunk, during the first year is blood red and very shining; afterwards it becomes woody, as thick as the wrist, hollow with transverse septa, pithy, with circular warts at the joints from fallen stipules, ash-coloured, interruptedly and slightly streaked. Before the leaves come out, they are wrapped up in red stipules like sheaths, that fall off soon after. The leaves are divided half way into eight, sometimes ten lobes, which are ferrate and acute, and the petiole is long; they are of a dark blood-red colour on the upper surface, and livid on the lower, with blood-red veins, the largest less than a foot in diameter, quite smooth without any hairiness whatever. Petioles round, blood-red, with two remote glands, of the same colour, and obliquely truncate, above the base; and two others on the upper part in front, placed near each other, roundish, concave, sometimes united into one. Other glands similar to those now and then appear on the stem and branches, sitting on each side of the axils of the leaves. Such glands are not found on the common Ricinus. The calyx is blood-red; the divisions are lanceolate, acute, spreading very much, and concave. Filaments in about ten bodies, with globular, twin, yellow anthers. Pistil blood-red. Fruit of a livid colour, with long soft prickles. Seeds shining, variegated with black and brown.—Native of the East Indies<sup>r</sup>.

3. This is a middle-sized tree, with twisting spreading branches. Leaves suboval, subacuminate, smooth, whitish on the upper surface, odorous, scattered, on long petioles. Racemes simple, long, subterminating. Flowers hermaphrodite, apetalous. Calyx three-leaved: leaflets ovate-lanceolate, curved, spreading, deciduous. Filaments distinct, about thirty, adhering to the receptacle, longer, than the calyx. Anthers two-lobed, roundish. Germ three-cornered, superior. Style thick, short. Stigmas three, filiform, reflex. Capsule three-lobed, smooth, three-valved, three-celled; with solitary, roundish seeds<sup>s</sup>.

Native of the East Indies, and the woods of CochinChina.

4. Native of Ternate, the Molucca islands, and Tanna in the South Seas.

5. This is a shrub, four feet high, and very much branched. Leaves not peltate, rounded at the base, smooth, whitish underneath, scattered, on long petioles. Stigmas three, sessile, undivided, woolly, reflex. Capsule extremely villose.—Native of China, about Canton<sup>t</sup>.

6. Native of the island of Tanna<sup>u</sup>.]

<sup>n</sup> Woodville.    <sup>o</sup> Browne.    <sup>p</sup> Staunton, embassy, 2. 401.

<sup>q</sup> Thunberg, fl. jap. & travels, 4. 118. engl. ed.

<sup>r</sup> Jacquin.

<sup>s</sup> Loureiro.

<sup>t</sup> Idem.

<sup>u</sup> Forster.



## PROPAGATION AND CULTURE.

These plants are generally annuals in these countries, though in their native places of growth they continue longer; and in England the plants are often preserved through the winter, but young plants are much preferable to those which are thus preserved; therefore few persons are at the trouble to keep them, unless when the seasons prove so bad as that their seeds do not ripen, whereby the species might be lost, if the plants are not preserved through the winter.

These plants are propagated by seeds, which must be sown upon a hot-bed in the spring, and when the plants are come up, they should be each planted into a separate pot filled with light fresh earth, and plunged into a fresh hot bed, observing to water and shade them until they have taken root; after which they must have a great share of free air when the season is mild, otherwise they will draw up tall, and be very weak; and as these plants grow very fast, their roots will in a short time fill the pots; therefore they should be shifted into larger pots, filled with the like fresh earth; and towards the end of may, when the season is warm, they may be hardened to endure the open air by degrees; and then if some of the plants are shaken out of the pots, and planted out into a very rich border, and in dry weather duly watered, they will grow to a very large size, and produce a great quantity of flowers and seeds: but if you intend to preserve any of the plants through the winter, they must not be planted in the full ground, because after their roots have been widely extended, there will be no transplanting them with safety; therefore the best way is to shift them into larger pots from time to time, as their roots shall require, placing them in the open air during the summer season in some warm situation, where they may remain until october, when they must be removed into the house with other exotic plants, observing to water them sparingly in winter, and also to admit the free air in mild weather; for they only require to be protected from frost and cold winds, so that they will endure the winter in a warm green-house, without any addition of artificial warmth.

These plants deserve a place in every curious garden for the singular beauty of their leaves (notwithstanding their flowers make no great appearance) especially those which may be propagated every year from seeds; because those persons who have no green-house to place them into in winter, may cultivate them as other annual plants, amongst which these being placed either in pots or on borders, afford an agreeable variety; but it must be observed, as these are large-growing plants, never to place them too near others of less growth, because they will overbear and destroy them; and those which are planted in pots, should be allowed room for their roots to spread, and must be frequently watered, otherwise they will not grow very large.

[RICINUS. See *Cluytia*, *Croton*, *Jatropha*, *Phyllica*, *Tragia*.

RICOPHORA. See *Dioscorea*.

RICOTIA.

*Lin. gen. n. 810. Reich. n. 874. Schreb. n. 1086. Juss. 239.*

Class. 15. 2. Tetradynamia Siliquosa.

Nat. order of *Siliquosæ* or *Cruciformes*. *Cruciferae*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* oblong, parallel-approximating, deciduous.

COR. four-petalled, cruciform. *Petals* obcordate, spreading.

STAM. *Filaments* six, the length of the tube: two opposite, a little shorter. *Anthems* oblong, acute.

PIST. *Germ* cylindrical, the length of the stamens. *Style* scarcely any. *Stigma* acute.

PER. *Siliqua* lanceolate-oval, one-celled, two-valved: *valves* flat.

SEEDS about four, orbicular, compressed.

## ESSENTIAL CHARACTER.

*Siliqua* one-celled, oblong, compressed; with flat valves.

## SPECIES.

1. *Ricotia ægyptiaca*. *Egyptian Ricotia*.

*Lin. spec. 912. Reich. 3. 243.*

*Cardamine* foliis supradecompositis, filiquis unilocularibus pendulis. *Lin. spec. ed. 1. 656.*

*Lunaria* fol. suprad. foliolis trifidis, filiquis oblongis pendulis. *Mill. fig. 113. t. 169.*

*L. Ricotia*. *Gærtn. fruct. 2. 289. — ægyptiaca. Diet. nostr.*

## DESCRIPTION, &amp;c.

See *Lunaria ægyptiaca*.

Loureiro has a species under the name of *R. cantoniensis*.

RINDER. See *Cynoglossum*.

RITRO. See *Echinops*.

RITTERA. (So named by Schreber, in honour either of Albertus or Joannes Jacobus Ritter, physician in Silesia, born at Berne 1714, died 1784.)

*Lin. gen. Schreb. n. 919. Possira. Aublet. t. 355.*

*Swartz, prodr. 81. Juss. 351.*

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Leguminosæ*.

## GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* ovate, rounded, concave, deciduous.

COR. *Petal* one, wide, roundish, upright, fringed, lateral, with a very short claw.

STAM. *Filaments* many, longer than the corolla, inserted into the receptacle, of which some opposite to the petal are shorter and barren. *Anthems* oblong, incumbent.

PIST. *Germ* pedicelled, oblong, compressed, curved inwards. *Style* short. *Stigma* blunt.

PER. *Legume* oblong, ventricose, compressed, one-celled, two-valved.

SEEDS three or four, compressed, angular.

OBS. It is referred by Aublet to order *Monoecia* of class *Polygamia*.

## ESSENTIAL CHARACTER.

Cal. four-leaved. *Petal* one, lateral. *Legume* one-celled, two-valved.

## SPECIES.

1. *Rittera simplex*.

*Vahl symb. 2. 60.*

*Possira simplex. Swartz prodr. 82.*

*Leaves* simple, *petal* roundish obovate larger than the calyx, many-stamened.

2. *Rittera grandiflora*.

*Vahl, ecl. 2. 37.*

*Leaves* simple oblong-ovate, *peduncles* subtriflorous, *petal* roundish kidney-form very large, *legumes* oblong.

3. *Rittera dodecandra*.

*Vahl, symb. 2. 6. t. 34.*

*Leaves* simple, *petal* oblong the length of the calyx, *flowers* twelve-stamened.

4. *Rittera triphylla*.

*Possira triphylla. Swartz prodr. 82.*

*P. arborecens. Aubl. guian. 934. t. 353.*

*Leaves* ternate, *petioles* margined.

5. *Rittera pinnata*.

*Vahl, ecl. 2. 38.*

*Leaves* pinnate.

## DESCRIPTIONS, &amp;c.

1. Branches round, smooth, brown, with raised scattered white dots, angular at the end. Leaves alternate, ovate, three inches long, very smooth, veined, quite entire, blunt, emarginate. Petiole very short, slightly margined, two-toothed at the top, convex underneath. Stipule on both sides setaceous, rigid, erect, deciduous. Peduncles axillary and terminating, solitary or sometimes in pairs, much shorter than the leaf. Flowers in racemes, four or five on each peduncle, before they open, globular and the size of a pea. Calyx smooth, coriaceous, thick, bursting into four oblong equal segments. Petal large, clawed, veined, twice as long as the calyx. Stamens numerous, the length of the corolla. Germ lanceolate, sharp at both ends, double the length of its pedicel.—Native of the Caribbee islands<sup>x</sup>.

2. This is a middle-sized tree, with round smooth subdichotomous branches, of a brown colour, except the younger ones, which are green. Leaves alternate, three inches long, very smooth on both sides, veined,

<sup>x</sup> Vahl, symb.



somewhat waved, a little acuminate, blunt, the midrib underneath yellowish. Petioles short, with an obsolete toothlet on each side at the tip. Stipule on both sides setaceous, stiffish. Peduncles from the upper axils and the end of the branches, solitary, shorter than the leaf, smooth, generally three-flowered. Pedicels alternate, an inch long, a little thicker towards the flower. Bracte minute, on each side at the base of the pedicels. Calyx coriaceous, bursting into two, three or four unequal obovate parts, three times shorter than the petal; which is clawed, roundish-reniform, an inch and half long, nerved and veined, both nerves and veins disappearing towards the periphery. Filaments shorter than the petal; about fifteen of them longer and stouter than the rest declining with the pistil to the side opposite to the petal; the rest are shorter, more slender, and incumbent on the petal. Germ linear, lessening to both ends, smooth and even, shorter than the petal: stigma sharp. Legume pedicelled, two inches long, sharp at both ends, terminated by the style, containing one or two seeds, and contracted between each. Seed oval, an inch long, nearly as thick as the middle finger, black and shining: navel ventral, linear: aril incomplete, covering the seed almost to the opposite margin, orbicular, somewhat fleshy, many-parted; segments linear, a little wider outwards, parallel, cohering only at the base.

This resembles the preceding so much, that it is difficult to assign any infallible limits between them: but the leaves are narrower than in this, more acuminate, and of a thinner texture; the apex of the petiole has an obscure tooth, but by no means running down the petiole, the peduncles are commonly no more than three-flowered, and the petals are larger. When the petals and legume shall be examined more accurately, we shall perhaps know better whether these be distinct species or not.

Native of the island of Trinidad<sup>1</sup>.

3. Branches round, pubescent at top. Leaves alternate, two inches long, ovate, rounded at the base, acuminate with a blunt point, emarginate, membranaceous, very smooth, veined, quite entire. Petiole very short, with a very small tooth on each side a little below the base of the leaf. Stipule on each side, setaceous, upright, the length of the petiole. Racemes axillary, shorter than the leaf. Peduncles filiform: pedicels remote, an inch long, a little thickened. Bractes two at the base of the pedicels, setaceous. Calyx four-parted: segments oblong, smooth, very short. Petal small, oblong, the length of the calyx. Filaments from fourteen to nineteen, yellow, twice as long as the calyx: anthers globular. Germ the length of the filaments, attenuated to each end.

This is more tender and smaller in all its parts than the first species, the leaves are rounded at the base, instead of the teeth of the petioles there are two minute tubercles; but in the number of stamens, the figure and size of the petal this is very nearly allied to that.—Native of South America<sup>2</sup>.

4. This is a middle-sized tree, with a trunk from seven to eight feet in height, and seven or eight inches in diameter, with a smooth, thin, gray bark, and a yellowish, hard, compact wood. It divides at top into twisted branches that extend themselves on all sides. Leaves alternate, composed of three sessile leaflets, which are entire, smooth, thin but firm, ovate, acuminate; the middle leaflet much larger than those on the sides. Stipules two, small, deciduous, at the base of the midrib. Flowers axillary, in corymbs, with two bractes at the base of the peduncle and each pedicel. Leaflets of the calyx two, three or four. Corolla yellow. Stamens twenty-five or twenty-six, six or seven of which are shorter and abortive. Seeds from one to four, of a disagreeable taste, and very acrid, inflaming and swelling the lips of those who bite them.

Native of the forests of Guiana, near the source of the creek of the Galibis; flowering and fruiting in the month of may. The French call it *Bois dard* or *Bois a fleche*, because the natives arm their arrows

<sup>1</sup> Vahl, ecl.

<sup>2</sup> Vahl, symb.

at the point with a piece of the wood cut very sharp<sup>a</sup>.

5. Branches round, smooth. Leaves alternate, a foot long, unequally pinnate, with two pairs of leaflets: these are opposite, about a span in length, the inner ones smaller, elliptic, smooth on both sides, very finely veined, quite entire, acuminate: general petiole roundish, flattened above at the leaflets; partial very short, toothless. Racemes sometimes two together, half a foot long: common peduncle round at bottom and dotted, angular above, gray with a very fine nap, as are also the pedicels and calyxes: pedicels scattered, frequent, an inch long, flattened a little, from upright spreading, one-flowered. Calyx before it opens globular, the size of a pea, membranaceous, bursting. Petal twice as long as the calyx. Two of the filaments opposite to the petal, ascending, longer and stouter than the rest; the rest shorter, more slender, and incumbent on the petal. Germ flexuose, opposite to the petal, linear, hoary, longer than the petal. Legume pedicelled, pendulous, often a span long, the thickness of the thumb, roundish, contracted between the seeds, terminated by the style, which is an inch and half in length. Seeds from two to five, oblong-ovate, on a fleshy filiform pedicel, twice curved at the base, adhering at top to the valves; they are pale yellow, with one end towards the base of the legume sharp, the other flat: scar at the upper end, linear, orange-coloured: aril incomplete, veiled, covering the upper end of the seed, fleshy, striated, crenulate, whitish yellow, ending in the pedicel.—Native of the island of Trinidad.

The fructification of *Swartzia* agrees so exactly with that of *R. pinnata*, that it can scarcely be deemed to form a distinct genus<sup>b</sup>.]

RIVINA. (So named by Plumier, in honour of Augustus Quirinus Rivinus, Professor of Physiology and Medicine at Leipsic. Author of *Introductio in rem herbariam* and *Ordines Plantarum*, 1690, 1691, 1699, fol. ob. 1723.)

*Lin. gen. n. 162. Reich. n. 174. Schreb. n. 219.*

*Plum. 39. Juss. 84. Gertn. t. 77. Solanoides.*

*Tournef. art. gall. 1706. Piercea. Miller.*

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Holoraceae*. *Atriplices*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* four-leaved, coloured, permanent: *leaflets* oblong-ovate, blunt.

COR. none, unless the calyx be taken for it.

STAM. *Filaments* four or eight, shorter than the calyx, approaching by pairs, permanent. *Anthers* small.

PIST. *Germ* large, roundish. *Style* very short. *Stigma* simple, blunt.

PER. *Berry* globular, placed on the green reflex calyx, one-celled, with a point curved in.

SEED one, roundish, lens-shaped, rugged.

#### ESSENTIAL CHARACTER.

*Cal.* four-leaved (or, *Cor.* four-petalled) permanent.

*Berry* containing one lens-shaped seed.

#### SPECIES.

1. *Rivina humilis*. *Downy Rivina*.

*Lin. spec. 177. Reich. 1. 346. Willd. 694. hort.*

*cliff. 35. Kniph. cent. 2. n. 75. Gertn. fruct. 1.*

375.

*Piercea tomentosa. Mill. dict. n. 2.*

β. *R. canescens*.

*R. hum. racemosa, baccis puniceis. Plum. gen. 48.*

*Solanoides americana, Circeæ foliis canescentibus.*

*Tournef. art. gall. 1706.*

*Solanum barbadense racemosum minus tinctorium.*

*Pluk. phyt. t. 112. f. 2. Mor. hist. 3. 522.*

*n. 23.*

*Amarantus baccifer, Circeæ foliis. Comm. hort. 1.*

*127. t. 66.*

*Racemes simple, flowers four-stamened, leaves pubescent.*

2. *Rivina lævis*. *Smooth Rivina*.

*Lin. syst. 165. Reich. 1. 346. Willd. 694. mant.*

*41. Kniph. cent. 2. n. 74.*

*R. humilis. Mill. dict. n. 1.*

<sup>a</sup> Aublet.

<sup>b</sup> Vahl, ecl.



*Solanoides americana*, *Circeæ foliis glabris*. Tournef. *art. gall.* 1706.

*Racemes simple, flowers four-stamened, leaves ovate acuminate smooth flat, stem round.*

[3. *Rivina brasiliensis*. *Wave leaved Rivina*.

*Lin. spec. ed. Willd.* 695.

*Racemes simple, flowers four-stamened, leaves ovate waved and wrinkled, stem grooved.*

4. *Rivina octandra*. *Climbing Rivina*.

*Lin. spec.* 177. *syft.* 165. *Reich.* 1. 347. *Willd.*

695. *amoen.* 4. 305. *Loefl. it.* 207. *Jacqu.*

*obs.* 1. p. 6. t. 2. *Plum. gen.* 48. *ic.* 241. *Brown.*

*jam.* 149. t. 23. f. 2.

*R. scandens*. *Mill. dict. n.* 2.

*R. dodecandra*. *Jacqu. amer. pict.* 17. t. 21.

*Racemes simple, flowers eight-stamened or twelve-stamened, (leaves elliptic smooth.)*

#### DESCRIPTIONS, &c.

1. This grows taller than the second, and the branches are more erect. The leaves are smaller, heart-shaped, and covered with short hairy down. The spikes of flowers are not so long; the flowers are not so closely placed together, and have longer peduncles.

[Mr. Miller separates this plant from the *Rivinas* or *Rivinas*, because, as he affirms, the flowers have eight stamens. He gave it therefore the name of *Piercea*, in honour of Hugh Percy, duke of Northumberland.

Native of the West Indies. Cultivated before 1699, in the Apothecaries garden at Chelsea, according to Morison<sup>c</sup>: who describes the stems as a cubit high; leaves round at the base from an inch to two inches in breadth, running out into a point, resembling very much those of *Circeæ* or Enchanter's Nightshade, soft, pale green, pubescent with a very short nap, on petioles an inch in length. Spike long, slender. Flowers small, on slender pedicels, pale, divided into five parts and acute.

2. This resembles the preceding very much, but is wholly smooth. The leaves are purplish about the edge. The flowers are red on the outside<sup>d</sup>.]

It rises with shrubby stalks six or eight feet high, dividing into several spreading branches, and covered with a gray spotted bark. Leaves alternate, lanceolate, entire, two inches and a half long and one inch broad in the middle, drawing to a point at each end, smooth, of a lucid green, and pretty thick consistence, on long slender footstalks, and placed at pretty great distances on the branches. Flowers in long bunches, from the side and at the end of the branches, each on a slender peduncle near half an inch long: calyx scarlet: stamens eight, longer than the calyx. Berry roundish, with a thin pulp, outwardly scarlet changing to purple; inclosing one roundish hard seed.

[Gærtner, who seems to consider this and the preceding as making one species, describes the berry as small, spherical, red terminated by a black callous dot; within one-celled, filled with a watery pulp tinging yellow. Seed lenticular, rugged with little soft bristles, but under the outer cuticle very smooth, shining black.

Native of the West Indies. Cultivated by Mr. Miller in 1733. It flowers most part of the year<sup>e</sup>.]

Mr. Miller says of his *Piercea glabra*, that it rises with a slender herbaceous stalk, three or four feet high, and by age becomes a little woody at bottom; that it divides into many herbaceous branches, which are angular; that the leaves are oval-lanceolate, near four inches long, and two broad in the middle, of a bright green, on slender foot-stalks an inch and half long; that the peduncles come out from the side of the branches, at the base of the petioles, are from four to five inches long, and sustain a great number of small white flowers, ranged along the upper part on both sides; that the berries are small, red, full of red juice, and inclose one hard seed of the same form. These berries hang on the branches in long bunches, great part of the year.

[3. This is distinct from the preceding in size, leaves, bigness and colour of the fruit, and time of flowering. Native of Brasil<sup>f</sup>.]

4. This rises with a climbing woody stalk to the height of twenty feet, covered with a dark gray bark. Leaves oval-lanceolate, near three inches long, and an inch and half broad, smooth, entire, on short foot-stalks. The flowers come out in long bunches from the side of the branches, shaped like those of the second sort. The berries are blue, of the same size with those of the other.

[Stamens four within the leaves of the calyx, alternate with eight others. Anthers hastate. Style none. Stigma pencilled. Seed lens-shaped, shining<sup>g</sup>.

The stem is commonly weak and sustains its long flexile branches on other shrubs and trees; but sometimes it is upright, and puts on the appearance of a very branching and not inelegant tree, fifteen feet high. Leaves oblong-lanceolate, acuminate, entire, very smooth, petioled, alternate, numerous, from three to six inches long. Racemes few, simple, terminating the younger branches; and sometimes others from the axils of the leaves. Calyx, in the flower white, in the fruit violet-red. Berries dark-purple, the size of a pea. Seed black. Stamens always twelve.—Loefling numbers from eight to twelve stamens, and describes the berry as wrinkled, and the seeds as angular, whereas in Jacquin's plant, the seed has no angles, and the berry no wrinkles<sup>h</sup>.

Browne says, it stretches a great way among the neighbouring shrubs and bushes, the main stalk being seldom under an inch or two in diameter, and throwing out a few slender branches towards the top, which are generally adorned with flowers at their extremities. The berries make the principal part of the food of the American thrush or nightingale; they contain a very oily seed, and after the bird has swallowed many of them, he frequently flies to the next bird-pepper bush, (*Capficum*) and picks a few of those warm berries; nature doubtless having taught it what was necessary to promote the digestion of that oleaginous heavy food.

The stalk is very tough and flexile, and often made into hoops in Jamaica, when there is a scarcity of those imported from Europe or North America, but they are not so strong and durable. Hence the name of Hoop-Withe, given to this plant in Jamaica<sup>i</sup>.

From the same circumstance, the French in Martinico name this shrub *Lianne à baril*<sup>k</sup>.

Native of the West Indies. Cultivated before 1752 by Mr. Miller<sup>l</sup>:] who says that he received the seeds from Antigua, and that Dr. Houstoun found it at the Havannah.

#### PROPAGATION AND CULTURE.

These shrubs are propagated by seeds, which remain long in the ground before they vegetate; I have had them lie two years before the plants have appeared, but they never rise the same year the seeds are sown.

These berries must be procured from the countries where they naturally grow, and when they arrive, should be sown in pots filled with fresh earth, and plunged into a moderate hot-bed. If this happens late in the autumn or winter, the pots must be plunged into the tan-bed of the stove; but if in the spring, they may be plunged in a common hot-bed under a frame. The earth must be moistened frequently in summer, to promote the vegetation of the seeds, but as they will not come up the same year, the pots should be removed into the stove before winter, and plunged into the tan-bed; during the winter season, the earth must be sometimes refreshed, but must not be too moist. In the spring the pots may be taken out of the stove, and plunged into a fresh hot-bed to bring up the plants; but if they should not then rise, the earth must not be disturbed, because the plants may come up the following season.

When the plants come up and are two inches high, they should be each transplanted into a separate small pot, filled with light loamy earth, and plunged into a

<sup>c</sup> Hort. kew.

<sup>d</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>f</sup> Willdenow.

<sup>g</sup> Linn. syft.

<sup>h</sup> Jacquin.

<sup>i</sup> Browne.

<sup>k</sup> Jacquin.

<sup>l</sup> Hort. kew.



hot-bed, observing to shade them from the sun till they have taken new root; after which they must be treated in the same way as other plants from the same countries.

These plants being tender, cannot be preserved in this country, unless they are kept in a warm stove, especially while they are young; but when they have obtained strength, they will live in a moderate warmth in winter, and in summer they may be removed into the open air, placing them in a sheltered situation, where they may remain near three months in the warmest part of the summer. During the winter season they should be sparingly watered, for as they grow naturally on a dry soil, much wet will destroy them, especially in cold weather.

[RIVINA PANICULATA. See *Salvadora persica*.

**ROBERGIA.** (So named by Schreber, in honour of Laurentius Roberg, Professor of Medicine at Upsal in Sweden.)

Lin. gen. Schreb. n. 787. Rouréa. Aubl. 187. Juss. 369.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Terebintaceæ*, Juss.

#### GENERIC CHARACTER.

**CAL.** Perianth one-leafed, five-parted, permanent: segments roundish, concave.

**COR.** Petals five, roundish, the length of the calyx.

**STAM.** Filaments ten, inserted into the receptacle, the length of the corolla. Anthers roundish.

**PIST.** Germ roundish, villose, superior. Styles five, capillary. Stigmas thickish, grooved.

**PER.** Drupe ovate, more convex on one side, very slightly hollowed on the other.

**SEED.** Nut the form of the drupe, one-celled, with a two-valved shell.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Drupe with a one-seeded nut, and a two-valved shell.

#### SPECIES.

1. *Robergia frutescens*.

Willd. spec. 752.

*Rourea frutescens*. Aubl. guian. 467. t. 187.

#### DESCRIPTION, &c.

This is a shrub five feet in height. Leaves alternate, unequally pinnate, four-paired: leaflets petioled, oblong, acuminate, quite entire, veined, smooth above, tomentose underneath: the lower leaflets are smaller. Flowers white. Panicle corymbed axillary and terminating, much shorter than the leaf.

Native of the woods of Guiana, flowering and fruiting in the month of august. The flowers have a smell sweeter than that of the Lilac<sup>m</sup>.]

**ROBINIA.** (From Jean Robin, arboriste du Roy, author of *Histoire des Plantes*, &c. Par. 1620. 12. printed also with the second edition of Linocier's *History of Plants*.)

Lin. gen. n. 879. Reich. n. 953. Schreb. n. 1195.

Gärtn. t. 145. Juss. 358. Pseudoacacia. Tournef.

t. 417. Caragana. Lamarck, encycl. 1. 615.

Juss. 358.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

**CAL.** Perianth one-leafed, small, bell-shaped, four-cleft: the three lower toothlets more slender; the upper fourth toothlet wider, scarcely emarginate to the naked eye, all equal in length.

**COR.** papilionaceous: standard roundish, larger, spreading, blunt; wings oblong, ovate, free, with a very short blunt appendix; keel almost femiorbicular, compressed, blunt, the length of the wings.

**STAM.** Filaments diadelphous (simple and nine-cleft) ascending at top. Anthers roundish.

**PIST.** Germ cylindrical, oblong. Style filiform, bent upwards. Stigma villose in front at the top of the style.

**PER.** Legume large, compressed, gibbous, long.

**SEEDS** few, kidney-form.

**OBS.** Caragana of Lamarck has a smooth truncate stigma, and a subcylindrical inflated legume. Schreb.

<sup>m</sup> Willdenow and Aublet.

#### ESSENTIAL CHARACTER.

Cal. four-cleft. Legume gibbous, elongated.

#### SPECIES.

1. *Robinia Pseud-Acacia*. False or common *Acacia*.

Lin. spec. 1043. Juss. 668. Reich. 3. 485. hort.

cliff. 354. upf. 212. Gärtn. fruct. 2. 307.

L'Herit. stirp. nov. 158. Gron. virg. 105. Dubam.

arb. 2. t. 42. Du Roi barbecc. 2. 320. Munting.

phyt. t. 8. Kniph. cent. 3. n. 76. Pluk. phyt.

t. 73. f. 4.

*Acacia americana*, filiquis glabris. Raii hist. 1719.

Seba, thes. 1. t. 15. f. 1.

*A. amer. Robini.* Corn. canad. 171. t. 172. (excluso

fructu.)

*Arbor filiquosa virginensis spinosa.* Park. theat. 1550.

f. 2.

*Pseudo-acacia.* Riv. tetrap. t. 63.

Racemes with pedicels one-flowered, leaves unequally pin-

nate, stipules thorny.

2. *Robinia sepium.* Hedge *Robinia*.

Jacqu. amer. 211. pict. 260. f. 40. Swartz, prodr.

106.

Unarmed, peduncles racemed, the partial ones two-flow-

ered, leaves unequally pinnate, pinnae ovate acumi-

nate.]

3. *Robinia violacea.* Ash-leaved *Robinia*.

Lin. spec. 1044. Juss. 668. Reich. 3. 485. Jacqu.

amer. 210. t. 177. f. 49. pict. 103. t. 262.

f. 61.

*Pseudacacia floribus violaceis.* Plum. spec. 19.

Racemes with pedicels one flowered, leaves unequally pin-

nate, stem unarmed.

4. *Robinia hispida.* Rose *Acacia* or *Robinia*.

Lin. Juss. 668. Reich. 3. 486. mant. 101. Jacqu.

amer. 221. t. 179. f. 101. Mill. fig. 163. t. 244.

Du Roi barbecc. 2. 325. Jungh. ic. cent. 1. f. 3.

Curt. magaz. 311.

*Pseudo-acacia hispida*, floribus roseis. Catesb. car. 3.

t. 20.

Racemes axillary, leaves unequally pinnate, stem unarmed

hispid.

5. *Robinia mitis.*

Lin. spec. 1044. Juss. 668. Reich. 3. 486. Lour.

cochin. 455. ed. Willd. 555. Burm. ind. 163.

Pluk. phyt. t. 310. f. 3.

*Cytisus foliis pinnatis.* Lin. spec. ed. 1. 741.

Racemes with pedicels in threes, leaves unequally pinnate,

stem unarmed.]

6. *Robinia Caragana.*

Lin. spec. 1044. Reich. 3. 486. hort. upf. 212.

L'Herit. stirp. nov. 160. Gmel. fib. 4. 17. n. 22.

Du Roi barbecc. 2. 327. Kniph. cent. 5. n. 76.

*R. Altagana.* Pallas roff. 1. t. 42. fig. intermedia.

*Aspalathus arborescens*, pinnis foliorum crebrioribus ob-

longis. Amm. ruth. 285.

*Pseudo-acacia foliorum pinnis crebrioribus.* Dubam.

arb. 3.

*Caragana fibrica.* Roy. lugdb. 537.

Peduncles simple very many, leaves abruptly pinnate four

or five-paired, petioles unarmed, legumes cylindrical.

7. *Robinia spinosa.* Thorny *Robinia*.

Lin. Juss. 668. Reich. 3. 487. mant. 269. L'Herit.

stirp. nov. 160.

*R. spinosissima.* Laxm. nov. com. petrop. 15. 558.

t. 30. f. 4.

*R. ferox.* Pallas roff. 70. t. 44. itin. 3. app. 752. n. 125.

t. Ee. f. 2, 3.

Peduncles simple subsolitary, leaves abruptly pinnate many-

paired, petioles spinescent.

8. *Robinia Altagana.* Daurian *Robinia*.

Pallas roff. 1. 68. t. 42. L'Herit. stirp. nov. 159.

t. 76.

Peduncles simple solitary, leaves abruptly pinnate seven or

eight-paired, stipules spinescent, legumes compressed.

9. *Robinia Chamlagu.* Shining *Robinia*.

L'Herit. stirp. nov. 161. t. 77. Ait. kew. 3. 54.

Peduncles simple subsolitary, leaves abruptly pinnate two-

paired, petioles and stipules spinescent.

10. *Robinia squamata.*

Vahl symb. 3. 88. t. 69.

Racemes with pedicels one-flowered, leaves unequally pin-

nate, leaflets oval spiny-mucronate, petioles unarmed.



11. *Robinia florida*.  
*Vahl symb.* 3. 89. t. 70.  
*Peduncles simple one flowered, leaves abruptly pinnate, petioles and stipules unarmed.*
12. *Robinia Halodendron*. *Salt-tree Robinia*.  
*Lin. syst.* 668. *suppl.* 330. *L'Herit. stirp. nov.* 162.  
*Ait. kew.* 3. 54. *Pallas, it.* 2. 741. t. W. *roff.* 1.  
72. t. 46. *Gmel. fib.* 4. 15. n. 19. *Amm. ruth.*  
208. n. 284. (*Aspalathus*).  
*Peduncles three-flowered, leaves abruptly pinnate two-paired, petioles and stipules spinescent.*
13. *Robinia frutescens*. *Shrubby Robinia*.  
*Lin. spec.* 1044. *Reich.* 3. 487. *hort. upf.* 212.  
*Du Roi herbecc.* 2. 330. *Gmel. fib.* 4. 16. *Pallas*  
*roff.* 1. 69. t. 43. *Amm. ruth.* 293. *Dubam.*  
*arb.* 4. (*Aspalathus*).  
*Peduncles simple, leaves in fours subpetioled terminated by an unarmed spine.*
14. *Robinia pygmæa*. *Dwarf Robinia*.  
*Lin. spec.* 1044. *syst.* 668. *Reich.* 3. 487. *hort. upf.*  
212. *Du Roi herbecc.* 2. 332. *Gmel. fib.* 4. 16.  
n. 21. *Pallas, it.* 2. 687. *roff.* 1. 71. t. 45.  
*Amm. ruth.* 204. n. 282. t. 35. *Dubam. arb.* 5.  
(*Aspalathus*).  
*Peduncles quite simple, leaves in fours sessile.*
15. *Robinia tubecandra*.  
*L'Herit. stirp. nov.* 157. t. 75.  
*Racemes simple, filaments almost distinct, leaves unequally pinnate, stem unarmed.*
16. *Robinia amara*. *Bitter-rooted Robinia*.  
*Lour. cochinch.* 455. ed. *Willd.* 556.  
*Racemes elongated, pedicels in threes, leaves unequally pinnate five or six-paired, stem unarmed.*
17. *Robinia flava*.  
*Lour. cochinch.* 456. ed. *Willd.* 556.  
*Peduncles in threes, three-flowered, terminating, leaves abruptly-pinnate, seven or eight-paired, stem unarmed.*

## DESCRIPTIONS, &amp;c.

These are chiefly Shrubs; some, as (1. 2. 3.) are Trees. Leaves pinnate. Stipules distinct from the petiole. Peduncle axillary and terminating. Fruit oblong, two-valved, containing several seeds<sup>a</sup>. They are mostly natives of North America or Siberia, and are proper for ornamental plantations.

- Thorny: 1. 7. 8. 13. 14. The rest unarmed.  
Stipules or petioles armed: 6 to 10. 12. 13. 14.  
Leaves pinnate unequally: 1 to 5. 10. 15. 16.  
—— pinnate abruptly: 6 to 9. 11 to 14. 17.  
—— two-paired: 5. 9.  
—— two or three-paired: 12.  
—— three-paired: 3.  
—— three or four-paired: 7.  
—— four or five paired: 6.  
—— five-paired: 2.  
—— five or six-paired: 16.  
—— six or seven-paired: 4.  
—— seven or eight-paired: 8. 17.  
—— eight to ten-paired: 1.  
—— nine-paired: 10.  
—— nine or ten-paired: 11.  
—— twelve to fifteen-paired: 15.  
—— quaternate: 13. 14.  
Flowers in racemes: 1 to 5. 12. 15. 16.  
—— on single peduncles: 6 to 11. 13. 14.  
—— tern, three-flowered: 17.  
—— White: 1. 17.  
—— Purple: 11. 12.  
—— Rose-coloured: 2. 4.  
—— Violet: 3. 16.  
—— Yellow: 5 to 9. 13 to 15: in n. 9. becoming blood-red.]

1. The common false or bastard Acacia, called in America Locust Tree, grows very fast whilst young, so that in a few years from seed, the plants rise to eight or ten feet high, and it is not uncommon to see shoots of this tree six or eight feet long in one summer. The branches are armed with strong crooked thorns. Leaflets eight or ten pairs, ovate, bright green, entire, sessile. The flowers come out from the

side of the branches in pretty long bunches, hanging down like those of Laburnum: each flower on a slender pedicel, white, and smelling very sweet: they appear in June, and when the trees are full of flower, they make a fine appearance and perfume the air round them; but they seldom continue more than one week. [Legume oblong, flat, having a longitudinal nerve next the feeding future, and on the outside of that drawn out into a membranaceous margin, one-celled, two-valved. Seeds sometimes as many as sixteen, kidney-shaped, ending in a hooked beak, compressed like a lens, rufescent<sup>o</sup>.]

Native of North America, where it grows to a very large size, and the wood is much valued for its duration. Most of the houses which were built at Boston in New England, on the first settling of the English, were constructed of this timber.

The seeds were first brought to Paris by Mons. Robin, from Canada; and soon after, we had the seeds from Virginia. Many of the trees were raised in several gardens, which for some years were in great esteem, but as they grew larger, their branches were frequently broken by strong winds in the summer, which rendered them unsightly, and discouraged the introduction of them into ornamental plantations. Great numbers however have been raised of late years, so that there are now few plantations in which there are not some of these trees.

The leaves do not come out till late in the spring, and fall off early in autumn, which renders this tree less valuable in ornamental plantations.

[According to Parkinson, it was cultivated in England in 1640 by Mr. John Tradescant, senior<sup>p</sup>.

Bradley (in 1720) makes mention of some then growing in the Court before Ruffel-House, Bloomsbury, and in the Old Palace Yard, Westminster<sup>q</sup>. The latter have been long cut down, but the former have been seen by every body. They also are now (1801) demolished along with the house.

The wood, when green, is of a soft texture, but becomes very hard when dry. It is as durable as the best white Oak, and esteemed preferable for axle-trees of carriages, trenails for ships, and many other mechanic purposes. It makes excellent fuel, and its shade is less injurious to grass than that of most other trees<sup>r</sup>. The leaves afford wholesome food for cattle. A gentleman in New England sowed several acres of it for that purpose.

It has been employed with success in Virginia for ship-building, and found to be far superior to American Oak, Elm, Ash, &c. for that purpose<sup>s</sup>. In New York it has been found upon repeated trial, that posts for rail-fencing made of this tree, stand wet and dry next the ground, better than any other in common use; almost as well as posts of the swamp Cedar<sup>t</sup>.

Sir George Savile planted many thousands of these trees at Rufford; so that the next generation will probably be sufficiently furnished with this article of trenails at least. The choicest pieces only of the best Oak-timber are applied to this purpose at present; and as the Suffex Oak is generally reckoned the best, most shipwrights, even in the north, have their trenails from thence, and the demand for them is so great, that trenail-making is there become a considerable manufacture.

A Locust tree in New England, forty years old, was in 1782 sixty feet high, and four feet ten inches in girth at three feet from the ground<sup>u</sup>.

Even in England, says Mr. Gilpin, it is often a very beautiful tree, whether it feathers to the ground, or is adorned with a light foliage hanging from the tree; but its beauty is very frail, being of all trees least able to endure the blast.

Mons. L'Heritier mentions a variety very lately introduced into gardens, having no thorns on the branches, which is easily known at first sight by its peculiar appearance.]

<sup>o</sup> Gartner. <sup>p</sup> Hort. kew.

<sup>q</sup> Improvements, 3. 259.

<sup>r</sup> Cutler in mem. amer. 1.

<sup>s</sup> Hunter's Evelyn.

<sup>t</sup> Pownall in Young's Annals, 8. 158.

<sup>u</sup> Hunter's Evelyn.



Mr. Miller has a variety, which he sets down for a distinct species, under the name of *Rob. echinata*. The pods are much shorter, and closely beset with short prickles, but in other respects it agrees with the common sort. There was a large tree of it in the Bishop of London's garden at Fulham.

[2. This is a thornless tree, growing to the height of thirty feet, very much resembling the preceding in habit, and dividing into round, almost upright, very long branches. Leaves ten inches long, scattered alternately over the whole branch: leaflets most commonly five on each side, ovate, blunt, attenuated at the end, shining, quite entire, opposite, petioled, two inches long. Racemes axillary. Flowers without scent, rose-coloured. Legumes smooth, brownish.

Native of Carthage in New Spain, where they use it much for hedges to their gardens, but unless it be kept down, it will fill the ground by the great quantity of seeds which it scatters<sup>a</sup>. Found also in Hispaniola.

3. This is an upright tree without thorns, growing to the height of twelve feet. Leaves alternate, numerous, shining; having three leaflets on each side, sometimes two, very seldom five; these are ovate, blunt, emarginate, entire, petioled, opposite, two inches long. Racemes axillary, half a foot in length; pedicels short, two-flowered, numerous. The flowers have the smell and colour of Violets<sup>r</sup>.]

According to Mr. Miller it rises to the height of twenty feet, dividing at the top into several spreading branches, which are covered with a very light-gray bark. The leaves are composed of eleven pairs of leaflets, which are of a lucid green on the lower part of the branches, but those towards the end are covered with a soft ferruginous down. The flowers come out in long bunches from the side of the branches; they are blue, and stand upon long foot-stalks. Legumes downy. Dr. Houstoun found it growing naturally at Campeachy; [Jacquin, about Carthage. It was cultivated before 1759, by Mr. Miller<sup>z</sup>.]

4. This rises in Carolina, where it grows naturally, sometimes to the height of twenty feet, but in England it seems to be of low growth; the branches spread out near the ground, and produce their flowers very young. The young branches, and also the peduncles and calyxes are closely armed with small brown prickles, or rather stiff bristly hairs, like Raspberries and some sorts of Roses. The leaves are like those of the first sort, but the leaflets are larger and rounder. The flowers are larger, and of a deep rose-colour; but they have no scent: they come out early in June, and make a fine appearance. Each flower is on a short separate pedicel. Legumes flat oblong.

[Mr. Marshall says, it sends up weak branching stalks, to the height of six or eight feet only, but often flowers much smaller; that the leaves have five or six pairs of oval concave leaflets, with their midribs protruding in short bristly points; that the flowers are of a peach-blossom colour, with the stamens distinctly in two bodies; whereas those of *R. Pseudacacia* are frequently all joined at the base<sup>a</sup>. It was cultivated by Mr. Miller in 1758<sup>b</sup>.

5. Stem shrubby, three feet high, upright, branched. Leaflets ovate-lanceolate, smooth, bright green, two or three-paired. Racemes terminating, short. Corolla yellow. Legume oblong, narrowing to each end, smooth<sup>c</sup>.

Branches round, unarmed. Leaflets five, ovate, smooth, quite entire. The racemes have three flowers fixed at each tooth, each on its proper pedicel. Calyx subtruncate<sup>d</sup>.—Native of the East Indies, China and CochinChina<sup>e</sup>.

6. Trunks arboreous, commonly branched from the bottom, slender, with a smooth, shining, coriaceous bark, covered by a greenish ash-coloured skin: branches alternate, very much divided; twigs rod-like, weak, very leafy, ash-coloured or greenish, with longitudinal nerves running from bud to bud. Buds

alternate, frequent, bearing both leaves and flowers, unarmed, with the stipules of the bud-leaves soft, but in the new branches spinescent, divaricating, rigid. Pairs of leaflets from four to six, oblong, smooth, quite entire, submucronate with a spinule from the nerve; the common petiole grooved above, between the extreme pair setaceous and a little prominent. Peduncles from the buds of the branches of the former year, two and three together solitary, with a broken joint near the flower. Calyx drooping a little, bell-shaped, smooth, permanent, five-toothed but not deeply, the upper tooth wider and more distant. Corolla larger than the calyx, yellow, having wings as long as the standard, and a keel scarcely shorter. Legumes cylindrical, rigid, mucronate. Seeds five to eight, oblong, yellowish-gray powdered with brown, rather large. The germination is made by the first leaves being ternate, and the last of the first year two or three-paired<sup>f</sup>.

Leaves five or six-paired. Stipules and point of the petioles subspinescent, as in the following species. Flowers six, at the bud of the former year, on their proper peduncles<sup>g</sup>.]

It rises with a tree-like stem near twenty feet high, sending out many side branches, with leaves composed of four or five pairs of oval leaflets, placed opposite. Flowers axillary, one on a peduncle. Pods oblong, taper, containing three or four seeds.

[Wood hard, compact, very tough, yellow on the outside, within waved and striped with bay and red. The leaves are good fodder for cattle; and it is suggested that they contain a blue colouring matter like Indigo. The seeds are good for poultry. The bark is very tough, and fit for tying; the twigs may also be used as withes<sup>h</sup>.

Native of Siberia. Cultivated in 1768, by Mr. Miller. It flowers in April and May<sup>i</sup>.

7. This resembles the preceding, but is distinguished by its stiff or thorny stipules. It is a shrub above the height of a man. Leaflets six or eight, ovate, even. Common petiole woody, the whole of it perennial, thorny at the end. Stipules awl-shaped, thorny, perennial<sup>k</sup>.

The trunk is scarcely an inch and half in diameter, with branches often a fathom in length, subdivided, twisted and diffused, so as to form a hemispherical head, full of branches and thorns. Being covered with flowers during the whole summer, it appears very beautiful. Wood bay-coloured within, on the outside yellow, very hard. Cuticle on the younger branches greenish yellow, less shining and more fringed than in *R. pygmaea*, with ash-coloured longitudinal nerves, running from branch to branch. Branches round, divaricating, alternate. Thorns spreading out every way almost at right angles, alternate, very large, arising from the permanent petioles enlarged, marked also with the scars of the leaflets, and having at the base on each side a small, bristle-shaped spinule, standing up, and arising from the stipules. There are several leaves and two or three flowers from the axils of all the spines on the branches. The petioles are spinescent. The leaflets commonly two pairs, but sometimes three and even four, linear-lanceolate, mucronate at the end with a spinule, opposite and remote. Peduncles so short that the flowers seem to be sessile. Calyx angular, smooth, five-toothed; the two upper teeth, longer than the others and approximating. Corolla deep yellow, twice as long as the calyx, with an oblong reflex standard, scarcely longer than the wings, which are linear. Legumes testaceous, cylindrical, very stiff. Seeds oval, greenish dotted with brown.

On account of the length and toughness of the branches, and its large stout thorns, this shrub is admirably adapted to form impenetrable hedges, and is sufficiently hardy to bear our climate. It is a native of Siberia, and also of China; where, about Pekin, they stick the bushes in clay on the tops of their walls, to prevent persons from getting or looking over them<sup>l</sup>.

<sup>a</sup> Jacquin.

<sup>y</sup> Idem.

<sup>z</sup> Hort. kew.

<sup>a</sup> Arbut. amer. 134.

<sup>b</sup> Hort. kew.

<sup>c</sup> Loureiro.

<sup>d</sup> Linn.

<sup>e</sup> Loureiro.

<sup>f</sup> Pallas.

<sup>g</sup> Linn.

<sup>h</sup> Pallas.

<sup>i</sup> Hort. kew.

<sup>k</sup> Linn.

<sup>l</sup> Pallas.



It was introduced here in 1775, by Hugh Duke of Northumberland; and flowers in april and may<sup>m</sup>.

8. This is a shrub, somewhat thorny, about three feet in height. Root sparingly branched, having somewhat of the smell and taste of Liquorice. Stems upright, scarcely branched, round, gray, tubercled: bark bay-coloured, torn: branches alternate, erect, round, like the stem: shoots somewhat angular with three lines running down from the stipule, prickly as it were with the stipules, putting off the cuticle, of a greenish bay-colour. Leaves alternate, petioled, spreading, two inches long: leaflets commonly opposite, subsessile, ovate obovate or cuneate, mucronate with a fine point, entire, at first pubescent but afterwards almost naked, one-nerved, the upper ones gradually less, bright green, the same colour on both sides, spreading, flat. Petioles roundish on one side, having one slight streak on the other, pubescent, ending in a soft spinule. Stipule two-parted, the segments lanceolate-linear and spreading, becoming stiff or thorny, permanent. Flowers axillary, solitary, on longer peduncles, spreading, yellow. Peduncles suberect, filiform, jointed at top, pubescent, having an acute little bracte at the joint. Calyx pubescent; the teeth almost equal, sharp, the two upper ones approximating. Standard of the corolla oval, emarginate, almost upright, reflex at the sides, larger than the other petals: wings oblong, blunt, crescent-shaped at the base, straight, loose, a little shorter than the standard: keel two-petalled, oblong, acuminate, scarcely shorter than the wings. Legumes linear, roundish but flattened a little, acuminate, naked, bay-coloured. Seeds oblong, bay somewhat variegated.

It differs from *R. Caragana*, with which Pallas confounded it, in being of much smaller stature, in having leaves that are less and many-paired, and stiffer stipules; the flowers are solitary, not aggregate, and are produced on the annual shoots, not on the branchlets of the year preceding; the legumes are slightly compressed, not cylindrical as in *R. Caragana*.—Native of Dauria.

The synonyms in Pallas that belong to *R. Caragana*, the middle figure in his plate, and the former part of his description, are to be omitted here, and referred to that species<sup>n</sup>. See his whole description there.

9. This is a diffused smooth shrub or undershrub. Root somewhat branched, thicker than the stems, having a smell approaching to that of Liquorice. Stems upright, round, somewhat branched, gray, from a yard to a yard and half in height. Branches alternate, like the stem, at first upright, then decumbent, with a torn cuticle. Shoots angular with a stipule running down in three lines more raised than in the other species, at first green, afterwards bay-coloured. Leaves alternate, two-paired: leaflets opposite, sessile, remote, the two upper ones larger, obovate, scarcely emarginate or rather repand, having a very fine point scarcely visible, entire, one-nerved; the midrib prominent beneath, scored above; smooth, scarcely paler on the under surface. Petioles round on one side, having one groove on the other, ending in a very short prickle between the uppermost pair of leaflets. Stipules supporting the petiole, two-parted, linear on each side, very sharp, spreading, becoming prickles and permanent. Flowers lateral, solitary, seldom two together, obliquely peduncled, pendulous, yellow with the disk of the standard green, becoming afterwards blood-red. Peduncles filiform, at the end jointed and bracted, patulous, continuing a little white after they are fallen off. Bracte very small and short, at the joint. Teeth of the calyx nearly equal, acute, pubescent at the edge, upright. Standard of the corolla inversely oblong or lanceolate, subemarginate, ending in a wide channelled claw, the whole reflex: wings oblong, blunt, crescent-shaped at the base: keel two-petalled. Legume cylindrical, many-seeded.

Native of China, as supposed, where it has the name of *Chamlagu*<sup>o</sup>. Introduced in 1773, by Mons. Richard<sup>p</sup>.

<sup>m</sup> Hort. kew.

<sup>n</sup> L'Heritier.

<sup>o</sup> Idem.

<sup>p</sup> Hort. kew.

10. Branches round, smooth, with a purplish-gray bark, leafy only at top, scaly below the leaves: branchlets alternate, four-cornered with ovate acuminate imbricate scales. Leaves alternate, distant, from the end of the branchlets or a little below, solitary or two or three together, all petioled, nine-paired: leaflets on very short petioles, alternate, the outmost a little smaller; all oval or roundish, smooth on both sides, shining, simply veined, subretuse, the midrib beyond the leaflet running out into a spine. Petiole unarmed. Stipules rigid, thorny, from upright-spreading, permanent. Peduncles axillary, solitary, filiform, pubescent, shorter than the leaf. Pedicels four or five, distant, jointed below the flower. Bracte small, linear, at the base of the pedicels. Calyx smooth, with lanceolate segments. Legume compressed, linear, straight, acute, jointed or contracted between the seeds, which are from two to five.—Native of the island of St. Thomas in America.

11. This is a very handsome shrub, leafless in the time of flowering, when it is quite covered with flowers. Branches round, smooth, purplish-ash-colour, smooth. Lower leaves from the bud of the former year after the fall of the flowers, commonly two or three, approximating, a finger's length; at top and on the younger branches solitary, alternate, more remote; on the lower ones longer by half, with leaflets hardly an inch in length: all petioled, alternate. Leaflets on short petioles, opposite, smooth, oblong, veined, mucronate, the inner ones a little smaller. Petiole unarmed. Stipules lanceolate, small, attenuated, unarmed, flexible, permanent. Peduncles four or five from each bud, capillary, one-flowered, jointed below the flower. Calyx goblet-shaped, smooth, with the margin entire, villose when magnified. Corolla large, purplish, with the claws of the petals of the same length with the calyx. Germ smooth.—Native of America, in Krabben Island<sup>q</sup>.

12. This is a small tree or shrub, commonly the height of a man, irregular, very much branched, rigid, leafy only at the ends of the branches, stouter than *R. frutescens*, with a strigose gray bark. Branches subflexuose, alternate, the extreme ones striated; the petioles, when old, become thorns, and are scattered alternately. Branchlets and leaves from the axils of the spines. Leaflets obovate-oblong, hoary with a very fine nap, mucronate with a spinule; the common petiole is spinulent. Stipules at the base of the petioles, very small, soft. Sometimes two-paired and three-paired leaves are seen on the same shrub. Flowers on the upper branches copious, in racemes commonly of three, but sometimes only of two flowers, purplish, almost the colour of *Lathyrus tuberosus*, smelling sweet. Calyx five-toothed, with two of the teeth approximating: standard nearly equal to the wings and keel: all the petals whitish at the base. The corolla in many flowers, and frequently all on a shrub, six-petalled, the wings being doubled. Each pedicel has a stipule. The peduncles with the permanent calyx are hoary. Legumes short, inflated, hard, remaining on to another year. Seeds reniform-subglobular, of a yellowish gray colour<sup>r</sup>.

The whole of this shrub is silky. It has all the habit of a *Robinia*, but a pedicelled germ, and an inflated legume, like that of *Phaca* or *Colutea*<sup>s</sup>.

Native of Siberia, in dry naked salt fields by the river Irtis; flowering in june, and highly agreeable to many insects, especially of the genus *Meloe*, many species of which are peculiar to this region. It flourishes in gardens, but has never produced flowers in them, probably for want of the saline principle in the soil. As it is a handsome shrub, this is to be lamented<sup>t</sup>. It was introduced here in 1779, by William Pitcairn, M. D.<sup>u</sup>

13. Trunk branched from the bottom, with a dusky or greenish-ash-coloured bark; there are commonly many lateral shoots or suckers from the root. Branches rod-like, pliant, loaded with leaves and flowers, of a shining yellowish colour, with longitudinal gray nerves,

<sup>q</sup> Vahl.

<sup>r</sup> Pallas.

<sup>s</sup> L'Heritier.

<sup>t</sup> Pallas.

<sup>u</sup> Hort. kew.



with triple spines. Leaves on the shoots of the year alternate, with spinescent stipules; from the buds in bundles, with unarmed stipules. Leaflets clustered, obovate, attenuated at the base, with a spinule at the end: petiole spinescent, after the leaves are fallen, hardening with the stipules into a triple spine. Peduncles on the branches of the preceding year, from each bud, one, two or three, bent a little at the joint, one-flowered. Calyx, like the whole plant, smooth, permanent, shortly bell-shaped, deeply four-toothed; the teeth subciliate, the upper one larger and more remote. Corolla frequently drooping topsy-turvy, three times as large as the calyx, yellow: standard reflex; wings with the keel biggish, oblong, entire. Legumes cylindrical, of a testaceous-gray colour and hard. Seeds oval, gray<sup>2</sup>.]

It grows with a shrubby stalk eight or ten feet high, sending out several branches which grow erect, covered with a smooth yellowish bark. The leaves have two pairs of oval pointed leaflets, on short foot-stalks. The flowers are produced upon single peduncles, which come out at the joints of the branches: they are yellow, shaped like those of Laburnum, but smaller, appear in May, and if the plants stand in a moist soil and shady situation, the seeds will ripen at the end of August.

[Native of Siberia, by the Volga, &c. in temperate situations, on hills and the rocky banks of the river<sup>3</sup>. Cultivated in 1759, by Mr. Miller<sup>4</sup>.

14. Trunks covered with a shining yellowish bark. Wood of a very deep bay, almost as hard as horn: the older twigs round, with a beautifully golden shining cuticle; branchlets gray, with very frequent two-spined buds. Spinules slender like needles, spreading, arising from the stipules, in the older branches deciduous. Leaflets four or six in the spontaneous shrub clustered in bundles, quite sessile, linear acuminate, a little hispid. Peduncles springing singly from most of the buds on the branchlets among the leaves, the length of the leaflets, bent at the joint. Calyx somewhat hairy, five-toothed, the two upper teeth approximating. Corolla twice the size of the calyx, deep yellow: standard ovate, compressed, tawny at the back; wings wide-lanceolate, equal to the standard; keel a little shorter. Legumes round flattened a little, rigid, mucronate. Seeds partly ovate, partly oblong, yellowish powdered more or less with black dots.

The Altaic plant is scarcely a span high, more branched, with more remarkable spines, but with slender leaves and smaller flowers. In the gardens, the leaves are more remarkable, being four in form of a star, on a large spreading petiolar spine; there is a third accessory pair at the very base of the spine, springing out between the stipular spines. The first leaves of the seminal plant are ternate<sup>5</sup>. That Linneus says is the case in all the Siberian species. He remarks, that this resembles the preceding very much, but is of a dwarf stature and more thorny; that the leaves are wedge-shaped, very blunt, and hardish; and that the stipules in the primordial leaves are leafy and lanceolate in this species only.]

It is a weak low shrub, seldom rising more than three feet high in England: the branches are slender, and are covered with a light bark. The leaves are composed of four oblong sessile leaflets: the flowers are produced singly upon axillary peduncles; they are yellow and appear in April, but are rarely succeeded by seeds in England.

[Native of Siberia; where this elegant species begins by the Irtysh, in the southern, rocky, open parts; becomes more frequent by the Jenisea; and most common in the regions beyond the lake Baikal. It rises commonly with twigs an ell in height where it is exposed to the firing of the country in spring; but in the mountains it grows with a trunk the height of a man, and the thickness of his wrist. The twigs are very tough and fit for withes; and are of an elegant golden colour<sup>6</sup>. Mr. Miller cultivated it before 1768<sup>7</sup>.

15. This is a shrub about a fathom in height. Root branched, having the smell and taste of Liquorice. Stem upright, somewhat branched, round, tubercled, gray: branches alternate, spreading, like the stem. Leaves alternate, spreading, eight inches long. Leaflets from twelve to fifteen pairs, opposite, on short petioles, those of the outmost longer, oblong, blunt and scarcely acuminate, quite entire, one-nerved; the midrib prominent below, the veins scarcely apparent; almost naked, bright green, paler underneath, spreading very much, flat, from twelve to eighteen lines long, from six to eight lines wide. Petioles round on one side, channelled on the other; both these and the petiolets pubescent. Stipules linear, acute, pubescent, brownish, upright, permanent. Racemes axillary, solitary, peduncled, patulous, bracted, pubescent, four or five inches long. Flowers alternate, nodding, pedicelled, yellow. Pedicels round, jointed at the top. Bractes lanceolate, acute, concave, pressed close, pubescent, brown. Calyx half-four-cleft, pubescent; segments lanceolate, acute, upright, the upper one double the width of the rest and bifid. Corolla longer than the calyx: standard obcordate, wholly bent back; wings oblong, blunt, appendicled and crescent-shaped below: keel two-petalled, oblong, acute, compressed, of the same shape with the wings. Filaments scarcely united at the base. Germ pedicelled. Stigma blunt. Legume oblong, narrowing into a pedicel, acuminate, compressed. Seeds few (about three) oblong, almost kidney-shaped, smooth.

It recedes a little from its congeners in having all the filaments united together at the base only, and in having a pedicelled germ. It has the leafing of the first species, but the branches have no thorns. The stigma is naked, not villose, as in *R. Pseudacacia* and *bispida*.

Native of Abyssinia; whence the seeds were brought by Bruce, and introduced into the Paris garden, with many other plants of that country<sup>8</sup>.

16. This is a shrubby plant, four feet high, without any thorns: branches diffused, of a reddish brown colour. Leaflets about five pairs, ovate-oblong, greenish-brown above, whitish underneath. Racemes upright, long, subterminating. Calyx flattish, four-toothed. Corollas violet: standard roundish, spreading; wings oblong, straight; keel shorter, blunt, one-leaved. Legume long, roundish, straight, acuminate, smooth; containing many oblong-reniform seeds. Root somewhat fleshy, of a yellowish-brown colour, and very bitter.—Native of China and Cochinchina.

17. This also is a shrubby plant, but only one foot high. Leaves upright. Leaflets seven or eight-paired, oblong, subacute, smooth, pale green. Flowers white, terminating; with peduncles in threes, upright, and three-flowered. Root simple, woody, thick, yellow, bitter.—Native of the northern provinces of China<sup>9</sup>.]

#### PROPAGATION AND CULTURE.

1. False or Bastard Acacia or Locust-tree is generally propagated in the English nurseries, by suckers from the roots of the old trees; or by cutting off some of the roots, and planting them upon a gentle hot-bed. But these are not so valuable as plants raised from seeds; because they do not make so great progress, and are very subject to send forth many suckers.

Sow the seeds on a bed of light earth at the end of March or beginning of April. If the bed be well exposed to the sun, the plants will appear in five or six weeks, and will require no farther care but to keep them clear from weeds. The following spring, about the end of March, transplant them into a nursery, in rows three feet distant, and a foot and half asunder in the rows. After two years more they will be fit to transplant where they are designed to grow: for as they send forth long tough roots, if they stand long unremoved, the roots will be cut off, when they are transplanted, which sometimes occasions their miscarrying.

<sup>2</sup> Pallas.

<sup>3</sup> Idem.  
<sup>4</sup> Idem.

<sup>5</sup> Hort. kew.  
<sup>6</sup> Hort. kew.

<sup>7</sup> Pallas.

<sup>8</sup> L'Heritier.

<sup>9</sup> Loureiro.



This tree will grow well upon almost any soil, but best in such as is light and sandy; where it will shoot six or eight feet in a year. Whilst young and well furnished with leaves it makes an agreeable appearance; but when old, the branches being frequently broken by winds, it is rendered unsightly, especially in an exposed situation.

[In New England, the Locust tree is increased not only by seeds and suckers; but also by sets, as we do Willows; but they get the largest trees from seed.]

4. The Rose-Acacia, as it is commonly called, not producing seeds in England, is propagated by cutting off part of the roots, and planting them upon a gentle hot-bed, where they will put out fibres and shoots. It should have a sheltered situation, and a light moist soil. Though the ordinary winters of this country never injure it, yet in very severe seasons the young plants are sometimes killed in exposed places: [Their branches are also liable to be broken by high winds. Marshall, in his *Arbustum Americanum*, describes it as spreading much from its running roots; but it does not do so in any great degree here. It may be increased by layers, and by grafting. It is of a ready growth; disposed to flower even when young, and not nice as to soil or situation. On account of its large, beautiful branches of rose-coloured flowers, it is one of the most valuable shrubs we have for ornamental plantations.]

6. 7. 8. 9. 12. 13. 14. The Siberian sorts are propagated from seeds sown in a shady situation in autumn; and then the plants will come up the following spring: but if the seeds are sown in the spring, the plants seldom rise the same season. When the plants come up, they will require no other care but to keep them clean from weeds till autumn; when, if they have made any progress, they should be planted on a north border, at about six inches distance, where they may grow two years, and then be planted out where they are to remain, which should be in a cool moist soil, not too much exposed to the sun. [They may also be increased by the roots, by layers and grafting.]

2. 3. 5. 10. 11. 15. Being tender, cannot be maintained in England, unless they are placed in a stove in winter. These are propagated by seeds procured from the countries where they grow naturally. Sow them in small pots filled with earth from the kitchen garden, and plunged into a hot-bed of tanner's bark. The plants will appear in six weeks or two months. When these are fit to transplant, shake them out of the pots, and put each plant into a small pot filled with the like earth, and plunged into the tan-bed; shading them till they have taken new root, and then treating them as other tender plants.

Whilst the plants are young they are more tender than afterwards; therefore it will be proper to keep them in the tan-bed for two or three years: but when they have obtained strength, they may be kept in a dry stove of a temperate heat in winter: and in summer they may be exposed to the open air in a sheltered situation. Some of the sorts may be propagated by cuttings. [The 15th sometimes ripens its seeds in France.]

ROBINIA. See *Æschynomene*.

----- alata. See *Piscidia Erythrina*.

Robinson Crusoe's Coat. See *Callus*.

ROBINSONIA. (So named by Scopoli. We have two English Robinsons—Thomas, rector of Ousby in Cumberland, author of the natural history of Cumberland—and Tancred, physician in London, and amicorum alpha of our excellent Ray; author of many letters in his philosophical correspondence, and papers in the Philosophical Transactions of the Royal Society: the name is probably given from the latter.)

Lin. gen. Schreb. n. 852. Scop.

Touroulia. Aubl. t. 194. Juss. 434.

Class. 12. 1. Icosandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leaved, turbinate, five-toothed; teeth acute.

COR. Petals five, roundish, concave, spreading, inserted into the calyx.

STAM. Filaments very many, capillary; thickened towards the top, inserted into the calyx below the petals. Anthers two-celled: cells oblong, divaricated at the base.

PIST. Germ superior. Style none. Stigma oblong, striated.

PER. Berry, globular-depressed, scored longitudinally with many contiguous grooves, crowned with the teeth of the calyx, fleshy, seven-celled: partitions membranaceous.

SEEDS solitary, oblong, compressed, outwardly convex, villose.

ESSENTIAL CHARACTER.

Cal. five-toothed. Pet. five. Berry striated, two-celled, cells one-seeded. Seeds villose.

SPECIES.

1. Robinsonia melianthifolia.

Willd. spec. 999.

Touroulia guianensis. Aubl. guian. 1. 492. t. 194.

DESCRIPTION, &c.

This is a large tree. Leaves alternate, almost like those of *Melanthus major*, unequally pinnate, the leaflets lanceolate-acuminate, finely serrate, veined, the upper ones decreasing at the base into the common petiole. Stipules oblong, acute, small. Flowers yellow, minute, in a terminating panicle. Berry eatable, slightly acid and of a pleasant taste, the size of a Cherry. Native of Guiana, in woods.

ROBIN, WAKE. See *Arum*.

ROCAMBOLE. See *Allium*.

ROCELLA. See *Lichen*.

ROCHEFORTIA. (So named by Swartz, in memory of de Rochefort, a traveller at the beginning of the 17th century; and author of Histoire naturelle & morale des îles Antilles de l'Amérique. Rotterdam, 1639, &c.)

Lin. gen. Schreb. n. 1740. p. 797. Swartz, prodr.

53. descr. 551.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Dumetæ*. Rhamni, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted: segments ovate, blunt.

COR. one-petalled, funnel-form: tube short: aperture open: border five-parted: segments ovate-oblong, spreading.

STAM. Filaments five, inserted in the throat of the corolla at the openings, awl-shaped. Anthers oblong.

PIST. Germ superior, roundish, compressed. Styles two, awl-shaped. Stigmas simple.

PER. subglobular, two-celled.

SEEDS a few, angular.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. one-petalled, funnel-form, inferior, with the aperture open. Fruit two-celled, many-seeded.

SPECIES.

1. Rochefortia cuneata.

Lin. spec. ed. Willd. 1328. Swartz, prodr. 54. descr. 552.

Leaves wedge-shaped obovate entire.

2. Rochefortia ovata.

Lin. spec. ed. Willd. 1328. Swartz, prodr. 54. descr. 554.

Leaves ovate emarginate.

DESCRIPTIONS, &c.

1. This is a shrub, three or four feet high, with a branching, upright, unarmed stem: branches subdivided, flexuose, round, thorny, almost even, covered with an ash-coloured bark. Thorns near the base of the petioles, solitary, stretched out, three times shorter than the petioles. Leaves in bundles, or threes, seldom more, alternately clustered, on short petioles, sometimes emarginate, smooth on both sides, brownish-green, paler underneath, slightly nerved, somewhat rigid. Peduncles commonly terminating, axillary, subdichotomous, clustered, cymed, shorter than the leaves. Flowers small, greenish or whitish: segments of the calyx upright, pubescent: tube of the corolla five-cornered. Germ villose: styles shorter than the filaments, villose: stigmas villose, subplumose.—Native of Jamaica, on dry rocky mountains.

L'Heritier.

2. This



2. This is a small tree, with round smooth branches. Leaves alternate, petioled, entire, somewhat villose, nerved and veined, an inch long. Peduncles five times shorter than the leaves, many-flowered; with the flowers in pairs. Calyx divided to the base: segments villose at the edge, upright, incumbent. Tube of the corolla bell-shaped, the length of the calyx: segments blunt, a little longer than the tube. Anthers large, subincumbent. Germ smooth.—Native of Jamaica<sup>1</sup>.

ROCK-CRESS. See *Iberis*.

ROCKET. See *Brassica*, *Erythimum Barbarea*, *Hesperis*.  
——, Base. See *Refeda*.

ROCK-ROSE. See *Cistus*.

ROELLA. (So named by Linneus in honour of William Roell, professor of anatomy at Amsterdam, who sent many seeds of plants to Linneus from both Indies, Africa and Japan, among others the seeds of this plant from Africa.)  
Lin. gen. n. 219. Reich. n. 235. Schreb. n. 291.  
Gärtn. t. 31. Juss. 165.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanaceæ*. *Campanulaceæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, five-parted, permanent, superior: segments lanceolate, acute, toothed, large.

COR. one-petalled, funnel-form, deciduous: tube a little shorter than the calyx: border from upright-spreading, five-parted, longer than the calyx.

Nectary of five converging scales, at the bottom of the corolla.

STAM. Filaments five, awl-shaped, placed on the nectary. Anthers awl-shaped, converging, the length of the filaments, the height of the calyx.

PIST. Germ oblong, inferior. Style filiform, the length of the stamens. Stigmas two, oblong, depressed, spreading.

PER. Capsule cylindrical, shorter than the calyx, crowned with the calyx which spreads and is become larger, two-celled (according to Bergius subbilocular—to Gärtner, unilocular, opening at top by a large round hole.)

SEEDS very many, angular.

OBS. Allied to *Campanula*.

#### ESSENTIAL CHARACTER.

Cor. funnel-form, with the bottom closed by stamiferous valves. Stigma bifid. Caps. two-celled (one-celled, G.) cylindrical, inferior.

#### SPECIES.

1. *Roella ciliata*. *Ciliate Roella*.

Lin. spec. 241. Juss. 211. Reich. 469. Willd. 918.  
hort. cliff. 492. t. 35. Thunb. prodr. 38. Berg.  
cap. 41. Gärtn. fruct. 1. 155. Desfont. atlant.  
182. Lamarck, illustr. n. 2576. t. 123. f. 1.  
Pluk. phyt. t. 252. f. 4. Curt. magaz. 378.

*Campanula africana frutescens aculeosa*, flore violaceo.  
Comm. hort. 2. 77. t. 39.

C. afr. humilis pilosa, flore exalbido languide purpureo. Seba, thes. 1. 25. t. 16. f. 5.

Leaves lanceolate, ciliate, flowers solitary terminating.

2. *Roella squarrosa*. *Trailing Roella*.

Lin. Juss. 211. Willd. 918. suppl. 143. Thunb.  
prodr. 38. Berg. cap. 42.

Leaves ovate toothed ciliate, flowers terminating aggregate.

3. *Roella decurrens*. *Decurrent Roella*.

Lin. spec. ed. Willd. 918. L'Herit. fert. 4. t. 6.  
Ait. kew. 1. 206.

Leaves lanceolate ciliate quite entire decurrent, flowers solitary terminating.

4. *Roella muscosa*. *Mossy Roella*.

Lin. Juss. 211. Willd. 918. suppl. 143. Thunb.  
prodr. 38.

Herbaceous, diffused, leaves ovate toothed reflex, flowers terminating solitary.

5. *Roella spicata*. *Spiked Roella*.

Lin. spec. ed. Willd. 919. Juss. 211. suppl. 143.  
Thunb. prodr. 38.

Leaves lanceolate ciliate, flowers terminating aggregate.

<sup>1</sup> Swartz.

#### DESCRIPTIONS, &c.

1. This is a low shrubby plant, somewhat like a heath when not in flower. The narrow ciliate leaves are clustered about the flower-bud like bractes. A single flower terminates each branch, differing from that of the *Campanula*, to which it is very nearly related, in being funnel-shaped, that is having a tube, and a border spreading out; whereas in *Campanula*, the corolla is bell-shaped, or spreads gradually from the bottom.—When a flower is recently expanded, five shades of colour appear, which being disposed in circles, produce a striking effect: the bottom of the flower is white, of a yellowish cast, next succeeds a circle of deep blue inclining to black, with a surface highly glazed, the next circle is greyish-blue resembling satin, the next nearly white, and the outermost pale purple. The anthers at first are closely applied to the surface of the corolla, and resemble so many small ridges; the stigma, as in many other flowers, does not assume its true appearance till the corolla is on the decay; then it becomes bifid<sup>k</sup>. Capsule ovate-cylindrical, crowned with the pinnate-toothed rigid leaflets of the calyx; and within these, by five scalelets of the stamens, united at the base into a hemispherical cup. Seeds subovate, angular, rugged with raised dots, or shagreened as it were, ferruginous, fastened to the branchlets of very slender threads hanging down from the top of the capsule<sup>l</sup>. Gärtner could not distinguish any vestige of a partition in ripe capsules.

Native of the Cape of Good Hope and Barbary.—It was introduced by Mr. Francis Masson in 1774<sup>m</sup>: but it was long before known to Dutch botanists. It flowers in June, and continues several weeks<sup>n</sup>.

2. Native of the Cape of Good Hope, where it was found by Thunberg.—Masson also introduced it from thence in 1787. It flowers in June<sup>o</sup>.

3. This differs from the two preceding in being annual. It is a native of the Cape, like the others, and was introduced by Masson in 1787. It flowers in September<sup>p</sup>.

4. This is a very small plant, annual, herbaceous and diffused, resembling a moss when not in flower.—Thunberg found it at the Cape.

5. This is shrubby and upright. The flowers are not solitary, but aggregate; forming a sort of spike.—Found at the Cape by Thunberg<sup>q</sup>.

#### PROPAGATION AND CULTURE.

The first, and other shrubby species may be increased by cuttings, but not very readily. They are not so easy of culture as many others. They must be kept in a dry stove, good green-house or glass case.

*Roella reticulata* is *Gorteria ciliaris*.

ROHRIA. (So named by Schreber; in honour of Julius von Rohr, who travelled into America, and sent many plants to Europe from Surinam, Carthagen, St. Martha, Cayenne, Jamaica, Martinico and other islands of the West Indies, which are edited by Vahl.)

Lin. gen. Schreb. n. 63. Tapura. Aubl. t. 48.

Juss. 419.

Class. 3. 1. Triandria Monogynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, five-parted: segments ovate, concave, blunt; ciliate, coriaceous; the two inner ones a little longer.

COR. Petals five; upright, longer than the calyx, the two upper ones a little larger, the three lower smaller: claws narrow, wider at the base, woolly within, under the laminae a little bent outwards: laminae ovate, erect, in the larger petals bent inwards and cowed, in the smaller spread out and bluntish.

STAM. Filaments three; one between the two larger petals, and two by the side of them, united at bottom with their claws, filiform, longer than the corolla, woolly within. Anthers roundish, erect, with the face turned inwards.

PIST. Germ turbinate, tomentose. Style filiform, the length of the stamens, villose. Stigmas three, revolute.

PER. Capsule?

SEEDS.

<sup>k</sup> Curtis.

<sup>l</sup> Gärtner.

<sup>m</sup> Hort. kew.

<sup>n</sup> Curtis.

<sup>o</sup> Hort. kew.

<sup>p</sup> Idem.

<sup>q</sup> Linn. suppl.



# R O N

## ESSENTIAL CHARACTER.

Cal. bell-shaped, five-parted. Cor. five-petalled, unequal. Stigmas three, revolute. Capsule?

## SPECIES:

1. Rohria petioliflora.

Lin. spec. ed. Willd. 186.

Tapura guianensis. Aubl. guian. 126. t. 48.

## DESCRIPTION, &c.

This is a branching shrub. The leaves are alternate, petioled, oblong, acuminate, quite entire, netted-veined. The petioles are floriferous. Flowers small, yellow, at the top of the petiole and base of the leaf, heaped into small very short four-flowered or five-flowered racemes.

Native of the woods of Guiana.

Rojoc. See Morinda.

ROLANDRA. (So named by Rottboell, in honour of Daniel Rolander, a pupil of Linneus's, who travelled to Surinam.)

Lin. gen. Schreb. n. 1355. Rottboell. coll. hafn. 2. 256. Swartz prodr. 116.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of Compositæ Capitatae. Cinarocephalæ, Juss.

## GENERIC CHARACTER.

CAL. common none. Florets in bundles, in a roundish head: bundles distinct, pedicelled, with many scales interposed, shorter than the florets, ovate and lanceolate awned.

Perianth partial chaffy, two-valved: valves unequal, compressed, keeled; the upper one larger, inclosing the other, awned; lower acuminate.

COR. Proper hermaphrodite, very small, funnel-shaped: tube filiform, long: border five-cleft; segments very short, erect, acute.

STAM. Filaments five, shorter than the tube. Anther tubular, within the aperture.

PIST. Germ compressed-three-cornered, acute at the base, retuse at the top. Style the length of the tube, bifid at the top. Stigmas thickened, erect.

PER. none. Partial calyx includes.

SEED three-cornered, crowned with a toothed rim. Down none.

## ESSENTIAL CHARACTER.

Florets bundled into a head with scales interposed. Calyx partial two-valved, one-flowered. Corollets hermaphrodite. Down none.

## SPECIES.

1. Rolandra argentea.

Rottb. coll. hafn. med. 2. 256. Swartz prodr. 116.

Echinops fruticosus. Lin. spec. ed. 1.

E. frutescens ad nodos floridus. Plum. ic. 114. t. 123.

Amaranthoides fruticosum, &c. Sloan. jam. 1. 43. t. 7. f. 3.

## DESCRIPTION, &c.

Stem straight, woody, covered with a smooth reddish-brown bark; having at every inch or two one, two or three leaves, greater and smaller, the largest about two inches long, and three quarters of an inch broad in the middle, smooth, dark green on the upper side, and very white underneath, on a very short foot-stalk. At each axil a sessile conglomerate head of flowers.

Native of the West Indies.

ROMULEA. See Ixia Bulbocodium.

RONABEA. See Psychotria.]

RONDELETIA. (So named by Plumier, in memory of Guillaume Rondelet, a famous physician and natural historian of Montpellier.)

Lin. gen. n. 224. Reich. n. 240. Schreb. n. 296.

Plum. 12. Juss. 201.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rubiaceæ, Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, superior, five-parted, acute, permanent.

COR. one-petalled, funnel-shaped: tube cylindrical, longer than the calyx, bellying a little at top: border five-parted, from reflex flat; segments roundish.

\* Willdenow.

\* Sloane.

# R O N

STAM. Filaments five, awl-shaped, almost the length of the corolla. Anthers simple.

PIST. Germ roundish, inferior. Style filiform, the length of the corolla. Stigma bifid.

PER. Capsule roundish, crowned, two-celled.

SEEDS several, or sometimes solitary.

OBS. Several of the species have four parts in the fructification.

## ESSENTIAL CHARACTER.

Cor. funnel-shaped. Caps. two-celled, inferior; many-seeded, (or with one or two seeds only) roundish, crowned.

## SPECIES:

\* With many seeds.

1. Rondeletia americana.

Lin. spec. 243. Reich. 1. 473. Willd. 930.

R. arborescens tini facie. Plum. gen. 15. ic. 142. f. 1. Leaves sessile, panicle dichotomous.

[2. Rondeletia odorata.

Lin. spec. 1671. Willd. 930. Jacqu. amer. 59. t. 42. pict. 34. t. 61. Swartz, obs. 67.

R. obovata. Lin. syst. 212. Reich. 1. 474.

Leaves petioled subovate blunt.

3. Rondeletia trifoliata.

Lin. spec. 1671. syst. 212. Reich. 1. 474. Willd. 930. Jacqu. amer. 60. t. 43. pict. 34. t. 62.

R. arborescens tini facie. Ebrret, pict. t. 15.

Leaves tern tomentose underneath, panicles axillary.

4. Rondeletia virgata.

Lin. spec. ed. Willd. 931. Swartz, prodr. 41. descr. 354.

Leaves roundish, branches filiform spreading, peduncles trifid, flowers tern clustered four stamened.

5. Rondeletia pilosa.

Lin. spec. ed. Willd. 931. Swartz, prodr. 41. descr. 356.

R. triflora. Vahl, symb. 3. 34. t. 54.

Leaves ovate hairy on both sides, peduncles axillary shorter than the leaves trifid, flowers four-stamened.

\* With subsolitary seeds.

6. Rondeletia thyrsoides.

Lin. spec. ed. Willd. 931. Swartz, prodr. 41. descr. 358.

Leaves oblong acute membranaceous pubescent underneath, thyrses axillary.

7. Rondeletia racemosa.

Lin. spec. ed. Willd. 931. Swartz, descr. 360.

Petefia fruticosa, &c. Brown. jam. 143. 1. t. 2. f. 3. Leaves lanceolate-ovate acuminate smooth on both sides, stipules elliptic with a short point, racemes axillary trichotomous patulous.

8. Rondeletia laurifolia.

Lin. spec. ed. Willd. 931. Swartz, descr. 363.

Petefia fruticosa, &c. Brown. jam. 143. 2. t. 2. f. 2. Leaves lanceolate-oblong acute smooth on both sides, stipules deltoid, racemes compound axillary erect, tube of the flowers very short.

9. Rondeletia tomentosa.

Lin. spec. ed. Willd. 932. Swartz, prodr. 41. descr. 365.

Petefia stipularis. Lin. & Diet. nostr.

Leaves ovate acuminate tomentose, peduncles three-parted axillary short.

10. Rondeletia umbellulata.

Lin. spec. ed. Willd. 932. Swartz, prodr. 41. descr. 367.

Petefia fruticosa, &c. Brown. jam. 144. n. 3. Leaves lanceolate-ovate acute subhirsute, peduncles axillary trichotomous at top, flowers subumbelled.

11. Rondeletia incana.

Lin. spec. ed. Willd. 933. Swartz, prodr. 41. descr. 369.

Leaves ovate-lanceolate underneath hoary rugged, peduncles axillary simple three-flowered.

12. Rondeletia hirsuta.

Lin. spec. ed. Willd. 933. Swartz, prodr. 41. descr. 371.

Leaves oblong acute hirsute, peduncles axillary trichotomous loose, flowers hirsute.



13. *Rondeletia hirta*.

*Lin. spec. ed. Willd. 933. Swartz, prodr. 41. descr. 373. Ait. kew. 1. 227.*

*Leaves oblong acuminate rough-haired rigid nerved underneath, peduncles axillary trichotomous erect.*

14. *Rondeletia buxifolia*.

*Vahl, ecl. 2. 11.*

*Leaves obovate smooth, flowers four-stamened axillary solitary.]*

## DESCRIPTIONS, &amp;c.

1. This rises with a woody stalk ten or twelve feet high, branching out on every side; the branches covered with a smooth greenish bark. Leaves oblong, ending in acute points, entire, the upper surface lucid green, the under pale; they are a little crumpled, and stand alternate. The flowers come out in bunches at the end of the branches, are white, and have little scent. They appear in autumn, but are not followed by seeds in England.

[The leaves of this small tree are opposite, lanceolate. Common peduncles solitary, very long, naked, forming at the top a dichotomous corymb, in each division of which is a sessile flower, with a two-leaved involucre.]

The seeds of this plant were first sent to Mr. Philip Miller by Mr. Robert Millar, who collected them on the north side of the island of Jamaica; he also observed the trees growing plentifully in the Spanish West Indies; Mr. Philip Miller also afterwards received the seeds from Barbadoes, which succeeded in the Chelsea garden. [It appears from the 5th edition of his Dictionary, that he cultivated it in 1748<sup>1</sup>.

2. This is an inelegant, irregular, upright shrub, five or six feet high. Branches round, the younger ones villose. Leaves opposite, subcordate at the base, entire, somewhat rugged on the upper surface, veined and rigid, on very short petioles. Stipules within the petioles, wide, acute. Common peduncles erect, terminating in threes, three-flowered, the middle division sometimes subdivided into three others that are similar: the pedicels collecting the flowers into a handsome umbel, or umbelled-cyme. Flowers handsome, scarlet with the projecting rim of the tube orange-coloured, smelling very sweet like violets. The corolla is very often six-parted, with a six-leaved calyx, though it has always five stamens. The capsules have many angular seeds<sup>2</sup>.

Native of the West Indies, but not very common. Jacquin observed it, at the Havannah, in rocky coppices near the coast, growing frequently on the very naked rocks; flowering in January, and at the same time loaded with ripe fruit.

By mistake, the trivial name was printed *obovata* in all the editions of the *Systema vegetabilium*.

3. This is an upright tree, twelve feet in height. The younger branches are obtusely triangular and hirsute. Leaves lanceolate, acute, quite entire, smooth on the upper, slightly tomentose on the lower surface, three inches long, on hirsute petioles. Stipules roundish-acuminate, in threes, alternating with the leaves. Racemes hirsute, unequal, branched, axillary, an inch and half in length. Flowers small, reddish, sessile and peduncled, void of scent. Fruit two-valved, with the partition opposite to the valves<sup>3</sup>.

Linneus remarks, that the peduncles are shorter than the leaves, not longer as in Plumier's plant.

Native of America. Jacquin observed it in Jamaica, flowering in February.

4. This is a shrub, a fathom in height, with very long, alternately spreading, unarmed branches, with a rugged bark. Leaves opposite, half an inch long, cordate, in others roundish or ovate, entire, subreflex, veined, paler underneath, quite smooth, on very short petioles. Stipules between the petioles, small, acute. Peduncles axillary and terminating, opposite, elongated, upright, having a pair or two of leaves, three-parted, or terminating only three-flowered and leafless. Flowers terminating, subsessile, or sometimes on very short pedicels, upright, dusky-purple, silky-pubescent

<sup>1</sup> Linn.

<sup>2</sup> Hort. kew.

<sup>3</sup> Jacquin and Swartz.

<sup>4</sup> Jacquin.

on the outside. Bractes very small, linear, two or four, under the flowers. Calyx four-leaved: leaflets linear, upright. Corolla salver-shaped: tube filiform, widening a little at top; border four-parted; segments convex, with a yellow notched ring placed on the aperture. Filaments four, very short, in the middle of the tube: anthers linear, striated, yellow. Style longer than the stamens, awl-shaped. Stigma below the ring of the aperture bifid; segments obtuse. Capsule subdidymous, hoary-pubescent, crowned with the calyx, two-celled, two-valved, with the partition contrary. Seeds very many, acuminate, compressed, small, brown, inserted or fastened to their proper ovate receptacle in each cell.

Native of Hispaniola, in maritime coppices towards the north, near Cul de sac, flowering and fruiting in December.

5. This is a shrub with round or four-cornered branches, leafy towards the top, and hairy, below even, ash-coloured, often warted with the old deciduous petioles. Leaves opposite, two or three inches long, the upper or terminating ones clustered, ovate-lanceolate, entire, nerved, hairy, underneath rough-haired or tomentose-hoary. Petioles short, villose. Stipules between the petioles, subconnate, acuminate, hairy. Peduncles opposite, filiform, hairy, at the top trifid or three-flowered; the flowers pedicelled; the lateral pedicels half an inch long, the middle one shorter. Bractes two awl-shaped at the base of the lateral pedicels; and two others at the base of the germ, shorter by half than the calyx. Calyx four-parted: segments lanceolate-linear, acute, villose. Corolla salver-shaped: tube subcylindrical, the length of the calycine segments, wider at top, on the outside villose or somewhat silky: border near the aperture crowned with a margined ring, four-parted, with the segments roundish, spreading, convex above, shorter than the tube. Filaments four, very short, inserted in the tube above the middle: anthers oblong, linear, included. Germ villose: style the length of the tube: segments of the stigma linear, blunt. Capsule small, subglobular, twin, villose, two-valved with the partition contrary. Seeds numerous, brown.

Native of the West Indies, in the islands of Santa Cruz and Montserrat<sup>2</sup>.

Vahl thus describes his *R. triflora*: Branches round, smooth below, hairy at top. Leaves at the top of the branches, on short villose petioles, opposite, the uppermost in clusters, two or three inches long, broad-lanceolate, a little narrowed towards the base, acuminate, quite entire, above marked with lines along the nerves, and having hairs thinly scattered about, underneath a little hoary with frequent longer hairs, soft especially the younger ones, nerved. On each side an oblong, acuminate stipule, somewhat villose. Peduncles axillary, opposite, two inches long, filiform, three-flowered; the fruiting ones an inch and half long and more. Flowers pedicelled: the middle pedicel shorter, without any bracte; the lateral ones longer, with a subulate bracte on each side; at the base of the pedicels and above are two others similar on each lateral pedicel. Calyx four-parted; the segments awl-shaped, villose. Corolla one-petalled, cinereous-villose on the outside: tube filiform, widening a little at top, with the segments of the border oblong, blunt. Filaments four, very short, inserted into the tube above. Anthers linear, within the tube. Germ globular, villose-cinereous. Style linear, thickened towards the top, villose at the base. Stigma blunt. Capsule the size of black Pepper, globular, villose, crowned with the calyx, two-celled, containing many seeds.

6. This is a small tree or shrub six feet high, branched, upright, even, with an ash-coloured bark. Branches simple, almost upright, long, spreading, round or bluntly four-cornered, smooth. Leaves opposite decussated, three inches long, entire, nerved and veined, on petioles an inch long, striated, spreading. Stipules between and above the petioles, pressed to the branchlet, wide, ovate, acute, smooth, rigid. Thyrses solitary opposite, shorter than the leaves, ob-

<sup>2</sup> Swartz.



long, spreading; on a common petiole, an inch in length, angular, striated, smooth; branchlets opposite, decussated, subdivided; the outmost commonly three-flowered. Flowers small, dull, whitish-yellow or ferruginous. Bractes small, awl-shaped, or little leaflets under the ramifications of the thyse. Calyx very minute, five-toothed. Tube of the corolla elongated, cylindrical, swelling below the border, silky-pubescent on the outside: border five-parted; segments roundish, convex, distant, patulous, with a small ring contracting and crowning the aperture. Filaments five, inserted into the upper part of the tube: anthers very small, ovate, pale, placed in the very aperture. Germ roundish: style awl-shaped, bifid at the top: stigmas simple. Capsule roundish, with a groove along the middle, the size of a Coriander seed, crowned with the very small calyx, two-celled; having two angular-rounded, striated seeds in each cell.

Native of the driest hills of Jamaica, in the western part of the island; flowering in May: the flowers smell very sweet during the night.

7. This is a shrub with round spreading branches, covered with an irregular hoary bark: branchlets four-cornered, compressed a little at the tip, smooth. Leaves decussated, quite entire, scarcely nerved, veined; somewhat membranaceous. Petioles longish, four-cornered, smooth. Stipules interpetiolar, opposite, patulous, convex, wide, very minutely villose at the edge. Racemes solitary, opposite, from upright spreading, shorter than the leaves: common peduncle the length of the petioles, compressed; branches decussated, almost horizontal, with sessile awl-shaped spreading bractes every where at the subdivisions of the raceme; flowers pedicelled, distinct not clustered. Calyx small, with five very short upright teeth. Corolla small, silky-hoary on the outside, pale within: tube short, oblong, equal; border five-parted, segments ovate, spreading, pubescent; aperture naked, five-cornered. Filaments from the middle of the tube: anthers oblong, yellowish in the aperture of the tube. Germ ovate, smooth: style simple, upright, the length of the tube: stigma thickish, with the apex more acute and undivided. Capsule ovate, crowned with the calyx, smooth, two-celled? opening by two valves, two-seeded. Seeds convex on one side, flat on the other, joined at the middle, distinct from the partition at the sides. Besides the ripening seeds there are other very minute embryos within the valves.—Native of Jamaica, on the mountains.

It is allied both to *R. thyrsoides* and *laurifolia*, but differs in the leaves, spreading racemes, and flowers.

Browne's figure agrees very well with this plant. In his specific character he makes the leaves verticillate-ternate, whereas in the figure they are opposite. He also speaks of the flowers as four-stamened, which they very seldom are.

8. This is a shrub, with round, smooth, somewhat striated branches, jointed as it were with the deciduous petioles, compressed a little at the top. Leaves opposite, three or four inches long, decussated, acuminate at both ends, entire, nerved and veined, paler underneath; on petioles an inch long, roundish, flat above, smooth. Stipules between the petioles, wide connate acuminate spreading rigid smooth, except at the edge where they are villose. Racemes often the length of the leaves, opposite: branches decussated, compressed a little: pedicels scattered, the last commonly three-flowered. Bractes minute, awl-shaped, at the divisions of the raceme. Flowers small, dusky-yellow. Calyx five-toothed, very small, pubescent: teeth acute, erect, very small. Tube of the corolla very short, scarcely longer than the teeth of the calyx, wider under the border; which is five-parted, with the segments the length of the tube, oblong, reflex, tomentose above: throat open, with the margin five-cornered, smooth, shining. Filaments from the middle of the tube, shorter than the tube: anthers in the throat, oblong, yellow. Style thickish, the length of the tube: stigma above the border thickened, bifid. Capsule globular, scarcely larger than a seed of hemp, smooth, crowned with a very minute calyx, two-celled,

two-valved; partition contrary. Seeds very many, membranaceous, but two only ripening, and these hemispherical.—Native of Jamaica.

It is very like *R. thyrsoides*, but has the leaves a little narrower and smooth on both sides; the racemes are erect; the tube is very short, not four times as long as the calyx; and two seeds only ripen in the capsule. It seems to be Browne's plant, though Linneus refers that to his *Petesia stipularis*; which it can hardly be; because in that case, the leaves ought to be tomentose underneath, and the flowers thyrsoid.

9. This shrub is three feet high, upright, branched above, even: branches and branchlets opposite, round, upright, somewhat villose at the top. Leaves on short pubescent petioles, opposite, entire, nerved and veined, rough-haired, dusky green, villose-tomentose underneath, becoming hoary. Stipules between the petioles, ovate with a short point, pubescent. Peduncles small, several times shorter than the leaves, three-parted with three-flowered branchlets: flowers small, whitish or dusky yellow, villose on the outside. Calyx five-toothed, small. Tube of the corolla longer than the calyx, narrow: border five-parted, with ovate concave segments: aperture crowned with a small ring. Anthers within the aperture. Style bifid at the top. Capsule roundish, two-celled, small, the size of a Coriander seed. Seeds solitary, hemispherical.

Native of Jamaica, on rocky hills; as in Sixteen-mile walk near Spanish Town.

It differs from *R. thyrsoides* in being smaller, in having the leaves pubescent on both sides and tomentose underneath, and the racemes flowers and fruit very small.

*Petesia stipularis*, *syn. veg.* belongs either to this or *R. thyrsoides*: that species therefore in our Dictionary is to be blotted out.

*P. tomentosa*, *syn. veg.* is certainly a different plant; for Jacquin has described it as having flowers in corymbs.

10. This shrub is two feet high and more, branched and upright: branches almost upright, subdivided, compressed a little, even: branchlets hirsute at the top. Leaves on hirsute petioles of a middling length. Stipules between the petioles, opposite, connate, membranaceous, broadish at the base, with a longer and somewhat bristly point, hirsute, shrivelling. Peduncles opposite, solitary in the axils of the terminating leaves, shorter than the leaves, compressed, hirsute, at top three-parted, three-flowered. Pedicels forming an umbellet; with four small linear acute leaflets, instead of an involucre, at the base. Segments of the calyx linear, hirsute, permanent. Corolla larger than the others, dusky-yellow, pubescent on the outside: tube elongated, widening towards the border, which has five roundish convex segments: aperture crowned with a ring. Filaments as in *thyrsoides*. Style bifid at the top. Capsule roundish, crowned with the segments of the calyx, two-celled, two-valved: valves bipartite: partition contrary. Seeds very many, but two ripening in each cell; these are angular-convex; the rest are small, flat and membranaceous.

Native of Jamaica, on rocks near streams; flowering in April.

It is distinguished by its shagginess, the size of the flowers, and the inflorescence.

Browne's *Petesia*, n. 3. seems to appertain to this species, rather than to the preceding.

11. Shrub from two to three feet in height, upright, branched, rugged. Branches round, rigid, rugged. Leaves mostly terminating, on round tomentose-hoary petioles, opposite, entire, nerved, netted-veined, smooth, somewhat shining, underneath hirsute, rugged, rigid, somewhat leathery. Stipules within the base of the petioles, very short, truncate, whitish-ciliate at the edge. Flowers subumbelled, on very short pedicels, with a two-leaved involucre: leaflets ovate-acute, concave, pubescent-hoary. Calyx five-parted: segments ovate, acute, thick, rigid, silky-hoary within and without: five other little segments at the base of the germ; and two ovate-acute leaflets at the base of the calyx. Corolla biggish: tube the length



length of the calyx and hoary: border five-parted: segments ovate, convex, rigid, hoary: aperture margined. Filaments from the middle of the tube. Anthers below the border. Germ oblong, truncate at the top, hirsute: style bifid at the top: stigmas thicker. Capsule oblong, clothed and crowned with the calyx, two-celled, truncate at the top, perforated in the centre, two-valved, with the valves bipartite: partition contrary. Seeds very many, small, oblong, membranaceous, two only ripening. This species is very distinct in its habit, flowers and hoariness.

Native of Jamaica, in the rocky calcareous mountains, but rare.

12. This shrub is a fathom high, branched and even. Branches subdivided, round-flatted, loofish, rugged; twigs hirsute. Leaves on short, hirsute, rufescent petioles, decussated, in the middle widish, acute, entire, nerved and veined, pale underneath. Stipules opposite, wide, ovate-lanceolate, long, hirsute. Peduncles opposite, solitary, nearly the length of the leaves, filiform, three-parted at top, trifid, hirsute. Flowers pedicelled, yellowish, hirsute on the outside. Leaflets minute, opposite, linear, acute, hirsute, at the subdivisions of the peduncles. Calyx five-cleft: segments lanceolate, acute, upright, hirsute. Corolla falver-shaped: tube the length of the calycine segments, round, narrower towards the border, hirsute on the outside; border five-cleft, spreading; segments oblong, blunt, short, incumbent: aperture contracted, scarcely margined. Filaments inserted into the middle of the tube: anthers oblong, within the tube. Germ ovate, hirsute: style the length of the tube, bifid at the top. Stigmas erect, acute.

Native of Jamaica, on mountains in the southern part; flowering in January<sup>a</sup>.

13. This is very nearly related to *R. odorata*; but it differs from it in its axillary inflorescence, and larger sharper leaves, not rugged above, scarcely cordate at the base, and longer petioles. The tube of the corolla in this is only double the length of the calyx. Style protended beyond the aperture. Stigmas erect, converging. Corolla yellowish or rufescent<sup>b</sup>.

It agrees in many respects with *R. pilosa* or *triflora* of Vahl; which however is distinguished from this, by having the leaves generally narrower, tomentose-hoary, often clustered towards the ends of the branchlets; the peduncles only three-flowered, the flowers four-stamened, and many of the seeds ripening.

*R. hirta* differs from *hirsuta* in the leaves being rigid and nerved; the branches and peduncles stiff and upright, not loose:—from *R. umbellulata*, in the leaves not being lanceolate-ovate, acute; the flowers in umbels not clustered<sup>c</sup>.

Native of Jamaica. Introduced about 1776, by John Blackburne, Esq. It flowers from June to August<sup>d</sup>.

14. Branches smooth, jointed: joints two inches long, gradually less upwards, the lower roundish, the upper flatted a little and sometimes four-cornered, the upper compressed-ancipital, widening at the top: branchlets opposite, spreading, short. Leaves opposite, an inch long, nerved and somewhat veined, quite entire, a little bent back at the edge, paler underneath, sharp at the base, ending in an obscure point, on very short petioles. Peduncles opposite, a little longer than the petiole, one-flowered, sometimes but very seldom in the last axils three-flowered with a small leaf on each side, and in the middle on both sides a minute hoary bracte. Calycine segments four, linear, bluntish, permanent; in the fruit reflex. Tube of the corolla hoary, filiform: aperture crowned with a short ring: border four-cleft, with oblong short blunt segments. Filaments scarcely any: anthers four linear erect stretched at the tip a little beyond the tube. Germ small oblong: style the length of the tube: stigma subbifid, with one segment a little shorter than the other. Capsule the size of black pepper, globular, hoary, with a groove on each side, crowned with the reflex calyx, two-valved, two-celled, two-seeded.

Native of Montserrat. *Ryan*.<sup>e</sup>]

<sup>a</sup> Swartz.

<sup>b</sup> Hort. kew.

<sup>c</sup> Swartz.

<sup>d</sup> Hort. kew.

<sup>e</sup> Vahl.

PROPAGATION AND CULTURE.

These plants being very tender, cannot be preserved in England, unless they are kept in a warm stove. They are propagated by seeds, which should be sown on a hot-bed early in the spring; and when the plants are come up and fit to remove, they must be transplanted into separate small pots, and plunged into a moderate hot-bed of tanner's-bark, where they must be treated in the same manner as hath been directed for other tender plants from the West Indies; in winter they must be placed in the tan-bed in the stove, where these plants will thrive, and in two or three years will flower, when they will make an agreeable variety amongst other tender exotic plants, for they retain their leaves all the year.

[RONDELETIA. See *Petesia*.

ROPOUREA. See *Camax*.

RORELLA and RORIDA. See *Drosera*.

RORIDULA. (*Dimin. from Ros, dew.*)

*Lin. gen. Reich. n. 307. Schreb. n. 400. N. L.*

*Burm. — Gært. t. 62. Juss. 426.*

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* lanceolate, equal, permanent.

COR. *Petals* five, oblong, equal, larger than the calyx.

STAM. *Filaments* five, awl-shaped, shorter by half than the corolla. *Anthers* inserted above their base, awl-shaped, semibifid, gaping at the top. *Nectary* from the scrotiform base of the anther protruded downwards.

PIST. *Germ* oblong. *Style* filiform, the length of the stamens. *Stigma* truncate, subtrilobate.

PER. *Capsule* oblong, three-cornered, three-celled, three-valved. *Partitions* contrary to the valves.

SEEDS solitary, oval, angular on one side, G.

ESSENTIAL CHARACTER.

*Cal.* five-leaved. *Cor.* five-petalled. *Anthers* scrotiform at the base. *Caps.* three-valved.

SPECIES.

1. *Roridula dentata*.

*Lin. syst. 244. Reich. 1. 571. Willd. 1184.*

*Gært. fruct. 1. 298.*

*Irion verticillatum. Burm. prodr. 6.*

DESCRIPTION, &c.

This is a suffruticose plant, with the habit of *Drosera*. Leaves clustered, alternate, sessile, half-embracing, awl-shaped, with filiform teeth ciliate. Scape branched into peduncles; which are axillary and terminating, few-flowered in a sort of spike, each pedicel having one bracte. The whole plant, like *Drosera*, is viscid with glandular hairs\*. Capsule pyramidal, acuminate, roundly three-cornered: partitions fastened to the axis, and separating in such a manner from the valves when ripe, that a three-sided pyramidal column remains in the midst. In each cell is one seed, biggish, ovate, compressed a little, flattish on the back, obscurely angular on the belly, deeply honeycombed with very minute excavations in longitudinal rows, of a reddish-ferruginous colour. The seeds are fastened to the axis of the capsule, a little above the base<sup>f</sup>.

Native of the Cape of Good Hope.]

ROSA. (*From the Greek Ρόδον; changing the ρ into σ: and that from ῥω, or ρεον and ῥωμ.*)

*Lin. gen. n. 631. Reich. n. 687. Schreb. n. 863.*

*Tournef. t. 408. Juss. 335. Gært. t. 73.*

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticosæ. Rosaceæ, Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leaved: *tube* ventricose, contracted at the neck; with the *border* spreading five-parted, globular: *segments* long, lanceolate-narrow (in some of them two alternate ones appendicled on both sides; two others, also alternate, naked on both sides; the fifth appendicled on one side only.)

COR. *Petals* five, obcordate, the length of the calyx, inserted into the neck of the calyx.

\* Linn. and Juss.

<sup>f</sup> Gartner.



STAM. Filaments very many, capillary, very short, inserted into the neck of the calyx. Anthers three-cornered.

PIST. Germs numerous, in the bottom of the calyx. Styles as many, villose, very short, compressed close by the neck of the calyx, inserted into the side of the germ. Stigmas blunt.

PER. none. Berry fleshy, turbinate, coloured, soft, one-celled, crowned with the rude segments, contracted at the neck, formed from the tube of the calyx.

SEEDS numerous; oblong, hispid, fastened to the inner side of the calyx.

OBS. The calyx of the Pericarp resembles a berry.

#### ESSENTIAL CHARACTER.

Cal. pitcher-shaped, five-cleft, fleshy, contracted at the neck. Petals five. Seeds very many, hispid, fastened to the inner side of the calyx.

#### SPECIES.

\* With subglobular fruits.

#### [1. Rosa berberifolia. Single-leaved Rose.

Lin. spec. ed. Willd. 1063. Pallas nov. act. petrop. 10. 379. t. 10. f. 5.

R. simplicifolia. Salisb. hort. prodr. 359. Juss. gen. 452.

Fruits globular, with the peduncles prickly; stem with prickles usually in pairs hooked, leaves simple sessile.]

#### 2. Rosa lutea. Single Yellow Rose.

Ait. kew. 2. 200. Willd. spec. 1064. arb. 303. Lawrance, t. 12.

α. R. eglanteria. Lin. spec. 703. (exclusis synonymis) syst. 473. Reich. 2. 524. Scholl. barb. n. 399. Moench. bass. n. 418. Leyf. bal. n. 489. Hoffm. germ. 174. Roth. germ. 1. 217. 2. 553. Retz. obs. 1. 20. Kniph. cent. 7. n. 77. Villars dauph. 3. 549. Krock. files. n. 768.

Rosa lutea. Mill. dict. n. 11. Du Roi barbecc. 2. 344. Curt. magaz. 363. Dalech. hist. 126. Lob. ic. 2. 209. Tabern. hist. 1495. Baub. hist. 2. 47. Raii hist. 1475. Ger. 1085. 4. emac. 1267. 5.

R. lutea simplex. Baub. pin. 483. Park. parad. 417. Dubam. arb. 36.

R. lutea flore simpl. Best. exst. vern. 6. t. 5. f. 1. Weinm. phytanth. 4. 232. t. 870. f. C.

R. foetida. Allion. pedem. n. 1792. Herrm. monogr. n. 13.

R. chlorophylla. Ehrh. Beitr. 2. 69. Single Yellow Rose.

β. R. bicolor. Jacqu. hort. 1. p. 1. t. 1. conf. vol. 3. p. 1.

R. punicea. Corn. canad. 11. Mill. dict. n. 12. Du Roi barbecc. 2. 347.

R. sylvestris austriaca flore phœniceo. Park. theat. 1019. n. 6. fig. in 1018. Raii hist. 1475. n. 33.

R. graveolens simplex flore extus luteo intus rubro holoserico. Weinm. phytanth. 4. 231. t. 868. f. C.

Red and Yellow Austrian Rose. Lawrance, t. 6.

Fruits globular, with the peduncles smooth, calyxes and petioles spinulose, prickles of the branches straight.

#### [3. Rosa sulphurea. Double Yellow Rose.

Ait. kew. 2. 201. Willd. spec. 1065. arb. 305. Lawrance, t. 77.

R. glaucophylla. Ehrh. Beitr. 2. 69.

R. hemisphaerica. Herrm. monogr. n. 14.

R. lutea multiplex. Baub. pin. 483. Ger. emac. 1267. 6. Hort. angl. 66. t. 18. Dubam. arb. 37. Du Roi barbecc. 2. 346. Knorr. del. 1. t. R.

R. lutea flore pleno. Baub. hist. Raii hist. 1475. n. 31.

R. lutea multiplex f. flore pleno. Park. parad. 417. n. 17. t. 415. f. 6.

R. flava flore pleno. Clus. cur. post. 6. fig.

Fruits globular, petioles and stem prickly, prickles of the stem of two sorts, larger with numerous smaller ones, leaves oval.

#### 4. Rosa blanda. Hudson's-Bay Rose.

Ait. kew. 2. 202. Willd. spec. 1065. Lawrance, t. 27.

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Fruits globular smooth; the stems, when adult, and the peduncles even and unarmed.]

#### 5. Rosa cinnamomea. Cinnamon Rose.

Lin. spec. 703. syst. 473. Reich. 2. 525. Willd.

1065. Herrm. monogr. n. 2. Leers herb. born.

n. 381. Hoffm. germ. 174. Roth. germ. 1. 217.

2. 554. Du Roi barbecc. 2. 348. Krock. files.

n. 770. Allion. pedem. n. 1793. Lour. cochinch.

323. ed. Willd. 395.

α. R. odore cinnamomi simplex. Baub. pin. 438.

R. cinnamomea simplex. Park. parad. 416. n. 15.

Raii hist. 1473. n. 20.

R. cinnam. simplici flore. Ger. 1086. 5. emac. 1268. 8.

R. cinnam. floribus subrubentibus spinosa. Baub. hist. 2. 39.

R. laxatilis flore ruberrimo. Camer. epit. 99.

Single Cinnamon Rose.

β. R. cinnam. multiplex. Park. parad. 416. n. 15.

Raii hist. 1473. n. 19.

R. cinnam. flore pleno. Ger. 1086. f. 5. emac. 1268. 7. Park. parad. 419. f. 2.

R. odore cinnamomi, flore pleno. Baub. pin. 483. Double Cinnamon Rose. Lawrance, t. 34.

Fruits globular, with the peduncles smooth, stem with stipular prickles, petioles mostly unarmed.

#### [6. Rosa arvensis. White Dog Rose.

Lin. syst. 473. Reich. 2. 526. Willd. 1066. mant.

245. Hudf. angl. 219. Wither. arr. ed. 3. 464.

Smith, brit. 558. engl. bot. t. 188. Relb. cant.

n. 366. Sibth. oxon. n. 457. Abbot. bedf. 111.

Hall. belv. n. 1102. Krock. files. n. 771. Allion.

pedem. n. 1796. Villars dauph. 3. 548. Lawrance,

t. 86.

R. sylvestris. Herrm. monogr. n. 5.

R. arvensis candida. Baub. pin. 484.

R. sylvestris altera minor, flore albo nostras. Raii

syn. 455. hist. 1471. n. 14.

R. sylv. folio glabro, flore plane albo. Baub. hist. 2.

44. 1.

Fruits globular, with the peduncles unarmed, prickles of the stem and petioles hooked, flowers subcymed.

#### 7. Rosa pimpinellifolia. Small Burnet-leaved Rose.

Lin. spec. 703. Reich. 2. 526. Willd. 1067. arb.

308. Pallas it. 2. 517. Ross. 1. 2. 62. t. 75.

Hoffm. germ. 176. Retz. obs. 4. 27. Krock. files.

n. 772.

Fruits globular, with the peduncles smooth, prickles on the stem scattered straight, petioles rugged, leaflets blunt.]

#### 8. Rosa spinosissima. Scotch Rose.

Lin. spec. 705. syst. 473. Reich. 2. 526. Willd.

1067. mant. 399. Fl. suec. n. 442. Herrm.

monogr. n. 1. Hudf. angl. 218. Wither. arr. ed.

3. 465. Smith, brit. 537. engl. bot. t. 187.

Lightf. scot. 260. Fl. dan. t. 398. Hall. belv.

n. 1106. Pollich pal. n. 487. Leers, herb. born.

n. 384. Hoffm. germ. 176. Roth. germ. 1. 217.

2. 555. Krock. files. n. 773. Villars dauph. 3.

555. Allion. pedem. n. 1794. Du Roi barbecc.

2. 339.

R. pimpinellifolia. Lin. syst. ed. 10. 1062.

R. campestris spinosissima, flore albo odorato. Baub.

pin. 483.

R. pumila spinosissima, foliis Pimpinellæ glabris,

flore albo. Baub. hist. 2. 40. 2. Raii hist. 1472.

n. 15. syn. 455.

R. campestris odorato flore. Clus. hist. 1. 116. 1.

Common Scotch Rose. Lawrance, t. 48.—Tall

Scotch Rose. Lawrance, t. 19.

β. R. Ciphiana, seu R. pimpinellæ foliis minor nostras, flore eleganter variegato. Sibb. scot. 2. 46. t. 2.

Striped-flowered Scotch Rose. Lawrance, t. 15.

γ. R. alpina pumila, pimpinellæ fol. minoribus ac rotundioribus, flore minimo livide rubente. Hort. cathol.

R. scotica. Mill. dict. n. 5.

Red Scotch Rose. Lawrance, t. 62.

δ. R. spinosissima pedunculis aculeatis. With. 465.

ε. Double Scotch Rose. Lawrance, t. 63.

Fruits globular smooth, peduncles smooth (or hispid,) prickles on the stem very numerous straight bristle-shaped, leaflets roundish smooth.

[9. Rosa

12 A



- [9. *Rosa parviflora*. Small-flowered American Rose.  
Willd. spec. 1068. arb. 309. Ebrh. Beitr. 4. 21.  
*R. carolina*. Du Roi barbecc. 2. 355.—γ, δ. Ait. kew. 203.  
*R. pensylvanica*. Wangenh. amer. 113.  
*R. humilis*. Marsh. arb. 136.  
Fruits globular-depressed, with the peduncles hispid, petioles pubescent somewhat prickly, stem smooth, stipular prickles straight, leaflets elliptic, flowers mostly in pairs.]
10. *Rosa lucida*. Shining-leaved American Rose.  
Willd. spec. 1068. arb. 310. Ebrh. Beitr. 4. 11.  
*R. carolina fragrans*, foliis medio tenus serratis. Dill. elth. 325. t. 245. f. 316.  
*R. virginiana*. Mill. dict. n. 10.  
Fruits globular-depressed, with the peduncles subhispid, petioles smooth somewhat prickly, stem smooth, stipular prickles straight, leaflets oblong-elliptic shining smooth, flowers mostly in pairs.
- [11. *Rosa carolina*. Carolina Rose.  
Lin. spec. 703. Reich. 2. 527. Willd. 1069. arb. 311. Wangenh. amer. 112. t. 31. f. 71. Abbot. georg. t. 25. Lawrance, t. 3. & 24. & 36. & 54.  
*R. corymbosa*. Ebrh. Beitr. 4. 21.  
*R. virginiana*. Du Roi barbecc. 2. 353.  
Fruits globular, with the peduncles subhispid, petioles hairy somewhat prickly, stem smooth, stipular prickles somewhat hooked, leaflets oblong-lanceolate, flowers corymbed.]
12. *Rosa villosa*. Apple Rose.  
Lin. spec. 704. syst. 474. Reich. 2. 527. Willd. 1069. fl. succ. n. 1295. mant. 399. Hudf. angl. 219. Wither. arr. ed. 3. 466. Smith, brit. 538. engl. bot. t. 583. Lightf. scot. 261. Hall. belv. n. 1105. Pollich pal. n. 483. Leers, herb. n. 385. Hoffm. germ. 176. Roth. germ. 1. 217. 2. 556. Krock. filef. n. 774. Villars dauph. 3. 551. Allion. pedem. n. 1795. Retz. obs. 1. 19. Du Roi barbecc. 2. 341. Pallas ross. 1. 2. 63. Lawrance, t. 33. & t. 29. (flore pleno.)  
*R. pomo spinoso folio hirsuto*. Baub. hist. 2. 38.  
*R. sylvestris pomifera major*. Baub. pin. 484. Park. parad. 419. 7. Raii hist. 1472. n. 17. syn. 455. Dubam. arb. 42. Herrm. monogr. n. 11.  
*R. pomif. major*. Park. parad. 418. n. 21. t. 419. f. 7. Raii hist. 1472. n. 18.  
β. *R. mollissima*. Willd. prodr. n. 1237.  
*R. sylvestris folio molliter hirsuto, fructu rotundo glabro, calyce & pediculo hispidis*. Dill. in Raii syn. 478?  
Fruits globular, with the peduncles hispid, prickles on the stem straightish, leaflets elliptic tomentose on both sides.
- [13. *Rosa rugosa*. Wrinkled-leaved Rose.  
Lin. spec. ed. Willd. 1070. Thunb. jap. 213.  
Fruits globular smooth, peduncles stem and petioles prickly, leaves tomentose underneath.]
14. *Rosa provincialis*. Provence Rose.  
Mill. dict. n. 18. Ait. kew. 2. 204. Willd. spec. 1070. arb. 314. Du Roi barbecc. 2. 349. Herrm. monogr. n. 4.  
*R. provincialis f. hollandica damascena*. Park. parad. 413. 5. t. 415. 2. Raii hist. 1469. n. 7.  
*R. hollandica f. batava*. Ger. 1080. 6. fig. in 1081. emac. 1262. 6.  
Common Provence Rose. Lawrance, t. 8.  
β. *R. provinc. rubra*. Park. parad. 413. n. 6. Raii hist. 1469. n. 3.  
*R. rubra flore valde pleno*. Baub. hist. Red or Scarlet Provence Rose. Lawrance, t. 22.  
γ. *R. incarnata*. Mill. dict. n. 19. Park. parad. 412. 2. Blush Provence Rose. Lawrance, t. 1.  
δ. *White Provence Rose*. Park. parad. 414. 7. Lawr. t. 4.  
ι. *Rose de Meaux*. Lawrance, t. 31.—or great dwarf Rose.  
ζ. *Rose de Meaux*, or small dwarf Rose.  
Pompone Rose. Curt. magaz. 407. Lawrance, t. 50. Willd. β.  
η. *Blandford or Portugal Rose*. Lawrance, t. 21.  
Fruits roundish, peduncles and petioles hispid, prickles of the branches scattered somewhat bent back, leaflets ovate villose underneath, serratures glandular.

\*\* With ovate fruits.

15. *Rosa centifolia*. Hundred-leaved Rose.  
Lin. spec. 704. syst. 474. Reich. 2. 528. Willd. 1071. arb. 315. mat. med. 128. Woodv. med. bot. 379. t. 140. Du Roi barbecc. 2. 367. Kniph. cent. 1. n. 75. Knorr. del. 1. t. B. Regnault bot. Lour. cochinch. 323. ed. Willd. 396. Herrm. monogr. n. 7.  
*R. multiplex media*. Baub. pin. 482. Dubam. arb. 15.  
*R. centifolia batavica* 2. Clus. hist. 1. 114.  
α. Dutch Hundred-leaved Rose. Lawrance, t. 11.  
β. Blush Hundred-leaved Rose. Lawrance, t. 40.  
γ. Singleton's Hundred-leaved Rose. Lawrance, t. 85.  
δ. Burgundy Rose. Lawrance, t. 44.  
ε. Single Velvet Rose. Park. parad. 416. 13. t. 419. f. 3. Ger. 1085. 3. Lawrance, t. 51.  
ζ. Double Velvet Rose. Park. parad. 416. 13. t. 419. f. 4. Lawrance, t. 2.  
η. Sultan Rose. Lawrance, t. 35.  
θ. Stepney Rose. Lawrance, t. 46.  
ι. Garnet Rose.  
κ. Bishop Rose. Lawrance, t. 20.  
λ. Lisbon Rose. Lawrance, t. 67.  
Fruits ovate, with the peduncles hispid, stem hispid prickly, petioles unarmed.
16. *Rosa gallica*. Red Rose.  
Lin. spec. 704. mant. 399. syst. 474. Reich. 2. 529. Willd. 1071. arb. 315. Hoffm. germ. 176. Roth. germ. 1. 218. 2. 359. Krock. filef. n. 776. Allion. pedem. n. 1797. Woodv. med. bot. 382. t. 141. Du Roi barbecc. 2. 363. Blackw. t. 82. Regnault bot. Lawrance, t. 16.  
*R. rubra multiplex*. Baub. pin. 481. Dubam. arb. 2. t. 53.  
*R. rubra*. Ger. 1079. 2. emac. 1261. Raii hist. 1468. Pharm. Lond. & Edinb.  
*R. anglica rubra*. Park. parad. 412. n. 3.  
*R. rubra flore valde pleno, & semipieno & simplici fere*. Baub. hist. 2. 34.  
Red officinal Rose.  
β. *R. gallica versicolor*. Ait. kew. 205.  
Mundi Rose. Lawrance, t. 13.  
*R. rubro & albo variegata Rosa mundi vulgo dicta*. Raii hist. 1475. n. 35.  
γ. Marbled Rose. Lawrance, t. 57.  
δ. Virgin Rose. Lawrance, t. 7.  
Fruits ovate, with the peduncles, hispid, stem and petioles hispid-prickly.
17. *Rosa damascena*. Damask Rose.  
Mill. dict. n. 15. Ait. kew. 2. 205. Willd. spec. 1072. arb. 316. Du Roi barbecc. 2. 369. Retz. obs. 3. 33. Herrm. monogr. n. 9. Ger. 1079. 3. emac. 1261. 3. Park. par. 413. 4. Raii hist. 1468.  
α. Red Damask Rose. Lawrance, t. 38.  
β. Blush Damask Rose. Lawrance, t. 52.  
γ. York and Lancaster Rose. Mill. fig. 148. t. 221. f. 2. Lawrance, t. 10.  
*R. versicolor*. Park. parad. 414. n. 8. Raii hist. 1469. n. 6.  
δ. Red Monthly Rose. Lawrance, t. 5.  
*R. omnium calendarum vulgo dicta*. Raii hist. 1475. n. 34.  
*R. italica flore suaviter rubente perpetua*. Ferrarii.  
ε. White Monthly Rose. Lawrance, t. 17.  
ζ. Blush Belgick Rose. Lawrance, t. 70.  
*R. Belgica*. Mill. dict. n. 17.—f. vitrea flore rubicante. Rea flor.  
*R. crystallina*. Park. parad. 414. n. 9.  
η. Great Royal Rose. Lawrance, t. 58.  
θ. Imperial Blush Damask Rose. Lawrance, t. 90.  
Calyxes semipinnate, fruits ovate turgid, with the peduncles, hispid, stem and petioles prickly, leaflets ovate acuminate villose underneath.
18. *Rosa sempervirens*. Evergreen Rose.  
Lin. spec. 704. Reich. 2. 528. Willd. 1072. Ait. kew. 2. 205. Hoffm. germ. 176. Roth. germ. 1. 218. 2. 556. Du Roi barbecc. 2. 358. Park. parad. 420. n. 24. Raii hist. 1474. n. 29. Lawrance, t. 45.



- R. sempervirens* Jungermannii. *Clus. hist.* 2. app. alt. *austrarium*. *Dill. elth.* 326. t. 246. f. 318.
- R. scandens*. *Mill. dict.* n. 8.
- Fruits ovate, calyxes and peduncles hispid, stem and petioles prickly, flowers subumbelled, bractes lanceolate reflex.
- [19. *Rosa pumila*. Dwarf Austrian Rose.  
*Lin. syst.* 474. *Willd.* 1072. suppl. 262. *Ait. kew.* 2. 206. *Jacqu. austr.* 2. 59. t. 198. *Allion. pedem.* n. 1802. *Retz. obs.* 3. 33.
- R. sylvestris pumila rubens*. *Baub. pin.* 483.
- R. pumila pannonica flore rubello*. *Baub. hist. Raii* *hist.* 1469. n. 6.
- R. pum. rubra austriaca*. *Park. theat.* 1019. n. 7.
- R. 6. pumila*. *Clus. hist.* 1. 117.
- Fruits ovate, with the peduncles, hispid, petioles and stem prickly, leaves glaucous underneath with the serratures glandular.
20. *Rosa turbinata*. Frankfort Rose.  
*Ait. kew.* 2. 206. *Willd. spec.* 1073. *Lawrance*, t. 69.
- R. campanulata*. *Ebrh. Beitr.* 6. 97.
- R. francofurtensis*. *Park. parad.* 414. n. 11. *Raii* *hist.* 1475. n. 36.
- Fruits turbinate, with the peduncles, hairy, petioles villose, prickles scattered recurved.]
21. *Rosa rubiginosa*. Sweet Briar Rose.  
*Lin. syst.* 473. *Reich.* 2. 525. *Willd.* 1073. arb. 317. *mant.* 564. *Wither. arr. ed.* 3. 466. *Smith, brit.* 540. *Relh. cant.* n. 365. *Sibth. oxon.* n. 455. *Abbot, bedf.* 110. *Jacqu. austr.* 1. 31. t. 50. *Hall. belv.* n. 1103. *Hoffm. germ.* 174. *Roth. germ.* 1. 218. 2. 558. *Krock. files.* n. 769. *Villars dauph.* 3. 547. *Allion. pedem.* n. 1803. *Ebrh. Beitr.* 4. 22. *Retz. obs.* 1. 20. *Pollich pal.* n. 482. *Leers, herb. born.* n. 379.
- R. eglanteria*. *Mill. dict.* n. 4. *Gouan, hort.* 245. *Herrm. monogr.* 17. n. 12. *Du Roi barbecc.* 2. 336. *Huds. angl.* 218. *Tabern. ic.* 1087. *Leers, herb. born.* n. 379.
- R. suavifolia*. *Lightf. scot.* 262. *Fl. dan.* t. 870.
- R. sylvestris fol. odoratis*. *Baub. pin.* 483. *Dod. pempt.* 187. 10.
- R. sylv. odora*. *Ger.* 1087. 1. *emac.* 1269. 1. *Raii* *hist.* 1471. n. 13.
- R. sylv. od. f. Eglanteria flore simplici*. *Park. parad.* 418. n. 22.
- R. fol. odoratis Eglantina dicta*. *Baub. hist.* 2. 41.
- Common single Sweet Briar. *Lawrance*, t. 56.
- β. *R. flore pleno f. multiplici*. *Baub. pin.* 483.
- R. sylvestris f. Eglanteria duplex*. *Park. parad.* 419. f. 8.
- R. eglantina fl. pleno*. *Baub. hist.*
- Common double Sweet Briar. *Lawrance*, t. 65.
- γ. Mossy double Sweet Briar. *Lawrance*, t. 72.
- δ. Evergreen double Sweet Briar.
- ε. Marbled double Sweet Briar.
- ζ. Red double Sweet Briar. *Lawrance*, t. 61.
- η. Royal Sweet Briar. *Lawrance*, t. 74.
- θ. Yellow Sweet Briar.
- Fruits ovate, with the peduncles, hispid, petioles and stem prickly, prickles recurved, leaflets ovate glandular-hairy underneath.
22. *Rosa muscosa*. Moss Provence Rose.  
*Mill. dict.* n. 22. *fig.* 148. t. 221. f. 1. *Ait. kew.* 2. 207. *Willd. spec.* 1074. arb. 318. *Du Roi barbecc.* 2. 368. *Curt. magaz.* 69. *Lawrance*, t. 14. *Retz. obs.* 1. 20. n. 58. *conf.* 3. 33. n. 59.
- R. provincialis spinosissima pedunculo muscoso*. *Hort. angl.* 66. n. 14. t. 18.
- R. rubra pleno spin. pedunc. muscoso*. *Boerb. ind.* 2. 252.
- Fruits ovate, calyxes peduncles petioles and branchlets hispid glandular-viscid, spines of the branches scattered straight.
23. *Rosa moschata*. Musk Rose.  
*Mill. dict.* n. 13. *Ait. kew.* 2. 207. *Willd. spec.* 1074. arb. 819. *Desfont. atlant.* 1. 400. *Du Roi barbecc.* 2. 365. *Herrm. monogr.* n. 10.
- R. opofflemma*. *Ebrh. Beitr.* 2. 72.
- R. moschata minor flore simplici*. *Baub. hist.* 2. 45. *Raii hist.* 1474. n. 26.
- R. mosch. simpl. flore*. *Baub. pin.* 482. *Ger.* 1084. 1. *emac.* 1265. 1.
- R. mosch. simplex*. *Park. parad.* 417. n. 18.
- Single Musk Rose. *Lawrance*, t. 64.
- β. *R. moschata flore pleno*.
- R. mosch. multiplex*. *Ger.* 1084. 2. *emac.* 1265. 2. *Park. parad.* 419. f. 5.
- Double Musk Rose. *Lawrance*, t. 53.
- Fruits ovate, with the peduncles, villose, stem and petioles prickly, leaflets oblong acuminate smooth, peduncles many-flowered.
- [24. *Rosa rubrifolia*. Red-leaved Rose.  
*Willd. spec.* 1075. *Villars dauph.* 3. 549.
- Fruits ovate, with the peduncles smooth and glaucescent, petioles prickly, stem with scattered uncinat prickles, leaflets oblong finely serrate smooth, flowers subcorymbed.
25. *Rosa lagenaria*. Bottle-fruited Rose.  
*Willd. spec.* 1075. *Villars dauph.* 3. 553.
- Fruits obovate smooth, peduncles and petioles glandular-hispid, stem unarmed, leaflets oval smooth.]
26. *Rosa alpina*. Alpine Rose.  
*Lin. spec.* 703. *syst.* 474. *Reich.* 2. 529. *Willd.* 1075. arb. 320. *Hall. belv.* n. 1107. *Hoffm. germ.* 176. *Roth. germ.* 2. 559. *Jacqu. austr.* 3. 43. t. 279. *Pallas ross.* 1. 2. 61. *Gmel. fib.* 3. 177. *Villars dauph.* 3. 552. *Krock. files.* n. 767. *Allion. pedem.* n. 1798. *Retz. obs.* 3. 32. n. 58. *Lawrance*, t. 30.
- R. inermis*. *Mill. dict.* n. 6. *Turra diar. act.* 128.
- R. rupestris*. *Crantz. austr.* 85. n. 6.
- R. campestris, spinis carens, biflora*. *Baub. pin.* 484. *Raii hist.* 1472. n. 16.
- R. rubello flore parvo simplici, non spinosa*. *Baub. hist.* 2. 39. *Raii hist.* 1470. n. 12.
- Fruits ovate smooth, peduncles and petioles hispid, stem unarmed.
- [27. *Rosa pyrenaica*. Pyrenean Rose.  
*Willd. spec.* 1076. *Gouan, illustr.* 31. t. 19.
- R. hispida*. *Krock. files.* n. 783.
- Fruits ovate, with the peduncles hispid coloured, petioles hispid-prickly, calyxes altogether leafy.
28. *Rosa pendulina*. Smooth pendulous Rose.  
*Lin. spec.* 705. *Reich.* 2. 531. *Willd.* 1076. arb. 322. *Ait. kew.* 2. 208. *Du Roi barbecc.* 2. 371. *Lawrance*, t. 9. *Herrm. monogr.* n. 21.
- R. sanguisorbæ majoris folio, fructu longo pendulo*. *Dill. elth.* 325. t. 245. f. 317.
- Unarmed, fruits oblong, peduncles and petioles hispid, stem and branches smooth, fruits pendulous.
29. *Rosa montana*. Mountain Rose.  
*Lin. spec. ed. Willd.* 1076. *Villars dauph.* 3. 547.
- Fruits oblong, with the peduncles, hispid, petioles prickly, stipular hooked prickles on the stem, leaflets smooth obovate glandular-serrate.
30. *Rosa multiflora*. Many-flowered Rose.  
*Lin. syst.* 474. *ed. Willd.* 1077. *Thunb. jap.* 214.
- Fruits ovate, with the peduncles, unarmed villose, stem and petioles prickly.]
31. *Rosa canina*. Dog Rose, wild Briar or Hep-tree.  
*Lin. spec.* 704. *syst.* 474. *Reich.* 2. 530. *Willd.* 1077. *mant.* 399. *fl. suec.* n. 441. *mat. med.* 129. *Woodv. med. bot.* 377. t. 139. *Gartn. fruct.* 1. 348. *Herrm. monogr.* n. 6. *Willd. arb.* 321. *Du Roi barbecc.* 2. 359. *Huds. angl.* 219. *Wither. arr. ed.* 3. 467. *Smith, brit.* 541. *Lightf. scot.* 262. *Curt. lond.* 5. t. 34. 299. *Relh. cant.* n. 194. *Sibth. oxon.* n. 158. *Abbot, bedf.* 111. *Fl. dan.* t. 555. *Hall. belv.* n. 1101. *Pollich pal.* n. 186. *Hoffm. germ.* 176. *Roth. germ.* 1. 218. 2. 560. *Pallas, ross.* 1. 2. 60. *Neck. gallob.* 225. *Scop. carn.* n. 604. *Krock. files.* 777. *Villars dauph.* 3. 546. *Allion. pedem.* n. 1799. *Ludw. est.* t. 70. *Blackw. t.* 8. *Lawrance*, t. 81. *Kniph. cent.* 7. n. 76. *Regnault, bot.*
- R. sylvestris vulgaris, flore odorato incarnato*. *Baub. pin.* 483.
- R. sylv. prima*. *Camer. epit.* 99.
- R. sylv. inodora f. canina*. *Park. theat.* 1017. 1. *Raii* *hist.* 1470. n. 13. *syn.* 454.
- R. sylv. alba cum rubore, folio glabro*. *Baub. hist.* 2. 43. 2.



- R. canina* vulgo dicta. *Dod. pempt.* 187. 6. t. 186. f. 2.  
*R. can. inodora.* *Ger.* 1087. 2. *emac.* 1270. 3.  
 β. Double Dog-Rose. *Lawrance, t.* 60.  
*Fruits ovate, with the peduncles, smooth, prickles on the stem hooked, leaflets ovate acuminate very smooth.*  
 [32. *Rosa tomentosa.* Downy-leaved Dog-Rose.  
*Smith, brit.* 539.  
*R. villosa* β. *Huds. angl.* 219. *Wither. arr. ed.* 3. 466.  
*R. villosa.* *Relb. cant. n.* 367? *Sibth. oxon. n.* 458?  
*R. sylvestris fructu majore hispido.* *Raii syn.* 454.  
*R. sylv. alba, cum aliquo rubore, folio hirsuto.* *Baub. hist.* 2. 44.  
*Fruits ovate with the peduncles hispid, prickles on the stem hooked, leaflets ovate tomentose on both sides.*  
 33. *Rosa collina.* Hill Rose.  
*Lin. syst.* 474. *Willd.* 1078. *Jacqu. austr.* 2. t. 197. *Hofst. syn.* 280. *Allion. pedem. n.* 1801.  
*Fruits ovate smoothish, peduncles and petioles glandular-hirsute, stem prickly.*  
 34. *Rosa parvifolia.* Small-leaved Rose.  
*Willd. spec.* 1078. *Ehrh. Beitr.* 6. 97.  
*Fruits ovate smoothish, peduncles glandular, petioles and stem with very fine prickles, leaflets wrinkled somewhat villose underneath ovate glandular-ferrate.*  
 35. *Rosa semperflorens.* Deep-red China Rose.  
*Willd. spec.* 1078. *Curt. magaz.* 284. *Lawrance, t.* 28.  
*R. sinica.* *Lin. syst.* 474.  
 β. Blush China Rose. *Lawrance, t.* 26.  
*Fruits oblong, with the peduncles, hispid, stem and petioles prickly-hispid, leaves subternate prickly.*  
 36. *Rosa chinensis.* Pale China Rose.  
*Willd. spec.* 1078. *Jacqu. obs.* 3. p. 7. t. 55.  
*Fruits ovate, with the peduncles smooth, petioles and stem prickly, leaflets ovate-lanceolate subternate serrulate smooth.*  
 37. *Rosa indica.* Indian Rose.  
*Lin. spec.* 705. ed. 1. 402. *Reich.* 1. 531. *Willd.* 1079. *Lour. cochinch.* 323. 396. *Herrm. monogr. n.* 20.  
*R. cheusan glabra, juniperi fructu.* *Petiv. gaz.* 57. t. 35. f. 11.  
*Fruits ovate, with the peduncles smooth, stem almost unarmed, petioles prickly.*  
 38. *Rosa longifolia.* Long-leaved Rose.  
*Willd. spec.* 1079.  
*Fruits ovate smooth, peduncles glandular-subaculeate, stem almost unarmed, petioles prickly, leaflets smooth ovate acuminate.*  
 39. *Rosa bracteata.* Bracted Rose.  
*Lin. spec. ed. Willd.* 1079. *Wendl. obs.* 50.  
*Fruits obovate, peduncles bracted, with the branchlets villose, stem and petioles prickly, leaflets smooth roundish crenate somewhat prickly.]*  
 40. *Rosa alba.* White Rose.  
*Lin. spec.* 705. ed. 1. 492. *syst.* 474. *Reich.* 2. 531. *Willd.* 1080. *arb.* 322. *mat. med.* 129. *Herrm. monogr. n.* 8. *Crantz, austr.* 85. n. 5. *Roth. germ.* 1. 219. 2. 561. *Hoffm. germ.* 176. *Krock. files. n.* 778. *Allion. pedem. n.* 1800. *Retz. obs.* 3. 34. *Knorr. del.* 1. t. R. 6. *Du Roi barbecc.* 2. 361. *Lour. cochinch.* 323. 396. *D'Asso arag.* n. 437.  
 α. *R. alba vulgaris major.* *Baub. pin.* 482. *Dubam. arb.* 16.  
*R. fativa* 1. *Dod. pempt.* 186.  
 Single White Rose. *Lawrance, t.* 37.  
 β. *R. alba flore pleno.* *Best. eyf. vern.* 6. t. 3. f. 1. *Blackw. t.* 73. *Kuiph. cent.* 3. n. 76.  
*R. alba.* *Ger.* 1079. f. 1. *emac.* 1260. f. 1. *Raii hist.* 1473. n. 23.  
*R. anglica alba.* *Park. parad.* 412. 1.  
 Double White Rose. *Lawrance, t.* 25.  
 γ. Small Maiden's-blush Rose.  
 δ. Great Maiden's-blush Rose. *Lawrance, t.* 32.  
 ε. Cluster Maiden's-blush Rose. *Lawrance, t.* 23.  
*Fruits ovate smooth, peduncles hispid, stem and petioles prickly.*

## DESCRIPTIONS, &amp;c.

[This genus can scarcely be mistaken; every body knows a Rose at first sight. It consists of Shrubs, which for the most part are prickly. The leaves are unequally pinnate, with wing-shaped stipules fastened to the common petiole. The flowers are either solitary or in a sort of corymb at the ends of the branches; in their natural state they have five petals, which are often large and generally red, but sometimes white, seldom yellow. The tube of the calyx becomes a sort of berry, crowned with the border; and being of a globular shape in some species, and ovoid in others, the genus divides commodiously into two sections<sup>a</sup>.

But though the genus be easy, it is very difficult to determine the species, or to ascertain what is a species and what a variety. Scopoli, Gerard and others, regard all the European species as varieties from one source. Haller, on the contrary, thought he perceived sufficient marks of distinction, accompanied with no more obscurity than in other large genera. Linneus remarks, that the species of Roses are not without great difficulty circumscribed within any certain limits, and perhaps that there are no such limits set by nature.

Much pains has been bestowed in Aiton's catalogue of the Royal garden at Kew, to ascertain and characterize most of the species known in Europe, either wild or in gardens, and the several varieties are there set down under each. It is of little consequence whether all these were originally distinct or not, if they now maintain their difference, and are generally acknowledged for species. It is scarcely necessary to add that the Rose has been a favourite flower, in all ages, among all the polished people both of Asia and Europe. Some species are found in Africa, and others in North America. We are not acquainted with the native country of some double Roses, and they are probably creatures of art and cultivation. The first species is the only one which has single leaves.

1. Stem pubescent with stout hooked prickles. The leaves are different from all the other species, being simple, ovate, on very short petioles, toothed, glaucous. Peduncles terminating the branchlets, short, one-flowered, pubescent, with a few prickles. The tube of the calyx (germ, *Lin.*) is covered with numerous prickles. Petals obovate, yellow with a red spot at the base.—Native of northern Persia<sup>b</sup>.]

2. The single Yellow Rose has weak stalks, which send out many slender branches, closely armed with short crooked brown prickles. Leaflets two or three pairs, ovate and thin, smooth, of a light green, sharply ferrate. Flowers on short peduncles, single, bright yellow, without scent.

[Leaves obovate, biserrate, five or seven, smooth even underneath. Stem beset, not here and there, but closely with straight prickles. Segments of the calyx tomentose within, seldom pinnatifid. Petals large, obcordate, or two-lobed with a large rounded sinus<sup>c</sup>.

Authors differ as to the scent of the flowers. Miller says they have none; Parkinson, that they are without any great scent whilst fresh, but a little more, yet small and weak when dried; Retzius says that they smell like bugs; and from this circumstance Allioni names this species *Rosa fetida*. The leaves, according to Linneus, smell very sweet; and according to Krock, they have a pleasant vinous smell. Gerard says, they have an excellent sweet smell, more pleasant than those of the Eglantine.

Native of Germany, the South of France and Italy. Cultivated by Gerard in 1596<sup>k</sup>.]

β. The Austrian Rose has the stalks, branches and leaves like those of the single yellow Rose, but the leaves are rounder. The flowers are also larger; the petals have deep indentures at their points; are of a pale yellow on the outside, and of a reddish copper colour, orange-scarlet or Barré colour within; are single; have no scent, or a disagreeable one; and soon fall away. It has sometimes flowers entirely yellow on one branch, and copper-coloured on another.

<sup>a</sup> Jussieu.<sup>b</sup> Willdenow.<sup>c</sup> Retzius.<sup>k</sup> Hort. kew.



[Ray says that the flowers smell like honey: to me they smell more like bugs; but the scent varies much.

According to Jacquin the petals are brimstone-coloured on the outside, and bright scarlet within, the flowers are in such abundance as in a manner to cover the whole shrub, and their scent is unpleasant and even rather fetid. Branches smooth, with straight prickles. Petioles somewhat hirsute. Peduncles and calyxes very smooth. Petals obcordate, but sometimes scarcely emarginate.

3. This differs from the preceding, not only in the doubleness of the flowers, but in having the leaflets simply ferrate, not glandular, pubescent and glaucous underneath; whereas in *R. lutea* they are doubly ferrate, glandular and glutinous, and of a shining green colour, the stipules lacerated; the fruits hemispherical and glandular, which in the other are subglobular and smooth. The prickles on the stem are of two sorts in this; a few being larger, and many smaller<sup>m</sup>.

The flower, says Parkinson, is so thick and double, that very often it breaketh out on one side or another, but a few of them abiding whole and fair in our country: being fair blown open, it doth scarce give place for largeness, thickness and doubleness, unto the great Provence or Holland Rose.

Native of the Levant. It was first procured to be brought into England by Master Nicholas Lete, a worthy merchant of London, and a great lover of flowers, from Constantinople; which, as we hear, was first brought thither from Syria; but perished quickly both with him, and with all other to whom he imparted it: yet afterwards it was sent to Master John de Franqueville, a merchant also of London, and a great lover of all rare plants, as well as flowers, from which is sprung the greatest store, that is now flourishing in this kingdom<sup>n</sup>.

Johnson speaks of it as of a shrub still of great rarity, in 1633. Mr. Miller regards it as a variety of the single Yellow Rose. He seldom errs on that side. It flowers later than that, namely in July.

4. Hudson's-bay Rose has the stems, when full grown, unarmed; the younger ones, or those of the first year, are armed with slender straight prickles bent a little back at the top. Branches round, unarmed, shining, reddish. Leaflets commonly seven, oblong, sharply and almost equally ferrate, smooth. Petioles smooth, generally armed with one or two spinules.

Native of Newfoundland and Hudson's-bay. Cultivated in 1773, by Mr. James Gordon. It flowers from May to August<sup>o</sup>.]

5. The Cinnamon Rose rises about four feet high. The branches are covered with a purplish smooth bark, and have no spines, except at the joints immediately under the leaves, where they are commonly placed by pairs; they are short and crooked. Leaflets seven, ovate, ferrate, hairy on their under side. Leaves of the calyx narrow and entire. Flower small, with a scent like Cinnamon, whence its name.

[The single Cinnamon Rose, says Parkinson, hath his shoots somewhat red, yet not so red as the double kind; armed with great thorns, like almost unto the Eglantine bush; thereby showing, as well by the multiplicity of its shoots, as the quickness and height of his shooting, his wild nature. The Roses are single, somewhat large, and of a pale red colour.

Native of the South of Europe.

β. The shoots of the Double Cinnamon Rose are redder; the flowers small, short, thick and double, of a pale red colour at the end of the leaves, (petals) somewhat redder and brighter towards the middle<sup>p</sup>.]

It is the smallest and earliest of the double garden Roses; [flowering in May. Hence some authors call it *maialis*, but have supposed it to be different from the Cinnamon Rose. Retzius thus describes it. The root creeps much. The stems are from six to eight feet high, half-jointed, prickly; the prickles closer towards the bottom; they are straight and recurved; under the joints larger. The branches have only two

or three prickles at the bases of the branchlets and petioles. Petioles without prickles, but rough-haired, widening into ferrate stipules; the serratures sphacelate-glandular. Leaflets five or seven, oblong, ferrate beyond the middle, rough-haired underneath but smooth above, veined on both sides. Peduncles naked, smooth, solitary or two and three together. Fruits subglobular, naked, smooth. Segments of the calyx smooth, entire, widening at the end, longer than the corolla, rough-haired within and at the edge; sometimes one of the segments has a few linear jags. Flowers small, full, pale red. It agrees with *Rosa fecundissima* of Du Roi (2. 345.), except that Retzius did not observe any prickles upon the petioles. It is the *R. maialis* of Hermann (*diff. de Rosa*, p. 8. n. 3.): *R. collineola* of Ehrhart (2. 70.): and the *cinnamomea* of Miller: but Retzius can scarcely think it to be the *cinnamomea* of Linneus<sup>q</sup>.

The petioles in our garden Cinnamon Rose are not rough-haired (hirti) but villose, as are the leaflets underneath, giving them a glaucous hue. The stipules are of a very pale yellowish green, sometimes tinged with red at the back along the midrib. The common petiole has prickles along it on the young shoots only.

Gerarde, who cultivated it in 1596, calls it the Canell or Cinnamon Rose, and says that it took this name, not of the smell of its flowers, as some have deemed, for they have little or no flavour, but from the smell of the leaves. I cannot discover any smell of Cinnamon either in the leaves or flowers.

6. White Dog-Rose has round, glaucous, often mahogany-coloured stems; with very long, thong-like branches, bowing, with scattered, hooked prickles, smaller than in the common Dog-Rose. Leaflets five or seven, but mostly five, ovate, pointed, smooth, simply ferrate, glaucescent underneath. Petioles prickly. Peduncles three or five in a terminating cyme, (rarely solitary) mahogany-coloured, covered with a glandular roughness, not all exactly from one point, accompanied by a few lanceolate bractes, and each bearing a single white flower, like the common Dog-Rose, but never red or blush-coloured, and less fragrant. Fruit oblong; but in ripening it becomes globose, and deep red. The styles, as soon as they have passed through the neck of the calyx, are compacted into a cylinder, resembling a single style, terminated by a knob composed of the stigmas. This circumstance alone will distinguish it from the other species<sup>r</sup>.

Native of England, Switzerland, Germany, Dauphiné, Piedmont, and probably other parts of Europe, where it may not perhaps have been distinguished from *R. canina*. It is however sufficiently distinct. With us it is frequent in hedges, and thickets; flowering in June and July. It is said to be the most common wild Rose in the west of Yorkshire and about Manchester. Mr. Robson has not observed it within fifty miles of Darlington.

7. The small Burnet-leaved Rose has been confounded with the *spinosissima*, or what we commonly call the Scotch Rose; and others think it is not distinct from that.

Pallas says, that the shrub, as it appears in the open grassy steppes of New Servia and New Russia, is quite the same with the European. It is three feet high, with stouter prickles thinly scattered, as in the garden plant. Stipules long, entire. Petioles spinulose. Leaflets seven. Peduncles hispid. Segments of the calyx seldom pinnate. Corolla white. In the garden plant there are larger and fetaceous prickles intermixed, and nine leaflets, the lower ones smaller. The flowers are white, and the segments of the calyx entire.

The Siberian shrub is very elegant, a foot and half or at most two feet in height; the trunk thorny all over, the thickness of the little finger, very much branched, the branches collected into an ovate form. Spines on the trunk and branches very frequent, brittle-shaped, transverse or reclining, gray. Leaves very small, on red petioles, sometimes smooth, sometimes with small prickles on them. Stipules very narrow

<sup>m</sup> Ehrhart.

<sup>n</sup> Park. parad. 420.

<sup>o</sup> Hort. kew.

<sup>p</sup> Parkinson.

<sup>q</sup> Obs. 3. 33. n. 60.

<sup>r</sup> Smith, brit. Engl. bot. and Stokes in Withering.



with wider earlets, external and serrate. Leaflets commonly seven, but sometimes nine or five, the size of the little finger nail, oval, cut round, sharply double-serrate, stiffish, rugged, more or less retuse, on some shrubs rather acute. Peduncles sometimes rough, sometimes smooth, with a ternate and simple leaf, almost to the flower. Fruit globose, smooth. Segments of the calyx linear-attenuated, tomentose at the edge, shorter than the petals; which are yellowish-white and subcordate. Fruit when ripe black, dry, insipid, crowned with the segments of the calyx.

Retzius distinguishes it by the following marks. Stems not decumbent but upright. Segments of the calyx villose on the interior margin; the ends dilated, twice trifid. Flower the size of the Dog-Rose, but white, tinged here and there slightly with red. Petioles underneath, and generally also the ribs of the leaves, prickly. Serratures of the leaflets glandular at the end. Stipules also serrate, and the serratures glandular.

Native of the South of Europe, as well as Asia. It flowers here in May and June.

8. The Burnet or Scotch Rose has its stems about two feet high, upright, much branched, with numerous straight, unequal, very slender needle-like prickles, on the young branches, which often disappear from the old ones. Leaflets seven or nine, small, roundish, blunt, serrate, smooth, sessile. Their common petiole is sometimes prickly. Peduncles solitary, one-flowered, smooth, or very seldom prickly. Stipules small, halbert-shaped, toothed. Tube of the calyx almost hemispherical, smooth: the segments are entire. Petals white or cream-coloured, yellow at the base, delicately fragrant, sometimes striped with red. Fruit globose, deep red, black when quite ripe, smooth, sometimes, as Haller describes it, somewhat prickly. The prickles on the stem and branches are very unequal in size; some are flat, others like needles.

According to Mr. Woodward, the petioles are not prickly; in my own notes the branches and midrib of the leaves are said to be prickly; the leaflets from three to five pairs; the peduncles smooth; the fruit subglobular, smooth and shining, of so dark a purple when ripe, as to appear black on the outside. The pericarp is full of a fine purple juice. Dr. Withering informs us, that this diluted with water, dyes silk and muslin of a peach-colour; and with the addition of alum a deep violet: but that it has very little effect on woollen or linen. He adds, that the ripe fruit is eaten by children, and has a grateful subacid taste; that its dwarfish growth, and the singular elegance of its little leaves, resembling those of the upland Burnet, entitle it to a place in the flower garden.

Native of most parts of Europe; with us on the borders of fields, on heaths and downs, in hedges and on ditch banks, on a gravelly or sandy soil: as near Yarmouth, about Worcester and Bewdley, Perran downs, Cornwall, by Dudiston-loch in Scotland, &c.

β. Sibbald mentions a variety growing upon a hill at his Ciphian farm, with variegated flowers, red striped with white.]

γ. This seldom rises more than a foot high. The stalks are covered with a brown bark, and are closely armed with small spines; the leaves are very small; the flowers are also small, sessile, and of a livid red colour; the fruit is round, of a deep purple colour inclining to black when ripe.

δ. Dr. Withering speaks of a specimen from Lancaster Haws in Lancashire, with prickly peduncles, and cream-coloured flowers, changing to white. Mr. Atkinson, who sent it, relates that it covers several acres of sand, to the exclusion of every other vegetable.

It appears from Linneus's herbarium, that his *Rosa pimpinellifolia* is exactly, as Haller believed, the same plant as his original *spinosissima*, and not even a variety.

9. This very much resembles the two following species; but differs in having the stem two feet high, the petioles hairy at the top, and the flowers in pairs.

It rises with several slender stems to the height of two or three feet, covered with a brownish-green bark, and armed with a few sharp spines. Leaflets seven or nine, oblong-ovate and sharply serrate. The leaves of the flower-cup have often linear leafy elongations. The corolla is single and of a pale reddish colour. There is a variety of it with a double flower\*. Mr. Marshall calls this species the Dwarf Pennsylvania Rose. In the Kew catalogue it is not distinguished from the Carolina Rose.

10. Stem four or five feet high, petioles smooth, leaves shining, flowers in pairs<sup>γ</sup>.]

It rises with several smooth stalks to the height of five or six feet. The young branches are covered with a smooth purple bark. The leaves are composed of four or five pairs of spear-shaped leaflets, smooth on both sides, of a lucid green on the upper surface, but pale on the under, and deeply serrate. Segments of the calyx long, narrow and entire. Flowers of a livid red colour, single, with little scent. They appear in July.

[According to Dillenius, the stems are slender and green, with very few spines; the branches also are slender and smooth, or very seldom prickly. Leaves smooth, like those of the Dog-Rose, but somewhat narrower; leaflets five or seven, not serrate the whole length, but only from a little above the middle to the end. Flowers on short peduncles, solitary, a little smaller and of a deeper red than those of the common wild Rose; and smelling sweet like the Damask Rose. Calyxes cut into oblong pointed segments: these, with the fruit, and the leaf-stalks, have slender hairs on them. The fruit is small and round, but does not ripen in England. It is not the *Rosa virginensis* of Parkinson, theat. 1017: and Ray, hist. 1473.—Nor is it the *virginiana* of Du Roi.—It was cultivated in 1726, by James Sherard, M.D. at Eltham<sup>z</sup>.

11. Stem five or six feet high, smooth. Stipular prickles two. Leaflets seven, oblong-ovate or nearly lanceolate, smooth, not shining but opaque, serrate, paler underneath. Petioles prickly. Peduncles several, branched, forming a corymb, unarmed, with glandular hairs scattered over them. Leaflets of the calyx undivided, hispid on the outside. Petals obcordate, red. It flowers late.

These three species are natives of North America.

12. The Apple Rose grows upright to the height of four feet or more: the branches are upright and short. Prickles on the stem and branches scattered, small, awl-shaped, nearly straight. Leaflets seven, elliptical, bluntish, clothed on both sides with short velvet-like down, fragrant when rubbed, their serratures fringed with glands. Petioles downy, prickly, glandular. Peduncles terminating, mostly solitary, one-flowered, rough with rigid glandular bristles. Germ globular, bristly. Segments of the calyx long, downy, prickly on the outside. Corolla of a full rose-colour, not very odoriferous. Fruit globular, larger than in any other species, for the most part bristly, blood-red<sup>β</sup>.

According to Mr. Woodward, the peduncles, tube of the calyx, petioles, edges of the stipules, and serratures of the leaflets are beset with hairs of various lengths, terminated by a gland: the leaflets are ovate-lanceolate, more or less pointed: the petals longer than the calyx: and the fruit not always hispid. Dr. Stokes observes, that the leaflets are doubly serrate.

Retzius informs us, that a large variety of this, brought from Holland, and planted in a fertile soil, produced fruit that was quite smooth; and then, being transplanted into a worse soil, the fruit became very hispid. The experiment however, when repeated, did not succeed.

The Apple Rose, well known in gardens, and plantations, both in a single and double state, is found in many parts of Europe and Asia. It grows copiously with us in Westmoreland, Cumberland, and the north of Yorkshire, as well as in some parts of Scotland, as in the way from Edinburgh to Ravelston wood, about Killin in Breadalbane, upon the coast of Fife, &c.

\* Smith, Withering.

<sup>γ</sup> Smith in Engl. bot.

<sup>z</sup> Willdenow.

\* Marshall.

<sup>γ</sup> Willdenow.

<sup>z</sup> Hort. kew.

<sup>β</sup> Willdenow.

<sup>β</sup> Smith.



It flowers in june, and the large deep-red fruit remains till eaten by birds or destroyed by frost and wet.

β. Dillenius mentions a downy-leaved Rose, found by Sherard near Kingston upon Thames, which by his description seems to be a variety of this<sup>c</sup>.]

The fruit has a pleasant acid pulp surrounding the seeds, which is sometimes made into a conserve or sweetmeat, and served up in deserts.

[13. Branches round, subtomentose, closely covered with spreading white prickles, some larger and others smaller. Leaflets four pairs, ovate, blunt with a point, serrate, green and wrinkled on the upper surface. Petiole tomentose, with scattered patulous white prickles. Calyx tomentose within, hirsute without. It differs from all the other species, in having the leaflets blunt with a point, wrinkled and tomentose; and the branches exceedingly prickly and hispid. Native of Japan<sup>d</sup>.]

14. The common Provence Rose is well known in the English gardens, and is one of the most beautiful sorts yet known. The flowers are sometimes very large, and the petals closely folded over each other, like Cabbages, whence this variety is called the Cabbage Rose. The flowers of the Provence Rose have the most fragrant odour of all the sorts.

[The great double Damask Province or Holland Rose, hath his bark, says Parkinson, of a reddish or brown colour. The leaves are likewise more reddish than in others, and somewhat larger. It usually groweth very like the Damask Rose, and much to the same height. The flowers are of the same deep bluish colour, or rather somewhat deeper, but much thicker, broader, and more double by three parts almost, the outer leaves turning back, when the flower hath stood long blown, the middle part itself being folded hard with small leaves. The scent cometh nearest unto the Damask Rose, but yet is short of it by much.

β. The stem and branches of the Red Provence Rose are not so great as those of the other, but greener, the bark being not so red. The flowers are not so large, thick and double, but of a little deeper damask or bluish colour, turning to red, but not coming near the full colour of the best red Rose: nor is the scent so sweet as that of the damask Provence, but coming near that of the ordinary red Rose. This is not so plentiful in bearing as the Damask Provence<sup>e</sup>.]

γ. The stalks of the Blush Provence Rose rise from three to four feet high, and are unarmed: the leaves are hairy on their under side: the peduncles have some small spines: the segments of the calyx are semipinnate: the corolla has five or six rows of petals, which are large, and spread open; they are of a pale bluish colour, and have a musky scent.

[δ. The White Provence Rose differs only in the colour of the flowers.

ε, ζ. The two dwarf Provence Roses, both called Rose de Meaux, differ from each other in little except size. The smaller of the two is generally known by nurserymen and gardeners by the name of Pompon Rose. This throws out numerous stems, which rarely exceed a foot or a foot and half in height; usually straight, rigid and very prickly. Flowers very small, and distinguished by the brilliant colour of the central petals: they appear in june<sup>f</sup>.

These last are of late introduction, but the others were cultivated by Gerarde in 1596, and probably much earlier. They flower from june to august.]

15. This rises with prickly stalks about three feet high. The leaves have three or five leaflets, which are large, oval, smooth, and of a dark green with purple edges. The peduncles are set with brown bristly hairs. The segments of the calyx are smooth and semipinnate. The flowers are very double, and of a deep red colour, but have little scent.

[The petals are so closely wedged together that the flower appears as if it came out of the hand of the turner—*flos quasi tornatus*<sup>g</sup>.

The varieties of this species are very numerous;

the most remarkable ones are set down from the Kew catalogue. Parkinson describes the Velvet Rose; saying that the old stem is covered with a dark-coloured bark, but that the young shoots are of a sad green, with few or no thorns: the leaves are of a sadder green than in most Roses, and very often seven on a stalk: the flower is single; or double with two rows of petals, the outer larger, of a deep red like crimson velvet; or more double, with sixteen petals or more in a flower, most of them equal. They have all less scent than the ordinary red Rose.—Several of the other varieties are of more modern date. The Burgundy Rose is an elegant little plant, not more than a foot or eighteen inches in height.

According to Loureiro, the *Rosa centifolia* is a native of China.

This species is confounded with the Damask Rose, and is named *Rosa damascena* in the London Pharmacopœia. The petals, which are of a pale red colour, and of a very fragrant odour, are directed for medicinal use. The smell is extremely agreeable to most persons; but in too great quantities, these flowers are said to produce sneezing, inflammation of the eyes, faintings, hysterical affections, &c. and where persons have been confined in a close room with a great heap of Roses, they have been in danger of immediate extinction of life. From the experiments of Priestley and Ingenhouz this effect seems owing to the mephitic air, which these and most other odoriferous flowers exhale.—Six pounds of fresh Roses impregnate, by distillation, a gallon of water strongly with their fine flavour. On distilling large quantities, there separates from the watery fluid a small portion of a fragrant butyrous oil, which liquifies by heat and appears yellow, but concretes in the cold into a white mass: an hundred pounds of the flowers, according to the experiments of Tachenius and Hoffman afforded scarcely half an ounce of oil.

The smell of this oil exactly resembles that of the Roses, and is therefore much used as a perfume. It possesses very little pungency, and has been highly recommended for its cordial and analeptic qualities.—The process for making Attar or essential oil of Roses is as follows: Forty pounds of Roses, with their calyxes, are put into a still, with sixty pounds of water. The mass being well mixed, a gentle fire is put under the still; and when fumes begin to rise, the cap and pipe are properly fixed and luted. When the impregnated water begins to come over, the fire is lessened by gentle degrees, and the distillation continued until thirty pounds of water are come over, which is generally in four or five hours. This water is to be poured upon forty pounds of fresh Roses, and from fifteen to twenty pounds of liquor are to be drawn from it, as before. It is then poured into pans of earthen ware or tinned metal, and left exposed to the fresh air for the night. The Attar or essence will be found in the morning, congealed and swimming on the surface of the water.

These flowers also contain a bitterish substance, which is extracted by water along with the odorous principle, and remains entire in the decoction, after the latter has been separated by distillation or evaporation. This fixed sapid matter of the petals manifests a purgative quality, and it is on this account that the flowers are received in the Materia Medica.

The Pharmacopœias direct a syrup to be prepared of this Rose, which in doses of a spoonful is found to be pleasant and useful as a laxative for children, or to obviate costiveness in adults. The simple distilled Rose-water seems to have nothing but its fragrance to recommend it<sup>h</sup>.

It was cultivated by Gerarde in 1596<sup>i</sup>.]

16. The stalks of this grow erect, and have scarce any spines; they rise from three to four feet high. The leaves are composed of three or five large oval leaflets, which are hairy on their under side. The leaves of the calyx are undivided. The flowers are large, but not very double, spread open wide, and

<sup>c</sup> Smith.

<sup>d</sup> Thunberg.

<sup>e</sup> Parkinson.

<sup>f</sup> Curtis.

<sup>g</sup> Linn. syst.

<sup>h</sup> Woodville.

<sup>i</sup> Hort. kew.



decay soon; they are of a deep red colour, and have an agreeable scent.

[Stem smooth or but little prickly. Peduncles hispid. Leaves subacute, naked above, scarcely tomentose or downy underneath. Fruit hispid at the base. Flowers red or white<sup>k</sup>.

This species does not rise so high as the *centifolia*, but much resembles it in its foliage. Linneus rests their specific difference on the greater roughness and prickliness of the leaf-stalks in this, but this circumstance is not sufficiently remarkable to found the distinction. The petals, though large and spreading, are never half so numerous as in the *centifolia*, and are of a deep crimson colour<sup>l</sup>.

Parkinson gives the Red Rose the epithet of English, because this and the White are the most ancient and known Roses to our country, and assumed by our precedent Kings of all others, to be cognizances of their dignity, and because the Red is more frequent and used in England than in other places. The flowers vary in colour; some are of an orient red or deep crimson colour, and very double, although never so double as the White; some again are paler, tending somewhat to a damask: and some are of so pale a red, as that they are rather the colour of the canker Rose; yet all for the most part with larger leaves than the Damask, and with many more yellow threads (stamens) in the middle. The scent hereof is much better than in the White, but not comparable to the excellency of the Damask Rose; yet this being well dried and kept, will hold both colour and scent longer than the Damask.

β. Neither Gerarde nor Parkinson mention the *Mundi Rose*, which has the flowers very elegantly striped or variegated with red and white; in other circumstances it so perfectly resembles the red Rose, that there can be no doubt of its being a variety of that; indeed it frequently happens that a red Rose or two appears on the same plant with the variegated flowers<sup>m</sup>.]

γ, δ. The Childing, Marbled, and double Virgin Roses, says Mr. Miller, have great affinity with each other.

[The flowers of the Red officinal Rose possess neither the fragrance nor the laxative quality of those of the *centifolia*, but are chiefly valued for their astringency, which is most considerable before the petals expand, and therefore in this state they are chosen for medicinal use, and ordered in different preparations, as those of a conserve, a honey, an infusion, and a syrup. These preparations, especially the first and second, have been highly esteemed in phthisical cases, particularly by the Arabian physicians. Riverius also cites several cases in point, and that of Kruger, related in the German ephemerides, has been thought a still more evident proof of the efficacy of conserve of Roses in phthisis pulmonalis; but as the use of the conserve was constantly joined with that of milk and farinacea, together with proper exercise in the open air, it has been doubted if these recoveries could be wholly imputed to the Roses, though their mild astringent and corroborant virtues certainly contributed much. In some cases, twenty or thirty pounds of the conserve were taken in the space of a month.

The infusion of Roses is a grateful cooling sub-astringent, and useful in spitting of blood; its efficacy however depends chiefly on the acid. The syrup derives its use merely from its colour.

Notwithstanding the reputed astringent quality of red Roses, Poterius relates, that he found a dram of the leaves dried and powdered, occasioned three or four stools, and this not in a few instances, but constantly in several. The full blown flowers are slightly laxative, especially in the paler sorts; but the buds of this Rose are astringent.

Both the astringency and colour of the petals are best preserved by hasty drying<sup>n</sup>.

Gerarde says, in Leyland fields in Lancashire, our garden Rose doth grow wild, in the plowed fields among the corn in such abundance, that there may be gathered daily, during the time, many bushels of

Roses, equal with the best garden Rose in each respect: the thing that giveth great cause of wonder is, that in a field in the place aforesaid, called Glover's-field, every year that it is plowed for corn, it will be spread over with Roses; but when it is leye, and not plowed, then shall there be but few Roses to be gathered: by the relation of a curious gentleman there dwelling, so often remembered in our history.

I give this improbable tale, as an instance of the dependance that is to be placed on the information of curious gentlemen. Johnson, the emaculator of Gerarde, has set it right, by informing us, he had heard that the Roses which grow in such plenty in Glover's field are no other than the corn Rose or red Poppies.]

17. The Damask Rose rises with prickly stalks eight or ten feet high, covered with a greenish bark, and armed with short prickles. The leaves are composed of five or seven oval leaflets, dark green above, but pale underneath; the borders frequently turn brown and are slightly ferrate; the peduncles are set with prickly hairs; the calyxes are semipinnate and hairy; the corolla is of a soft pale red, and not very double, but has an agreeable odour; the hips are long and smooth.

[Retzius says that the stipules are quite entire, with a glandular margin; and that the fruits are hispid-hairy half over.

It is a native of the South of France, and was cultivated in 1596 by Gerarde<sup>o</sup>.

These garden Roses were certainly cultivated and highly esteemed in England long before the time of Gerarde, as appears both from our historians and poets. Though some of them are set down as indigenous of the South of Europe, yet I cannot help thinking, that they were first produced and nurtured in the more benign and earlier cultivated regions of Asia. Hakluyt says that the Damask Rose was brought in by Dr. Linaker, physician to King Henry VII. and VIII.

Of this elegant species, which has not been well distinguished from the *provincialis* and *centifolia*, there are many varieties.]

The Monthly, the striped Monthly, the York and Lancaster, and Mr. Hart's Rose, says Mr. Miller, are all supposed to be varieties of the Damask Rose.

[α, β. The Red and Blush Damask Rose differ only in the shade of colour.]

γ. The York and Lancaster Rose, agrees with the Damask in stalk, leaf, &c. differing only in the flower being variegated with white stripes. Mr. Hart's Rose has the white stripes more distinct. The flowers in these being less double than in several others, are frequently succeeded by fruit, and have ripe seeds, from which other varieties may be obtained<sup>p</sup>. [Some of these are particularized by Parkinson. Sometimes one half of the petal is of a pale whitish colour, and the other half of a paler damask than common: or one petal is white or striped with white, and the other half blush or striped with blush; sometimes also all striped or spotted over, and at other times little or no stripes or marks, as nature listeth to play with varieties, in this, as in other flowers: the longer it abideth blown open in the sun, the paler and the fewer stripes, marks or spots will be seen in it. The smell is of a weak Damask Rose scent.

δ, ε. The Red and White Monthly Roses are so called, from their continuing to blow in succession during the greater part of the summer; not that they blow in every month, as the name implies. They are in every respect like the Damask Rose; unless it be, as Ferrarius observes, more full of prickles than that<sup>q</sup>.]

ζ. The Blush Belgick Rose, which Mr. Miller gives as a distinct species, rises about three feet high, with prickly stalks. The leaves are composed of five or seven leaflets, which are oval, hairy on their under side, and slightly ferrate: the peduncles and calyxes are hairy, and without prickles; the calyxes are large and semipinnate; the flowers very double, of a pale flesh colour, with little scent, generally in great quan-

<sup>k</sup> Linn. mant. <sup>l</sup> Woodville. <sup>m</sup> Ray. <sup>n</sup> Woodville.

<sup>o</sup> Hort. kew. <sup>p</sup> Mill. fig. <sup>q</sup> Ray.



tities. The Red Belgick Rose differs only in having the colour of the flower a deep red.

18. The Evergreen Rose has slender stalks which trail upon the ground unless they are supported, and if trained up to a pole or the stem of a tree, will rise twelve or fourteen feet high; they are armed with crooked reddish spines, and have small leaves, with seven oval acute leaflets, of a lucid green, and serrate. The leaves continue on all the year. The flowers are small, single, white, and have a musky odour. In their natural place of growth they continue in succession great part of the year, but their time of flowering in England is June.

[Parkinson remarks, that this Rose-bush is very like the wild single Eglantine; and that the lowest pair of leaflets are smallest, the next bigger, the third bigger still, and the end-leaf biggest of all. At first coming out, the shoots and young leaves are reddish; but this, I believe, is common to most, if not all the species. The flowers stand four or five together at the tops of the branches; they are of a pure white, much larger than the ordinary Musk Rose, and of a fine scent.

Native of Germany. Sherard gathered the seeds in Italy, and introduced this plant into his garden at Eltham about the year 1727. Mr. Miller relates that in the same year he saw it growing at Leyden, in the curious garden belonging to Boerhaave; who had it from Micheli; and that the latter found it growing naturally in the woods near Florence. According to Clusius, Joachim Camerarius sent the seeds to him at Padua, in the year 1592; and as he carried them to Leyden, Boerhaave's plants probably descended from them.—Parkinson cultivated the Evergreen Rose in 1629<sup>r</sup>.

19. The branches have great abundance of prickles, which fall off on the stems. The fruits are large and pear-shaped.

Native of Austria and Italy.

According to the catalogue of the royal garden at Kew, it was introduced about 1773, by Messrs. Kennedy and Lee.

20. The young shoots of the Frankfort Rose are covered with a pale purplish bark, set with a number of small prickles like hairs; the older branches have but few thorns. The fruit is very large. The flower is thick and double as a Red Rose, but so strong swelling in the bud, that many of them break before they can be full blown; and then they are of a pale red-rose colour, between a red and a damask, with a very thick broad hard umbone of short yellow threads in the middle. The segments of the calyx are quite entire. The smell is nearest unto a Red Rose<sup>s</sup>.]

Mr. Miller says, this may be a distinct species, but is of little value; the flowers rarely opening fair, and having no odour.

[Its native place is not known. Parkinson cultivated it in 1629<sup>u</sup>.

21. The Sweet Briar or Eglantine has yellow hooked prickles on the stem. Leaflets seven, very fragrant, elliptic or subovate, above smooth and wrinkled, underneath rust-coloured with resinous atoms or little dots; serratures glandular. Petioles also glandular and prickly. Peduncles muricate and in corymbs. Calyx glandular. Petals rose-coloured, white at the base. Fruit scarlet, muricate but sometimes smooth, farinaceous, insipid<sup>x</sup>.

Leaflets doubly ferrate, smooth above except a few scattered hairs along the midrib, even in the newly expanded leaves, half-doubled together, not so full-scented as those of the Garden Sweet-Briar. The habit however and mode of growth of the wild plant are the same with that<sup>y</sup>. Dr. Stokes thinks they are at least varieties; the leaves in the garden Sweet-Briar being beset above with very short hairs, between oval and ovate, and not unfrequently quite oval; the glands yellowish; the fruit scarlet and sometimes quite smooth; whereas, according to Lightfoot, the fruit of the wild is black, when ripe. Dr. Withering remarks, that the prickles are not numerous on the tube of the

calyx, or germ, as Linneus calls it, and chiefly on one side; that the rusty appearance is chiefly confined to the lower leaves; and that the sweet scent seems to be owing to the glands.

The garden shrub certainly grows larger and more erect; the leaves are bigger and much sweeter than in the wild one, the rusty colour of them disappears, and the whole puts on a more vigorous appearance. But all this is owing to culture, which has done much in this favourite genus.

Native of most parts of Europe on heaths; in thickets, hedges and woods, chiefly in a gravelly soil.

The varieties with double flowers are very elegant shrubs in ornamental plantations.]

22. The Moss Provence Rose, commonly called the Moss Rose, from the moss-like pubescence on the calyx, has the stalks and branches closely armed with brown spines. The peduncles and calyx are covered with long hair-like Moss. The flowers are of an elegant crimson colour, and have a most agreeable odour.

[This elegant Rose is known to us only in its double state, and we are ignorant of the country to which we are indebted for it. By Furber's catalogue it appears that it was cultivated here in 1724<sup>z</sup>.

Retzius describes the stem as very prickly, and at the same time hispid; the peduncles long, beset with curled strigæ terminated by a resinous globule, as are also the whole calyxes; these strigæ are often branched. The petioles are less hispid and unarmed. The leaflets are very large, three or five, smooth. The colour and smell of the clammy resinous glands are very much the same as in the Flowering Raspberry, or *Rubus odoratus*.]

23. The Musk Rose rises with weak stalks to the height of ten or twelve feet, covered with a smooth greenish bark, and armed with short strong spines. Leaflets seven, light green and serrate. Flowers in large bunches, in form of umbels, at the end of the branches, they are white, and have a fine musky odour, appear in July and August, and continue in succession till the frost stops them. The stalks are too weak to support themselves. It varies with double flowers.

[Prickles remote, stout, bent back. Leaflets five, ovate, serrate, acute, smooth. Petioles often prickly, pubescent. Flowers numerous, in corymbs. Peduncles hirsute. Calyx oblong, villose; the segments lanceolate, entire, pubescent within. Petals white, obovate, of the same size with those of the Dog Rose. It grows every where in hedges in the kingdom of Tunis; and the Tunisiens cultivate it for the sake of a highly odorous essential oil which they obtain from the petals by distillation<sup>a</sup>.

It was cultivated in 1596, by Gerarde<sup>b</sup>. According to Hakluyt (1582) the Musk Rose plant was procured of later time out of Italy.

*R. sempervirens* or Evergreen Musk Rose of Miller (n. 9.) seems to be the same with this.]

The seeds were sent by Robert More, Esq. who found it growing naturally in Spain.

Stems four or five feet high, erect, covered with a green bark, and armed with strong crooked white spines. Leaves composed of five oval leaflets ending in acute points, smooth, of a lucid green, slightly serrate, and continuing all the year. The flowers grow in large bunches at the end of the branches; are single, white, and have a musky odour. They appear in August, and continue in succession till October.

[24. The veins of the leaves underneath are red. The stem, peduncles and fruits are covered with a glaucous bloom.

Native of the mountains of Dauphiné, Switzerland and Salzburch.

25. Allied to the following species, but distinguished by the obovate fruit and other marks. Different from *R. pumila* by the leaves not being glaucous underneath, the stem and petioles unarmed.—Native of the mountains of Dauphiné and Switzerland<sup>c</sup>.

<sup>r</sup> Hort. kew.

<sup>s</sup> Parkinson.

<sup>u</sup> Hort. kew.

<sup>x</sup> Smith.

<sup>y</sup> Withering.

<sup>z</sup> Hort. kew.

<sup>a</sup> Desfontaines.

<sup>b</sup> Hort. kew.

<sup>c</sup> Willdenow.



26. The Alpine Rose is a low shrub, with reddish-brown stems, the lower half or thereabouts of which is covered with straight awl-shaped slender white not pungent prickles; the upper part is quite naked. Stipules ciliate-glandular at the edge. Petioles hispid-glandular. Leaflets commonly seven, smooth on both sides, ovate, biferrate, ciliate-glandular. Peduncles naked, unarmed. Calyx rufous-brown on the outside; the tube ovate-oblong, naked; the leaflets or segments quite entire, spatulate, villose-white about the edge, villose within. Flowers solitary, red, middle-sized.

Gouan has confounded Haller's Rose, n. 1107. with Linneus's *pimpinellifolia*. Haller has united the *pimpinellifolia* and *spinossissima*, which Du Roi has very well distinguished<sup>d</sup>.

Jacquin describes the stems as from one to four feet in height, branched and upright. Stipules lanceolate, acute, ferrulate. Leaflets commonly seven, but sometimes five or nine. The peduncles have always hairs, with glandular heads, scattered over them. The flowers have a very powerful and sweet odour. The fruits are generally quite smooth, sometimes but more seldom hispid. Leaflets of the calyx entire, lanceolate, concave, running out into a very long point. Petals emarginate, of a very deep purple-red colour, but sometimes paler. Fruit oblong-ovate, contracted into a neck below the calyx, sometimes a little curved in, shining very much, of an elegant red colour, crowned with the converging calyx, and very smooth; it always hangs down, and thus approaches very much to *R. pendulina*, from which it differs in little else than in never having the peduncles smooth; not even in cultivation. It varies in the hirsuteness of the stems, but they are commonly smooth, and the branches are always so. The midribs of the leaves and the stipules seldom have hairs on them. This shrub never has any genuine prickles on it.

Native of the Alps, Germany, Austria, Piedmont, and Siberia.—Cultivated in 1683, by Mr. James Sutherland. It flowers in June and July<sup>e</sup>.]

According to Mr. Miller it rises to the height of six or seven feet. The stalks and branches have no spines, but are covered with a smooth reddish bark. Leaflets seven, thin, oval, smooth, bright green, very slightly ferrate, far asunder. Peduncles armed with bristly hairs. Leaflets of the calyx long, slender in the middle, terminating in an oval leafy point. Flowers single, bright, appearing at the beginning of May; and succeeded by long smooth spear-shaped hips. The plants produce a second crop of flowers about the end of August; but these fall off, and are not succeeded by hips.

[27. Height from a foot to two feet. The stem covered with a smooth bark, often coloured. Branches weak, also coloured, alternate, one-flowered only. Leaves on each branch three or four, composed of five or seven leaflets, ovate or wedge-truncate, smooth, doubly ferrate; the uppermost or outmost larger than the others. Stipules running much down, diverging at the end, smooth above, rugged underneath with clammy glandular prominent dots, ciliate: becoming bald when far advanced. Peduncle of the same colour with the flower, hispid, shorter than the opposite leaf: at the base of it is an ovate-lanceolate, smooth, ciliate bracte, twice the size of the stipules. Calyxes ovate; germs hispid with prickles; calycine leaflets long, widened at the end, lanceolate, ferrate, unequal; one or two of them commonly awl-shaped and not dilated, having a dense white cotton along the edge. Petals deep red, two-lobed or emarginate.—It differs from the *alpina* in having seven ovate leaves, larger stipules more decurrent, rugged underneath, larger bractes, the peduncles more hispid and prickly, and the germ rough with spinules, and lastly the calycine leaflets not subulate-setaceous, but dilated lanceolate<sup>f</sup>.

Native of the Pyrenees, the Swiss Alps, and the mountains of Silesia.

28. Height from eighteen inches to two feet, slender, straight, brown, covered with numerous slender innoxious spines; bending downwards. The branches

have no spines, but smooth leaves, glaucous green above, and glaucous white underneath, composed of five or six pairs of leaflets; the midrib is thinly hairy. Peduncles short. Flowers large; petals emarginate, pale flesh-colour. Fruits long, pendulous, smooth; of a fine coral red. Calyxes then set with slender hairs; but in flowering-time fringed with a hoary lanugo; in other parts smooth and without prickles. It flowers earlier than the other Roses, namely in May; and the fruit ripens in August<sup>g</sup>.

Native of North America. Cultivated at Eltham by James Sherard, M.D. in 1726<sup>h</sup>. Dillenius says that the seeds were sent from New England.

29. Petiole prickly, and thinly set with glanduliferous hairs, especially towards the base. Leaflets orbicular-obovate, smooth, concolour, doubly ferrate, the ferratures glandular. Stem smooth, with prickles commonly in pairs and renicinate below the origin of the leaves. Petals obcordate, white.

Native of the mountains of Dauphiné and Switzerland<sup>i</sup>.

30. Stem upright. Branches round, purple, smooth, upright. Prickles scattered, recurved. Leaves alternate, petioled. Leaflets opposite, sometimes but seldom alternate; sessile, ovate, ferrate, green and pale above, pale and villose underneath. Petioles villose, with scattered small recurved prickles. Flowers terminating in panicles, the size of Bramble flowers. Panicle decomposed, spreading. Peduncles and pedicels villose, unarmed. Calyx very hirsute with a white pile, especially at the edge. Corolla white. Germ villose, unarmed. It differs quite from the other Roses in having small flowers in panicles, on villose peduncles.

Native of Japan<sup>k</sup>.

31. The common Dog Rose or wild Briar has the stem smooth, with two alternate hooked prickles between the knots, growing to the height of six feet or more. Branches elongated, from upright spreading. Prickles conical-hooked, compressed, bright red when young, but afterwards ash-coloured. Leaves alternate, having for the most part seven scentless serrate leaflets, the ferratures terminated by minute purple glands; naked and quite smooth on both sides, the upper side shining, the lower paler; the lower leaflets gradually smaller; the midrib and petiole prickly underneath, the edges beset with purple glands. Stipules finely toothed, the teeth tipped with red, and terminated by a globule. Peduncles forming a sort of corymb of two or three to six flowers together; but sometimes they are solitary, round, even and naked. Calyx pubescent within and at the edge; the leaflets lanceolate and long-tailed, two simple, two pinnate on each side, and one pinnate only on one side. Petals obcordate, a little remote, pale red, fainter towards the base, sometimes white, sweet-scented<sup>l</sup>. Fruit, which is a sort of berry formed from the ripened calyx, scarlet, quite smooth and shining, sometimes closed and sometimes pervious at the top; containing about thirty seeds, which are bony, ovate-acuminate, angular, having white silky bristles dispersed among them, terminated by the permanent style, pale: the outer ones are immersed in the excavations of the fleshy substance of the calyx; but those in the middle have fleshy, saffron-coloured, subvillose peduncles<sup>m</sup>. It is sometimes seen with a hispid fruit<sup>n</sup>.

Native of Europe, in hedges and woods, decorating them with its lively odorous flowers in the months of June and July. From these a perfumed water may be distilled, which is said to be much more fragrant than that from garden Roses. The leaves are recommended as a substitute for tea, giving out a fine colour, a sub-astringent taste, and a grateful smell, when dried, and infused in boiling water. The fruit, commonly known by the name of *Hips*, is agreeable enough when ripe and mellowed by the frost: beaten up with sugar, it makes a pleasant conserve, more used as a vehicle for other medicines, than for any virtue of its own. Care

<sup>g</sup> Hort. elth.

<sup>h</sup> Hort. kew.

<sup>i</sup> Willdenow.

<sup>k</sup> Thunberg.

<sup>l</sup> Curtis, Smith, Withering.

<sup>m</sup> Gartner.

<sup>n</sup> Smith.

<sup>d</sup> Retzius.

<sup>e</sup> Hort. kew.

<sup>f</sup> Gouan.



should be taken in making this conserve, to remove all the chaffy or prickly fibres or bristles with the seeds, which will otherwise produce considerable irritation on the primæ viæ. A mossy protuberance is common on various parts of the wild Rose, which is occasioned by an insect called *Cynips Rosæ*: formerly, under the name of *Bedeguar* it was used medicinally, but it is now justly discarded. The fruit in winter is much sought after by birds, especially the pheasant. Its strong thorns make it valuable for strengthening hedges<sup>o</sup>.

32. The downy-leaved Dog Rose agrees in habit with the common Dog Rose, except that the leaves are pubescent all over, and have a subcinereous appearance. It is less in all its parts than the Apple Rose (*R. villosa*.) Branches from upright spreading, subflexuose. Prickles on the stem hooked, widened at the base. Leaflets five or seven, sweet, elliptic-ovate, very softly tomentose on both sides, with the serratures glandulously ciliate. Petioles tomentose, muricate. Peduncles terminating, subsolitary, muricate with rigid glandular bristles. Germ also muricate, elliptic. Calyx glandular-hispid. Petals whitish at the base, but the rest of a beautiful rose-colour. Fruit ovate, scarlet, muricate, nearly of the same size and shape as in the *canina*.

Not uncommon in hedges and thickets. Observed about London by Hudson. At St. Faith's, Catton, and other places near Norwich. In Shropshire and Wales common. It flowers in June and July<sup>p</sup>.

33. This also has very much the habit of *R. canina*. Stems round and smooth, armed with recurved, strong, pungent, shining, brownish prickles, which are reddish when young. Leaflets five, (seldom seven) ovate or rather roundish, acute, sharply serrate, on very short petioles, very dark green and smooth above, somewhat hoary or villose underneath, especially along the nerves and veins and at the edges; the tips of the serratures are cartilaginous, and red ending in a brown colour, when examined by a magnifier. The midribs have prickles, short whitish hairs, and thinly scattered pedicelled dusky red glands. Stipules sharp and ciliate at the edge; in other parts smooth. The leaves differ from those of the *canina*, not only in their pubescence, but in being thicker and less shining. Peduncles round, hispid with glands on long pedicels. Germ very smooth, or sometimes with a few of these glands towards the base. Leaflets of the calyx villose within and at the edges, but glandular only at the back and on the leafy edges of the segments; two or three of them are pinnate-laciniate, the others quite entire. Petals obcordate, sweet; flesh-coloured or paler. Fruit smooth and shining, red with an orange-coloured pulp, hardly to be distinguished from the fruit of the common Rose.—Native of Austria, on hills<sup>a</sup>.

34. This is a very dwarf shrub, with small flowers. Leaflets five small ovate acute.—Native of Europe<sup>r</sup>.

35. Height seldom exceeding three feet. Flowers large in proportion to the plant, semidouble, with great richness of colour (dark red) uniting a most delightful fragrance, coming out in succession during the greater part of the year, only more sparingly in the winter months<sup>s</sup>. Segments of the calyx leafy at the end, one larger than the rest. Germs and peduncles sometimes but rarely smooth<sup>t</sup>.

Native of China. Introduced by Gilbert Slater, Esq. of Knots-green near Laytonstone<sup>u</sup>.

36. This is very nearly allied to the preceding, and perhaps may be only a variety of it<sup>x</sup>. It is distinguished from the next species chiefly by the shining smoothness of the leaflets, and the ciliate hairiness of the calycine segments. The upper leaves are ternate, the lower ones have a single leaflet added, on one side, and thus become in some degree pinnate<sup>y</sup>.—Native of China.

37. Branches unarmed; or sometimes, but seldom, having one or two very slender prickles towards the

leaves or on the petioles. Leaflets five, tomentose underneath, smooth above, serrate, the outmost twice as large as the rest. Peduncles long, naked, simple. Calyx gashed, even. Fruit the size of that of *Sorbus aucuparia*.—Native of China<sup>z</sup>, and Cochinchina.

38. Stem smooth without prickles, seeming to be entirely unarmed, with a large stem, and branches a foot long. Leaflets five, smooth on both sides, simply and remotely serrate, the lateral ones an inch and half, the end one two inches long. The petiole has glandular hairs scattered over it, and has one or two hooked prickles. Flowers the size of those of the Dog Rose, in a sort of corymb. Peduncles hispid with hairs which are glandular at the tip. Germ oblong, smooth. Leaflets of the calyx leafy at the tip, acuminate, toothed, smoothish on the outside, tomentose within. It seems to differ from the preceding.—Native of the East Indies<sup>a</sup>.

39. Stem villose, with scattered straight prickles. Leaflets five or seven, roundish-elliptic, subcoriaceous, blunt, the upper surface shining. Flowers fragrant, terminating, solitary. Peduncle very short, with lanceolate silky-villose bractes covering the germ. Leaflets of the calyx undivided, ovate-lanceolate, acuminate, silky-villose. Petals yellowish white obcordate. Native of China<sup>b</sup>.

40. The white Rose, in its wild state, has an affinity to the *arvensis* (n. 6.); but differs from it in having wider ovate leaves, smooth and deep green above, paler and slightly hairy underneath, unequally serrate and blunt: stem and petioles villose, prickly: peduncles solitary, long, hispid: fruits ovate, smooth, but more frequently having a few slender prickles on them: calyxes smooth, green, half-pinnate<sup>c</sup>.

Loureiro describes the stem as long, scandent, branched, having many recurved prickles scattered over it. Leaflets three or five, broad-lanceolate, ciliate, on prickly petioles. Flowers pale, without scent, many together. Fruits oblong-ovate, smooth, on hispid peduncles.

Retzius remarks, that the germs and calyxes are sometimes hispid: and D'Affo that the segments of the calyx are entire.

Parkinson describes two varieties of the White garden Rose; one attaining sometimes the height of eight or ten feet, with a stock of a great bigness: the other seldom higher than a Damask Rose. Both have somewhat smaller and whiter-green leaves than in many other Roses, five most usually on a stalk, and paler underneath; as also a whiter-green bark, armed with short prickles. The flowers in the one are whitish with an eye of blush, especially towards the bottom, very double, and for the most part not opening so fully as the Red or Damask Rose. In the other more white, less double and opening more. Some have only two or three rows of petals; and all have little or no smell. Native of Europe, China, Cochinchina, &c.

All these sorts of Roses says Gerarde in 1597, we have in our London gardens; that is the White, Red, Province or Damask, lesser Damask, and greater Province: and doubtless they were in our gardens long before his time. He affirms that the Double White Rose grew wild in many hedges of Lancashire in great abundance, even as Briers do with us in the southerly parts. But Gerarde must have been misinformed, perhaps by the same person who sent him intelligence of Red Roses, which proved to be Corn Roses or Red Poppies.]

#### PROPAGATION AND CULTURE.

Most of the sorts of Roses are of foreign growth, and have been at various times introduced into the English gardens, but they are generally natives of northern countries, or grow upon the cold mountains in the warmer parts of Europe, so they are very hardy in respect to cold, but love an open free air, especially the Yellow Rose, the Austrian Rose, and the Monthly Rose. The two former will not flower in a warm soil and situation, nor near the smoke of London, and the Monthly Rose will flower much better in a free

<sup>o</sup> Curtis, Withering, Woodville. <sup>p</sup> Smith. <sup>q</sup> Jacquin.

<sup>r</sup> Willdenow. <sup>s</sup> Curtis. <sup>t</sup> Willdenow. <sup>u</sup> Curtis.

<sup>x</sup> Willdenow. <sup>y</sup> Jacquin.

<sup>z</sup> Willdenow.

<sup>a</sup> Jinn. spec.

<sup>c</sup> Krocke.

<sup>b</sup> Willdenow.



open air, than within the reach of the smoke of London.

The usual time of these shrubs producing their flowers is from the middle, or latter end of may, till the middle of july.

But in order to continue these beauties longer than they are naturally disposed to last, it is proper to plant some of the Monthly Roses near a warm wall, which will occasion their budding at least three weeks or a month before those in the open air; and, if you give them the help of a glass before them, it will bring their flowers much forwarder, especially where dung is placed to the back side of the wall (as is practised in raising early fruits;) by this method I have seen fair Roses of this kind blown in february, and they may be brought much sooner against hot walls or in stoves, where people are curious this way.

You may also cut off the tops of such shoots which have been produced the same spring early in may, from some of these sorts of Roses which are planted in the open air, and upon a strong soil; this will cause them to make new shoots, which will flower late in autumn, as will also the late removing the plants in spring, provided they do not suffer by drought, as I have several times experienced; but particularly in the year 1718, when I had occasion to remove a large parcel of these plants in may, just as they were beginning to flower; in doing of which I cut off all the flower-buds, and, after having opened a trench where they were to be planted, I poured a large quantity of water, so as to render the ground like a pap; then I took up the plants, and placed them therein as soon as possible, that their roots might not dry; and, after planting them, I watered the ground well again, and covered the surface over with mulch to prevent the drying; after this I repeated watering the plants all over two or three times a week, in the evening, until they had taken root. In three weeks or a month after, the plants shot out again, and produced a great quantity of flowers in august and september, which were as fair as those produced in june. The Monthly Rose is the best sort for this purpose, there being no other sort which will flower both early and late so well as this.

The next sort of Rose which flowers in the open air, is the Cinnamon, which is immediately followed by the Damask Rose, then the Blush, York, and Lancaster come; after which, the Provence, Dutch Hundred-leaved, White, and most other sorts of Roses follow; and the latest sorts are the Virginia and Musk Roses, which, if planted in a shady situation, seldom flower until september; and, if the autumn proves mild, will continue often till the middle of october.

The plants of the two sorts of Musk Roses, should be placed against a wall, pale, or other building, that their branches may be supported, otherwise they are so slender and weak as to trail upon the ground. These plants should not be pruned until spring, because their branches are somewhat tender; so that when they are cut in winter, they often die after the knife; these produce their flowers at the extremity of the same year's shoots in large bunches, so that their branches must not be shortened in the summer, lest thereby the flowers should be cut off. The shrubs will grow to be ten or twelve feet high, and must not be checked in their growth, if you intend they should flower well, so that they should be placed where they may be allowed room.

The lowest shrub of all the sorts here mentioned is the Scotch Rose, which rarely grows above a foot high, so that this must be placed among other shrubs of the same growth, which should have a moist soil and a shady situation. The Red Rose, and the Rosa Mundi, commonly grow from three to four feet high, but seldom exceed that: but the Damask, Provence, and Frankfort Roses grow to the height of seven or eight feet; so that in planting them, great care should be taken to place their several kinds, according to their various growth, amongst other shrubs, that they may appear beautiful to the eye.

The Yellow Rose, and Austrian Rose seldom shoot so strong as most of the other sorts, especially in the

light land near London, where they seldom produce their flowers. These are esteemed for their colour, being very different from all the other sorts of Roses; but as their flowers have no scent, and are of short duration, they do not merit the price they are generally sold at.

The Frankfort Rose is of little value, except for a stock to bud the more tender sorts of Roses upon, for the flowers seldom open fair, and have no scent; but it being a vigorous shooter, renders it proper for stocks to bud the Yellow and Austrian Roses, which will render them stronger than upon their own stocks; but the Yellow Roses seldom blow fair within eight or ten miles of London, though in the northern parts of Great Britain they flower extremely well. This sort must have a northern exposure, for if it is planted too warm, it will not flower.

The Damask and Monthly Rose seldom flower well in small confined gardens, nor in the smoke of London, therefore are not proper to plant in such places, though they frequently grow very vigorously there. These always begin to shoot the first of any of the sorts in the spring, therefore frequently suffer from frosts in april, which often destroy all their flowers.

All the sorts of Roses may be propagated either from suckers, layers, or by budding them upon stocks of other sorts of Roses; which latter method is only practised for some peculiar sorts, which do not grow very vigorous upon their own stocks, and send forth suckers very sparingly, or where a person is willing to have more sorts than one upon the same plant; but where this is designed, it must be observed to bud only such sorts upon the same stock as are nearly equal in their manner of growth; for if there be a bud of a vigorous growing sort, and others of weak growth budded in the same stock, the strong one will draw all the nourishment from the weaker, and entirely starve them.

If these plants are propagated by suckers, they should be taken off annually in october, and transplanted out either into a nursery in rows (as hath been directed for several other sorts of flowering-shrubs) or into the places where they are to remain; for if they are permitted to stand upon the roots of the old plants more than one year, they grow woody, and do not form so good roots as if planted out the first year, so there is more danger of their not succeeding.

But the best method to obtain good-rooted plants is to lay down the young branches in autumn, which will take good root by the autumn following (especially if they are watered in very dry weather,) when they may be taken from the old plants, and transplanted where they are to remain. The plants, which are propagated by layers, are not so apt to send out suckers from their roots as those which are from suckers, therefore should be preferred before them; because they may be much easier kept within compass, and these will also flower much stronger. These plants may be transplanted any time from october to april; but when they are designed to flower strong the first year after planting, they should be planted early; though, as I said before, if they are planted late in the spring, it will cause them to flower in autumn, provided they do not suffer by drought.

Most of these sorts delight in a rich moist soil and an open situation, in which they will produce a greater quantity of flowers, and those much fairer, than when they are upon a dry soil or in a shady situation. The pruning which they require, is only to cut out their dead wood, and take off all the suckers, which should be done every autumn; and if there are any very luxuriant branches, which draw the nourishment from the other parts of the plant, they should be taken out, or shortened, to cause them to produce more branches, if there be occasion for them to supply a vacancy; but you must avoid crowding them with branches, which is as injurious to these plants as to fruit-trees; for, if the branches have not equal benefit from the sun and air, they will not produce their flowers so strong, nor in so great plenty, as when they are more open, and better exposed to the sun,



so that the air may circulate the more freely between them.

[14. Those little elegant varieties of the Provence Rose, called greater Rose de Meaux, and smaller Rose de Meaux or Pomponne Rose, may be increased, like most of the other species, by suckers, which however are not very plentifully produced in these, and do not extend to any great length.

The roots should not be divided oftener than once in three years: if the old wood be cut down every year, after the plants have done blowing, they will throw out more vigorous shoots, and flower more freely \*.]

22. The Moss Provence Rose rarely sends up suckers, and when the branches are layed down they are long before they put out roots; it is therefore frequently propagated, by budding it upon stocks of the other sorts; but the plants so raised are not so durable as those which are propagated by layers; [and this latter method is now most usually adopted.

ROSA hierochuntea. See *Anastatica*.]

— finensis. See *Camellia* and *Hibiscus*.

— folis. See *Drosera*.

ROSE-BAY. See *Nerium*.

— Willow-herb. See *Epilobium*.

ROSE Champion. See *Agrostemma*.

—, China. See *Hibiscus*.

—, Guelder. See *Viburnum Opulus*.

ROSEMARY. See *Rosmarinus*.

ROSE of Jericho. See *Anastatica*.

—, Rock. See *Cistus*.

— root. See *Rhodiola*.

ROSMARINUS. (From *ros*, dew, and *marinus*, on account of its affecting maritime situations.)

Lin. gen. n. 38. Reich. n. 41. Schreb. n. 49.

Tournef. t. 92. Juss. III.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Verticillatæ*. *Labiata*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, compressed above: mouth upright, two-lipped: upper lip entire, lower bifid.

COR. unequal: tube longer than the calyx; border ringent: upper lip two-parted, upright, shorter, acute, with the edges bent back; lower lip bent back, trifid; the middle segment very large, concave, narrow at the base, the lateral ones narrow, acute.

STAM. Filaments two, awl-shaped, simple with a tooth, inclined towards and longer than the upper lip. Anthers simple.

PIST. Germ four-cleft. Style of the same figure, situation and length with the stamens. Stigma simple, acute.

PER. none. Calyx containing the seeds at the bottom.

SEEDS four, ovate.

OBS. This genus approaches very near to that of *Salvia*, and is distinguished by not having the stamens at all forked.

#### ESSENTIAL CHARACTER.

Cor. unequal, with the upper lip two-parted. Filaments long, curved, simple with a tooth.

#### SPECIES.

1. *Rosmarinus officinalis*. Official Rosemary.

Lin. spec. 33. Reich. 60. Willd. 126. hort. cliff. 14.

upf. 11. mat. med. 39. Woods. med. bot. 239.

t. 87. Hall. herb. n. 250. Villars dauph. 2. 401.

Allion. pedem. n. 62. Blackw. t. 159. Riv. mon.

t. 39. Sabb. hort. rom. 3. t. 67. Kniph. orig.

cent. 1. t. 76. Ludw. ed. t. 196. Plenck, ic. 18.

2. *R. latifolia*. Broad-leaved or wild Rosemary.

Mill. dict. n. 2.

*R. spontaneus*, latiore folio. Baub. pin. 217. Raii

hist. 515. 2. Tournef. inst. 195.

*R. coronarius fruticosus ignobilior*. Baub. hist. 2.

25.

*Rosmarinum sylvestre*. Ger. 1109. emac. 1292. 2.

*Rosmarinum latifolium*. Park. theat. 74. 3.

3. *R. angustifolia*. Narrow-leaved or common garden Rosemary.

Mill. dict. n. 1.

\* Curtis.

*R. coronarius fruticosus*. Baub. hist. 2. 25. Raii hist. 515. 1.

*R. hortenensis angustiore folio*. Baub. pin. 217.

*R. coronarium*. Ger. 1109. 1. emac. 1292. 1.

*Libanotis coronaria* f. *Rosmarinum vulgare*. Park. theat. 74.

Leaves sessile.

[2. *Rosmarinus chilensis*. Chili Rosemary.

Willd. spec. 127. Molina chil. ed. germ. 134.

Leaves petioled.

#### DESCRIPTIONS, &c.

1. Root strong, woody, fibrous. Stem shrubby, covered with a rough gray bark, divided into many branches, and in gardens rising frequently to the height of eight or ten feet: but in its natural state much lower. Leaves numerous, sessile, linear, entire, blunt, contracted at the edges, dark green above, grayish or whitish underneath, with small glandular excavations, placed in whorls on the branches. Flowers from the axils of the leaves, from six to twelve together, large, pale blue, sometimes white with blue spots and dots. Calyx subtomentose.

Native of the South of Europe, the Levant and Barbary. Its cultivation in this country, like many other plants, is probably of ancient date, though we can now seldom trace them beyond the time of Gerard<sup>f</sup>, in 1596. It flowers from January to May.]

Mr. Miller, following the old writers, distinguishes two species of the Rosemary, having long cultivated both, and having raised them from seeds, without finding them to vary. The leaves of the wild are broader than those of the garden Rosemary, and their points are blunter. The flowers are also much larger, and of a deeper colour. The stalks grow larger, and spread out their branches wider; and the whole plant has a stronger scent.

There are two other varieties; one of the garden sort, with striped leaves, which the gardeners call the Silver Rosemary: the other, of the wild sort, striped with yellow, and called Gold-striped Rosemary. The former is somewhat tender, and all the plants of this variety were killed in the severe winter of 1740. The latter is pretty hardy, and will live in the open air through our common winters, on a dry soil.

[Rosemary has a fragrant aromatic smell, and a bitterish pungent taste. The leaves and tops are strongest in their sensible qualities: the flowers ought not to be separated from their calyxes; the active matter residing principally, if not wholly, in the latter. Rosemary yields its qualities completely to rectified spirit, but only partially to water. The leaves and tops, distilled with water, yield a thin light pale essential oil of great fragrancy, though not quite so agreeable as the Rosemary itself. From one hundred pounds of the herb in flower eight ounces of oil have been obtained. The decoction, thus divested of the aromatic part of the plant, yields on being inspissated, an unpleasant bitterish extract. Rectified spirit likewise, distilled from Rosemary leaves, become considerably impregnated with their fragrance, leaving however in the extract the greatest share both of their flavour and pungency. The active matter of the flowers is somewhat more volatile than that of the leaves, the greatest part of it arising with spirit.

Rosemary is reckoned one of the most powerful of those plants which stimulate and strengthen the nervous system: it has therefore been recommended in various affections, supposed to proceed from debilities, or defective excitement of the brain and nerves; as in certain headaches, deafnesses, giddinesses, palsies, &c. and in some hysterical and dyspeptic symptoms.

The ancients were well acquainted with this shrub, and it is mentioned by Dioscorides, Galen and Pliny\*. It has ever been treated with great respect for its efficacy in comforting the brain, and strengthening the memory. Hence the frequent allusions to this property in our old poets:

“ There’s Rosemary, that’s for remembrance;”

\* Haller and Woodville.

f Woodville.

\* Woodville, Lewis.



# R O T

says Ophelia to Laertes, in Shakspeare's Hamlet.—  
Again, Perdita says to Polixenes and Camillo:

“ Reverend Sirs,  
“ For you there's Rosemary and Rue; these keep  
“ Seeming and favour all the winter long;  
“ Grace and Remembrance be to you both:—”

Rue signifying Grace, and Rosemary Remembrance.

Its quality of strengthening the memory made Rosemary an emblem of fidelity in lovers. Thus in a sonnet 1584:

“ Rosemary is for remembrance  
“ Betweene us daie and night;  
“ Wishing that I might alwaies have  
“ You present in my sight.”

It was accordingly worn at weddings: and perhaps on the same principle at funerals<sup>2</sup>, on which latter occasions, in some parts of England, it is still distributed among the company, who frequently throw the sprigs into the grave along with the corpse.

Rosemary has the character of being an emmenagogue; and the only disease in which Bergius states it to be useful is the chlorosis. The officinal preparations of it are *Oleum essentielle roris marini*, and *Spiritus Roris marini*. It is a principal ingredient in what is known by the name of Hungary water: and the herb is taken as tea by many persons<sup>3</sup>, for headachs and disorders called nervous<sup>4</sup>.

2. This is a shrub known only from a short description given by Ignatius Molina. Future observations will inform us whether it belong really to this genus or not.—Native of Chili<sup>1</sup>.]

## PROPAGATION AND CULTURE.

Rosemary thrives prodigiously upon dry rocky soils near the sea, in the South of France, in Spain and Italy. It is hardy enough to bear the cold of our ordinary winters in the open air, provided it be planted upon a poor dry gravelly soil, or near a wall.

The varieties with striped leaves are somewhat tender, especially that with silver stripes. These therefore should either be planted by a warm wall, or in pots filled with light fresh earth, and sheltered in winter under a frame.

Rosemary may be increased by planting slips or cuttings in the spring, just before the plants begin to shoot, upon a bed of light fresh earth: when they are rooted, transplant them where they are to remain, about the beginning of september, that they may take new root, before the frosty weather comes on. If they are not transplanted thus early, let them remain unremoved till march following; observing to transplant them in mild showery weather. They will then require no farther care but to keep them clear from weeds.

When Rosemary is by accident rooted in a wall, it will endure the greatest cold of our winters, though it be much exposed to cold winds.

[Ros SOLIS. See *Drosera*.

ROT, RED. See *Drosera*.

WHITE. See *Hydrocotyle*.

ROTĀLA. (*Dimin. from Rota, a wheel.*)

*Lin. gen. Reich. n. 56. Schreb. n. 69. Juss. 303.*

*Class. 3. 1. Triandria Monogynia.*

*Nat. order of Caryophyllæ.*

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, membranaceous, three-toothed, permanent.

COR. none.

STAM. *Filaments* three, capillary, the length of the calyx. *Anthers* roundish.

PIST. *Germ* superior, ovate. *Style* filiform. *Stigma* trifid.

PER. *Capsule* ovate, subtrigonal, inclosed within the calyx, three-celled, three-valved.

SEEDS very many, roundish.

## ESSENTIAL CHARACTER.

*Cal.* three-toothed. *Cor.* none. *Caps.* three-celled, many-seeded.

<sup>2</sup> See notes on Shakspeare, Steevens's edit. vol. 15. p. 275.

<sup>3</sup> Woodville.

<sup>4</sup> Willdenow.

# R O T

## SPECIES.

1. *Rotala verticillaris.*

*Lin. syst. 82. Reich. 94. Willd. 189. mant. 175.*

## DESCRIPTION, &c.

This is an annual plant, with a simple creeping root. Stem ascending, a palm high, round, jointed, even. Branches quite simple, stiff; the lower opposite, the upper alternate, fewer; the joints below round, above somewhat four-cornered. Leaves in fours, sometimes on the branches from five to eight, sessile, linear, sharpish, even, somewhat keeled, spreading. Flowers in fours, one from each axil of the leaves, sessile, small. Calyx covering the whole capsule, very finely membranaceous. Fruit the size of Mustard seed. Whorls remote.—Native of the East Indies<sup>k</sup>.

ROTANG. See *Calamus*.

ROTHIA. (*So named by Schreber in honour of Albrecht Wilhelm Roth, physician at Bremen.*)

*Lin. gen. Schreb. n. 1241. Gertn. t. 174.*

*Class. 19. 1. Syngenesia Polygamia Æqualis.*

*Nat. order of Compositæ Semisfculosæ. Cichoraceæ, Juss.*

## GENERIC CHARACTER.

CAL. *Common* rounded, villose-tomentose: *scales* about seven, equal, linear, acute.

COR. *Compound* imbricate, uniform: *Corollets* hermaphrodite, numerous, equal.

*Proper* one-petalled, ligulate, linear, truncate, five-toothed.

STAM. *Filaments* five, capillary, very short. *Anther* cylindrical, tubular.

PIST. *Germ* ovate. *Style* filiform, the length of the *stamens*. *Stigmas* two, reflex.

PER. none. *Calyx* converging.

SEEDS solitary.—In the *Disk* cylindric-turbinate, striated; with a capillary *Down*, feathered below and sessile.—In the *Ray* cylindrical, striated, wrapped up in chaffs; without any *Down*.

REC. flat, in the disk hairy, in the ray chaffy. *Chaffs* in several rows, linear, channelled, erect, sharpish, tubular at the base: outer the length of the calyx; inner gradually shorter.

OBS. *It is very nearly allied to Andryala.*

## ESSENTIAL CHARACTER.

*Cal.* many-leaved in a single row, equal, woolly. *Recept.* in the ray chaffy, in the disk villose. *Seeds* in the ray bald, in the disk pappose.

## SPECIES.

1. *Rothia andryaloides.*

*Gertn. fruct. 2. 371.*

*Voigtia. Roth diar. botan. tigur. 1790. n. X. p. 17.*

ROTTBOELLIA. (*So named by the younger Linneus, in memory of Christian Friis Rottboell, professor of botany, at Copenhagen.*)

*Lin. fil. nov. gen. gram. 23. suppl. 13. Schreb. gen. n. 1573. Juss. 31.*

*Class. 23. 1. Polygamia Monoecia—v. 3. 2. Triandria Digynia.*

*Nat. order of Gramina, Gramineæ or Grasses.*

## GENERIC CHARACTER.

RECEPTACLE common elongated into the jointed rachis of a cylindrical spike: the joints alternately hollowed out to receive flowers of a two-fold structure: *some* (in the calyx) one-glumed, placed on a thicker tooth, hermaphrodite; *others* two-glumed, each inserted (alternately) on either side of the former, a little lower down, and a little smaller than the former, female hermaphrodites? in some species only one of each sort.

\* *Hermaphrodites, one-glumed.*

CAL. *Glume* one-flowered, one-valved: *valve* cartilaginous, ovate-oblong, truncate at the base, often emarginate, striated, closing the sinus of the joint (which is in place of a second valve) like a lid.

COR. *Glume* two-valved, parallel to and shorter than the calycine glume: *valves* lanceolate, acute, concave, membranaceous, hyaline: outer longer, inner with the edges bent in.

*Necessary* one-leafed, lanceolate, blunt, membranaceous, hyaline, longer than the germ.

<sup>k</sup> Linn. mant.

STAM.



STAM. Filaments three, capillary. Anthers oblong, bifid at each end.

PIST. Germ oblong. Styles two, filiform. Stigmas oblong, feathered, spreading, standing out.

PER. none. The sinuses of the joints of the spike closed by the glume of the calyx contain the seed, until the rachis separates in joints.

SEED single, oblong.

\* Hermaphrodites? two-glumed.

CAL. Glume one-flowered, two-valved, transverse: valves cartilaginous, oblong, mucronate, striated; outer a little shorter, with a shorter dagger-point.

COR. Glume two-valved, transverse: valves lanceolate, membranaceous, shorter than the calyx; outer concave, longer, inner with the edges folded together.

Nectary as in the other; or two-leaved, with the leaflets lanceolate, acuminate.

STAM. Filaments three, capillary. Anthers oblong, bifid at each end.

PIST. Germ oblong or ovate. Styles two, capillary. Stigmas oblong, feathered, spreading, standing out.

PER. none. Calyx and corolla cherish the seed, fastened to the rachis, which separates in joints.

SEED single, ovate or oblong.

OBS. Flowers of both structures are found in *R. exaltata*, corymbosa, and others: one-glumed only in *R. cylindrica* and *compressa*; two-glumed only in *R. incurvata*. Where both are present, both seem to be hermaphrodite; unless perhaps in the *R. exaltata*, the two-glumed flowers may have the anthers barren, for there does not seem to be any defect in the styles and stigmas. If flowers of either sort only be present, they are hermaphrodites. This genus therefore, in other respects very nearly allied to *Ægilops*, might have been put with the other Grasses in the second order of the third class, *Triandria Digynia*. — Schreber observed a two-leaved nectary in *R. incurvata* alone.

#### ESSENTIAL CHARACTER.

Rachis jointed, roundish, in most species filiform. Cal. ovate-lanceolate, flat, one or two-valved. Florets alternate on a flexuose rachis.

#### SPECIES.

##### 1. *Rottboellia incurvata*.

*Lin. suppl.* 114. *yst.* 124. *Willd.* 463. *Fl. dan.* t. 938. *Desfont. atlant.* 110. *Cyrill. neap.* 1. 18. t. 6. f. A. *Wither.* 169. *Smith,* 151. *engl. bot.* 760. *Relb. suppl.* 2. 8.

*Ægilops incurvata.* *Lin. spec.* 1490. *yst.* ed. 13. 762. *Huds. angl.* 441.

*Agrostis incurvata.* *Scop. carn.* n. 88.

*Gramen maritimum spicis articulatis.* *Monti gram.* 43. f. 29. *Mor. hist.* 3. f. 8. t. 2. f. 8.

*Gr. loliaceum marit. scorpioides.* *Scheuch. agr.* 42. t. 2. f. 1. A. B.

*Gr. parvum marinum, spica loliacea.* *Raii syn.* 395.

Spike round awl-shaped curved inwards, calycine glume two-valved awl shaped pressed close.

##### 2. *Rottboellia filiformis*.

*Lin. spec. ed. Willd.* 464. *Roth. catalect.* 1. 21.

*Gramen loliaceum minimum, spicis gracilibus reflexis.* *Monti gram.* 43. f. 30.

*Gr. junceum nodosum min. capillare.* *Bar. ic.* 1164. t. 117. f. 1.

Spike round-awl-shaped subcompressed, erect, calycine glume two-valved ensiform spreading.

##### 3. *Rottboellia cylindrica*.

*Lin. spec. ed. Willd.* 464.

*Nardus gangitis.* *Lin. spec.* 78?

*Rottb. altissima.* *Poir. itin.* 2. 105?

*R. fasciculata.* *Desfont. atlant.* 110. t. 36?

*Gramen loliaceum, spicis articulatis erectis.* *Monti gram.* 43. f. 28.

*Gr. lol. junceum majus.* *Barr. ic.* 1162. t. 5.

Spike round awl-shaped, erect, calycine glume one-valved.

##### 4. *Rottboellia Thomæa*.

*Lin. spec. ed. Willd.* 464. *Roxb. corom.* 2. 2. 17.

t. 132 f. 2.—*R. pilosa.* *Willd. spec.* 465.

*Nardus Thomæa.* *Lin. suppl.* 105. *yst.* 102. *Trans.*

*Linn. soc.* 1. 116.

Spike solitary erect awl-shaped imbricate two ways, rachis waved excavated but not jointed.

##### 5. *Rottboellia repens*.

*Lin. spec. ed. Willd.* 465. *Forst. prodr.* n. 50.

Spike round awl-shaped, calycine glume one-valved undivided.

##### 6. *Rottboellia lævis*.

*Lin. spec. ed. Willd.* 465. *Retz. obs.* 3. 11. n. 26.

Peduncles very long, spike with flowers in pairs lateral, calyxes ovate undotted even.

##### 7. *Rottboellia compressa*.

*Lin. suppl.* 114. *yst.* 124. *spec. ed. Willd.* 465.

*Retz. obs.* 3. 12. n. 27.

Spike compressed awl-shaped, calycine glume lanceolate flat undivided.

##### 8. *Rottboellia hirsuta*.

*Lin. spec. ed. Willd.* 465. *Vahl, symb.* 1. 11.

*Triticum ægilopoides.* *Forsk. descr.* 26. n. 94.

Spike awl-shaped hirsute, hermaphrodite florets spreading, barren florets pedicelled pressed close.

##### 9. *Rottboellia Cymbachne*.

*Lin. spec. ed. Willd.* 465.

*Cymbachne ciliata.* *Retz. obs.* 6. 36.

Spikes twin halved, sheaths of the leaves ciliate.

##### 10. *Rottboellia Coelorachis*.

*Lin. spec. ed. Willd.* 466. *Forst. prodr.* n. 49.

Spike round one-sided, florets twin, one of them pedicelled, calyx two-valved.

##### 11. *Rottboellia dimidiata*.

*Lin. suppl.* 114. *yst.* 124. *spec. ed. Willd.* 466.

*Thunb. prodr.* 23.

Spike halved compressed linear, outer side aggregate-floscular, inner even naked.

##### 12. *Rottboellia exaltata*.

*Lin. suppl.* 114. *yst.* 124. *spec. ed. Willd.* 466.

*Swartz, obs.* 42.

Spike round-filiform, floscular every way, glumes ovate blunt, sheaths dotted and hirsute.

##### 13. *Rottboellia corymbosa*.

*Lin. suppl.* 114. *yst.* 124. *spec. ed. Willd.* 466.

*R. punctata.* *Retz. obs.* 3. 12. n. 28.

*Ægilops exaltata.* *Lin. mant.* 575. *Retz. obs.* 2. 27.

Spikes aggregate lateral filiform, florets bifarious spreading, leaves ciliate at the base.

##### 14. *Rottboellia muricata*.

*Lin. spec. ed. Willd.* 466. *Retz. obs.* 3. 12. n. 29.

*Ægilops muricata.* *Retz. obs.* 2. 27.

Spikes several round on long peduncles, calyxes ciliate-aculeate, the neutres bifid.

##### 15. *Rottboellia sanguinea*.

*Lin. spec. ed. Willd.* 467. *Retz. obs.* 3. 25.

Spikes of the panicle awned alternate simple peduncled, the lateral bracte of the flowers ciliate.

##### 16. *Rottboellia setacea*.

*Roxb. corom.* 2. n. 2. p. 17. t. 132. f. 1.

*Nardus indica.* *Lin. suppl.* 105. *Dist. nostr.* n. 3.

Spike solitary awl-shaped one-ranked, a little curved inwards, rachis excavated but not jointed.

##### 17. *Rottboellia monandra*.

*Cavan. hisp.* 1. 27. n. 41. t. 39. f. 1.

*Gramen exile arundinaceum minimum, acumine reflexo.*

*Scheuch. agr.* 41. t. 1. f. 7. K.

Culm erect, flowers distich in spikes.

#### DESCRIPTIONS, &c.

1. Culms branched, procumbent at the base, jointed, knobbed. Leaves smooth, wide. Spikes slender: rachis flexuose, knobbed, striated, alternately excavated. Flowers solitary, sessile, pressed close. Outer calyx two-flowered, one-glumed; glume coriaceous, two-parted, awl-shaped, segments converging at the edge and equal: inner calyx membranaceous, two-glumed, shorter, awnless: one of the flowers commonly abortive.

Culm branched. Spikes linear, rigid, curved inwards, having as far as fourteen joints. At each joint is a spikelet, with a two-glumed calyx; the glumes equal, acuminate, awnless, one-flowered. Petals two, acuminate, thin, twice as short as the calyx; one of them bifid. Filaments shorter than the petals, with fulvous anthers. Germ fulvous. — Scopoli did not

<sup>1</sup> Desfontaines.

<sup>m</sup> Scopoli.



find a three-flowered calyx, and male flowers mixed with the hermaphrodites.

Calycine glume solitary, undivided, for the flowers being fastened to the rachis, a second glume is not wanting. The case is the same in *Lolium*<sup>a</sup>.

Root annual, fibrous, very much branched, elongated. Culms numerous, decumbent at the base, branched, jointed, round, very smooth, leafy. Leaves spreading, linear, acute, flat, striated, rugged above and at the edge. Sheaths shorter than the leaves, somewhat swelling, striated, smooth. Stipule short, blunt. Spike solitary, filiform, somewhat bowed, round, smooth, many-flowered. Rachis jointed, alternately excavated; joints one-flowered. Calyx two-glumed: glumes lanceolate, acute, awnless, smooth, striated, parallel, tightly closely each excavation, but spreading in flowering time. Floret solitary, hermaphrodite, a little shorter than the calyx: glumes membranaceous, white, awnless, nearly equal<sup>o</sup>.

Native of many parts of Europe, on the sea coast, and in salt-marshes. In England, near Yarmouth and Sheringham in Norfolk. Wisbech in Cambridgeshire, Near Seaton, in Durham. Below King's Weston, near Bristol. At Exmouth, in Devonshire. It flowers in July and August.

2. This resembles the preceding very much, but differs from it in having the culm more slender and purple; the leaves of a darker green, three times shorter and narrower, more acuminate, and channelled, not bright green and flat, above more striated and rugged; the ligule almost three times as long, instead of being very short scarcely the quarter of a line in length, retuse; the spike as slender again; the florets more approximating, so as to be almost contiguous, and smaller; the glumes twice as small and blunter, not lanceolate-acuminate.—Native of the South of Europe<sup>p</sup>. Perennial.

3. Culm erect, even, branched, alternately compressed and channelled from one knot to another. Leaves smooth; with a sheath shorter than the internodes. Spikes three to six, in bundles, axillary, peduncled. Peduncles involved in the sheath, pressed close. Several acute membranes come out from each knot. Spikes bowed, smooth. Flowers disposed in four rows, close pressed. Outer calyx one-flowered, one-glumed; glume coriaceous, ovate, compressed, subacute. Inner calyx two-glumed, membranaceous, awnless, shorter. Rachis jointed, excavated in four rows<sup>q</sup>.—Native of the South of Europe, and of Barbary. Perennial.

4. Culms minute, erect, compressed, about an inch high without the spike, and two with it. Leaves numerous, forming a tuft, two inches long, bristle-shaped. Spike solitary, erect, awl-shaped, two-ranked, compressed, yellowish: rachis waved, excavated on the sides, not jointed. Flowers all hermaphrodite, disposed alternately in the excavations of the rachis. Calyx one-flowered, two-valved: outer valvelet rigid, linear; inner boat-shaped and less rigid. Corolla two-valved, membranous, hairy.—Found by Koenig in Tranquebar, at St. Thomas's mount; on old walls<sup>r</sup>.

Willdenow has distinguished another species, found also by Koenig in Malabar, which seems to be the same with this. He thus describes it under the name of *R. pilosa*. It is the smallest species of the genus. The whole grass being hardly more than an inch in height. Culms simple, closely covered with the sheaths of the leaves, several from one root. Leaves linear, channelled, hairy with scattered hairs long in proportion to the plant. Spike solitary, terminating, awl-shaped.

5. Native of the islands in the South Seas within the Tropics<sup>s</sup>.

6. Culms ascending, leafy, having a sheath to the second or third joint, whence spring three or four one-spiked peduncles more than a foot long. The lower joint of these is almost triangular or else semicylindrical, and hollowed, but the upper one, which bears the spike, is exactly cylindrical, and is wrapped up about half way in the sheath. Leaves short,

keeled, bearded at the edges. Spike very stiff, and in each joint of it two lateral alternate flowers. Outer glume of the calyx obliquely ovate, cartilaginous, quite smooth and even: inner glume equal, membranaceous, very thin, as is also the corolla.—Sent by Koenig from Tranquebar.

7. Culms compressed, leafy. Leaves even, naked, with compressed sheaths. From the upper sheaths of the culm comes out a peduncled and involucred bundle of spikes. Spikes in this involucre again peduncled, and having a partial sheathed involucre at the base. Each spike compressed flat on one side. At each joint are two flowers, the calyxes of which are acute, awnless, undotted; each two-valved, but one opposite, with both valves cartilaginous, narrower, longer, and in a manner awned; the other lateral, with the inner valve membranaceous and together with the corolla concealed by the outer valve in the hollow of the rachis.—Tranchell found it in China<sup>t</sup>. Native both of the East and West Indies.

8. Culm a foot high and more, striated, alternately excavated at top. Flowering branches sometimes several from one joint. Leaves involute, stiffish, two inches long, yellowish at the tip, the uppermost spathaceous. Sheaths wider than the leaves, somewhat grooved, bearded at the mouth. Spike solitary, three or four inches long. Rachis flexuose, jointed; one side convex, the other concave where the florets are, the whole set with a soft silky hairiness, except the hollow side; each tooth two-flowered: one of the flowers sessile, spreading, the other pedicelled, pressed close: sometimes there are three to each tooth, and then the middle one is pedicelled. Glumes two-valved, ovate, two-flowered: valves unequal; outer flat, ciliate with long hairs, rolled in at the edge, acuminate, point bifid with the segments unequal; inner convex, keeled, hairy on the back and at the end, acute, entire. One corolla male, the other hermaphrodite: valves lanceolate, hyaline. The pedicelled flower is barren: valves lanceolate, unequal, ciliate, entire<sup>u</sup>.

Native of Egypt. Perennial. A beautiful Grass.

9. This is a slender grass, a foot high. Culms several simple and branched; the latter having one leaf, the former none. Leaves short, thin, ciliate at the edge above the sheath with long, distinct, white hairs: sheath truncate, with a pale-brown mouth, ciliate. Spikes two, linear, an inch and half long and a line wide, some hermaphrodite, others female: rachis linear, membranaceous, behind flat with three longitudinal streaks, in front alternately and flexuofely hollowed. In the hermaphrodite two-glumed florets, both valves are pressed close to the rachis and parallel to it, but not concealed one by the other: outer valves linear, blunt, ciliate at the back; inner of the same length, half-ovate, acute, boat-shaped, very much compressed, striated, coloured, ciliate at the back, inclosing the corolla, which is hyaline and less than the calyx. Anthers black. Germ minute. Stigmas black-bearded. In the female florets, the calyx is one-valved, ovate, slightly bifid at the end, ciliate on the edge, opposite to the rachis, pressed close. Corolla none. Pistil like those of the others, but the stigmas seem to be longer. Native of Bengal, where it was observed by Koenig<sup>v</sup>.

10. Native of the island of Tanna<sup>w</sup>.

11. Native of the East Indies, in sandy soils<sup>x</sup>, and of the Cape of Good Hope<sup>y</sup>.

12. This is a tall grass, with a solid culm. Sheaths of the leaves grooved, dotted with raised dots, ending in a bristle, hispid all over. Spikes solitary, lateral, a hand long or more<sup>z</sup>.

Swartz thus describes under the same name a Grass which he found in Jamaica. Culm from two to six feet high, upright, subdivided, striated, semicylindrical, sheathed; branchlets upright. Leaves a foot long, broad-linear, spreading, even, cartilaginous-ferrate at the edge. Sheaths two or three inches in length, striated, dotted, hispid-hirsute, rough-haired at the mouth: hairiness thin, white, pungent. Spikes

<sup>a</sup> Cyrillo. <sup>o</sup> Smith. <sup>p</sup> Roth in Willdenow.  
<sup>q</sup> Desfontaines. <sup>r</sup> Roxburgh. <sup>s</sup> Forster.

<sup>t</sup> Retzius. <sup>u</sup> Vahl. <sup>x</sup> Retzius. <sup>y</sup> Forster.  
<sup>z</sup> Linn. suppl. <sup>z</sup> Thunb. prodr. <sup>z</sup> Linn. suppl.



## R O T

solitary, two or three inches long, cylindrical, jointed, acuminate, even, green. Florets sessile, alternate: rachis flexuose, with excavations for the florets, which form a round spike. The exterior flowers are male, the interior hermaphrodite, within the same calycine glumes. Glume two-valved, two-flowered: outer valve ovate, acute, pressed close to the spike; inner arched involving the hermaphrodite flower. Corolla of the male flower two-valved: valves smaller, white. The nectary consists of two truncate petals at the base of the filaments. Anthers red, fertile; they are often barren, and then are yellow. Pistil none. Hermaphrodite within the male, and not visible unless that be removed. The corolla of the hermaphrodite is also two-valved; the valves whitish and fugacious. Anthers often barren. Germ roundish. Stigma villose, purple. After the male flower falls, the seed ripens within the rachis, and when ripe falls off, the spike breaking.

13. Culm cylindrical, full, leafless. Spike shorter than a finger, stiff, coming out in bundles from the upper sheaths of the culm, and sheathed themselves. Florets placed in an alternate row, solitary. Calyx ovate, blunt, streaked and dotted<sup>c</sup>.—Native of Malabar, in ditches.

14. Culms angular, leafy; with ciliate sheaths. All the calyxes very slightly pubescent; the lateral wider, scarious at the top, ciliate-prickly at the edge; the opposite a little lower, smaller, scarcely ciliate, empty. In this and in *compressa*, one calyx is lateral, the other opposite, in *corymbosa* and *lævis* they are all lateral<sup>d</sup>.—Native of the East Indies.

15. This has altogether the appearance of an Andropogon. Culm half-round, jointed, leafy. Sheaths widening at top, and almost cowed over the upper joints. From each sheath issues a filiform sheath, the peduncle of which is concealed within the sheath. Flowers sessile, alternate, along the excavated rachis. Calyx two-valved obliquely lateral; the outer glume semicylindric awl-shaped, cartilaginous; the inner equal, very thin, white with blood-red streaks. Outer glume of the corolla blood-red, the length of the inner calycine glume: inner glume cloven to the very base, so that there seems to be inner glumes, of a lanceolate form, half white and half red, very finely ciliate: at the base of this is a long twisted awn. Bracte next the flower linear, cartilaginous, slightly awned, ciliate-bearded on one side, alternate. Anthers and stigmas blood-red. If the bracte be assigned to the calyx, and the inner petal be considered as double, then the calyx and corolla will be three-glumed, with unequal glumes, which is singular. Perhaps this grass may be of a distinct genus; the habit certainly is different. Native of China, whence it was sent by Bladh<sup>e</sup>.

16. Culms many, erect, ramous, filiform, smooth, from two to six inches high. Leaves a little hairy on the inside. Spike about an inch or an inch and half long. Flowers all hermaphrodite, imbricate on the excavated side of the rachis. Calyx one-flowered; valves equal, membranaceous-margined. Corolla two-valved, membranaceous, hairy.

Native of the East Indies, on old walls<sup>f</sup>.—See the description from the Supplement of the younger Linneus, under *Nardus indica*.

17. Roots capillary, numerous; whence spring several culms half a foot high, having three reddish knots at bottom. Root-leaves short, very narrow: stem-leaves sheathing the culm for an inch and half in length: thence erect and bristle-shaped. Flowers solitary, or in pairs, one sessile, the other peduncled; all in the alternate excavations of the rachis. Glume of the calyx solitary, very short, red, ovate-acute. Corolla two-valved: valves smooth, nearly equal, oblong, keeled, acute; the outer embracing the inner, and terminated by an awn equal to the valve itself. Stamen one only: filament between the germ and the awned valve, villose at the base: anther oblong, four-grooved, blackish-purple, after fecundation deeply bifid. Germ turbinate. Styles two. Stigmas revolute, feathered. Seeds solitary, concealed within the

## R O X

valves. It is an annual grass, very common about Madrid, and flowers in may. At the top of the stem there is always a solitary flower, which beyond the calycine glume bears another almost opposite to that and much shorter<sup>g</sup>.

ROUCOU. See *Bixa*.

ROUGH BINDWEED. See *Smilax*.

ROUHAMON. See *Lasiostoma*.

ROUPALA. See *Rupala*.

ROUREA. See *Robergia*.

ROUSSEA. (So named by J. E. Smith, M. D. in memory of the celebrated Jean Jacques Rousseau, who wrote very elegant Letters on the subject of Botany, and cultivated and adorned that lovely science with his last breath. Linneus, who frequently corresponded with him, had in his manuscripts consecrated a plant to his name: but the younger Linneus having, by mistake, published that under the name of *Ruselia*, Dr. Smith gave this new, beautiful and very singular genus the name of *Rousssea*.

Smith, *ic. ined.* 1. 6.

Class. 4. 1. Tetrandria Monogynia.

### GENERIC CHARACTER.

CAL. Perianth four-cleft, smooth: segments tongue-shaped, acute, reflex.

COR. bell-shaped, wrinkled on the outside, subpubescent, half-four-cleft: segments acute, revolute.

STAM. twice as long as the revolute corolla, and alternate with its segments. Filaments straight, very wide, a little narrower at the top, smooth. Anthers small, sagittate, acute.

PIST. Germ superior, quadrangularly pyramidal, smooth. Style the length of the stamens, permanent. Stigma simple, blunt, umbilicate-depressed, smooth.

PER. Berry quadrangularly pyramidal, one-celled, with a smooth hard bark.

SEEDS very numerous, small, lens-shaped, nestling.

### ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. one-petalled, bell-shaped, four-cleft, inferior. Berry quadrangular, many-seeded.

### SPECIES.

1. *Rousssea simplex*.

Smith, *ic. ined.* 1. 6. Willd. *spec.* 607.

### DESCRIPTION, &c.

This is a small shrub, climbing over trees or rocks, seemingly among moss. Stem and branches thick, fleshy, knobbed. Leaves opposite, petioled, obovate, acute or subacuminate, toothed, very smooth on both sides, somewhat fleshy. Stipules intrafoliaceous, membranaceous, acute. Flowers solitary, axillary, on short peduncles, nodding, large, of a very fleshy substance. Bractes clustered, membranaceous, acute, like the stipules. Peduncles round, naked.—Found by Commerçon in the island of St. Mauritius; and communicated by Monf. Thouin<sup>h</sup>.

ROXBURGHIA. (Named in honour of William Roxburgh, M. D. born in Scotland, and settled in the East Indies; author of a splendid work on the plants of the coast of Coromandel.)

Roxb. *corom.* 1. 1. 32.

Class. 8. 1. Octandria Monogynia.

### GENERIC CHARACTER.

CAL. inferior, four-leaved: leaflets lanceolate, membranaceous, striated, coloured, revolute, immediately below the petals.

COR. Petals four, nearly erect, lanceolate, the lower half rather broader than the upper, along the inside runs a deep, sharp, slightly waved keel, forming on each side a deep groove or hollow; the four keels converge, and in some measure adhere together, thus bringing the side of the petals close, and forming a tube: the upper part of the petals is narrow, bending out a little, and then their points bend in.

Nectary composed of four, lanceolate, yellow bodies, each sessile on the apex of the keel of the petals, converging into one conical body.

STAM. Filaments none. Anthers eight, linear, lodged in the grooves formed by the keel of the petals, adhering their whole length, but their chief insertion near the base.

<sup>c</sup> Retzius. <sup>d</sup> Idem. <sup>e</sup> Idem. <sup>f</sup> Roxburgh.

<sup>g</sup> Cavanilles;

<sup>h</sup> Smith.



# ROY

**Pist.** Germ superior, heart-shaped. Style none. Stigma pointed.

**PER.** Capsule ovate, compressed, one-celled, two-valved, opening from the apex; about an inch and half long, and an inch broad.

**SEEDS** from five to eight, inserted by pedicels into the bottom of the capsule, cylindric, striated; the pedicels surrounded with numerous small pellucid vesicles.

## ESSENTIAL CHARACTER.

**Cal.** four-leaved. **Cor.** four-petalled, inwardly keeled. **Nect.** four awl-shaped (lanceolate, *W.*) leaflets, on the apex of the keel of the petals, (inserted in the middle of the petals, *W.*) converging. **Anthers** (in pairs, *W.*) linear, sessile, in the grooves of the keel, (hanging down from the base of the leaflets of the nectary, *W.*) **Caps.** one-celled, two-valved. **Seeds** many, inserted in a spongy receptacle.

## SPECIES.

1. *Roxburghia gloriofoides*.

*Roxb. corom. 1. p. 29. n. 32. t. 32. Willd. spec. 321.*

## DESCRIPTION, &c.

Root perennial, composed of many smooth, cylindric fleshy tubers, from six to twelve inches long, and from three to five in circumference about the middle; they taper equally towards each end. Stem biennial or more, twining, smooth, from six to twenty feet long, running over small trees, &c. Branches like the stem, but few and more slender. Leaves alternate or opposite, nearly depending, heart-shaped, fine-pointed, the point recurvate; entire, smooth, shining, in substance soft and delicate, generally eleven-nerved, with beautiful very fine transverse veins running between the nerves, from four to six inches long, and three or four broad. Petiole slightly channelled, smooth, an inch and half or two inches broad. Peduncle axillary, single, erect, the same length with the petiole, generally two-flowered. Pedicels club-shaped, short. Bracte one, lanceolate, at the base of the pedicels.

Native of Coromandel, in moist valleys among the mountains; flowering in the cold season. It is the *Canipoo-Tiga* of the Telingas<sup>1</sup>.

Willdenow remarks, that this is a singular plant between the *Liliaceæ* and the *Asclepiadææ*, that the root is fusiform, the stem grooved, the branches alternate; that there are two bractes at the division of the peduncle; that the calyx is yellow and larger than the corolla, which is purple.]

**ROYENA.** (Named by Linneus, in honour of Adrian van Royen. He, and his son David, were successively professors of botany at Leyden.)

*Lin. gen. n. 555. Reich. n. 603. Schreb. n. 759.*

*Gartn. t. 94. Juss. 156.*

**Class.** 10. 2. Decandria Digynia.

**Nat. order** of *Bicornes*. *Guaiacana*, Juss.

## GENERIC CHARACTER.

**CAL.** Perianth one-leaved, pitcher-shaped, five-cleft, permanent.

**COR.** one-petalled: tube the length of the calyx: border spreading, revolute, five-parted; segments ovate.

**STAM.** Filaments ten, very short, fastened to the corolla. **Anthers** oblong, acute, twin, erect, the length of the tube.

**Pist.** Germ ovate, ending in two Styles, a little longer than the stamens. Stigmas simple.

**PER.** Capsule ovate, four-grooved, one-celled, four-valved.—(Berry globular, fleshy, four-celled, covered by the permanent corolla, *Gartn.*)

**SEEDS.** Nuts four, oblong, triangular, wrapped in an aril:—(Seeds solitary, in all four or two, oblong or elliptic, subtriquetrous or plano-convex, *Gartn.*)

## ESSENTIAL CHARACTER.

**Cal.** pitcher-shaped. **Cor.** one-petalled with the border revolute. **Caps.** one-celled, four-valved. (Berry four-celled, *G.*)

## SPECIES.

1. *Royena lucida*. Shining leaved Royena or African Bladder-nut.

*Lin. spec. 568. Reich. 2. 304. Willd. 631. hort. cliff. 149. Thunb. prodr. 80. Kniph. cent. 10. n. 74. Gartn. fruct. 2. 80.*

<sup>1</sup> Roxburgh.

# ROY

*Staphylodendron africanum*, folio singulari lucido. *Herm. par. 232. t. 232.*

*S. afr. sempervirens*, fol. splendentibus. *Comm. hort. 1. 187. t. 96. Raii hist. 3. dendr. 84.*

*Pistacia africana*. *Pluk. phyt. t. 63. f. 4. and t. 317. f. 5.*

Leaves ovate somewhat rugged.

2. *Royena villosa*. Heart-leaved Royena or African Bladder-nut.

*Lin. spec. 568. syst. 410. Reich. 2. 304. Willd. 631. Thunb. prodr. 80.*

*R. scabra*. *Burm. prodr. 13.*

Leaves cordate oblong tomentose underneath.

3. *Royena pallens*. Pale Royena or African Bladder-nut.

*Lin. spec. ed. Willd. 632. Thunb. prodr. 80.*

Leaves oblong-obovate blunt smooth.]

4. *Royena glabra*. Myrtle-leaved Royena or African Bladder-nut.

*Lin. spec. 568. syst. 410. Reich. 2. 304. Willd. 632. hort. cliff. 149. Berg. cap. 144. Thunb. prodr. 80.*

*Vitis idæa æthiopica*, buxi minoris folio, floribus albis. *Comm. hort. 1. 125. t. 65.—myrti foliis, flosculis dependentibus. Pluk. phyt. t. 321. f. 4.*

Leaves lanceolate smooth.

5. *Royena hirsuta*. Hairy-leaved Royena or Afric. Bladder-nut.

*Lin. spec. 568. Reich. 2. 305. Willd. 632. Thunb. prodr. 80. Jacqu. collect. suppl. 110. t. 13. f. 1.*

*Arbutus foliis lanceolatis integerrimis hirsutis. Lin. hort. cliff. 163.*

*Staphylodendron africanum*, folio lanuginoso rosmarini latiore. *Boerb. lugdb. 2. 235.*

Leaves oblong-lanceolate somewhat villose.

6. *Royena polyandra*. Oval-leaved Royena.

*Lin. suppl. 240. syst. 410. Willd. 632. Ait. kew. 2. 76. Thunb. prodr. 80.*

Leaves elliptic, flowers polygamous many-stamened.

7. *Royena angustifolia*. Narrow-leaved Royena.

*Lin. spec. ed. Willd. 633.*

Leaves lanceolate acute somewhat hairy underneath.]

## DESCRIPTIONS, &c.

1. Height eight or ten feet, putting out branches on every side. Leaves alternate, shining, continuing all the year. Flowers from the wings of the leaves along the branches, having little beauty.

[Fruit a Berry, covered with the permanent calyx, which is coriaceous, torn, and striated within, globular, smooth, red above, pale below, four-celled. Flesh or pulp firm, whitish, almost like that of the Apple. Cells filled with a pulp clear like glass, and not invested with any proper membrane, two of them commonly abortive, compressed, crescent-shaped. Seeds solitary, and two or four in all: those oblong, subtriquetrous; these elliptic, plano-convex, smooth, somewhat shining, dun-coloured, with a navel at the top, and in this very part marked with a depressed line, drawn through the back and belly; they are involved in gelly, and fastened to the apex of the partitions.

In Commelin's figure, the berry is represented too small, and furnished with an apex. The pellicle which he attributes to the seeds can be nothing else but the gelly of the seeds dried. Linneus's description of the fruit, from this figure, is erroneous<sup>k</sup>.

This and all the other species are natives of the Cape of Good Hope. This was introduced by Mr. Bontick in 1690. It flowers in may and june<sup>l</sup>.

2. This resembles the preceding, but the branches are villose. Leaves elliptic or oblong, cordate at the base, tomentose underneath, bluntyish, on short villose petioles. Flowers axillary, nodding, solitary, on villose peduncles the length of the flowers. Bractes two, opposite, ovate acute, pubescent, larger than the calyx and immediately under it, deciduous<sup>m</sup>.

Introduced in 1774, by Mr. William Malcolm<sup>n</sup>.

3. Found at the Cape by Thunberg.]

4. This rises with a shrubby stalk, five or six feet high, sending out many slender branches, covered with a purplish bark. Leaves less than those of the Box-

<sup>k</sup> Gærtner.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. syst.

<sup>n</sup> Hort. kew.



tree, entire, of a lucid green, and continuing all the year. The flowers come out from the wings of the leaves round the branches, and are white. Fruit roundish, purple, ripening in the winter.

[Cultivated in 1731, by Mr. Miller. It flowers in September.]

5. This rises with a strong woody stalk seven or eight feet high, covered with a gray bark, sending out many small branches alternately. Leaves about an inch long, and a quarter of an inch broad in the middle, covered with soft hairs. The flowers come out on short peduncles from the side of the branches; they are of a worn-out purple colour and small. They appear in July, but are not followed by seeds in England.

[It appears in the seventh edition of the Dictionary in 1759: but according to the Kew catalogue it was introduced in 1767, by Mr. William Malcolm.]

6. This was found at the Cape by Thunberg, and differs in the disposition of the flowers from the other species.

7. This also is very different from all the species hitherto known, in having narrow lanceolate leaves, sharp at both ends, and somewhat hairy underneath. It is a native of the same country with all the rest.]

#### PROPAGATION AND CULTURE.

These plants are too tender to live through the winter in the open air in England, they must be removed therefore into the greenhouse in autumn, and treated in the same way as Orange-trees. The first and fifth sorts are difficult to propagate here, for the branches which are laid down seldom put out roots, and those which do are two or three years before they make roots sufficient to transplant, and their cuttings very rarely succeed. The best time to plant the cuttings is early in the spring. Plant them in small pots filled with loam, and plunge them into a very moderate hot-bed; cover them down with hand-glasses, and refresh them with a little water, every eighth or tenth day. If the cuttings shoot, inure them gradually to bear the open air, and when they are well rooted, plant each in a separate small pot, and afterwards treat them as the old plants.

If the plants put out any young shoots from the bottom, lay them carefully down whilst young; sitting them, as is practised in laying Carnations. During warm weather water them frequently but gently; in cold weather sparingly. When they are rooted, take them off, and treat them in the same manner as the cuttings.

The fourth sort is very apt to send up suckers from the roots, and may be increased that way. When it does not, the branches may be laid down. The cuttings also succeed much more easily than in the others.

[ROYENIA. See *Loefelia*.

ROYOC. See *Morinda*.

RUBENTIA of Commerçon and Jussieu, the same with *Eleodendrum* of Jacquin.]

RUBEOLA. See *Asperula*, *Crucianella*, *Galium*, *Sberardia*, *Valantia*.

RUBIA. (From the red colour of the root.)

Lin. gen. n. 127. Reich. n. 134. Schreb. n. 164. Tournef. t. 38. Juss. 197.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth very small, four-toothed, superior.

COR. one-petalled, bell-shaped, four-parted, without a tube.

STAM. Filaments four, awl-shaped, shorter than the corolla. Anthers simple.

PIST. Germ twin, inferior. Style filiform, bifid at top. Stigmas capitate.

PER. Berries two, united, smooth.

SEEDS solitary, roundish, umbilicate.

OBS. The corolla is frequently five-cleft.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, bell-shaped. Berries two, one-seeded.

#### SPECIES.

1. *Rubia tinctorum*. Dyer's Madder.

Lin. spec. 158. Juss. 152. Reich. 1. 309. Willd. 603. mant. 330. hort. cliff. 35. upf. 28. mat. med. 50. Woodv. med. bot. 190. t. 68. Hall. belv. n. 708. Scop. carn. n. 160. Pollich pal. n. 158. Hoffm. germ. 52. Roth. germ. 1. 63. 2. 177. Allion. pedem. n. 41. Desfont. atlant. 133. Lamarck, illustr. n. 1385. t. 60. f. 1. Sabb. hort. 1. t. 77. Blackw. t. 26. Berg. phyt. 2. 181. Plenck, ic. 57. Miller, monogr. & Dict. ic. Ger. 961. 1. emac. 1118. 1. Raii hist. 480.

*Rubia*. Trag. 498. Dod. pempt. 352.

*R. major*. Lob. ic. 798. Clus. hist. 2. 177.

*R. fativa*. Fuchs. hist. 280. Matth. 920. Baub. hist.

*R. tinctorum fativa*. Baub. pin. 333. Tournef. inst.

114. Mor. hist. f. 9. t. 21. f. 1. ord. 1.

*R. major fativa*, f. *hortensis*. Park. theat. 274. f. 1.

Leaves annual, about five ovate-lanceolate ciliate, rugged on the upper surface, with little recurved prickles on the edge and keel, stem with prickles at the angles, clefts of the corolla commonly four.

[2. *Rubia chilensis*. Chili Madder.

Lin. spec. ed. Willd. 604. Molin. chil. 118.

*Rubiastrum Cruciatæ folio & facie vulgo* Relbun.

Feuill. peruv. 85. t. 45.

Leaves annual in fours, peduncles axillary solitary one-flowered, stem even.]

3. *Rubia peregrina*. Wild Madder.

Lin. spec. 158. Juss. 152. Reich. 1. 309. Willd.

604. Hudf. angl. 65. Cullum, 56. Smith, brit.

181. engl. bot. 851.

*R. anglica*. Hudf. angl. ed. 1. 54.

*R. tinctorum*. Wither. arr. ed. 3. 193.

*R. sylvestris aspera*, quæ *sylvestris* Dioscorides. Baub.

pin. 33. Raii hist. 480. syn. 223. ed. 1. 317.

Petiv. brit. t. 30. f. 3. Mor. hist. f. 9. t. 21. f. 2.

Leaves in fours or fives, elliptic, above shining even, flowers five-cleft.

[4. *Rubia lucida*. Shining-leaved Madder.

Lin. Juss. 152. Reich. 1. 310. Willd. 605.

Leaves perennial in sixes elliptic shining, stem even.

5. *Rubia fruticosa*. Prickly-leaved Madder.

Lin. spec. ed. Willd. 605. Jacqu. ic. rar. 1. t. 25.

collect. 1. 71. Ait. kew. 1. 147.

Leaves perennial elliptic prickly at the edge and keel, stem frutescent rough.

6. *Rubia angustifolia*. Narrow-leaved Madder.

Lin. Juss. 152. Reich. 1. 310. Willd. 605. mant.

39.

Leaves perennial linear rugged above.

7. *Rubia cordifolia*. Heart-leaved Madder.

Lin. Juss. 152. Reich. 310. Willd. 605. mant.

197. Pallas itin. 3. app. n. 68. t. L. f. 1. Thunb.

prodr. 30.

*R. cordata*. Thunb. jap. 60.

*Cruciatæ daurica scandens*, *smilacis folio aspero*, flore luteolo, fructu majori rubro. Amm. ruth. 19.

Akanni. Kœmpf. amoen. 5. 912.

Leaves perennial in fours cordate.]

#### DESCRIPTIONS, &c.

1. Dyer's Madder has a perennial root, and an annual stalk. The root is composed of many long, thick, succulent fibres, almost as large as a man's little finger; these are joined at the top in a head, like the roots of Asparagus, and strike very deep into the ground, being sometimes more than three feet in length. From the upper part (or head of the root) come out many side roots, which extend just under the surface of the ground to a great distance, whereby it propagates very fast; for these send up a great number of shoots, which, if carefully taken off in the spring, soon after they are above ground, become so many plants. These roots are of a dark colour on their outside, somewhat transparent, and have a yellowish red pith in the middle, which is tough and of a bitterish taste; from the root arise many large, four-cornered, jointed stalks, which in good land will grow five or six feet long, and, if supported, sometimes seven or eight; they are armed with short herbaceous prickles, and at each joint are placed five or six spear-shaped leaves, about three inches



inches long, and near one broad in the middle, drawing to a point at each end; their upper surfaces are smooth, but their midribs on the under side are armed with rough herbaceous spines; the leaves sit close to the branches in whorls. From the joints of the stalk come out the branches, which sustain the flowers; they are placed by pairs opposite, each pair crossing the other; these have a few small leaves toward the bottom, which are by threes, and upward by pairs opposite; the branches are terminated by loose branching spikes of yellow flowers, which are cut into four segments resembling stars. These appear in June, and are sometimes succeeded by seeds which seldom ripen in England.

[Leaves four, five or six. Flowers four, five or six-cleft. Native of the South of Europe, the Levant, and Africa. — Cultivated by Gerard, in 1597.]

It is well known that Madder is so essential to dyers and callico-printers, that neither business can be carried on without it. The consumption of it is so great in England, that upon a moderate computation, more than one hundred and eighty thousand pounds sterling is annually paid for what is imported from Holland. This might be saved to the public, if a sufficient quantity of Madder were planted in England, where it might be cultivated to greater advantage than in Holland, our lands being better adapted to the growth of this plant.

[The cultivation of Madder has been several times attempted, when our commerce with Holland has been interrupted, or the Dutch have raised the price of the commodity enormously. At the end of the 17th century, Madder was worth about six pounds the hundred weight. The quantity imported from Holland being six hundred and fourteen tons and an half; supposing that all together, some being better, some worse, it was worth five pounds the hundred on an average; the sum paid the Dutch for Madder was 61,450*l*. It was planted near Wisbech, and they cured a great deal there; upon which the Dutch sold theirs so low as forty shillings the hundred, by which means our planters were so discouraged as to lay their plantations by.]

The dearth of Dutch Madder, induced Mr. Miller, in the year 1758, to publish a quarto pamphlet on the cultivation of this useful plant, with figures of it, and of the stoves, kilns, drying-houses and mills, used by the Dutch in preparing the root; but I believe the culture was not carried to any great extent, and was soon dropped.

Since that time, the Society for the Encouragement of Arts, Manufactures and Commerce have taken up the Culture of Madder; and inform the public, in the first volume of their Transactions, published in 1783, that Madder having been raised to an extravagant price by the foreign growers and importers, on a supposition that it could not be brought to any degree of perfection in this kingdom, considerable premiums were given, to the amount of fifteen hundred pounds and upwards, besides two gold medals, to encourage its growth here; and that the commodity produced in consequence, was found as good at least, if not better, than any imported. By these premiums, fixing the tithes at five shillings an acre, and continuing the rewards, foreign Madder was reduced to a reasonable price, and may probably continue so, unless other causes should operate to make it dearer; as the foreign growers are convinced that we can supply ourselves with any quantity, and of the best kind, whenever, by an advance of the price, the profits are found sufficient to engage the attention of our husbandmen.

A sudden fall however in the price, although it be advantageous to the manufacturer, is a great injury, if not ruin to the grower, who has been at considerable expense in raising and preparing it. Accordingly Mr. Young, in 1784, says:—it was with great regret I found, that the extraordinary fall in the price of Madder of cent per cent, had totally destroyed all the plantations, which were once so flourishing in the neighbourhood of Feverham in Kent; and was exceedingly

concerned to hear, that Mr. Crowe, who had gone greater lengths, and made more spirited exertions in that culture, than any other man in England, had suffered very deeply in his property, by that ruinous decline.

Mr. Young, in his tour through the East of England, made in the year 1770, gives a detailed account of the experiments of John Arbuthnot, Esq. of Ravensbury, on the subject of Madder, begun in the year 1765; by which it appears that a clear profit of seven guineas an acre was made by it, and that instead of exhausting, it ameliorates and cleans the soil to a great degree. But if fourteen years after this time, Mr. Crowe was obliged to give up the culture of Madder, it is probable that Mr. Arbuthnot did not find it so profitable as it was at first, when Madder sold for 4*l*. 10*s*. the hundred weight.

This plant, with others of the same natural order, appears to differ from other substances used for the purpose of dying, in having the property of tinging with a florid red colour, not only the milk, urine, &c. but even the bones of those animals which have fed upon it; a circumstance which was first noticed by Antonius Mizaldus, but not known in England till Mr. Belchier published an account in the Philosophical Transactions of a pig and a cock, whose bones became red by eating Madder mixed with their food. Since that time various experiments have been made, from which it appears that the colouring-matter of Madder affects the bones in a very short time, and that the hardest part of them first receives the red colour, which gradually extends from the outside through the whole bony substance, so long as the animal continues to take the Madder; but if this root be alternately given and intermitted for a sufficient length of time and at proper intervals, the bones are found to be coloured in a correspondent number of concentric circles.

Madder is frequently mentioned by the Greek writers, who employed the roots with the same medicinal intentions for which they are now recommended by modern writers on the Materia Medica. They have a bitterish somewhat austere taste, and a slight smell not of an agreeable kind. They impart to water a dark red tincture; to rectified spirits, and to distilled oils, a bright red; both the watery and spirituous tinctures taste strongly of the Madder.

By medicinal writers Madder has been considered as a deobstruent, detergent and diuretic, and is chiefly used in the jaundice, dropsy and other diseases supposed to proceed from visceral obstructions, particularly those of the liver and kidneys. Some modern writers have recommended it as an emmenagogue, and in rickety affections. With regard to its diuretic quality, Dr. Cullen asserts, that in many trials, this is not constant. As a remedy for the jaundice, it has the authority of Sydenham, and it was formerly an ingredient in the *decoctum ad icteros* of the Edinburgh Pharmacopœia; but as it seemed more adapted to the *faeces albidæ* than to the disease itself, this decoction was expunged. That some French writers should prescribe Madder in a rickety state of the bones, appears surprising; since brute animals, to which it was given, especially the younger, were considerably emaciated and weakened by its effects. Its virtues as an emmenagogue rest principally upon the authority of Dr. Home, who gave from a scruple to half a dram of the powder, or two ounces of the decoction, three or four times a day. But this medicine failed with Dr. Cullen; who also says, “I know of other practitioners in this country, who after several ineffectual trials made with it, have now entirely deserted its use.”

2. Stems round, even, decumbent. Leaves in fours, ovate, rugged. Flowers white, solitary, peduncled, in the axils of the leaves. Berries roundish, red.—Native of Chili.

3. Root perennial, branched, penetrating deeply into the fissures of rocks; its outer bark red. Stems several, branched, diffused, four-cornered, the corners

<sup>p</sup> Linn. <sup>q</sup> Hort. kew. <sup>r</sup> Houghton's Collections, 2. 372.

<sup>s</sup> Annals, vol. 2. 69. <sup>t</sup> Woodville. <sup>u</sup> Willdenow.



set with prickles pointing backwards; not dying in the winter, but some of it remaining alive, and putting forth fresh shoots in the spring. Leaves lanceolate (those which appear first in the spring rather elliptical, as represented in Petiver's figure,) somewhat waved at the edge, even and shining on the upper surface, prickly at the edges and along the midrib on the under side, from three to six in a whorl, but mostly five. Flowers in dichotomous terminating panicles of a dirty yellow, always five-cleft, five-stamened; and without any calyx. This latter circumstance is common to it with *Rubia tinctorum*. *R. peregrina* seldom produces more than one perfect seed; perhaps there are not more than two or three instances on any one plant in which both seeds attain perfection. The plant in climbing up the rocks and through the shrubs supports itself by means of the prickles on the angles of the stem, and under the margins and midribs of the leaves<sup>x</sup>.

Native of England, among bushes and on rocks; near Biddeford in Devonshire, and common in hedges through great part of the county; and on St. Vincent's rocks near Bristol, by Ray: in Dorsetshire, hedges in Purbeck, and between Whitchurch and Milbourne St. Andrew's; yet found under Hod-hill, in the parish of Stour-pain near Blandford, as mentioned by Parkinson, where Dr. Pulteney says he has seen it many times green and flourishing in the month of January; found also in Portland, by A. B. Lambert, Esq.<sup>y</sup>: in Cornwall, by F. Borone: near Exmouth in Devonshire, by Dr. Withering; in the Isle of Wight, by Dr. Stokes; in a wood opposite St. Vincent's rocks, by Mr. Swayne; on Tunbridge rocks, by the Rev. Dr. Goodenough; at Chepstow in Monmouthshire, by Dr. Smith.

4. This is an evergreen plant, resembling the preceding, but the leaves are rugged with recurved prickles on the edge only, not on the keel. Flowers panicled, pale, mucronate, five-cleft.

Native of Majorca<sup>z</sup>. Introduced in 1762, by Mr. James Gordon. It flowers in July<sup>a</sup>.

5. Leaves five or six in a whorl. Flowers yellowish, axillary, on three-flowered peduncles<sup>b</sup>.

Native of the Canary islands. Introduced 1779, by Mr. Francis Masson. It flowers in September<sup>c</sup>.

6. Stems diffused, very rugged, four-cornered. Leaves four or six in a whorl, linear-acute, the keel and margin ciliate with little prickles, and rugged along the rib of the upper surface. Flowers yellow, flat, five-cleft<sup>d</sup>.

Native of Minorca. Introduced in 1772, by Monf. Richard. It flowers in July and August<sup>e</sup>.

7. This is a diffused scandent plant, quite smooth. Stem four-cornered, rugged with recurved prickles at the corners, and branched. Leaves commonly four in a whorl, sometimes but seldom six, ovate, cordate, acute, with the edge turned back, the whole rugged with muricate dots, especially along the edge and keel, spreading, shorter than the internodes: petioles four-cornered, with recurved prickles. Flowers axillary, panicled, white. Panicle very spreading, in whorls and subtrichotomous. Peduncles and pedicels capillary, four-cornered. Bractes subulate-setaceous<sup>f</sup>.

Native of the Cape of Good Hope, Siberia, China, Japan, where it is used in dying; in many parts of the East Indies and Africa.]

#### PROPAGATION AND CULTURE.

In all the Netherlands, there is no where better Madder cultivated, than in Schowen, one of the islands of Zealand, and the culture is performed in the following manner:

The land which is designed for Madder, if it is strong and heavy, is ploughed twice in autumn, that the frost in winter may mellow it and break the clods; then it is ploughed again in the spring, just before the time of planting the Madder; but if the ground is light, then it is ploughed twice in the spring; at

the last ploughing it is divided into lands of three feet broad, with furrows between each land four or five inches deep. Madder requires a loamy substantial soil, not too stiff and heavy, nor over light and sandy; for although it may thrive tolerably well in the latter, yet such land cannot have a second crop of Madder planted upon it in less than eight or ten years interval; but in Schowen, where the land is substantial, they need not stay longer than three or four years, in which interval the ground is sown with Corn, or planted with any kinds of pulse. It is granted, that the best land for producing Madder is in Schowen; where a gemet of land, which is three hundred square rods of twelve feet each, will yield from one thousand pounds to three thousand pounds weight, according to the goodness of the land and the favourableness of the seasons; but in light land, the quantity is from five hundred to a thousand pounds weight.

The time for planting Madder begins towards the end of April, and continues all May, and sometimes in very backward springs, there is some Madder planted the beginning of June. The young shoots from the sides of the root are taken off from the mother plant, with as much root as possible; these are called kiemen, and are planted with an iron dibble in rows at one foot asunder, and commonly four kiemen in a row.

The quantity of these slips (or kiemen) as is required to plant one gemet of land, are sold at different prices, according to the price which Madder bears, or to the demand for the plants; they are often sold from sixteen to twenty guilders, and sometimes they have been sold for ten to eleven pounds Flemish, but the lowest price is from fifteen guilders to three pounds Flemish.

The expense of planting out a gemet of land with slips (or kiemen) costs for labour only, from sixteen to twenty guilders, according as the land is heavy or light: there are generally employed six men to plant, two to rake the ground, these earn each a guilder a day; and five or six women or boys, called carpers or pluckers of the shoots or kiemen; these earn twelve Dutch pence a day, or two schillings.

The first year the Madder is planted, it is customary to plant Cabbages or Dwarf Kidney-beans, in the furrows between the beds, but there is always great care taken to keep the ground clear from weeds; this is generally contracted for at two pounds Flemish for each gemet of land.

In September or October, when the young Madder is cleaned for the last time that season, the green haulm (or stalks) of the plants, is carefully spread down over the beds, without cutting any part off; and in November the Madder is covered over the haulm with three or four inches of earth.

This covering of the Madder, is performed either with the plough or with the spade; if it is done by the first, it costs two guilders and a half, or three guilders in strong land each gemet, and over and above this, one guilder and a half to level the tops of the beds, and make them smooth; but it is better performed with the spade, only it is more chargeable, for that costs from eight to ten guilders each gemet, but at the same time the clods are broken, and the surface of the beds is made smooth and even.

The second year in the beginning of April, which is about the time the kiemen or young shoots are beginning to come out, the earth on the top of the beds should be scuffled over and raked to destroy the young weeds, and make the surface smooth and mellow, that the kiemen may shoot out the easier above ground; this labour costs three shillings each gemet.

The second summer there must be the same care taken to keep the Madder clean as in the first, and then nothing is planted in the furrows, or suffered to grow there; at the last time of cleaning the ground, in September or October, the green haulm is again spread down upon the beds; and in November the Madder is again covered with earth, in the same manner as the first year.

By this method of culture, one can see how necessary it is to plant the Madder in beds, for thereby it is

much

<sup>x</sup> Swayne in Withering, Smith.

<sup>y</sup> Pulteney's plants of Dorsetshire.

<sup>z</sup> Linn. syst.

<sup>a</sup> Hort. kew.

<sup>b</sup> Willdenow.

<sup>c</sup> Hort. kew.

<sup>d</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>f</sup> Thunberg.



much easier covered with the earth of the furrows; and hereby the earth of the beds is every time heightened, whereby the Madder roots will be greatly lengthened, and the kiemen or young shoots will have longer necks, and by being thus deeply earthed, will put out more fibres and have much better roots, without which they will not grow; and it is of equal use to the mother plants; for by this method the roots will be longer; and in this consists the goodness and beauty of the Madder, for those which have but few main roots, are not so much esteemed as those which are well furnished with side roots called tengels; a Madder plant that has many of these roots, is called a well bearded Madder plant; therefore one must never cut off these side roots, for by so doing there will be a less crop of Madder, and but few kiemen or young shoots can be produced; besides, by the loss of moisture, sometimes the plants will droop and become weak; and there is great profit in having a large quantity of kiemen to draw in the spring, which are in plenty the second and third years.

The Madder roots are seldom dug up the second year, but generally after it has grown three summers, therefore the culture of the third year is the same as in the second, during the spring and summer.

Before the first day of september, it is forbidden to dig up any Madder in this island; but on that day early in the morning, a beginning is made, and the person who carries the first cart load to the stove, has a premium of a golden rider, or three ducats.

The digging up the Madder of a gemet of land, costs from thirty-six to one hundred guilders, according to the goodness of the crop, and the lightness or stiffness of the ground, but in light land it costs from nine to ten pounds Flemish; the persons who are adroit in this business, are generally paid five shillings Flemish per day.

The Madder produces flowers in the middle of summer, and sometimes a few seeds, but they never ripen here; nor would they be of use to cultivate the plants, since it is so easily done by the kiemen.

Some years past they began to plant here the great wild Madder, which was called French Madder, but this was not esteemed so good for use as the tame Madder, from which it differs much, so that was not continued. The more bitter of taste the roots of the Madder are, when taken out of the ground before it is brought to the stove, the less it will lose of its weight in drying, and is the better afterward for use.

When the Madder is dug out of the ground, it is carried to the stove, and there laid in heaps; in that which is called the cold stove, and separated with hurdles made of wicker, and memorandums kept of each parcel, and to what countryman it belongs, that each may be dried in their turns, and prepared or manufactured, for which turn generally lots are cast beforehand. The Madder thus carried to the stove is relzyn.

This relzyn is carried about six o'clock in the morning, into the tower or steeple, hoisted in baskets by ropes to the rooms, and divided or spread, where it remains till the next day, two or three o'clock in the morning, about twenty or twenty-one hours; then those roots which have lain in the hottest places are removed to cooler, and those in the cooler are removed to the hotter places nearer the oven. This is continued for four or five days, according as there has been more or less carried there; but it is always the goods of one person, that every one may have his own, and of as equal quality as possible, when it is delivered out.

When the Madder is sufficiently dried in the tower, then it is threshed on the threshing-floor, which is made clean from dirt or filth, and then it is brought to the kiln, and there spread on a hair-cloth for about twenty hours, during which time the kiln is made more or less hot, according as the roots are more or less thick, or the weather being more or less cold.

From the kiln the Madder is moved to the pounding-house, and is there pounded on an oaken block made hollow, with six stampers plated at the bottom with

iron bands; these stampers are kept in motion by a mill very much resembling a grist-mill, which is turned by three horses; the presence of the pounding-master is here always required, to stir the Madder continually with a shovel, to bring it under the stampers. When the Madder is thus properly pounded, it is sifted over a tub till there is enough to fill a cask: this first pounding, which chiefly consists of the thinnest and smallest roots, and the outside husks with some earth, which by drying and threshing could not be separated, is called mor mull.

What remains in the sieve is put on the block again, and pounded a second time, and when the pounding-master guesses a third part is pounded, then the Madder is taken out again and sifted over another tub, and put into a separate cask, and this is called gor gemeens; that which remains in this second operation, not enough pounded in the sieve, is for the third time put on the block, and pounded till it is all reduced to powder, which is called kor krops.

When the Madder is cleansed from the dirt and mull, and is entirely pounded at once, then it is called oor onberoofde, so that this onberoofde actually consists of the gemeens and krops pounded together, and sifted without separating them from each other.

When there is two thirds of krops, and one third gemeens, which was separately prepared or manufactured, then they are called two and one, or marked  $\frac{2}{3}$ .

The sweepings of the stove, as also of the ground and beams being swept together is not lost, but is put amongst the mull, or sold by itself.

The sweepings of the mill, and every part of the pounding-place, is also gathered together, and put into a cask; this is called den beer.

When the Madder is thus prepared and put into casks, it is in Zealand examined by sworn assayers and tried, if it is not faulty packed up; that is, whether in the preparing it is properly manufactured, or falsely packed up, and to see if every part of the cask is filled with Madder of equal goodness and quality, not burned in the drying, or mixed with dirt; which the assayers by certain trials, and by weighing and washing of the Madder can know, if it is according to the statutes of the country.

There are sundry statutes made and published by the states of Zealand, concerning the preparing of Madder; as one of the 28th of july 1662, one on the 29th of september, and 31st of october 1671, another on the 23d of september 1699, and the last on the 28th of april 1735: by which statutes, among other things, it is strictly forbidden, That any person shall prepare krops, in which there shall be more than two pounds of dirt in a hundred weight; nor above eight pounds in the like weight of onberoofde, or in gemeens more than twelve pounds in a hundred weight.

If the Madder upon trial is found good, the arms of the city or village, and the sign of the stove where the Madder was prepared, is painted on the cask with black paint. The trial of the Madder is in no place more exact, or more religiously observed, than in the city of Zirkzee; therefore the merchants in Germany, who know this, always prefer the Madder of that place to all others, and will not buy any which has not the arms of Zirkzee painted upon the casks, if they are to be had.

We before mentioned the tower, the kiln, &c. where the Madder is dried and prepared for use.

The tower is the place where the Madder is first dried. This is heated by fifteen or sixteen pipes or flues of brick-work, which run on each side under the floor, and are covered with low burnt tiles, some of which are loose; so that by taking up these, the heat is moderated and conducted to any part of the tower, the person who has the care of drying the Madder pleases.

The tower has four or five lofts made of strong laths; they are four or five feet above each other, upon which the Madder is laid; these are heated by an oven, which is placed in the room where the work people live, and is by them called the glory.

The kiln is in a room whose length is equal to the breadth



breadth of the stove, and is entirely arched over at the top; the oven by which the kiln is heated, is called the hog; this is built upon a stone wall, which rises a foot or two above ground; and the small arch by which the heat passes through every part, has several square little holes in the brick-work, that the heat may come out; over these holes, on the top of the kiln, are laid wooden laths the whole length, and upon them a hair-cloth, on which the Madder is laid to dry, before it is carried to the pounding-place. In the Madder-stoves there is no other fuel used but Friezland turf, which gives an equal and moderate heat.

In the Madder-stoves, the people work more by night than day; first, because at the time of the year when the Madder is brought into the stoves, the nights are much colder than the days; and secondly, that the master, who must be always attentive to his work, may not be interrupted by visitors; and thirdly, because they see less dust; but principally, because the Madder which is pounded in the night is of a much better colour than that which is pounded in the day.

In the Madder-stoves are always constant workmen, one who is the drier, who has the care of drying the Madder in the tower and the kiln; for the right performance of this, art and experience are required, the goodness of the Madder greatly depending on the right drying. This person is a sort of foreman, and has the direction of all the workmen; his pay is five stivers, for every hundred weight of Madder which is prepared in the stove; he has one person under him for his assistant, to perform part of the laborious work, and to be always at hand; this man is paid eighteen or nineteen shillings per week Flemish, which is the constant wages.

The third person is the pounder, who is always present when the Madder is pounding, and with a particular shovel which is small, and fitted to the cavity of the pounding-block, stirs the Madder from time to time, to bring it under the stampers; he is paid four stivers for every hundred weight of Madder.

The fourth is a driver, who with a team of three horses, causes the mill to turn and pound the Madder; his pay for himself and the three horses, from eight to nine stivers per hundred weight, according as he can bargain.

Besides these four, there are five other assistants, who lay the Madder on and take it off; this is often performed by the wives and boys of the other workmen; these five have fifty stivers for every three thousand pounds of Madder, which is prepared, so they have each ten stivers.

There are nineteen or twenty Madder-stoves in the island of Schowen, which, at an average, prepare in one crop, that lasts from september to february, ten thousand weight of Madder each, which in the whole, amounts to two million pounds weight; and if we suppose, that the Madder is sold at an average for four pounds Flemish per hundred weight, which is a moderate price, one may soon reckon what advantage the culture of this dyeing commodity produces to this one island.

The countrymen pay to the owners of the Madder-stoves, two guilders for preparing every hundred weight of mull, and for each hundred weight of hard Madder; that is, of krops, gemeens, or onberoofde, three guilders, according as they will have them prepared.

The building of a Madder-stove quite new from the foundation, costs in the whole about twenty-four hundred pounds Flemish, which is twelve hundred pounds sterling.

The above is the method of cultivating Madder in Zealand, where the best Madder is now produced; to this I shall add, what I have observed of the growing of Madder in other parts of Holland, as also the experience I have had of the growth of Madder in England, with an account of the method of planting it here.

In the year 1727, I observed a great quantity of this plant cultivated in Holland, between Helvoetsluys and the Brill; and it being the first time I had ever seen any considerable parcel of it, I was tempted to

make some enquiries about its culture, and take some minutes of it down upon the spot, which I shall here insert, for the use of such as may have curiosity to attempt the culture of it.

In autumn they plough the land, where they intend to plant Madder in the spring, and lay it in high ridges, that the frost may mellow it: in march they plough it again, and at this season they work it very deep, laying it up in ridges eighteen inches asunder, and about a foot high; then about the beginning of april, when the Madder will begin to shoot out of the ground, they open the earth about their old roots, and take off all the side-shoots which extend themselves horizontally, just under the surface of the ground, preserving as much root to them as possible; these they transplant immediately upon the tops of the new ridges, at about a foot apart, observing always to do this when there are some showers, because then the plants will take root in a few days, and will require no water.

When the plants are growing, they carefully keep the ground hoed, to prevent the weeds from coming up between them; for if they are smothered by weeds, especially when young, it will either destroy or weaken them so much, that they seldom do well after. In these ridges they let the plants remain two seasons, during which time they keep the ground very clean; and at Michaelmas, when the tops of the plants are decayed, they take up the roots and dry them for sale. This is what I could learn of their method of cultivating this plant, to which I will subjoin a few observations of my own, which I have since made upon the culture of Madder in England.

The land upon which I have found Madder thrive best, is a soft sandy loam, and if it has been in tillage some years, it will be better than that which is fresh broken up. This should have at least a depth of two feet and a half, or three feet of good earth, and must be quite clear from Couch, or the roots of any bad weeds; for as the roots of Madder should remain three years in the ground, so where there are any of those weeds which spread and multiply at their roots, they will intermix with the Madder roots, and in three years will have taken such possession of the ground, as to greatly weaken the Madder, and render it very troublesome to separate when the Madder is taken up.

The ground should be ploughed deep before winter, and laid in ridges to mellow; and if it is not too strong, there will be no necessity for ploughing it again, till just before the time of planting the Madder, when the land should be ploughed as deep as the beam of the plough will admit; and there should be men following the plough in the furrows, which should dig a full spit below the furrow, and turn it up on the top; by preparing the ground of this depth, the roots of the Madder will strike down, and be of greater length, in which the goodness of the crop chiefly consists. The land being thus prepared and made level, will be fit to receive the plants. The best time for planting Madder is about the middle or end of april, according as the season is more or less forward, which must be determined by the young shoots; for when these are about two inches above ground, they are in the best state for planting.

In the taking up of these shoots for planting, the ground should be opened with a spade, that they may be separated from the mother plants with as much root as possible; for if the roots are broken off, they will not succeed: these plants should be drawn up no faster than they are planted; for if they lie long above ground, they will shrink and their tops will wither, and then they often miscarry; therefore if they are brought from a distant place, there should be great care taken in the packing of them up for carriage; especial regard should be had not to pack them so close, or in so great quantity, as to cause them to heat, for that will soon spoil them; but if they are a little withered by lying out of the ground, their roots should be set upright in water for a few hours, which will stiffen and recover them again.

In the planting of Madder, there are some who make



make the rows but one foot asunder, others one foot and a half, some two feet, and others who allow them three feet distance; I have made trial of the three last distances, and have found when the roots have been left three years in the ground, that three feet distance row from row is the best; but if it is taken up in two years, two feet asunder may do very well; and the distance in the rows, plant from plant, should be one foot, or a foot and a half.

If there is no danger of the ground being too wet in winter, the plants may be planted on the level ground; but if on the contrary, the ground should be raised in ridges where each row of plants is to be set, that their roots may not reach the water in winter, for if they do, it will stop their downright growth; and this is the reason why the Dutch, who plant Madder in the Low Countries, raise their ridges so high as two or three feet; and in Zealand, where the ground is drier, they raise the beds four or five inches above the intervals, that the wet may drain off from the beds where the Madder is planted.

The method of planting is as follows: the ground being made smooth, a line is drawn across it to mark out the rows, that they may be straight, for the more convenient cleaning, and for the better digging or ploughing the ground between the rows; then with an iron-shod dibble, holes are made, at the distance which the plants are to stand from each other. The depth of the holes must be in proportion to the length of the roots of the plants, which must be planted the same depth they had been while they were upon the mother plants; for if any part of the root is left above ground, the sun and winds will dry it, which will retard the growth of the plant; and should any part of the green be buried in the ground, it will not be so well; though of the two, the latter will be less prejudicial, especially if there is not too much of the green buried. When the plants are put into the holes, the earth should be pressed close to them to secure them from being drawn out of the ground, for crows and rooks frequently draw the new plants out of the ground before they get new roots, where there is not this care taken: so that in two or three days, I have known half the plants on a large piece of land destroyed by these birds.

If there happen to be some showers of rain fall in a day or two after the plants are planted, it will be of great service to them, for they will presently put out new roots, and become strong; so that if dry weather should afterwards happen, they will not be in so much danger of suffering thereby, as those which are later planted. There are some who, from a covetous temper of making most use of the ground, plant a row of Dwarf Peas or Kidney Beans between the rows of Madder, and pretend that thereby the land is kept cleaner from weeds; but I am very certain the crop of Madder is injured thereby much more than the value of those things which grow between the rows, as I have experienced; therefore I advise those persons who plant Madder, never to sow or plant any thing between the rows, but to keep the Madder quite clean from weeds, or any other kind of vegetable.

In order to keep the ground thus clean, it should be scuffled over with a Dutch hoe, as soon as the young weeds appear. When a man can perform a great deal of this work in a day, and if it is done in dry weather, the weeds will dry as fast as they are cut down; whereas, when the weeds are left to grow in the spring, so as to get strength, they are not so soon destroyed, and the expense of hoeing the ground then will be more than double; besides, there will be danger of cutting down some of the weaker plants with the weeds, if the persons employed to perform this work are not very careful; therefore it is much cheaper, as also better for the Madder, to begin this work early in the spring, and to repeat it as often as the weeds render it necessary; for by keeping the ground thus constantly clean, the Madder will thrive the better.

During the first summer, the only culture which the Madder requires, is that of keeping it clean in

the manner before directed; and when the shoots or haulm of the plants decay in autumn, it should be raked off the ground; then the intervals between the rows should be either dug with a spade or ploughed with a hoeing plough, laying up the earth over the heads of the plants in a roundish ridge, which will be of great service to the roots. The Dutch cover the haulm of their Madder with earth, leaving it to rot upon the ground; this perhaps may be necessary in their country to keep the frost out of the ground; but as I have never found that the severest winters in England have injured the Madder roots, there is not the same necessity for that practice here.

The following spring, before the Madder begins to shoot, the ground should be hoed and raked over smooth, that the young shoots may have no obstruction; and if there should be any young weeds appearing on the ground, it should be first scuffled over to destroy the weeds, and then raked over smooth; after this, the same care must be taken in the following summer to keep the ground clean; and if it is performed by the hoe plough, the earth of the intervals should be thrown up against the side of the ridges, which will earth up the roots, and greatly increase their strength; but before the ground of one interval is so hoed, the haulm of the plants should be turned over to the next adjoining interval; and if they are permitted so to lie for a fortnight or three weeks, and then turned back again on those intervals which were hoed, observing first to scuffle the ground to destroy any young weeds which may have appeared since the stirring of the ground; then the alternate intervals should be ploughed in like manner, turning the earth up against the opposite sides of the roots: by this method the intervals will be alternately ploughed, and the plants earthed up, whereby the ground will be kept clean, and stirred, which will greatly promote the growth of the roots; and by this method the superficial shoots will be subdued, and the principal roots greatly strengthened. The following autumn the ground should be cleared of the haulm and weeds, and the earth raised in ridges over the roots, as in the foregoing year.

The third spring the roots will furnish a great supply of young plants; but before these appear, the ground should be cleaned and raked smooth, that the shoots may have no obstruction to their coming up; and when the young plants are fit to take off, it should be performed with care, always taking off those which are produced at the greatest distance from the crown of the other plants, because those are what rob them most of their nourishment, and the wounds made by separating them from the old roots are not near so hurtful as those near the crown; for the stripping off too many of the shoots there will retard the growth of the plants.

The culture of the Madder in the third summer must be the same as the second; but as the roots will then be much stronger, the earth should be laid up a little higher to them at the times when the ground is cleaned; and if all the distant superficial shoots, which come up in the intervals are hoed or ploughed off, it will be of service to strengthen the larger downright root; and as the haulm will now be very strong and thick, the frequent turning it over from one interval to another will prevent its rotting; for if it lies long in the same position, the shoots which are near the ground, where there will be always more or less damp, and being covered with the upper shoots, the air will be excluded from them, which will cause them to rot, for the shoots of Madder are naturally disposed to climb up any neighbouring support; and in places where they have been supported, I have seen them more than ten feet high; but the expense of staking the plants to support their shoots would be much too great to be practised in general; therefore the other method of turning the haulm over from one interval to the other will be found of great use, for hereby it is kept from decaying, and by so doing the sun is alternately admitted to each side of the roots, which is of more consequence to the growth of the Madder than most people conceive; and from many repeated trials



trials I have found, that where the haulm has decayed or rotted in summer, it has greatly retarded the growth of the roots. There have been some ignorant pretenders who have advised the cutting off the haulm in summer, in order to strengthen the roots; but whoever practises this, will find to their cost the absurdity of this method; for I have fully tried this many years ago, and have always found that every other root, upon which this was practised, was at least a third part smaller than the intermediate roots, whose haulm was left entire. The first occasion of my making this experiment was, because the plants had been set too near each other, and the season proving moist had increased the number and strength of the shoots, so that they were so thick, as that many of them began to rot; to prevent which, I cut off the shoots of every other plant to give room for spreading the others thinner, but soon after this was done, the plants produced a greater number of shoots than before, but they were weaker, and the effect it had upon the roots was as before related; since which time I have frequently repeated the experiment on a few roots, and have always found the effect the same.

As soon as the haulm of the Maddar begins to decay in autumn, the roots may be taken up for use, because then the roots have done growing for that season, and will then be plumper and less liable to shrink than if they are dug up at another season; for I have always found, that roots of every kind of plant, which are taken out of the ground during the time of their growing, are very apt to shrink, and lose more than half their weight in a short time; whereas, when they are taken up soon after their leaves decay, they will not soon after shrink much.

When the season for digging up the Maddar root is come, it should be done in the following manner, viz. a deep trench should be dug out at one side of the ground next to the first row of Maddar to make a sufficient opening to receive the earth, which must be laid therein in digging up the row of roots, so that it should be at least two feet broad, and two spits and two shovellings deep, and should be made as close as possible to the roots, being careful not to break or cut the roots in doing it; then the row of roots must be carefully dug up, turning the earth into the trench before-mentioned. In the doing of this there should be to every person who digs, two or three persons to take out the roots, that none may be lost, and as much of the earth should be shaken out of the roots as possible; and after the principal roots are taken up, there will be many of the long fibres remaining below; therefore, in order to get the roots as clean as possible, the whole spot of ground should be dug of the same depth as the first trench, and the pickers must follow the diggers to get them all out to the bottom. As the digging of the land to this depth is necessary, in order to take up the roots with as little loss as possible, it is a fine preparation for any succeeding crop; and I have always found that the ground where Maddar has grown, produced better crops of all kinds than land of equal goodness, which had not the like culture.

After the roots are taken up, the sooner they are carried to the place of drying, the finer will be their colour; for if they lie in heaps, they are apt to heat, which will discolour them; or if rain should happen to wet them much, it will have the same effect, therefore no more roots should be taken up than can be carried under shelter the same day.

The first place, in which the roots should be laid to dry, must be open on the sides to admit the air, but covered on the top to keep out the wet. If a building is to be erected new, such as the tanners have for drying their skins will be as proper as any, for these have weather-boards from top to bottom at equal distances to keep out the driving rain, but the spaces between being open admit the air freely; and if, instead of plank floors or stages above each other, they are laid with hurdles or basket-work, upon which the roots are laid to dry, the air will have freer passage to the under side of the roots, which will dry them more equally.

In this place they may remain four or five days, by which time the earth which adhered to the roots will be so dry as to easily rub off, which should be done before the roots are removed to the cold stove, for the slower the roots are dried, the less they will shrink, and the better will be the colour of the Maddar; and the cleaner the roots are from earth, the better the commodity will be for use when prepared.

After the roots have laid a sufficient time in this place, they should be removed into another building called the cold stove, in which there should be conveniences of flues passing through different parts of the floor and the side-walls; in this the roots should be laid thin upon the floors, and turned from time to time as they dry, taking those roots away, which are nearest to the flues which convey the greatest heat, placing them in a cooler part of the room, and removing such of them as had been in that situation to the warmer, from whence the others are taken. The constant care in this particular will be of great service to the quality of the Maddar; for when this is properly conducted, the roots will be more equally dried, and the commodity, when manufactured, will be much fairer and better for use.

When the outside of the roots has been sufficiently dried in this cold stove, they should be removed to the threshing floor, which may be the same as in a common barn where Corn is threshed. The floor of this should be swept, and made as clean as possible; then the roots should be threshed to beat off their skins or outside coverings; this is the part which is prepared separately from the inner part of the root, and is called mull, which is sold at a very low price, being the worst sort of Maddar, so cannot be used where the permanency or beauty of the colours is regarded; these husks are separated from the roots, and pounded by themselves, which are afterwards packed up in separate casks, and sold by the title of mull. If this is well prepared, and not mixed with dirt, it may be sold for about fifteen shillings per hundred weight, at the price which Maddar now bears; and this, as is supposed, will defray the whole expense of drying the crop.

After the mull is separated from the roots, they must be removed to the warmer stove, where they must be dried with care; for if the heat is too great, the roots will dry too fast, whereby they will lose much in weight, and the colour of the Maddar will not be near so bright; to avoid which, the roots should be frequently turned, while they remain in this stove, and the fires must be properly regulated. If some trials are made by fixing a good thermometer in the room, the necessary heat may be better ascertained than can be done any other way; but this will require to be greater at some times than at others, according as the roots are more or less succulent, or the weather more or less cold or damp; but it will always be better to have the heat rather less than over much; for, though the roots may require a longer time to dry with a slow heat, yet the colour will be better.

When the roots are properly dried in this stove, they must be carried to the pounding-house, where they must be reduced to powder in the manner before related; but whether it is necessary to separate the krops from the gemeens, as is now practised by the Dutch, the consumers of Maddar will be better judges than myself.

There have been some objections of late mentioned to the introducing, or rather retrieving the culture of Maddar in England, which it may be proper here to take notice of, lest they should have so much weight as to prevent many persons from engaging in it. The first which has been generally started is, that the land in this country is not so well adapted for growing Maddar as that in Holland: to which I can with truth affirm, that there are vast tracts of land here much better adapted for producing Maddar than the best land in Zealand; and from the experience which I have had of its growth, will produce a greater crop.

Another objection which I have heard, was the labour in Holland being cheaper than in England. The Dutch will always undersell us, so consequently will



maintain this branch of trade; but this is certainly a great mistake: for though the labourers employed in cultivating Madder may not earn so great wages as is generally paid in England, sure I am, that the difference between an expert English labourer and that of the best Dutchman, in the ploughing, hoeing, planting, &c. of Madder, is much greater than that of their pay; for I am sure a good English gardener or ploughman will do more business, and perform it better, in four days, than the best workman in Holland can do in six. What I now say is greatly within compass, from my own knowledge; so that, supposing we were to proceed in the same manner now practised by the Dutch, this could be no objection to the cultivating of Madder; but we should soon find ways of performing the most laborious part, at much less expense, by means of the hoeing plough, which may be used to great advantage in the cultivation of Madder, whereby the expense will be much lessened; and, when once this is well established in England, there can be no doubt but that great improvements will be made both in the culture and method of preparing the commodity for use.

There have been objections made against farther trials of growing Madder, because some who have engaged in it have not succeeded: but in answer to this, it must be observed, that their ill success was owing to a want of skill. Some of them continued to plant repeated crops of Madder on the same spot of ground, till the roots became so small, as scarce to pay the expense of digging up; and here it is proper to observe, that Madder should not be planted on the same land, till after an interval of seven or eight years; during which interval the ground may be sown with any sort of grain, or kitchen vegetables, which it will produce to great advantage after Madder, because the land will be wrought so deep. The Dutch always sow grain upon their Madder ground in the intervals of four years, and have great crops from it; and they are obliged, from the scarcity of land fit for this purpose, to plant the same ground after an interval of four years; but, as we are not under the same necessity, it will be much better to stay eight years, for the roots of Madder are very similar to those of Asparagus, and draw much the same nourishment from the ground; and it is well known that, when Asparagus roots are dug up, which have been growing three years, if the same is planted with Asparagus again in a few years, it will not thrive equal to that which is planted on ground upon which Asparagus has not grown for several years; and this is always found to be the case even in kitchen-gardens near London, where, by the well working and frequent dunging the ground, it may be supposed changed in three or four years, more than the fields can possibly be in eight or ten.

Madder should not be planted in very rich dunged land, for in such there will be very large haulm, but the roots will not be in proportion; and, where there is much dung or sea-coal ashes, the Madder roots will be of a darker colour, as it will also where it is cultivated in the smoke of London, which is likewise the case with Liquorice; for that which grows in a sandy loam at a distance from London, is always much brighter and clearer than that which grows in the rich lands in the neighbourhood of London.

In Zealand the Madder is principally cultivated by the kitchen-gardeners, who, in the change of their crops, do every fourth or fifth year plant the Madder upon the same ground again, in like manner as the gardeners in the neighbourhood of London plant Asparagus for forcing in winter upon hot-beds. And as they have public kilns in Holland for drying of the Madder roots, so they know the expense of manufacturing the commodity for sale, which renders the cultivation sure and easy to them.

If the cultivation of Madder is carried on properly in England, it will employ a great number of hands from the time harvest is over, till the spring of the year, which is generally a dead time for labourers, and hereby the parishes may be eased of the poor's rate, which is a consideration worthy of public attention.

[Mr. Arbuthnot has shown by repeated experiments on Madder, that it may be cultivated profitably on soils not of extraordinary natural fertility: that good husbandry, with rich manuring will be sufficient to ensure a crop; consequently that the Madder culture may be extended over most parts of the kingdom, except on poor, stoney or clayey soils: that the profit made by an application of the land during three years, is superior to that of four: that the crop requires the ground to be well cleaned, on account of the great difficulty of extracting root-weeds from among the fibres of the plants, which consequently would, in three years, get entire possession of the ground: that the average profit of an acre amounts to above seven guineas, under the disadvantages of first attempts and want of experience; if the soil had been naturally rich, such as old Hop-grounds for instance, the profit would have been probably double: that the culture of this plant ameliorates and cleans the soil in a great degree, by the hand-hoeing, numerous horse-hoeings, and extraordinary tillage the ground receives in taking up the roots: that rich manuring is of the greatest importance: that great mischief is done to the crops by drawing plants from them: that the roots bear exact proportion to the luxuriance of the branches and leaves.

Instead of spoiling the plantations of Madder by drawing; it is much better to leave such a part of the crop, as will be wanting for a supply; taking up the plants for this purpose in the spring instead of the autumn. One acre of good Madder will yield plants enough for ten acres.

Old lay or new land is improper for this crop, on account of the wire-worm or fod-worm: such land should be thrown into one round of crops before the Madder is planted.

The best manure is farm-yard dung. Top-dressings of all sorts are too small in quantity, however rich, to last with effect three years.

The land should be ploughed about fourteen inches deep; the intervals between the rows repeatedly horse-hoed with a shim, and then the plants earthed up by a double mould-board plough with expanding earth-boards: the rows also must be hand-hoed, as often as it is necessary.

The sets may be planted in rows at eighteen inches or two feet distance, and a foot asunder in the rows. The best distance will vary according to the goodness of the land. But in general the nearer the rows, the greater will be the crop; at least as near as two feet equally distant. Single rows at four feet are not half so advantageous. Two rows on four feet are almost twice as beneficial as single ones; but though two rows on a four-foot land amount in the whole to the same as equally distant at two feet, yet do they not near equal them in product; from which it should seem that the plants should be spread pretty equally over the land.

RUBIA. See *Asperula*, *Crucianella*, *Galium*, *Houstonia*, *Ortegaia*, *Pharnaceum*, *Sherardia*, *Valantia*.

RUBROIDES. See *Opercularia*.

RUBUS. (From the redness of the twigs, or the juice of the fruit.)

Lin. gen. n. 632. Reich. n. 688. Schreb. n. 864.

Tournef. t. 385. Juss. 338. Gertn. t. 73.

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticoſæ*. *Rosaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft: segments oblong, spreading, permanent.

COR. Petals five, roundish, the length of the calyx, from upright spreading.

STAM. Filaments numerous, shorter than the corolla, inserted into the calyx. Anthers roundish, compressed.

PIST. Germs numerous. Styles small, capillary, springing from the side of the germ. Stigmas simple, permanent.

PER. Berry compounded of roundish acini, collected into a convex head, concave below: each one-celled.



SEEDS solitary, oblong. Receptacle of the pericarps conical.

OBS. The acini are united into a compound berry, and are not separable without tearing them asunder, except in *R. saxatilis*, which has the acini distinct. *R. Chamæmorus* is dioecous.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Berry composed of one-seeded acini.

SPECIES.

\* Frutescent.

- [1. *Rubus rosæfolius*. Rose-leaved Bramble.  
Lin. spec. ed. Willd. 1080. Smith, ic. ined. 3. 60.  
Leaves quinate-pinnate and ternate green on both sides, stem and petioles prickly, flowers solitary.
2. *Rubus pinnatus*. Pinnate-leaved Bramble.  
Lin. spec. ed. Willd. 1081.  
Leaves quinate-pinnate and ternate wrinkled smooth on both sides, stem petioles and peduncles prickly, raceme terminating.
3. *Rubus australis*. South-sea Bramble.  
Lin. spec. ed. Willd. 1081. Forst. prod. n. 224.  
Sbrubby, dioecous, leaves ternate and quinate-pinnate, stem and petioles prickly, racemes axillary simple.]
4. *Rubus idæus*. Raspberry.  
Lin. spec. 706. syst. 475. Reich. 2. 532. Willd. 1081.  
fl. lapp. n. 204. succ. n. 446. hort. cliff. 192. upf. 133. mat. med. 130. Woodv. med. bot. 375. t. 138. Hudf. angl. 220. Wither. arr. ed. 3. 468. Smith, brit. 541. Lightf. scot. 263. Sibth. oxon. n. 459. Abbot, bedf. 111. Fl. dan. t. 788. Hall. helv. n. 1108. Scop. carn. n. 611. Pollich pal. n. 488. Hoffm. germ. 177. Roth. germ. 1. 219. 2. 562. Neck. gallob. 220. Leers, herborn. n. 386. Krock. files. n. 785. Villars dauph. 3. 558. Allion. pedem. n. 1771. Willd. arb. 323. Du Roi barbecc. 2. 376. Blackw. t. 289. Knorr, del. 2. t. R. 1.  
Framboisier. Dubam. 2. 255. f. 260.
- α. *R. idæus*. Ger. 1089. 1. emac. 1272. 2. Park. parad. 559. 1. Matth. 1010. Clus. hist. 1. 117. Dod. pempt. 743. 1.  
*R. idæus spinosus*. Bauh. pin. 479.—fructu rubro. Bauh. hist. 2. 59. 2. Raii hist. 1640. syn. 467. Red prickly Raspberry.
- β. *Rubus idæus fructu albo*. Bauh. pin. 479. Raii hist. 1640. White prickly Raspberry.
- γ. *Rubus glaber*. Smooth Raspberry.  
Mill. dict. n. 4.  
*R. idæus lævis*. Bauh. pin. 479.  
*R. idæus non spinosus*. Bauh. hist. Raii hist. 1641. n. 4.  
Leaves quinate-pinnate and ternate tomentose underneath, petioles channelled, stem prickly.
5. *Rubus occidentalis*. Virginian Raspberry.  
Lin. spec. 706. syst. 475. Reich. 2. 532. Willd. 1082. arb. 324. Kalm, itin. 2. 283. engl. ed. 1. 66. Gron. virg. 2. 78. Thunb. jap. 216. Dill. elth. 327. t. 287. f. 319. Pluk. alm. 325.  
Leaves tern tomentose underneath, stem prickly, petioles round.
- [6. *Rubus triphyllus*. Three-leaved Bramble.  
Lin. syst. 475. Willd. 1082. Thunb. jap. 215.  
Leaves ternate tomentose underneath, leaflets ovate gashed toothed, branches petioles and peduncles villose and prickly.
7. *Rubus tomentosus*. Downy Bramble.  
Lin. syst. ed. Willd. 1083.  
Leaves ternate obovate acute unequally toothed tomentose on both sides, the lateral ones somewhat gashed.]
8. *Rubus hispidus*. Bristly Bramble.  
Lin. spec. 706. syst. 475. Reich. 2. 533. Willd. 1083. Thunb. jap. 216.  
Leaves ternate naked, stems and petioles very hispid with stiffish prickles.
- [9. *Rubus parvifolius*. Small-leaved Bramble.  
Lin. spec. 707. syst. 475. Reich. 2. 533. Willd. 1083. Lour. cochinch. 324. ed. Willd. 398.  
*R. moluccanus parvifolius*. Rumph. amb. 5. 88. t. 47. f. 1.  
Leaves ternate tomentose underneath, stem rough-haired, with recurved prickles on that and the petioles.

10. *Rubus sanctus*. Palestine Bramble.  
Lin. spec. ed. Willd. 1083. Schreb. dec. 15. t. 8.  
*R. creticus triphyllus*, flore parvo. Tournef. cor. 43.  
Leaves ternate and simple tomentose underneath, recurved prickles on the stem and petioles.
11. *Rubus jamaicensis*. Jamaica Bramble.  
Lin. syst. 475. Reich. 2. 533. Willd. 1084. mant. 75. Swartz, obs. 205. Brown. jam. 242. n. 1. Sloan. jam. 2. 109. t. 213. f. 1. Raii dendr. 76.  
Leaves quinate or ternate tomentose underneath, stem petioles and leaves pubescent with recurved prickles, panicles diffused.]
12. *Rubus cæsius*. Dewberry Bramble.  
Lin. spec. 706. syst. 475. Reich. 2. 534. Willd. 1084. hort. cliff. 192. fl. succ. n. 445. Hudf. angl. 220. Wither. arr. ed. 3. 468. Smith, brit. 542. Engl. bot. t. 826. Lightf. scot. 264. Relb. cant. n. 369. Sibth. oxon. n. 460. Abbot, bedf. 111. Hall. helv. n. 1110. Scop. carn. n. 612. Pollich pal. n. 489. Hoffm. germ. 177. Roth. germ. 1. 219. 2. 563. Neck. gallob. 219. Krock. files. n. 786. Villars, dauph. 3. 558. Allion. pedem. n. 1772. Willd. arb. 325. Du Roi barbecc. 2. 375. Thunb. jap. 216.  
*R. repens*, fructu cæcio. Bauh. pin. 479. Ger. emac. 1271.  
*R. minor*. Dod. pempt. 742. 2.—fructu cæruleo. Bauh. hist. 2. 59. Raii hist. 1640. 2. syn. 467.  
*R. minor*, Chamærubus, f. Humirubus. Park. theat. 1013. n. 2. t. 1014. f. 2.  
Leaves ternate hairy underneath, the lateral ones two-lobed, stem prickly prostrate glaucous.
- [13. *Rubus corylifolius*. Hazel-leaved Bramble.  
Smith, brit. 542. engl. bot. t. 827.  
*R. fruticosus major*. Wither. arr. ed. 3. 469. 2. Hull, 111.  
*R. major fructu nigro*. Schmidel. ic. t. 2.  
*R. floribus majoribus & præcocioribus*. Dill. in Raii syn. 467.  
Leaves subquinate hairy underneath, the lateral ones sessile, prickles straightish, calyxes of the fruit bent back.]
14. *Rubus fruticosus*. Common Bramble.  
Lin. spec. 707. syst. 475. Reich. 2. 534. Willd. 1084. hort. cliff. 192. fl. succ. n. 444. Gært. fruct. 1. 350. Hudf. angl. 220. Wither. arr. ed. 3. 469. Smith, brit. 543. engl. bot. t. 715. Lightf. scot. 264. Hull, 111. Relb. cant. n. 370. Sibth. oxon. n. 461. Abbot, bedf. 112. Hall. helv. n. 1109. Scop. carn. n. 613. Hoffm. germ. 177. Roth. germ. 1. 220. 2. 564. Pollich, pal. n. 490. Neck. gallob. 229. Krock. files. n. 787. Villars, dauph. 3. 559. Allion. pedem. n. 1773. Desfont. atlant. 401. Lour. cochinch. 325. ed. Willd. 398. Gron. virg. 163. Willd. arb. 326. Du Roi barbecc. 2. 372. Kniph. cent. 5. n. 77. Mill. illustr. t. 45.  
La Ronce. Regnault bot. ic.
- α. *Rubus*. Dod. pempt. 742. 1. Matth. 1009. Lob. ic. 2. 211. 2. obs. 619. 1. Fuchf. hist. 152. Trag. 970. Pauli dan. t. 337. Dalech. hist. 119. Camer. epit. 751. Ger. 1089. 2. emac. 1272. 1. Blackw. t. 45.  
*R. vulgaris*, f. *R. fructu nigro*. Bauh. pin. 479.—major. Park. theat. 1013.  
*R. major fructu nigro*. Bauh. hist. 2. 59. 1. Raii hist. 1639. syn. 467.  
Black-fruited common Bramble.
- β. *R. fruticosus albus*. Ait. kew. 2. 210.  
*R. vulgaris major*, fructu albo. Raii syn. 467. 2. White-fruited common Bramble.
- γ. *R. fruticosus plenus*. Ait. kew. 2. 210.  
*R. flore albo pleno*. Magnol hort. 175.  
Double-flowered Bramble.
- δ. *R. fruticosus inermis*. Ait. kew. 2. 210.  
Smooth Bramble.  
Leaves subquinate tomentose underneath, leaflets petioled, prickles hooked, stem angular, calyx bent back.
- [15. *Rubus villosus*. Hairy Bramble.  
Ait. kew. 2. 210. Lin. spec. ed. Willd. 1085.  
Leaves quinate elliptic acuminate sharply ferrate villose on both sides, stems and petioles prickly.



16. *Rubus canadensis*. Canadian Raspberry.  
*Lin. spec.* 707. *Reich.* 2. 535. *Willd.* 1085.  
 Leaves digitate in tens, five and threes, stem unarmed.]
17. *Rubus odoratus*. Flowering Raspberry.  
*Lin. spec.* 707. *Reich.* 2. 535. *Willd.* 1085. *hort.*  
*cliff.* 192. *upf.* 133. *Willd. arb.* 326. *Du Roi*  
*harbecc.* 2. 379. *Corn. canad.* 149. *t.* 150.  
*Dubam. arb.* 14. *Mill. fig.* 149. *t.* 223. *Curt.*  
*magaz.* 323. *Raii hist.* 1641.  
 Leaves simple palmate, stem unarmed many-leaved many-flowered.
- [18. *Rubus moluccanus*.  
*Lin. spec.* 707. *syft.* 475. *Reich.* 2. 535. *Willd.*  
 1086. *Thunb. jap.* 219. *Lour. cochinch.* 324.  
*ed. Willd.* 397.  
*R. molucc. latifolius*. *Rumph. amb.* 5. 88. *t.* 47. *f.* 2.  
 Leaves simple cordate sublobed, stem prickly decumbent.
19. *Rubus microphyllus*.  
*Lin. suppl.* 263. *spec. ed. Willd.* 1086.  
*R. palmatus*. *Lin. syft.* 475. *Thunb. jap.* 217.  
*Ki Itfigo*. *Kempf. amæn.* 787.  
 Shrubby, prickly, smooth, leaves simple cordate ovate blunt  
 sublobate, peduncles solitary one-flowered.
20. *Rubus incisus*.  
*Lin. syft.* 476. *Willd.* 1086. *Thunb. jap.* 217.  
 Leaves simple cordate gashed smooth, stem erect prickly.
21. *Rubus japonicus*.  
*Lin. syft.* 476. *Reich.* 2. 535. *Willd.* 1087. *mant.*  
 245. *suppl.* 263.  
 Shrubby, unarmed, very smooth, leaves simple cordate  
 oblong acuminate doubly-ferrate, peduncles solitary one-  
 flowered.
22. *Rubus corchorifolius*.  
*Lin. suppl.* 263. *spec. ed. Willd.* 1087.  
*R. villosus*. *Lin. syft.* 475. *Thunb. jap.* 218.  
 Shrubby, prickly, tomentose, leaves simple oblong cordate  
 ferrate, peduncles solitary one-flowered.
23. *Rubus elongatus*.  
*Smith, ic. ined.* 3. 62. *Willd. spec.* 1087.  
 Leaves simple cordate acuminate doubly crenate tomentose  
 underneath, stem prickly, calyxes blunt.
24. *Rubus pyrifolius*.  
*Smith, ic. ined.* 3. 61. *Willd. spec.* 1088.  
 Leaves simple oval acuminate ferrate naked, stem prickly  
 panicked, petals minute.  
 \*\* Herbaceous.
25. *Rubus pedatus*.  
*Smith, ic. ined.* 3. 63. *Willd. spec.* 1088.  
 Leaves pedate-quinate gashed, peduncles filiform bracted  
 in the middle, calyxes smoothish.]
26. *Rubus saxatilis*. Stone Bramble.  
*Lin. spec.* 708. *syft.* 476. *Reich.* 2. 536. *Willd.* 1088.  
*fl. lapp. n.* 206. *succ. n.* 447. *Huds. angl.* 221.  
*Wither. arr. ed.* 3. 470. *Smith, brit.* 544. *Lightf.*  
*scot.* 265. *Fl. dan. t.* 134. *Jacqu. vind.* 245.  
*Hall. herb. n.* 1111. *Hoffm. germ.* 177. *Roth.*  
*germ.* 1. 220. 2. 565. *Scop. carn. n.* 614. *Krock.*  
*filef. n.* 788. *Villars, dauph.* 3. 559. *Allion.*  
*pedem. n.* 1774. *Pallas, itin.* 1. 72. *Willd. arb.*  
 327. *Ger.* 1090. 3. *emac.* 1273. 4.  
*R. alp. humilis*. *Baub. hist.* 2. 61.  
*R. saxat. alpinus*. *Clus. hist.* 1. 118. 1. *Park. theat.*  
 1014. 4.  
*Chamærubus saxatilis*. *Baub. pin.* 480. *Raii hist.*  
 654. *syn.* 261.  
 Leaves ternate smoothish, runners creeping herbaceous,  
 panicle few-flowered.
27. *Rubus arcticus*. Dwarf crimson Bramble.  
*Lin. spec.* 708. *syft.* 476. *Reich.* 2. 536. *Willd.*  
 1088. *fl. lapp. n.* 207. *t.* 5. *f.* 2. *fl. succ. n.* 448.  
*hort. cliff.* 292. *mat. med.* 130. *Smith, brit.* 544.  
*Fl. dan. t.* 488. *Gmel. fib.* 3. 179. *n.* 22. *Willd.*  
*arb.* 327. *Curt. magaz.* *t.* 132.  
*R. humilis flore purpureo*. *Buxb. cent.* 5. 13. *t.* 26.  
*R. trifolius humilis non spinosus*, sapore & odore fra-  
 gariae, fructu rubro polycocco. *Amm. ruth.* 185.  
 Leaves ternate smooth, stem unarmed one-flowered.
- [28. *Rubus trifidus*.  
*Thunb. jap.* 217. *Willd. spec.* 1089.  
 Leaves simple gash-trifid smooth, stem unarmed.
29. *Rubus stellatus*.  
*Smith, ic. ined.* 3. 64. *Willd. spec.* 1089.

- Leaves simple cordate three-lobed, wrinkle-veined, stem  
 unarmed one-flowered erect, petals lanceolate.
30. *Rubus geoides*.  
*Smith, ic. ined.* 1. 19. *Willd. spec.* 1089.  
 Leaves simple and ternate blunt serrate naked, the end-  
 leaf very large.]
31. *Rubus Chamæmorus*. Mountain Bramble, or Cloud-  
 berry.  
*Lin. spec.* 708. *syft.* 476. *Reich.* 2. 536. *Willd.*  
 1090. *fl. lapp. n.* 208. *t.* 5. *f.* 1. *succ. n.* 449.  
*hort. cliff.* 192. *mat. med.* 130. *Gunn. norv. n.* 6.  
*Fl. dan. t.* 1. *Huds. angl.* 221. *Wither. arr. ed.*  
 3. 471. *Smith, brit.* 545. *Lightf. scot.* 266.  
*t.* 13. *f.* 2. *Dicks. hort. succ.* 2. 8. *Retz. obs.*  
 1. 20.  
*R. palustris humilis*. *Tournef. inst.* 615.  
*Chamæmorus*. *Ger.* 1090. *Vaccinia* 1368. *emac.*  
 1273. *Vaccinia* 1420. *Raii hist.* 653. *syn.* 260.  
*C. anglica*. *Park. theat.* 1014. 7.  
*Morus norvagica*. *Tillands. ic.* 159.  
*Chamærubus foliis Ribes*—& fol. *Ribes anglica*. *Baub.*  
*pin.* 480. 2. 3.  
 Leaves simple lobed, stem unarmed one-flowered, calycine  
 segments ovate.
32. *Rubus Dalibarda*. Simple-leaved Bramble.  
*Lin. spec.* 708. *syft.* 476. *Reich.* 2. 537. *Willd.*  
 1090. *Smith, ic. ined.* 1. 20.  
*Dalibarda repens*. *Lin. spec. ed.* 1. 401.  
 Leaves simple cordate undivided crenate, scape leafless  
 one-flowered.

## DESCRIPTIONS, &amp;c.

[1. Stem round, pubescent; prickles yellowish, re-  
 curved at the end. Leaflets commonly five, subsef-  
 file, ovate, acute, doubly ferrate, somewhat hairy; the  
 end one very large, elongated, petioled. Common  
 petiole channelled, hairy, with small hooked prickles.  
 Stipules in pairs, linear, acute, very narrow. Pedun-  
 cles solitary, opposite to the leaf, an inch long, spread-  
 ing, hairy, one-flowered, without any bractes. Calyx  
 deeply five-cleft: segments ovate, very much drawn  
 out at the point, entire, pubescent on both sides.  
 Petals a little shorter than the calyx, roundish, clawed,  
 seeming to be white. Filaments shorter by half than  
 the petals. Fruit globular, composed of very numerous  
 smooth acini, and seeming not to be very succulent.—  
 Found in the island of Mauritius by Commerçon; and  
 communicated by Thouin<sup>b</sup>.

2. Branches villose, green, beset with hooked  
 prickles. Leaves ovate-lanceolate, wrinkled and vein-  
 ed, sharply double-ferrate. Raceme simple. Pe-  
 duncles villose, very prickly. Calyxes villose, longer  
 than the petals. It seems to be allied to the next spe-  
 cies; but the flowers are hermaphrodite, and the ra-  
 ceme terminating.—Its native place is unknown<sup>c</sup>.

3. Native of New Zealand<sup>k</sup>.

4. Stems suffruticose, biennial, upright, round, acu-  
 leate-hispid, or thick set with small prickles, two feet  
 high: they produce fruit the second year, after which  
 they lie down. Leaflets rhomb-ovate, acute, marked  
 with lines, unequally ferrate, white underneath. Pe-  
 tioles pubescent, prickly. Peduncles hispid. Flowers  
 in panicles. Calyx tomentose, acuminate. Petals  
 small, white, blunt, flat. Fruit red, grateful to the smell  
 and taste, deciduous, bristly with the permanent styles<sup>l</sup>,  
 placed upon a conical receptacle.

The Raspberry, was anciently called Raspis or  
 Raspis-berry, and in some countries Hind-berry; also  
 Framboise, from the French.

Native of many parts of Europe in rocky moun-  
 tains, moist situations, woods and hedges. With us it  
 is plentiful in Wales, and some parts of Scotland.  
 Mr. Curtis remarked it in Grass-wood, near Kilnsay,  
 Yorkshire; Mr. Hutchinson, near Bishop's Auckland;  
 Dr. Withering, about Edgbaston-pool, and near Bir-  
 mingham; Mr. Crowe and Dr. Smith, between Nor-  
 wich and Thorpe; Mr. Woodward, near Berkhamstead  
 in Hertfordshire; Dr. Sibthorp, at Stokenchurch and  
 Mongewell, in Oxfordshire; Professor John Martyn,  
 in the Peak of Derbyshire; Dr. Deering, between

<sup>b</sup> Smith.<sup>c</sup> Willdenow.  
<sup>l</sup> Smith.<sup>k</sup> Forster.



Brockflow and Nuttal, in Nottinghamshire; by Gerard, near Harwood not far from Blackburne in Lancashire, and near Wisterfom, where he went to school, two miles from Nantwich in Cheshire.

The Raspberry flowers in may and june.

The fruit is grateful to most palates, as nature presents it, but sugar improves the flavour; accordingly it is much esteemed when made into a sweetmeat. The ripe fruit is fragrant, subacid and cooling, allays heat and thirst, and promotes the natural excretions, in common with other summer fruits. A grateful syrup, prepared from the juice, is directed for officinal use, by the London Pharmacopœia. It dissolves the tartar of the teeth; but for this purpose it is inferior to the Strawberry. The fresh leaves are the favourite food of kids<sup>m</sup>.]

The varieties of the Raspberry are, 1. The Red-fruited. 2. The White-fruited. 3. The twice-bearing; of which the first crop ripens in july, and the second in october: those of the latter season having seldom much flavour. [The size of the fruit has also been much increased by culture, but perhaps at the expense of the flavour. These are all accidental varieties, by the confession of Mr. Miller himself;] but the Smooth Raspberry he believes to be a distinct species; the leaves being trifoliate, larger than those of the common sort, woolly on their under side, the branches and stalks having no thorns. It produces few and small fruit, which has occasioned its being neglected.

5. The Virginian Raspberry rises with purplish stalks, a little higher than the common sort. The leaves are of a lucid green on their upper side, but hoary on their under; their foot-stalks are taper; the fruit is of a deep black when ripe, has little flavour, and ripens late in autumn.

[Stem round, even, with recurved prickles, and covered with a bloom like a Plum. The petioles have also recurved prickles. Leaves ternate, with the middle leaflet pedicelled, ovate, gash-ferrate, white-tomentose underneath. Raceme terminating. Fruit black. It varies also with a red fruit, more acid and pleasant than our European Raspberry. It differs chiefly from that, which it otherwise very much resembles, in the leaves being commonly ternate, although the lateral leaflets often become two; the lateral leaflets being usually angular; the prickles alternate, recurved, not scattered and in clusters; the petioles also being prickly: but it is known at first sight by the blue cloud or bloom on the stem<sup>n</sup>.

Native of North America. It was cultivated in the botanic garden at Chelsea in 1696; and flowers in may and june<sup>o</sup>.

6. Stem suffruticose, smooth, prickly. Branches weak, from flexuose-upright. Leaflets obovate, somewhat angular, with large teeth ending in a sort of bristle, smooth above, white-tomentose underneath. Flowers at the ends of the branchlets, in a sort of panicle. Calyxes tomentose, hispid.

Native of Japan<sup>p</sup>.

7. Branches smooth striated beset with scattered hooked prickles. Leaflets soft; the lateral leaflets obovate acute, unequally and grossly toothed, the outer side sublobate; the end leaflet obovate acute quite entire at the base. There are small prickles on the petioles, the rib of the leaves, and the peduncles. Flowers white, in panicles at the end of the branches. Leaflets of the calyx tomentose, bent back. Petals obovate, twice as long as the calyx. It is very different from the common Bramble; nor does it agree with *R. occidentalis*, under which name it was sent.—Native of Germany and Switzerland<sup>q</sup>.

8. The stems have long procumbent woody shoots like those of the Vine; these together with the petioles have stiff bristles scattered over them. Leaflets gash-ferrate, the middle one petioled. The peduncles also are hispid.

Native of Canada<sup>r</sup>. Cultivated by Mr. Miller in 1759. It flowers in august.

9. Stems shrubby round tomentose, with abundance of reflex prickles. Leaves white underneath, veined. Calyxes tomentose, formed into a raceme.—Native of the East Indies<sup>s</sup>.

Stems long, scandent, with many branches, and a few longish recurved prickles. Leaves roundish, ferrate-gashed. Flowers purple, in a loose terminating panicle. Berry roundish, red<sup>t</sup>.—Native of the East Indies, China and Cochinchina.

10. Native of Palestine, Candia, &c.

11. This differs from *R. parvifolius* in having the stem not hoary, but when young slightly pubescent only. Stem as in *R. fruticosus*. Leaves smooth above, white underneath, gash-ferrate<sup>u</sup>.

It differs from the common Bramble (*R. fruticosus*) in having the leaves gash-ferrate, with the ribs prickly; the panicles terminating, diffused; the flowers and berries small<sup>x</sup>.—Native of Jamaica and the neighbouring islands.]

12. The Dewberry has weaker trailing stalks than the common Bramble. The leaflets are larger. The fruit is smaller, with few larger acini, and is of a deeper black colour.

[Stems prostrate, round, rooting, pale green with a vivid glaucous tinge: though woody, they are only annual, or at most biennial. Leaflets gashed and ferrate, downy (not hoary) beneath: the lateral leaflets sessile, generally lobed on the outside, of various forms. Stipules lanceolate. Petioles downy, prickly, obscurely channelled above. Flowers few together, in terminating, downy, somewhat prickly panicles. Calyx silky, with long points, spreading. Petals waved and crumpled, white, rarely reddish. Fruit black with a bright blue tinge or bloom, composed of few large grains. Its flavour is agreeably acid, without the faint taste of the common Blackberry.

Native of Europe, in dry shady ditches, woods and the borders of fields; flowering in june and july, and fruiting through august and september, till frosts come on<sup>v</sup>.

13. Stems biennial, roundish, red, not truly shrubby and perennial, much more brittle than the *fruticosus*, so that it is rejected by thatchers, who use the other for binding their thatch; all the prickles are nearly straight and not hooked. Leaves quinate or ternate: leaflets large, sometimes exactly resembling the leaves of a Hazel, unequally ferrate and gashed; bright green above and smoothish, hairy but never hoary beneath; when the leaves are ternate, they are lobed on the outside. Stipules, some setaceous others lanceolate. Petioles hairy, prickly. Panicle many-flowered. Calyx villose, spreading, in fruiting-time reflexed. Corolla white, earlier and larger than in the common Bramble. Fruit earlier, of a browner black, more gratefully acid than in the *fruticosus*, and composed of rather fewer acini or grains<sup>z</sup>.

Dillenius had remarked that there are two species of Bramble in our hedges, this with white, larger and earlier flowers, and another (*fruticosus*) with reddish, smaller and later flowers. This difference has been since observed in Norfolk; and Mr. Woodward, who has marked the distinctions between them, suspected this to be a variety of the *cassius*; its larger size being owing only to its growing in open hedges, for in ditches it frequently throws out runners, which creep on the ground, and are not bigger than in the *cassius*. Mr. Woodward's description is given by Dr. Withering, who considers it as a variety of the *fruticosus*. Dr. Smith has described and figured it as a distinct species, by the persuasion of Mr. Crowe, who has examined it carefully, and fully ascertained it.

Professor Hoffmann thinks that our *corylifolius* is the *fruticosus* of his German Flora for 1800; and that the true *fruticosus* is his *tomentosus*. But the true *tomentosus* (n. 7.) is very different from both ours.

*R. corylifolius* is equally common in our hedges with the *fruticosus*<sup>a</sup>.

14. Common Bramble has very long, trailing or rather arching, woody stems, of a purplish hue, as in

<sup>m</sup> Woodville and Withering. <sup>n</sup> Linn. spec. <sup>o</sup> Hort. kew.  
<sup>p</sup> Thunberg. <sup>q</sup> Willdenow. <sup>r</sup> Linn. spec.

<sup>s</sup> Linn. spec. <sup>t</sup> Loureiro. <sup>u</sup> Linn. mant. <sup>x</sup> Swartz.  
<sup>v</sup> Smith. <sup>z</sup> Idem. <sup>a</sup> Engl. bot.



## R U B

the preceding, but much more tough, with the angles more strongly marked, and the prickles hooked. Leaves quinate, or sometimes ternate; leaflets somewhat elliptical, doubly-ferrate, acute, dark-green and shining above, white and downy beneath; but sometimes the under side is merely hairy and of a paler green. All the leaflets are petioled; and the petioles are prickly. Stipules bristle-shaped. Panicles many-flowered, subracemed, tomentose. Calyx short, always reflexed both in flower and fruit, concave, tomentose. Petals pale purple, bluish-coloured or pink; sometimes white. Fruit of a dark violet colour, with a mawkish sweet taste; composed of very numerous acini or grains<sup>b</sup>. Gærtner describes the fruit as a compound berry of an ovate-globular form, when ripe concave within and deciduous, composed of about fifty partial berries, which are ovate, succulent, very dark purple, perfectly smooth and shining; each inclosing one seed, which is ovate, narrowed above, compressed like a lens, netted and wrinkled, of a pale testaceous colour. The receptacle is short, fungose, and conical.

The Bramble is found in almost every hedge and thicket, flowering in July and August. The fruit ripens early in September. But Dr. Smith remarks, that the season was so unfavourable in 1799, that scarcely any Blackberries were to be seen ripe in October. They are called in some countries *Bumblekites*; in others *Scald-berries*, from their supposed quality of giving scald-heads to children, who eat of them inordinately. The green twigs are of great use in dyeing woollen, silk and mohair black. Silk-worms will sometimes feed upon the leaves, for want of those of the Mulberry<sup>c</sup>. They are very astringent, and a decoction of them may be used in gargarisms.

The Bramble, so generally reprobated as a very troublesome weed, may be useful in raising live hedges in a poor sandy soil, in the shortest time, and at the least expense. Several small inclosures having been made in the parish of Cavenham in Suffolk, which is a blowing sand, on each side of a narrow field-row, along which a large flock of sheep was frequently driven; on one side of the road the bank was planted with Brambles mixed with the White-thorn, and a dead hedge was placed on the top, as is the usual method in that country: the dead hedge was never renewed, and yet the fence in ten or eleven years was a tolerable one. The Bramble, which is a very fast grower, not only defended the young quick from the sheep, but likewise by twisting itself through the dead hedge strengthened it, and prevented its being broken down either by cattle or pilferers. On the other side of the road, the bank was planted at the same time with White-thorn only. The dead-hedge was renewed several times, and yet there was no probability that the White-thorn would ever make a fence. Mr. Le Blanc, who gives this account, improved upon the hint, by planting two rows upon a bank, the lower of Bramble only, the upper of White-thorn only. He tried this method in the years 1781 and 1782, and both fences in 1784 were more promising than he could have expected them to be if planted with White-thorn alone. He recommends this process only in poor sandy soils, where the growth of live-hedges is slow, where they are liable to the depredations of sheep, and where, by reason of the looseness of the soil, the ditch is no defence<sup>d</sup>.

The sweet Briar, or the Dog Rose, will, either of them, assist in rearing and protecting the White thorn, in making quick hedges.]

The varieties of the Bramble are—1. That with white fruit, which has the bark and leaves of a lighter green; and was found accidentally in a hedge not far from Oxford by Bobart. 2. The Bramble with a double flower, which is introduced into plantations of shrubs. 3. The smooth Bramble without thorns. 4. With cut leaves. 5. With variegated leaves.

[15. Native of North America. It flowers here in July<sup>e</sup>.

<sup>b</sup> Smith. <sup>c</sup> Withering. <sup>d</sup> Young's Annals, vol. 2. p. 342. <sup>e</sup> Hort. kew.

## R U B

16. Stem purplish. Leaflets lanceolate, naked on both sides, very thin, sharply ferrate. Bractes lanceolate. Stipules linear, prickly.—Native of Canada, where it was found by Kalm<sup>f</sup>.

17. Root perennial, creeping. Stems many, from four to seven feet high, about the size of a man's little finger, covered with a smooth bark of a light brown colour, and branching out a little towards the top. Leaves six inches long, and seven inches broad, cut into three, four or five angular lobes, ending in acute points, ferrate, having several veins arising from the midrib, running upwards diverging towards the borders, deep green above, but light green and smooth beneath; on foot-stalks four inches long, coming out alternately. Flowers in loose terminating bunches, each on a long peduncle. Petals large, roundish, of a light purple colour<sup>g</sup>.

The fruit is rarely produced with us, but in North America, its native country, it is like the common Raspberry, only not so pleasant. It flowers from June to September. Cornutus, who first figured and described this plant, gave it the name of *odoratus*, on account of the fragrance of its foliage. Nursery-men and gardeners have named it the *Flowering Raspberry*, because it is regarded in Europe merely for its flowers, which are showy, and plentifully produced in succession, during the whole summer<sup>h</sup>. It was cultivated by Mr. Miller in 1739<sup>i</sup>.

18. Stem frutescent, decumbent, among shrubs or trees scandent. Branches upright, hirsute, with minute recurved prickles. Leaves alternate, blunt, lobed or sublobed, ferrate, smooth and wrinkled above, veined and downy-ash-coloured beneath. Petioles tomentose, prickly, the length of the leaf. Flowers scattered in the axils and terminating, solitary and racemed. Peduncles tomentose, prickly. Calyx tomentose on the outside. Corolla scarcely longer than the calyx<sup>k</sup>. Flowers in panicles. Petals shorter than the calyx. Germs hirsute. Styles longer than the stamens. Leaves tomentose underneath<sup>l</sup>.—Flowers white, in oblong racemes, with torn bractes. Corolla commonly six-petalled. Berry small, roundish, red<sup>m</sup>.

Native of Amboina, Java, Ceylon, Japan and Cochinchina.

19. Stem frutescent, upright, from two to three feet in height. Branches round, purple, flexuose, with frequent spreading prickles. Leaves several from each bud, palmate-trifid or quinquefid, smooth on both sides, villose-veined, spreading, an inch or more in length. The three lobes are commonly simple, but sometimes divided again into three, lanceolate, acuminate, acutely and unequally ferrate, the middle one longer than the others. Petioles capillary, beset with recurved prickles the length of the leaves, unequal. Flowers from the buds among the leaves peduncled, solitary. Calyx villose, with lanceolate segments. Corolla biggish, twice as long as the calyx, white. Fruit yellow, esculent, sapid<sup>n</sup>.

It resembles the *parvifolius*, but that is hoary with down, and has the leaves always ternate, white underneath. Stems very smooth, round, thinly set with prickles. Leaves small, petioled, cordate, blunt, commonly three-lobed, ferrate, unarmed. Petioles and peduncles also unarmed. Flowers small, the size of *Potentilla*<sup>o</sup>.

Native of Japan, between Miaco and Quana; flowering in April<sup>p</sup>.

20. Stem frutescent, smooth, purple, beset with scattered spreading prickles. Branches like the stem, with frequent prickles. Leaves several from a bud, cordate, ovate, rounded, seldom acute, sublobed, ferrate, having raised nerves, unarmed. Petioles smooth, having recurved prickles, spreading, the length of the leaves. Peduncles capillary, unarmed and prickly, smooth, the length of the petioles. Flowers axillary, peduncled, solitary. Calyx smooth without, white-tomentose within. It differs from *R. moluccanus* in having an upright stalk and smooth leaves:—from *R.*

<sup>f</sup> Linn. spec. <sup>g</sup> Mill. fig. <sup>h</sup> Curtis. <sup>i</sup> Hort. kew. <sup>k</sup> Thunberg. <sup>l</sup> Linn. syst. <sup>m</sup> Loureiro. <sup>n</sup> Thunberg. <sup>o</sup> Linn. suppl. <sup>p</sup> Thunberg.



*villosus* (corchorifolius) in having the leaves smooth, unarmed, blunt, gashed, and both peduncles and petioles longer.—Native of Japan<sup>1</sup>.

21. This is a low shrub, with an upright, even, angular stem, not much branched. Leaves alternate, petioled, ovate or ovate-oblong, even on both sides. Peduncle filiform, the length of the corolla. Flower the size of that of the Strawberry, with roundish white petals. Calyx small.—Native of Japan.

22. Stem and petioles, and sometimes under the leaves prickly. Stem, lower surface of the leaves, petioles, peduncles and calyxes hoary with nap. Petals scarcely longer than the calyx<sup>2</sup>.

The leaves are beautifully plaited before they unfold. It differs from *R. hispida* in having simple, not ternate leaves, which are hairy: from *R. moluccanus* in having oblong-ovate acute leaves, and a shrubby upright stem.—Native of Japan, between Miaco and Jedo; flowering in april<sup>3</sup>.

23. Stem shrubby, round, pubescent, with small prickles on it. Leaves alternate, doubly and acutely crenate, smooth above, white-tomentose beneath, veined. Petioles shorter than the leaves, roundish, pubescent, unarmed. Panicle terminating, elongated, tomentose, flexuose, alternately branched. Pedicels clustered or solitary, short, a little thickened at top, silky, upright. Bractes oblong, concave, pubescent on the outside, toothed at top, deciduous. Calyx half-five-cleft, with blunt segments ending in a little point, silky. Petals roundish, white. Fruit red.—Found in Java by Commerfon.

24. Stem shrubby, subflexuose, round, slightly hirsute, with small recurved prickles. Leaves alternate, spreading, smooth, except that the veins are hirsute on both sides. Petioles short, hirsute. Stipules scarcely any. Panicle terminating, erect, somewhat like a thyrse, many-flowered, alternately branched, pubescent. Peduncles from the rudiments of the abortive flowers knobbed, subdivided. Pedicels round, scarcely thickened. Bractes oblong, multifid, pubescent, deciduous. Calyx deeply five-cleft, with the segments ovate, acuminate, the outer ones trifid at the top, tomentose on both sides. Petals four times shorter than the calyx, oval, blunt, toothed at the end. Fruit composed of few ovate grains.—Found in Java by Commerfon<sup>4</sup>.

25. Roots fibrous, from the joints of the stem, which is procumbent, round, unarmed and smooth. Leaves upright, ternate, with the side leaflets binate, thus seeming to be pedate. Leaflets shortly petioled, obovate, acutely crenate, veined, green on both sides, naked except at the veins which are somewhat hairy, the outer ones often obscurely lobed on one side. Common petioles very long, linear, channelled, smoothish, unarmed. Stipules in pairs, at the base of the petioles, roundish, concave, membranaceous, blunt. Flowers solitary, peduncled, upright, seemingly white. Peduncles filiform, the length of the petioles, subpubescent at top. Bractes in pairs, opposite, about the middle of the peduncle, blunt, smooth, small. Leaflets of the calyx oblong, reflex, sharpish, generally having a tooth or two on each side, veined, smooth or very slightly hairy, and not tomentose, as in most of the species. Petals the length of the calyx, obovate, spreading. This tender delicate plant, is distinguished from all the herbaceous species by its leaves. It was found by Mr. Archibald Menzies, in the western part of North America<sup>5</sup>.

26. Stone Bramble has a fibrose root, with very long, prostrate, creeping runners, naked or leafy and barren. Stems upright, simple, a span high, somewhat angular, villose, leafy, unarmed. Leaves ternate, (the lower ones sometimes quinate,) pale-green, thin, doubly-ferrate, acute, slightly hairy underneath, the lateral leaflets sessile. Mr. Woodward has remarked all the leaflets to be sessile, and also all on footstalks. Panicle terminating, few-flowered, pubescent. Petals white, lanceolate, upright<sup>6</sup>. Fruit of a most beautiful pink colour, when ripe, of an agreeable acid

flavour, and composed of a few (three or four) large acini<sup>7</sup>.

Native of several parts of Europe, particularly the northern parts; also of Russia. With us it is found in the north of England, in Scotland, Wales and Ireland; among stones in shady places on the sides of mountains. In Yorkshire, Cumberland, Westmoreland, Lancashire and Derbyshire. Woods about Settle and Ingleton. Helk's-wood and Mill-bank by Ingleton. Not far from the summit of Helsfelhab; near Kendal. In Dob bottom, near Burnley, Lancashire. Hills opposite Matlock bath in Derbyshire. At Dunkeld and Blair, and about Loch-Rannoch in Perthshire. Lyn y Cwn, near Snowdon. Common in mountain glens in Ireland, near the top<sup>8</sup>. It flowers in june.

In Scotland they call the fruit Roebuck-Berries. The Russians ferment them with honey, and extract a potent spirit from them<sup>9</sup>.

27. Dwarf Crimson Bramble has a creeping root, but no runners. Stems from a hand to a span in height, upright, simple, angular. Leaves unequally ferrate, commonly altogether smooth. Flowers solitary, peduncled, terminating, deep rose-coloured, with the petals sometimes jagged. Calyx hairy. Fruit purple, sweet and fragrant, very pleasant<sup>10</sup>; according to Linneus, almost as large as a Mulberry.

Linneus has figured and minutely described this arctic Bramble in his elegant Flora Lapponica, out of gratitude, as he expresses himself, for the benefit he reaped from it in his Lapland journey; it having so frequently recruited his spirits, when almost sinking with hunger and fatigue, by the vinous nectar of its berries. He informs us, that the principal people in the province of Norland, make a syrup, a gelly, and a wine, from these berries, which they partly consume themselves, and partly send to their friends at Stockholm, as a dainty of the rarest and most delicious kind; and he adds, that of all the wild Swedish berries, this holds the first place<sup>11</sup>.

Native of the North of Europe, Asia and America. It has lately been discovered by the Rev. Dr. Walker in the Isle of Mull.—Mr. Miller cultivated it in 1759. It flowers here in june and july<sup>12</sup>.

28. Stem herbaceous, from flexuose-erect, round, almost simple, purple, smooth. Leaves petioled, cordate, roundish, trifid, smooth on both sides; lobes gashed, unequally ferrate. Flowers from the same bud with the leaves, peduncled, solitary; peduncle simple, seldom bifid. Petioles and peduncles villose; a finger's length. Calyx white-tomentose. Fruit red, esculent, pleasant tasted.

Native of Japan, near Quana; flowering in april<sup>13</sup>.

29. Root branched, fibrose. Stem simple, entirely herbaceous, short, leafy, round, pubescent. Leaves three or four on a stem, alternate, spreading, cordate at the base, three-lobed, acutely and unequally ferrate, wrinkled, naked above, paler beneath, with the veins hairy. Petioles filiform, hairy, generally higher than the stem. Stipules in pairs, ovate, acute, membranaceous, naked. Flower on a short peduncle, terminating, solitary, almost erect, red, large in proportion to the plant. Calyx turbinate at the base, many-nerved, pubescent; with seven or eight linear, acuminate, very long, spreading segments. Petals as many, alternate with the segments of the calyx, a little longer, obovate-lanceolate, bluntish, spreading. Filaments much shorter than the calyx, curved inwards, continuing a long time. Anthers subcordate.

It is allied to *R. arcticus*, but the leaves are simple, and the flower almost sessile. It is distinguished from *R. Chamæmorus* by its appearance; but principally by the calycine segments being linear-lanceolate; not ovate. The calyx, together with the stamens of the year preceding; very frequently continues on the withered stem.

Mr. Archibald Menzies gathered it in the western part of North America<sup>14</sup>. The fruit is purple, as in *R. arcticus*<sup>15</sup>.

<sup>1</sup> Woodward, M. S.

<sup>2</sup> Smith.

<sup>3</sup> Curtis.

<sup>4</sup> Smith.

<sup>5</sup> Withering.

<sup>6</sup> Hort. kew.

<sup>7</sup> Willdenow.

<sup>8</sup> Lightfoot.

<sup>9</sup> Thunberg.

30: Stems

<sup>1</sup> Thunberg.

<sup>2</sup> Linn. mant.

<sup>3</sup> Linn. suppl.

<sup>4</sup> Thunberg.

<sup>5</sup> Smith.

<sup>6</sup> Idem.

<sup>7</sup> Idem.



## R U B

30. Stems herbaceous, very short, depressed. Leaves mostly ternate; leaflets irregularly serrate, very smooth on both sides, veined beneath, the end one very large, cordate, emarginate. Petioles subvillose. Flowers solitary, on short, very thick, pubescent peduncles. Petals roundish. It differs from *R. Dalibarda* in its ternate smooth leaves, serrate rather than crenate; in its short thick peduncles, not filiform and very long; and its roundish not lanceolate petals.

Found by Commerfon in South America, at the Straits of Magellan<sup>1</sup>.

31. The Mountain Bramble or Cloud-berry is a plant of an elegant appearance, with a creeping root; a simple stem, hardly a foot high, upright; mallow-like, but smooth and hardish leaves, petioled, cordate, five-lobed, plaited, wrinkled, unequally serrate. Flowers terminal, peduncled, white; male and female, the former with short abortive pistils, the latter with abortive stamens. Though the plants appear to be dioecious, yet Dr. Solander affirmed that the two sexes spring from one common root. The same has been said of White Bryony. But the assertion has not been confirmed in either case. The calyx is hairy on the outside, inflexed, with the segments oval or elliptical. Berries of a tawny or dull orange-colour, composed of many acini, acid mucilaginous and not unpleasant<sup>k</sup>.

Native of Sweden, Denmark, Siberia, Britain. On the highest mountains of the North of England, Scotland and Wales, in peat-bogs. In Yorkshire, Westmoreland, Cumberland, Lancashire. About Settle, Ingleton and Ingleborough; near Eggleston: between Patterdale and Keskwick, Cumberland: on Axedge near Buxton, Derbyshire: Barrowfield-wood; Cald-Kail-scrogs, near Kendal, in Westmoreland. Upon Ben-Lomond; and upon the mountains about Loch-Rannock in Perthshire, and many other places in Scotland. In Caernarvonshire and other counties of Wales.

From their exalted situation, they are called Cloud-berries; also Knot-berries or Knout-berries. The flowers appear in June, soon after the snow is dissolved, and the berries are scarcely well ripened in August, before the plant is again overwhelmed with its wintry covering. The snow preserves the fruit, and is used by the Laplanders to keep it through the winter; for they as well as the Scottish highlanders esteem it one of their most grateful and useful fruits, especially on account of its long duration. Its taste is moderately acid and mucilaginous, with something of the flavour of Tamarinds<sup>l</sup>. They are held to be an excellent antiscorbutic. The Norwegians pack them up in wooden vessels, and send them to Stockholm, where they are served up in deserts, or made into tarts. The Laplanders bruise and eat them with the milk of their Rein-deer<sup>m</sup>.

32. Root creeping, fibrous. Runners prostrate, herbaceous. Leaves alternate, erect, obtuse, unequally crenate, veined, having a few scattered hairs above, but naked beneath, resembling those of the Violet but firmer, sometimes red. Petioles hairy, longer than the leaves. Peduncles solitary, leafless filiform hairy one-flowered, the length of the petioles. Flowers hermaphrodite, white, small. Calyx five-parted, the segments lanceolate acute pubescent. Petals ovate-lanceolate, scarcely longer than the calyx. Filaments the length of the petals. Berry juiceless. Seeds five ovate sharpish, in the dried plant with a corrugated surface<sup>n</sup>.

Linneus makes a quere whether the flowers are not male and female on the same plant: and Miller asserts it to be so. Linneus remarks that the habit of this species unites it with *Rubus*, especially with *R. Chamemorus*; or else that both should be separated from this genus.

Kalm first brought it from Canada. It was formerly in the royal botanic garden at Kew, but perished, and was again introduced in 1788 from North America<sup>o</sup>. But Mr. Miller had cultivated it before, in 1768<sup>p</sup>.

Hill, in the 16th volume of his Vegetable System, t. 11. has given a figure of *R. Chamemorus*, from

<sup>1</sup> Smith. <sup>k</sup> Idem. <sup>l</sup> Idem. <sup>m</sup> Withering.  
<sup>n</sup> Smith. <sup>o</sup> Idem. <sup>p</sup> Hort. kew.

## R U D

Gerarde, for this species, and hence has affirmed that a very rare plant of Canada, is to be found in the northern mountains of England<sup>q</sup>.]

### PROPAGATION AND CULTURE.

4. The Raspberry is generally propagated by suckers, though I should prefer such plants as are raised by layers, because they will be better rooted, and not so liable to send out suckers as the other, which generally produce such quantities of suckers from their roots, as to fill the ground in a year or two; and where they are not carefully taken off or thinned, will cause the fruit to be small, and in less quantities; especially when the plants are placed near each other, which is too often the case, for there are few persons who allow these plants sufficient room.

In preparing these plants, their fibres should be shortened; but the buds which are placed at a small distance from the stem of the plant, must not be cut off, because those produce the new shoots the following summer. These plants should be planted about two feet asunder in the rows, and four or five feet distance row from row; for if they are planted too close, their fruit is never so fair, nor will ripen so kindly, as when they have room for the air to pass between the rows.

The soil in which they thrive best, is a fresh strong loam, for in warm light ground they do not produce so great plenty of fruit, for they naturally grow in cold land and in shade; therefore when they are planted in a warm situation and a light soil, they do not succeed.

The season for dressing them is in October, at which time all the old wood that produced fruit the preceding summer, should be cut down below the surface of the ground, and the young shoots of the same year must be shortened to about two feet in length; then the spaces between the rows should be well dug, to encourage their roots; if you bury a very little rotten dung therein, it will make them shoot vigorously the summer following, and their fruit will be much fairer. During the summer season they should be kept clean from weeds, which, with the before-mentioned culture, is all the management they will require; but it is proper to make new plantations once in three or four years, because when the plants are suffered to remain long, they will produce few and small fruit.

14. The Brambles are easily increased by laying down their branches, which will put out roots at every joint very freely. They may be transplanted any time from September to March, and will grow in almost any soil or situation. [Thus the common Bramble may assist in making or strengthening a fence; and the varieties with double flowers and variegated leaves in ornamenting a plantation.

17. The Virginian Flowering Raspberry is extremely hardy, and easily propagated by suckers: the only care which it requires, is to keep it within proper bounds. Young plants produce the largest and finest flowers; on account of which, and the largeness and elegant form of its leaves, it has long had a place in our ornamental plantations.

27. The dwarf crimson or arctic Bramble grows readily and increases rapidly in bog-earth, on a north border; but rarely ripens its fruit in gardens<sup>r</sup>.]

RUDBECKIA. (So named by Linneus, from Olaus Rudbeck, father and son, professors of botany at Upsal; the former died in 1702, the latter in 1740.)

Lin. gen. n. 980. Reich. n. 1061. Schreb. n. 1324. Gærtn. t. 172. Juss. 189. Obeliscotheca. Vaill. act. gall. 1720. f. 44. Dill. elth. 218.

Class. 19. 3. Syngenesia Polygamia Frustranea. Nat. order of Compositæ Oppositifoliæ. Corymbifera, Juss.

### GENERIC CHARACTER.

CAL. Common with a double row of scales: scales flat, widish, curtailed, six in each row.

COR. Compound radiate: Corollets hermaphrodite, numerous, in a conical disk; Females about twelve, very long, in the ray.

Proper of the Hermaphrodite tubular-funnel-form, with a five-toothed border. Female ligulate, lanceolate, with two or three teeth, flat, pendulous.

<sup>q</sup> Smith. <sup>r</sup> Curtis.

STAM.



STAM. in the Hermaphrodites: *Filaments* five, capillary, very short. *Anther* cylindrical, tubular.

PIST. in the Hermaphrodites: *Germ* four-cornered. *Style* filiform, the length of the corollet. *Stigma* two-parted, revolute. In the Females: *Germ* very small. *Style* none. *Stigma* none.

PER. none. *Calyx* unchanged.

SEEDS in the Hermaphrodites solitary, oblong; crowned with a membranaceous four-toothed rim: in the Females none.

REC. chaffy, conical, longer than the common calyx: *chaffs* the length of the seeds, erect, channelled-concave, deciduous.

ESSENTIAL CHARACTER.

*Cal.* with a double row of scales. *Crown* of the seed a four-toothed rim. *Recept.* chaffy, conical.

SPECIES.

1. *Rudbeckia laciniata*. Broad jagged-leaved *Rudbeckia*.  
*Lin. spec.* 1279. *Reich.* 3. 887. *vir. cliff.* 88. *hort.* cliff. 430. *hort. upf.* 269. *Gærtn. fruct.* 2. 435. *Retz. obs.* 2. 26. n. 92. *Gron. virg.* 129. *Kniph. cent.* 4. n. 69. *Mor. hist.* 3. 22. f. 6. t. 6. f. 53. 54. (*Chrysanthemum*.)  
*Doronicum americanum*. *Park. theat.* 322. f. 10.—*laciniato folio*. *Baub. pin.* 516.  
*Aconitum helianthemum canadense*. *Corn. canad.* 178. t. 179.  
*Leaves* compound *laciniate*.
2. *Rudbeckia digitata*. Narrow jagged-leaved *Rudbeckia*.  
*Mill. dict. n.* 6. *Ait. kew.* 3. 251.  
*Lower leaves* compound, *stem-leaves* quinate and ternate, *upper ones* simple.
3. *Rudbeckia triloba*. Three-lobed *Rudbeckia*.  
*Lin. spec.* 1280. *Reich.* 3. 887. *hort. upf.* 269. *Gron. virg.* 130. *Pluk. phyt. t.* 22. f. 2. *Mor. hist.* 3. 19. n. 37. (*Chrysanthemum*.)  
*Leaves* spatulate; the lower three-lobed, the upper undivided.
4. *Rudbeckia hirta*. Hairy *Rudbeckia*.  
*Lin. spec.* 1280. *yst.* 782. *Reich.* 3. 887. *Buttn. canon.* 227. *Gron. virg.* 1. 181. 2. 131. *Mill. fig. t.* 224. f. 1. *Kniph. cent.* 2. n. 77. *Knorr. del. 1. t. F. 1.* *Dill. elth.* 295. t. 218. f. 285. (*Obeliscotheca*.) *Pluk. phyt. t.* 242. f. 2. *Mor. hist.* 3. 23. *Raii suppl.* 210. (*Chrysanthemum*.)  
*Leaves* undivided spatulate-ovate triple-nerved serrate rough-haired, *receptacle* conical, *chaffs* lanceolate.
- [5. *Rudbeckia fulgida*. Bright *Rudbeckia*.  
*Ait. kew.* 3. 251.  
*Leaves* oblong-lanceolate toothletted hispid narrowed and subcordate at the base, *receptacle* hemispherical, *chaffs* lanceolate.]
6. *Rudbeckia purpurea*. Purple *Rudbeckia*.  
*Lin. spec.* 1280. *yst.* 782. *Reich.* 3. 888. *Gron. virg.* 130. *Curt. magaz. t.* 2. *Jungh. ic.* 1. f. 12. *Pluk. phyt. t.* 21. f. 1. *Catesb. car.* 2. t. 59. (*Chrysanthemum*.) *Mor. hist.* 3. 42. f. 6. t. 9. f. 1. *ord.* 3. *Raii suppl.* 218. (*Dracunculus*.)  
*Leaves* lanceolate-ovate alternate undivided, *petals* of the ray bifid.
7. *Rudbeckia angustifolia*. Narrow simple-leaved *Rudbeckia*.  
*Lin. spec.* 1281. *Reich.* 3. 888. *Gron. virg.* 181. *Mill. fig.* 150. t. 224. f. 2. (*Coreopsis*.)  
*Leaves* opposite linear quite entire.

DESCRIPTIONS, &c.

1. [Mr. Miller makes two species of this: *laciniata*, n. 4. and *quinata*, n. 5. which he thus describes.] The root of the former is perennial, but the stalk is annual. The lower leaves are composed of five broad lobes, deeply cut into acute points, and some of them jagged almost to the midrib; the outer lobe is frequently cut into three deep segments. The stalks rise seven or eight feet high, and divide at top into several branches; they are smooth, green, and have single, oval heart-shaped leaves, some indented on their edges, others entire. Peduncles naked, terminated by a single flower with yellow rays, like the Sun-flower, but smaller.—The latter is also perennial, and has smooth green stalks; but they rise higher. The leaves have all five lobes, which are much narrower, end with

sharper points, and are very acutely indented on their sides. The flowers are smaller and the petals narrower.—They are both natives of North America: [particularly Virginia and Canada. They flower here in July. Vespasian Robin (says Parkinson) the French King's herbarist at Paris, had this plant from Canada, gave Mr. Tradescant some roots, and he imparted thereof to me also. Parkinson therefore cultivated it before 1640\*.

Retzius supposes the *laciniata*, *quinata* and *digitata* of Miller to be mere varieties. He describes two, under the names of *digitata* and *quinata*. The first has the stem obsoletely tubercled and angular, with rust-coloured spots at the insertions of the lower leaves. Leaves wider, ferrate; the lower quinate, the upper ternate, with the lateral lobes bifid, and the end-one three-parted; the uppermost leaves are ovate, entire or slightly trifid. Ray two inches wide, twelve-leaved. Peduncles even, grooved.—The second (*quinata*) has the stem round at the base, angular at top, not spotted. Lower leaves quinate or ternate, with the lobes lacinate, narrow, toothed: the upper ternate, similar: the uppermost three-lobed or entire, lanceolate. Ray an inch and half wide, for the most part ten-leaved. Peduncles subvillose, grooved.

According to Gærtner, the seeds of the *laciniata* are columnar or inversely pyramidal, four-cornered, very finely streaked, of a yellow bay colour, crowned with a short rim, quite entire, crenulate: the chaffs on the receptacle sometimes coloured. In some of the species, as *R. hirta*, he remarks, that the rim on the seed almost vanishes, or is even quite wanting.]

2. This has a perennial root like the former. The leaves at bottom are composed of seven or nine lobes, some entire, others jagged to the midrib; they are of a dark green and smooth. The stalks rise six feet high, and divide into many branches; they are of a purple or iron colour, and are very smooth. The stem-leaves, towards the bottom, are hand-shaped, and composed of five lobes; higher up they have but three lobes, and at top the leaves are single. The flowers are smaller than those of the preceding, but of the same shape and colour.

[Native of North America. Cultivated in 1759, by Mr. Miller. It flowers in August and September\*.] Mr. Miller says that he had the seeds from Siberia, as well as North America.

3. This is a biennial plant. The lower leaves are divided into three lobes, but those upon the stalks are undivided; they are hairy, and shaped like those of the first sort. The stalks branch out on their sides, and are better furnished with leaves than the others. The flowers are very like those of the first sort, but smaller. It grows naturally in several parts of North America.

[According to Linneus, the stem is panicled and many-flowered.—The seed was sent by Banister from Virginia, and was cultivated in the botanic garden at Oxford\*.]

4. The root of this will continue four or five years. The leaves are oblong, ovate and hairy. The stalks rise a foot and half high, and have one or two leaves near the bottom. The peduncle is naked near a foot in length, and is terminated by one pretty large yellow flower, shaped like the Sun-flower. The florets of the ray are very stiff, and slightly indented at their points: the disk is very prominent, and of a dark purple colour. The flowers will continue six weeks, and there is a succession of them from the middle of July, till the frost puts a stop to them.—Native of Virginia and several other parts of North America.

[Cultivated in 1732, by James Sherard, M.D. in his garden at Eltham in Kent.

5. Native of North America. Introduced in 1760, by Messrs. Kennedy and Lee. It flowers in July and August\*.]

6. This is a perennial plant like the fourth. The leaves are longer and broader, are smooth, and have three veins. The peduncles are taller, and have two

\* Hort. kew.

\* Idem.

\* Bobart in hist. oxon.

\* Hort. kew.



or three narrow leaves on each, placed alternately. On the top is one flower, with long narrow, reflexed, peach-coloured florets in the ray: the disk is very prominent, and of a dark purple colour. It flowers at the same time with the fourth, but the flowers are not of so long duration.

[It is easily distinguished from the other species, by the long narrow purple pendulous florets of the ray.— It is a native of Carolina and Virginia; and was introduced before 1699, by the Rev. John Banister<sup>r</sup>.]

7. Root perennial. Stalks four or five feet high. Leaves narrow, smooth, opposite. Florets in the ray of the flower yellow, long, twelve in number: disk dark red. Scales of the calyx spreading and almost awl-shaped.

Native of Virginia. [Cultivated in 1758, by Mr. Miller. It flowers in august and september<sup>r</sup>.]

## PROPAGATION AND CULTURE.

1. 2. These do not produce seeds here, but are easily propagated by parting the roots. It is hardy, and loves a moist soil.

3. In warm summers this perfects its seeds in England. The plants will live through the winter in the open air, in mild seasons, and may be increased by slips or heads; but the best way is to raise the plants from seeds: the second year the seedling plants will flower, and produce ripe seeds.

4. The root of this will continue four or five years, but unless care be taken to shelter it in winter, it is sometimes destroyed by cold and too much wet. It sometimes produces good seeds in England, in a favourable season; but it is generally propagated here by offsets or slips, unless seeds can be procured from America.

The best time to separate the offsets is in the spring. The plants will live abroad in the open air through the winter, in a dry soil and warm situation; but it will always be prudent to shelter two or three plants under a common hot-bed frame to preserve the species, for in severe winters they are often killed.

The same directions may serve for the fifth and sixth sorts, but they rarely produce seeds in England; nor do the plants put out heads, whereby they may be increased that way.

7. This, together with the first and second sorts, may be propagated in plenty by parting the roots in october, when the stalks begin to decay. They love a moist soil, and should be allowed room, for if they are too near other plants, they rob them of their nourishment. They are proper furniture for large gardens or plantations.

[RUDBECKIA. See *Coreopsis* and *Zinnia*.

——, *Houst.* See *Conosarpus*.

—— oppositifolia. See *Buphthalmum helianthoides*.

RUE. See *Ruta*.

—— Goat's. See *Galega*.

—— Meadow. See *Thalictrum*.

—— Wall. See *Asplenium*.]

RUELLIA. (So named by Plumier, in memory of Joannes Ruellius, physician at Paris; author of a treatise De Natura Stirpium, Par. 1536. fol. He died in 1537.)

Lin. gen. n. 784. Reich. n. 847. Schreb. n. 1050. Gärtn. t. 54. Plum. 2. Dill. elth. 248, 249. Juss. 103.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personate*. Acanthi, Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, permanent: segments linear, acute, straight, permanent.

COR. one-petalled, irregular, with a patulous inclined neck: border five-cleft, spreading, blunt; with the two upper segments more reflexed.

STAM. Filaments four, placed where the tube widens, approximating by pairs. Anthers scarcely longer than the tube.

PIST. Germ roundish. Style filiform, the length of the stamens. Stigma bifid, acute; the lower segments rolled in.

<sup>r</sup> Hort. kew.

<sup>r</sup> Idem.

PER. Capsule round, acuminate both ways, two-celled, two-valved, opening elastically by the claws: partition contrary.

SEEDS a few, roundish, compressed.

OBS. In some species there is the rudiment of a fifth stamen.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. subcampanulate. Stam. approximating by pairs. Caps. opening by elastic teeth.

## SPECIES.

- [1. *Ruellia Blechum*. Hairy-leaved thick-spiked *Ruellia*. Swartz, obs. 243. Leaves ovate serrate-toothed somewhat hirsute, spikes ovate, inner bractes in pairs, flowers three together sessile.
2. *Ruellia Blechioides*. Smooth thick-spiked *Ruellia*. Swartz, prodr. 93. R. Blechium. Lin. spec. 884. Reich. 3. 189. amoen. acad. 5. 400. Brown. jam. 261. (Blechum.) Sloan. jam. 1. 173. t. 109. f. 1. (Brunella.) Barleria pyramidata, flore cæruleo. Plum. gen. 31. ic. 42. f. 3. Leaves oblong somewhat toothed smooth, spikes ovate, flowers longer than the bractes.
3. *Ruellia angustifolia*. Narrow-leaved *Ruellia*. Swartz, prodr. 93. Leaves linear-lanceolate, spikes oblong, bractes ovate hirsute.]
4. *Ruellia strepens*. Whorl-flowered *Ruellia*. Lin. syst. 575. Reich. 3. 190. mant. 422. hort. upf. 178. cliff. 218. Gron. virg. 73. Dill. elth. 330. t. 249. f. 321. Sabb. hort. 2. t. 92. Gärtn. fruct. 1. 254. Leaves petioled, peduncles three-flowered short.
- [5. *Ruellia macrophylla*. Long-leaved *Ruellia*. Vahl, symb. 2. 72. t. 39. Leaves ovate-lanceolate acuminate quite entire, peduncles axillary elongated two-flowered.
6. *Ruellia patula*. Spreading *Ruellia*. Lin. syst. 575. Jacqu. misc. 2. 358. icon. rar. t. 41. Shrubby villose, viscid, leaves ovate quite entire, flowers axillary aggregate.
7. *Ruellia pallida*. Pale-leaved *Ruellia*. Vahl, symb. 2. 72. R. strepens, flore magno violaceo, foliis obtusis. Forst. descr. 114. Leaves petioled ovate wave-crenate rugged at the edge, flowers axillary solitary sessile.]
8. *Ruellia clandestina*. Three-flowered *Ruellia*. Lin. spec. 885. Reich. 3. 190. hort. upf. 179. cliff. 308. Gouan illustr. 39. Dill. elth. 328. t. 248. f. 320. Leaves petioled, peduncles long subdivided naked.
9. *Ruellia paniculata*. Panicked *Ruellia*. Lin. spec. 885. Reich. 3. 190. hort. cliff. 313. Swartz, obs. 244. Brown. jam. 267. 1. Sloan. jam. 1. 158. t. 100. f. 2. Raii suppl. 389. (Speculum Veneris.) Leaves almost entire, peduncles dichotomous divaricate panicked.
- [10. *Ruellia intrusa*. Vahl, symb. 1. 45. Forst. descr. 113. Leaves petioled ovate hairy, flowers in spikes directed all one way.]
11. *Ruellia tuberosa*. Tuberous-rooted *Ruellia*. Lin. spec. 885. Reich. 3. 191. Swartz, obs. 245. Brown. jam. 268. 2. Dill. elth. 328. Plum. gen. 12. Sloan. jam. 1. 149. t. 95. f. 1. Raii suppl. 370. (Gentianella.) Leaves ovate crenate, peduncles one-flowered.
- [12. *Ruellia tentaculata*. Lin. spec. 886. syst. 575. Reich. 3. 191. amoen. acad. 4. 320. Euphrasia acinos. Pluk. phyt. t. 279. f. 7. Leaves obovate, whorls surrounded with unarmed two-forked spines.
13. *Ruellia ciliaris*. Ciliate-leaved *Ruellia*. Lin. syst. 575. Reich. 3. 191. mant. 89. Lour. cochinch. 381. ed. Willd. 462. R. perfica. Burm. ind. 135. t. 42. f. 1. Leaves toothed ciliate, flowers opposite.

14. *Ruellia*



14. *Ruellia biflora*. Two-flowered *Ruellia*.  
*Lin. spec.* 886. *Reich.* 3. 191. *Dill. elth.* 331.  
*Flowers twin subsessile.*
15. *Ruellia crispa*. Curled-leaved *Ruellia*.  
*Lin. spec.* 886. *fyst.* 575. *Reich.* 3. 192. *Ofb. it.*  
 240. *ed. angl.* 1. 390. *Pet. gaz. t.* 73. f. 6?  
*Leaves subcrenate lanceolate-ovate, heads ovate leafy hispid, stem creeping.*
- [16. *Ruellia fasciculata*. Aggregate-flowered *Ruellia*.  
*Vahl, symb.* 3. 82. *Retz. obs.* 4. 28. n. 90.  
*Leaves petioled oblong toothed, petioles winged, flowers aggregate terminating and lateral.*
17. *Ruellia mollissima*. Soft *Ruellia*.  
*Vahl, symb.* 3. 82.  
*Leaves petioled broad-lanceolate quite entire very soft, flowers in bundles.*
18. *Ruellia undulata*. Waved-leaved *Ruellia*.  
*Vahl, symb.* 3. 82.  
*Leaves petioled oblong waved, heads axillary sessile, stem erect.*
19. *Ruellia involucreta*. Involucred *Ruellia*.  
*Vahl, symb.* 3. 83.  
*Leaves lanceolate quite entire smooth, heads terminating involucred hairy.*
20. *Ruellia repanda*. Repand-leaved *Ruellia*.  
*Lin. spec.* 886. *fyst.* 575. *Reich.* 3. 192. *Burm.*  
*ind. t.* 40. f. 2.  
*Prunella molucca.* *Rumph. amb.* 6. 30. t. 13. f. B.  
*Leaves lanceolate bluntly toothed petioled, stem creeping.*
21. *Ruellia ringens*. Ringent-flowered *Ruellia*.  
*Lin. spec.* 886. *fyst.* 575. *Reich.* 3. 192. *fl. zeyl.*  
*n.* 234. *Ofb. it.* 229. *ed. angl.* 1. 370.  
*Upudali.* *Rheed. mal.* 10. 125. t. 64.  
*Leaves oblong quite entire, flowers solitary sessile, stem procumbent.*
22. *Ruellia antipoda*.  
*Lin. spec.* 886. *fyst.* 575. *Reich.* 3. 192. *mant.* 422.  
*fl. zeyl. n.* 235. *Lour. cochinch.* 380. *ed. Willd.*  
 462. *Pluk. mant. t.* 186. f. 2. (*Gentianella*).  
*Cruſſa ollæ.* *Rumph. amb.* 5. 460. t. 170. f. 2.  
*Pectianga-pulpani.* *Rheed. mal.* 9. 115. t. 59.  
*Leaves mucronate-ferrate, stem creeping, flowers subspiked terminating in fives or threes.*
23. *Ruellia repens*. Creeping *Ruellia*.  
*Lin. fyst.* 576. *Reich.* 3. 193. *mant.* 89. *Burm.*  
*ind.* 135. t. 41. f. 1.  
*Leaves lanceolate acuminate quite entire, flowers sessile, bractes petioled longer than the calyx, stem creeping.*
24. *Ruellia littoralis*. Maritime *Ruellia*.  
*Lin. fyst.* 576. *suppl.* 289.  
*Shrubby, hoary, leaves wedge-form serrate retuse smooth, flowers axillary solitary subsessile.*
25. *Ruellia longiflora*. Long-flowered *Ruellia*.  
*Vahl, symb.* 1. 45. t. 15.  
*Camellia longiflora.* *Forsk. descr.* 126. n. 99.  
*Leaves ovate quite entire, flowers axillary solitary very long, stem shrubby.*
26. *Ruellia difformis*.  
*Lin. fyst.* 576. *suppl.* 289.  
*Diffused, hirsute, leaves linear tooth-sinuate entire, flowers in whorls axillary.*
27. *Ruellia barbata*.  
*Vahl, symb.* 3. 83.  
*Leaves lanceolate quite entire, flowers in whorls, calyxes acute, bractes oblong, stem upright.*
28. *Ruellia salicifolia*.  
*Vahl, symb.* 3. 84.  
*Leaves lanceolate quite entire, flowers in whorls, calyxes awned, bractes lanceolate, stem upright.*
29. *Ruellia balsamica*.  
*Lin. fyst.* 576. *suppl.* 289.  
*Erect, smooth, leaves petioled lanceolate serrate, whorls sessile.*
30. *Ruellia uliginosa*.  
*Lin. fyst.* 576. *suppl.* 290.  
*Diffused, hirsute, leaves sessile oblong entire, spikes terminating four-cornered.*
31. *Ruellia hirta*.  
*Vahl, symb.* 3. 84. t. 67.  
*Rough-haired, leaves oblong petioled serrate, spikes terminating imbricate, stem creeping.*

32. *Ruellia pilosa*.  
*Lin. fyst.* 576. *suppl.* 290.  
*Leaves opposite ovate entire ciliate, flowers terminating solitary.*
33. *Ruellia depressa*.  
*Lin. fyst.* 576. *suppl.* 290.  
*Leaves opposite petioled obovate entire, stem closely depressed.*
34. *Ruellia cordifolia*.  
*Vahl, symb.* 3. 84.  
*Leaves cordate-ovate sessile tomentose-hoary beneath, flowers subspiked.*
35. *Ruellia secunda*.  
*Vahl, symb.* 3. 84.  
*Leaves subcordate-ovate quite entire villose, racemes axillary directed one way.*
36. *Ruellia japonica*.  
*Lin. fyst.* 576. *Thunb. jap.* 254.  
*Leaves elliptic, flowers in spikes, bractes oblong blunt.*
37. *Ruellia guttata*.  
*Vahl, symb.* 2. 72. *Forsk. descr.* 114.  
*Leaves ovate-lanceolate rugged at the edge and waved, spikes terminating imbricate.*
38. *Ruellia imbricata*.  
*Vahl, symb.* 2. 73. *Forsk. descr.* 113.  
*R. dorsiflora.* *Retz. obs.* 6. 31. n. 55.  
*Leaves petioled ovate, wave-crenate the opposite one less, spikes imbricate directed one way.*
39. *Ruellia aristata*.  
*Vahl, symb.* 2. 73.  
*Leaves ovate hoary beneath, head terminating, calyxes and bractes nerved awned, stem shrubby.*
40. *Ruellia alopecuroides*.  
*Vahl, ecl.* 2. 49.  
*Leaves ovate smooth obscurely repand, spikes terminating hairy, stem creeping.*
41. *Ruellia reptans*.  
*Forsk. prodr.* n. 242.  
*Leaves petioled ovate blunt, bluntly serrate, peduncles terminating subspiked.*
42. *Ruellia fragrans*.  
*Forsk. prodr.* n. 243.  
*Leaves sessile oblong bluntly serrate, flowers axillary solitary sessile.*
43. *Ruellia rupestris*.  
*Swartz, prodr.* 93.  
*Stemless, leaves petioled oblong crenate-waved, scapes erect many-flowered.*

## DESCRIPTIONS, &amp;c.

The *Ruellia* are very nearly allied to the *Justicia*, in their natural order, flowers, fruit and habit<sup>a</sup>. The case is the same in several other genera of the class *Diandria*: and in *Verbena* some species belong to this, and others to that class.

1. Stem herbaceous, a foot high, upright, branched, four-cornered, striated, even. Branches spreading, opposite, axillary. Leaves petioled, opposite, ovate-lanceolate, acuminate, nerved. Spikes terminating, four-cornered; conical, an inch long. Bractes imbricate, or floral leaves cordate, acuminate, nerved, hirsute; at the base of which are two little lanceolate bractes, and within them three subsessile flowers, smaller, whitish-blue. Calyx five-leaved; leaflets awl-shaped, erect. Corolla funnel-form; tube narrower at the base, somewhat bell-shaped above the middle, gibbous behind; border three-cleft, segments equal, oblong, the two hinder ones more upright. Two of the filaments the length of the tube. Anthers awl-shaped, upright. Germ oblong, acuminate. Style the length of the tube. Capsule subpedicelled, surrounded by the calyx at the base, ovate. Seeds black. It is an annual plant, common in pastures and bushy places in Jamaica.

The description of *R. Blechnum* in *Amoen. acad.* seems rather to belong to the next species, which *Linneus* has probably confounded with this<sup>b</sup>.

2. Stems prostrate, dichotomous, even, slightly four-cornered. Leaves opposite, ovate, scarcely pubescent, quite entire, toothlets obsolete. Petioles ciliate. Spikes

<sup>a</sup> Swartz, obs. 246.<sup>b</sup> Idem, ib.



loose, four-cornered, made up of cordate floral leaves, with two short lanceolate bractes within each, and within these two sessile flowers, one without the other<sup>c</sup>.

Browne says, that this plant is pretty frequent in most dry and shady places, among the lower hills in Jamaica; that it thrives best in a gravelly soil, but seldom rises above two feet and a half in height.—Introduced in 1780, by Monf. Thouin<sup>d</sup>.

3. Native of the West Indies<sup>e</sup>.]

4. Root fibrous, perennial. Stems about a foot high, four-cornered with two longitudinal furrows, one on each side; the joints are three or four inches asunder, and at each two oval leaves upon very short foot-stalks. Flowers axillary, two or three from the same point, sitting very close to the stalk, small, of a pale purple colour, and very fugacious; opening early, and gone by ten or eleven in the forenoon. Capsules short, taper, surrounded by the hairy segments of the calyx.

[Angles of the stem green. Leaves lanceolate-ovate, very bluntly serrate, much veined, remote at the base, and very slightly ciliate. Peduncles opposite, lateral. Bractes two, opposite, and two also under each lateral flower. Calyx five-parted, lanceolate. Corolla pale with a blueish palate. Filaments, of each side, connected at the base, by the mediation of a membrane<sup>f</sup>.

It has the epithet *strepens* from the crashing sound which the leaves make, when handled, on account of their very dry nature<sup>g</sup>.

Capsule oblong, acuminate at top, ventricose in the middle, rounded-four-cornered, lengthened out at the base into a compressed elastic claw, two-celled, two-valved: partition bifid, contrary, accompanied by the hooked, channelled, alternating retinacula of the seeds; which in each cell are three to five, rounded-cordate, rugged with very minute bristles pressed close to them, slightly convex on one side, flattish on the other, brown-ash-colour, sessile in the axils of the retinacula<sup>h</sup>.

Native of Virginia and Carolina. Cultivated in 1726, by James Sherard, M.D. at Eltham. It flowers in July and August<sup>i</sup>.

5. Stem four-cornered, pubescent, seemingly herbaceous. Leaves about a span in length, running down a little along the petiole, having a few small hairs scattered over them on each side, paler beneath. Petioles pubescent, an inch and half long. Peduncles opposite, the length of the leaves, round, pubescent, bifid. Pedicels in pairs, half an inch long, one-flowered, having a lanceolate ciliate bracte at the base on each side longer than the pedicels, and two others at the base of each calyx, and of the same length with it. Calyx smooth, with the five segments lanceolate and nearly equal. Corolla smooth, narrowed at the base, widening gradually upwards: segments quite entire, the two upper ones rounded, the three lower a little shorter and ovate. Filaments the same length with the corolla; and the style longer.—Native of the island of Santa Marta<sup>k</sup>.

6. Shrubby, the whole plant very fetid, insipid, and somewhat villose, as is also the calyx. Stem a foot high and more, round, viscid, upright, with decussated branches spreading at an acute angle, from the very bottom. Leaves rounded-ovate, blunt, opposite, petioled, thickish. Floral-leaves lanceolate and sharpish. Flowers subsessile, in threes or fives. Leaflets of the calyx awl-shaped and short. Corolla dirty flesh-colour; tube cylindrical, throat bell-shaped, border spreading very much, with roundish segments, the two upper ones a little less than the other three. The corolla emerges from the calyx in the evening, is fully expanded next morning, and falls before night. Anthers upright, acute and white. Style hairy. Stigma bifid, with the upper segment obsolete, but the lower protruded into a lip, and appearing with a magnifier to be rough-haired. Capsule wedge-shaped, acute, smooth, brown, compressed, thrice as long as the permanent calyx, two-celled, two-valved, with elastic

claws. Seeds in each cell commonly six, orbicular, convex a little on one side, flattened on the other, shining. Native of the East Indies<sup>l</sup>.

7. Stem obscurely four-cornered, with a groove in each side. Leaves an inch long, ovate-oblong, bluntish, pale green, smooth. Peduncles very short, opposite, one-flowered; having a lanceolate ciliate leaf, longer than the calyx, on each side at the base of the calyx. Tube of the corolla three times as long as the calyx, widening upwards. Flowers large, violet-coloured<sup>m</sup>.]

8. Root perennial, composed of many fleshy fibres. The leaves and stalks lie close to the ground; the stalks are five or six inches in length; the leaves, placed by pairs at each joint, are two inches long, and an inch and quarter broad, on foot-stalks half an inch in length. Peduncles naked, dividing into two smaller ones, each sustaining one small purple fugacious flower; calyx cut into very narrow segments to the bottom. Capsule taper, about an inch long.

[Native of Barbadoes, where they call it *Snap-dragon*, from the bursting of the seed-vessels. It flowered first in the month of August 1728, in Sherard's garden at Eltham; the following year in June and July<sup>n</sup>.]

9. Root perennial. Stems four or five feet high, much diffused. Leaves oblong, oval, entire, opposite, on short hairy foot-stalks. Flowers at the divisions of the stem, small, purple, of short duration.

[Stem suffrutescent, from two to three feet high, branched, often prostrate, four-cornered, smooth, but pubescent towards the top. Leaves opposite, on short petioles, ovate-lanceolate, subserrate, nerved, somewhat hirsute or rugged; stem-leaves larger; branch-leaves often deciduous. Panicles formed of opposite dichotomous branches divaricating very much; pedicels one-flowered; flowers biggish, blue. Capsule acuminate, surrounded by the calyx, two-celled, bursting by the claw. Seeds roundish, compressed, black. The whole herb is somewhat clammy with glands, and has an odour approaching to that of Camphor.

Native of Jamaica, in the southern parts, on dry hills and in hedges<sup>o</sup>. Cultivated by Mr. Miller in 1768.

Dr. Patrick Browne says, it is very common about Spanish Town, and in many other parts of the low lands; where it generally blows in the months of December and January; making a very beautiful appearance among the bushes, in that bleak season of the year. Hence they call it *Christmas Pride*. Being weakly, it seldom rises above a foot or two, if alone; but when supported, it runs frequently three or four feet, and bears a great number of flowers.

10. Stem herbaceous. Branches bluntly four-cornered, hairy, jointed; joints two inches long, thickened at the base. Leaves on short petioles, quite entire, acute, an inch in length. Spike terminating, two inches in length. Flowers solitary, alternate, or very rarely opposite. Bractes two, bristle-shaped, at the base of the flower. Calycine segments lanceolate-awl-shaped, hairy. Corolla violet-coloured, pubescent on the outside<sup>p</sup>.]

11. The roots are composed of many swelling fleshy tubers, which run deep into the ground, and are like those of the Day Lily (*Hemerocallis*), but smaller. Stem four or five inches high, sending out two or three short side-branches. Leaves opposite, some small and shaped like a spatula, others much larger; they have short foot-stalks, and are a little crenated on their edges. The flowers are produced on the side and at the end of the stalk; those on the side have two flowers upon each peduncle, which come out opposite at each joint, but those at the top sustain three. The flowers have narrow tubes about an inch long, then spread out to a sort of bell-shape, and at the top are cut into five large blunt spreading segments; they are of a fine blue, but seldom last in beauty through the day. Capsule an inch and half long, taper.

[Tubers of the root oblong smooth. Stem herbaceous, undivided, upright, from six inches to a foot

<sup>a</sup> Linn.

<sup>d</sup> Hort. kew.

<sup>e</sup> Swartz.

<sup>f</sup> Linn. mant.

<sup>g</sup> Dillenius.

<sup>h</sup> Gærtner.

<sup>i</sup> Hort. kew.

<sup>k</sup> Vahl.

<sup>l</sup> Jacquin.

<sup>m</sup> Vahl.

<sup>n</sup> Dillenius.

<sup>o</sup> Swartz.

<sup>p</sup> Vahl.



in height, four-cornered, smooth, but pubescent at top. Leaves wedge-shaped at the base, ovate, nerved, smooth. Peduncles axillary, opposite, spreading, seldom simple, commonly three-parted, the length of the leaves, sometimes trichotomous. Flowers large, blue. Capsule oblong, acuminate. Seeds roundish, black<sup>a</sup>.

This plant is very common in most parts of Jamaica, where it is called *Menow-weed*, *Spirit-weed*; and *Snap-Drum*. It is seldom more than twelve or sixteen inches high. The roots are frequently used in fevers, among the negroes: when fresh, they have a little pungency, but when dry they are quite insipid<sup>c</sup>.

Cultivated by Mr. Miller in 1759.

12. Native of the East Indies.

13. Stem pubescent. Leaves opposite, subsessile, lanceolate, having two or three teeth on each side, acuminate, ciliate. Flowers axillary, sessile. Calyx ciliate at the angles, with short teeth<sup>e</sup>.

Stem herbaceous, annual, eight inches high, angular, grooved, branched, diffused, creeping. Leaves ovate, subpetioled. Flowers white-violet, solitary, on long peduncles. Capsule ovate, many-seeded. Burman's figure, though quoted by Linneus, by no means agrees with his description, or with the plant of Cochin-China<sup>f</sup>.—Native of the East Indies and Cochin-China.

14. Leaves much smaller than in the *strepens*, and not so hairy. Flowers smaller, and two only from each axil.—Native of Carolina<sup>g</sup>. Introduced in 1765, by Mr. John Cree<sup>h</sup>.

15. Root woody, creeping. Stems a finger's length, quite simple, jointed, roundish. Leaves subpetioled, having hairs scattered over them, the edge turned back waved curled or crenate. Heads of flowers at the joints, lateral, solitary, imbricate with ovate acuminate hairy-rugged leaves, within which are the flowers, having a five-parted hirsute linear calyx, and a yellow corolla<sup>i</sup>.

This plant is a suffrutex, and has the appearance of yellow Cock's-comb (*Rhinanthus Crista galli*.) It is rough and lies on the ground. It grows on open hills in China; and the Chinese name is *Patt-fa*<sup>j</sup>.]

Mr. Miller says, that it grows naturally in both Indies; and that he received seeds of it from Carthage in New Spain. [If it be his plant, he cultivated it in 1759.

16. Stems herbaceous, filiform, weak, decumbent, angular with decurrent lines, alternately branched, jointed; the joints rough-haired, jointed. Leaves opposite, remote, an inch long, one smaller than the other, hairy underneath, nerved, tender, remote, toothletted, acute. Petioles the length of the leaves, winged by the decurrent base of the leaf, wider above. Flowers from the upper axils and top of the branchlets, collected into a small fastigiate peduncled head. Bractes three at the base of each flower; the outer membranaceous, three-nerved, hairy, oblong, acute, three times as wide as the others; the second of the same length, coloured, nerved, netted, lanceolate; the third shorter and narrower. Calyx hairy; the segments coloured, membranaceous, netted, three-nerved, acute: the upper one linear-lanceolate, wider than the rest; the two lateral ones bristle-shaped, shorter; the two lower the same length with the upper one, but a little narrower. Corolla longer than the calyx, smooth; lower lip three-lobed, with the lobes rounded<sup>k</sup>.

Found by Koenig, in woody places, near the hot baths of Trinquemala, in the island of Ceylon<sup>l</sup>.

17. The whole plant villose and soft. Branches roundish. Leaves opposite, remote, pendulous, a hand or more in length, an inch in width, attenuated at the top, alternately veined, on ash-coloured petioles. Flowers collected into a peduncled bundle: peduncles opposite on the uppermost axils and at the ends of the branches. Bractes three, minute, awl-shaped, at the base of the calyx; which is cylindrical and hairy: the five segments are linear, acute, the two outer larger than the others.—Native of Madagascar. *Thouin*.

18. Stem herbaceous, smooth, four-cornered, with the corners blunt, and a wide deep groove on each side; the joints thicker and hairy-ciliate. Branches opposite, shorter than the stem. Leaves two inches long, and an inch and half wide, blunt, narrowed at the base, flat, veined, smooth, paler underneath. Petiole an inch long, margined above by the decurrent leaf, ciliate at the base. Flowers clustered in alternate heads. Outer bractes six, ciliate, ovate-lanceolate, bluntish; inner narrower, lanceolate. Calycine segments five, ciliate, awl-shaped; the two lower deeper and shorter. Corolla a little longer than the calyx and smooth.—Found in the East Indies by Koenig.

19. Stem upright, obscurely four-cornered by four decurrent lines, two of the sides wider and more convex; with short branches, some alternate others opposite. Leaves subsessile, opposite, a long span in length, an inch in width, drawn to a point at both ends, bluntish, flat, paler underneath, alternately nerved, smooth on both sides. Flowers imbricate, in a shortly peduncled head, the size of a hazel nut. Bractes four under each head, ovate, acute, hairy, ciliate, shorter than the head; three at the base of each flower, the length of the calyx, hairy; two on the sides, linear-lanceolate; the outer oblong, three times as wide as the others. Calycine segments five, unequal, linear, acute.—Found in the East Indies by Koenig<sup>m</sup>.

20. Herb creeping. Stems herbaceous, filiform, jointed, even. Leaves opposite, blunt, smooth; spikes axillary, peduncled: flowers opposite: bractes linear, shorter: calyxes hairy-awned.—Native of Java<sup>n</sup>.

21. Procumbent. Stems a span long, jointed. Leaves lanceolate, bluntish, smooth, with the edge a little repand, or so obscurely crenate that it seems to be entire, petioled. Bractes two, sessile, shorter than the calyx, the leaflets of which end in subvillose bristles<sup>o</sup>.—Native of the East Indies, Ceylon and China.

22. This has the appearance of *Veronica officinalis*, but much smaller; or of *Verbena nodiflora*. Leaves oval, narrower at the base, sharply and deeply serrate, especially towards the end. Panicle or spike composed of opposite peduncled flowers, five together. Capsules awl-shaped, three times as long as the calyx<sup>p</sup>. Calyx four-cleft. Corolla four-lobed, unequal. Seeds many, oblong<sup>q</sup>.

Stem herbaceous, annual, five inches high, round, creeping, with diffused branches. Leaves ovate-lanceolate, serrate, smooth, sessile. Flowers white-violet, on many-flowered peduncles. Calyx five-cleft, acute, erect, permanent. Corolla ringent, five-cleft. Capsule awl-shaped, long, round, many-seeded.

Rumphius describes his *Crusta olle major* with many-flowered, subterminating peduncles, like this; but figures it with solitary, axillary flowers, more like the *ciliaris*<sup>r</sup>.

Native of the East Indies, China and Cochin-China.

23. Stems a hand high, herbaceous, creeping. Flowers lateral, solitary. Bractes in pairs, elliptic<sup>s</sup>.—Native of the East Indies.

24. Shrubby, very much branched, depressed. Branches four cornered, jointed, whitish. Leaves in bundles on the runners, small, on short petioles, rigid, remotely serrate, somewhat fleshy, dotted, sprinkled with a hoary meal. Calyx five-cornered, tubular, five-cleft; the segments striated, acute, hoary. Corolla tubular: border bell-shaped, angular, veined, five-cleft; the segments unequal. The two large stamens have a toothlet at the base. Capsule linear-oblong, longer than the calyx.

Found by Koenig near Sadrafs in the East Indies, on the coast; and very common where the lands are inundated in the rainy season<sup>t</sup>.

25. Stem upright, somewhat rugged, with long hairs standing out, mixed with others that are very short, and stellate. Leaves very blunt, veinless, covered on both sides with stellate hairs, paler underneath, an inch long. Petioles shorter than the leaf, hairy. Flowers on a peduncle half an inch in length.

<sup>a</sup> Swartz.

<sup>b</sup> Dillenius.

<sup>c</sup> Browne.

<sup>d</sup> Hort. kew.

<sup>e</sup> Vahl.

<sup>f</sup> Linn.

<sup>g</sup> Linn.

<sup>h</sup> Retz.

<sup>i</sup> Loureiro.

<sup>j</sup> Osbeck.

<sup>k</sup> Vahl.

<sup>l</sup> Linn. zeyl.

<sup>m</sup> Linn. mant.

<sup>n</sup> Linn. spec.

<sup>o</sup> Linn. mant.

<sup>p</sup> Linn. suppl.

<sup>q</sup> Linn. syst. and zeyl.

<sup>r</sup> Loureiro.

<sup>s</sup> Linn. suppl.



At the base of the calyx are two petioled leaflets, very like the stem-leaves but smaller. Calyx bell-shaped, five-cleft: segments ovate, acute, within hoary and very soft. Tube of the corolla four inches long, villose at top: border bell-shaped, five-cleft, with equal, rounded segments. Filaments almost equal. Capsule oblong, sharp at both ends.

This is very different from *Barleria longiflora* of Linneus's Supplement; for that has very soft leaves, without stellate hairs; smooth, netted, sessile, scarious bractes<sup>1</sup>.

26. Leaves lanceolate, narrow, entire, some serrate, others deeply toothed, with sharp teeth.—Native of the East Indies<sup>m</sup>.

27. Stem herbaceous, four-cornered, with the corners blunt, grooved on both sides, having hairs scattered over them so small as to be scarcely visible; jointed, the joints thicker at top. Branches few, short, alternate, of the same structure with the stem. Leaves sessile, two inches long or less, bluntish, a little narrowed at the base, of the same colour on both sides, flat, spreading: the younger ones hairy, especially at the edge. Flowers axillary, sessile, three on each side. Bractes, one at the base; those of the calyx oblong, narrowed at the base, blunt. Calyx tubular, five-cleft, on the outside pubescent, ash-coloured: segments linear-lanceolate, acute, equal. Upper lip of the corolla undivided, compressed, lanceolate, blunt: lower with long hairs scattered over the upper surface, trifid; the segments linear, blunt. Anthers two-awned at the base. Native of the East Indies.

28. Allied to the preceding; but differing in having the stem almost simple; the leaves longer, more attenuated at both ends, and not at the tip only, having lines resembling hairs scattered over both sides, pale green underneath, all nearly of the same length, and not smaller, oblong and blunt, on the branches. Bractes not leafy blunt, but linear-lanceolate acute, not attenuated at the base. Finally, the calyxes are smaller, and end in a bristle, and have subciliate hairs at the edge only, not all over, permanent even to the falling of the fruit.—Native of the East Indies<sup>n</sup>.

29. Stems four-cornered, jointed, fleshy, coloured. Leaves spreading, lanceolate-oblong, very finely serrate, smooth, glutinous. Bractes quite entire, often ciliate. Four segments of the calyx lanceolate; the fifth upper one wider. Corolla ringent, yellow. Anthers blueish. Style rough-haired. Very common in rice fields in the East Indies, especially when the harvest is over. It has a strong smell of turpentine.

30. This is a small plant, flowering in January and February. Very common in Tranquebar, &c. in rice fields. These two were found by Koenig<sup>o</sup>.

31. Stem herbaceous, rough with white hairs, scarcely a span high, branched, four-cornered. Branches opposite, quite simple, shorter than the stem. Leaves quite entire towards the base, but outwardly serrate, blunt. Spikes solitary at the ends of the branches, and opposite from the last axils, imbricate with bractes and flowers, an inch long, on short peduncles. Bractes oblong, the length of the calyx. Segments of the calyx linear.—Native of the East Indies<sup>p</sup>.

32. Native of the Cape of Good Hope.

33. Native also of the Cape, where these two were found by Thunberg. This is singular in having the stem pressed close to the ground<sup>q</sup>.

34. Stem shrubby. Branches jointed; the upper ones subdichotomously branched, obscurely four-cornered. Leaves quite entire, acute, greener above, nerved, appearing to be marked with paler lines resembling hairs, when examined by a magnifier, underneath hoary. Flowers four or six in a short terminating spike, opposite, distant, seldom in pairs, sometimes the opposite one is wanting. Bracte linear, the length of the calyx. Tube of the corolla filiform, longer than the calyx.

Native of the East Indies, whence it was sent with many other rare plants by Roetel.

35. Stem, branches, leaves and petioles pubescent.

Leaves an inch long, blunt; the younger ones hoary, a little acuminate. Petioles spreading very much, a little shorter than the leaf. Racemes almost a span long: pedicels short, remote. Bractes bristle-shaped, shorter than the pedicel. Calyxes rough-haired. Corollas smooth, yellow. Germ villose, hoary. It differs from the *intrusa* in having the corollas larger, in racemes, yellow, and the segments of the border roundish. Found in the East Indies by Koenig<sup>r</sup>.

36. Stem herbaceous, four-cornered, brown, upright. Leaves subpetioled, bluntish, quite entire, veined, smooth, spreading, small, the upper ones gradually less. Spikes several, terminating, alternate, smooth, a finger's length. Bractes entire, imbricate-spreading, the same length with the tube of the corolla. Corolla bell-shaped, yellow; the border equal.—Native of Japan<sup>s</sup>.

37. Stem suffruticose. Branches four-cornered, hairy, especially under the joints. Leaves an inch long or more, bluntish, sharp at the base, veinless, having fewer hairs above. Petiole scarcely half an inch long, rough-haired. Spike peduncled, upright, an inch and half in length. Flowers alternate. Bractes three at the base of each flower, lanceolate, attenuated, somewhat rough-haired, ciliate, longer than the calyx, unequal; the outer a little wider and longer than the two others. Calycine segments awl-shaped, smoothish. Corolla smooth.—In Forskahl's herbarium there is another plant, which is smooth all over, with the petioles a little longer, and the leaves wider, in all other respects resembling this.

38. Stem suffruticose. Branches weak, brachiate, four-cornered; corners sharp reverse-haired. Leaves an inch long, one half the size of its opposite, acuminate, veined, somewhat hairy. Petiole half an inch long, loose, pubescent. Spikes from the end of the branches and branchlets, an inch or more in length, hairy. Floral leaves at the back of the spike, oblong, sharpish, shorter at the base on one side, of the same consistence with the leaves on the stem. Anterior bracte cordate, membranaceous, very hairy, netted-veined. Flowers three or four under each bracte. At the base of the calyx a smaller bracte, which is ovate, and of the same structure with the outer one. Calycine segments hairy, unequal: the upper one ovate, membranaceous, netted, longer than the rest, and five times as wide; the two lateral ones bristle-shaped; the two lower ones a little wider and longer than the lateral ones. Corolla a little longer than the outer bracte<sup>t</sup>.

According to Retzius, the flowers are white and nocturnal.

Native of Arabia Felix, the East Indies, and the Isle of Bourbon<sup>u</sup>. Koenig sent it from Bengal<sup>x</sup>.

39. This is a little shrub, with the branches round at bottom, smooth, covered with an ash-coloured smooth bark, villose at the end. Leaves petioled, half an inch long, blunt, quite entire, thickish, veinless, marked with lines above, having small hairs pressed to the surface scattered thinly over them, underneath more hairy, canescent. Head of flowers hemispherical, surrounded at the base by a few oblong leaflets. Bractes three, lanceolate, membranaceous nerved, ending in an awn, hairy-ciliate. Calycine segments membranaceous, terminated by an awn two lines long, nerved, hairy, ciliate, unequal: the upper one oblong, four times as wide as the others, netted; the two lateral ones awl-shaped, shorter by half; the two lower ones of the same length with the upper, linear-subulate. Corolla hairy on the outside. Capsule smooth, oblong, acute, shorter than the calyx. Found in Arabia Felix by Forskahl.

40. Stem herbaceous, slightly four-cornered, smoothish, branched. Leaves petioled, an inch or a little more in length, rather attenuated at the base, sharpish, nerved, almost veinless. Spikes from the end of the branches, peduncled, scarcely an inch long, oblong, imbricate, the thickness of a swan's quill. Bractes two at the base of the calyx, awl-shaped.

<sup>1</sup> Vahl.

<sup>m</sup> Linn. suppl.

<sup>n</sup> Vahl.

<sup>o</sup> Linn. suppl.

<sup>r</sup> Vahl.

<sup>s</sup> Thunberg.

<sup>t</sup> Vahl.

<sup>u</sup> Idem.

<sup>p</sup> Vahl.

<sup>q</sup> Linn. suppl.

<sup>x</sup> Retz.



# R U I

Calyx five-leaved: four of the leaflets awl-shaped; the fifth a little longer, linear-lanceolate awned, somewhat veined; all membranaceous, pale, with three deeper-coloured lines, and ciliate. Found in Montserrat by Ryan<sup>1</sup>.

41. Native of the island of Tanna.
42. Native of the island of Otaheite<sup>2</sup>.
43. Native of Hispaniola<sup>3</sup>: By the note of interrogation, I suppose that Swartz doubts whether this be a Ruellia.]

## PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be sown early in the spring in pots filled with light rich earth, and plunged into a moderate hot-bed; and when the plants come up, they must be transplanted each into a separate small pot filled with rich earth, and plunged into a hot-bed of tanner's bark, where they must be shaded from the sun until they have taken new root; after which time they must have free air admitted to them every day in warm weather, and be constantly watered three or four times a week during the summer season. If the plants thrive well, those of the 8th and 11th sorts will produce flowers the July following, and will perfect their seeds in August; but the roots will continue, provided they are plunged into the bark-bed in the stove, and kept in a moderate temperature of heat.

The 4th sort is not a plant of long continuance, seldom abiding longer than two years; but if it is treated in the same manner as the two other, it will ripen seeds the second year, so may be propagated easily.

The 15th sort does not so constantly produce seeds as the three others, and therefore is not so common in England at present. This requires the same treatment as the other sorts.

If the seeds are permitted to scatter, as their pods discharge them with a violent spring into the neighbouring pots, the plants will come up without care, and may be transplanted into pots filled with fresh loamy earth, and plunged into the tan-bed.

[RUELLIA. See *Lindernia*.

----- coccinea. See *Barleria coccinea*.

**RUIZIA.** (So named in honour of Don Hipolito Ruiz, author of *Quinologia*, Madr. 1792. qu. and *Floræ Peruvianæ & Chilensis Prodrum.* Madr. 1794; fol. & Romæ, 1797. qu.)

*Lin. gen. Schreb. n. 1135. Cavan. diff. 3. 117. t. 36, 37. Juss. 275. Koenigia. Commersf.*

*Class. 16. 6. Monadelphia Polyandria.*

*Nat. order of Columniferae. Malvaceæ, Juss.*

## GENERIC CHARACTER.

**CAL.** *Perianth* double: outer three-leaved; leaflets ovate, concave, acute, deciduous; inner one-leaved, five-parted, permanent, segments lanceolate.

**COR.** *Petals* five, sickle-shaped towards the right, rounded at the tip, entire, flat, spreading, fastened to the pitcher of stamens.

**STAM.** *Filaments* many, (30—40) shorter than the corolla, united below into a pitcher surrounding the germ. *Anthers* oblong, incumbent.

**PIST.** *Germ* globular, ten-grooved. *Styles* ten, short. *Stigmas* simple.

**PER.** *Capsules* ten, compressed, membranaceous, woody on the back, gibbous, one-celled, united into a globular, umbilicate whorl.

**SEEDS** two, roundish-three-sided, acuminate.

*OBS.* It is allied to *Affonia*.

## ESSENTIAL CHARACTER.

*Calyx* double: the exterior three-leaved: *Styles* ten: *Capsules* ten, one-celled, two-seeded, closely cohering.

## SPECIES.

1. *Ruizia cordata.* Heart-leaved *Ruizia*.

*R. foliis oblongo-acuminatis, sinuato-crenatis incanis, subtus farinaceis. Cavan. diff. 3. p. 117. t. 36. f. 2. With cordate-lanceolate spreading leaves.*

<sup>1</sup> Vahl.

<sup>2</sup> Forster.

<sup>3</sup> Swartz.

# R U M

2. *Ruizia lobata.* Lobated *Ruizia*.

*R. foliis cordatis crenatis 3—5—lobatis oblongis, lobo medio productiore acuminato. Cavan. diff. 3. p. 118. t. 36. f. 1.*

*With heart-shaped five-lobed crenated leaves.*

3. *Ruizia variabilis.* Variable *Ruizia*.

*R. foliis ramorum florentium palmatis, steriliūm digitatis. Willden. sp. pl. 798. Jacqu. hort. Schonbr. 3. p. 24. t. 295.*

*R. palmata. Cavan. diff. 3. p. 119. t. 37. f. 1.*

*R. laciniata. Cavan. diff. 3. p. 119. t. 37. f. 2.*

*With palmate and digitate leaves.*

## DESCRIPTIONS, &c.

1. This is a branching shrub, growing in the Isle of Bourbon; where it flowers in the month of March and April: the flowers are sulphur-coloured and grow in umbel-like corymbs.

2. Native of the Isle of Bourbon, flowering in January, February and March: it is a handsome shrub, five or six feet high, with a grey bark, spreading, and fragile boughs, which when grown very old almost equal the thickness of a man's thigh: the leaves grow chiefly on the extremities of the branches, and are smooth above, but whitish and mealy beneath: the flowers like those of the former species.

3. This also is a native of Bourbon, and is a low spreading tree: the leaves are hoary on both sides; the flowers borne in umbel-shaped corymbs with long foot-stalks: in other respects resembling the former species.]

**RUMEX** (of Pliny, &c. (Λαπάθων. Gr.) a *rumpo aut. rupo*; or rather from *rumo, fugo*. Vossius.)

*Lin. gen. n. 451. Reich. n. 485. Schreb. n. 613.*

*Gærtn. t. 119. Juss. 82. Lapathum & Acetosa.*

*Tournef. 287.*

*Class. 6. 3. Hexandria Trigynia.*

*Nat. order of Holoraceæ. Polygoneæ, Juss.*

## GENERIC CHARACTER.

**CAL.** *Perianth* three-leaved: leaflets obtuse, reflex, permanent.

**COR.** *Petals* three, ovate, bigger than the calyx and like it, converging, permanent.

**STAM.** *Filaments* six, capillary, very short. *Anthers* erect, twin.

**PIST.** *Germ* turbinate-three-sided. *Styles* three, capillary, reflexed, standing out between the clefts of the converging petals. *Stigmas* large, lacinate.

**PER.** none: *Corolla* converging, three-sided, inclosing the seed.

**SEED** single, three-sided.

*OBS.* *R. digynus* excludes one third part of the number in all parts of the fructification except the stamens.

The *Acetosa* have the male and female flowers on separate plants.

*R. spinosus* has flowers of both sexes on the same plant, with the female perianths hooked.

*R. alpinus* is polygamous.

In some species a callose grain is fastened externally to the valves of the petals.

## ESSENTIAL CHARACTER.

*Cal.* three-leaved. *Pet.* three, converging. *Seed* one, three-sided.

## SPECIES.

\* *Hermaphrodites*, having the valves marked with a grain.

1. *Rumex Patientia.* Patience Dock or *Rhubarb*:

*Lin. spec. 476. Syst. 346. Reich. 2. 114. Willd.*

*2. 249. Hoffm. germ. 128. Roth. germ. 1. 160.*

*2. 420. Allion. pedem. n. 2029. Blackw. t. 489.*

*Plenck, ic. 282. Gærtn. fruct. 2. 178.*

*Lapathum hortense folio oblongo. Bauh. pin. 114.*

*L. fativum. Dod. pempt. 648.—f. Patientia. Park. theat. 154. 1. t. 155. f. 1.*

*Hippolapathum fativum. Ger. 313. f. 5. emac. 389. f. 3. Raii hist. 171.*

*Flowers hermaphrodite; valves quite entire, one of them graniferous, leaves ovate-lanceolate.*

2. *Rumex sanguineus.* Bloody-veined Dock. Bloodwort.

*Lin. spec. 476. Syst. 346. Reich. 2. 115. Willd.*

*2. 250. hort. cliff. 138. upf. 89. mat. med. 98.*

*Hudf. angl. 153. Wither. arr. ed. 3. 353. Smith, brit.*



# R U M

- brit.* 390. *Sibth. oxon.* n. 353. *Hoffm. germ.* 128. *Roth. germ.* 1. 160. 2. 421. *Leers, herb. born.* n. 274. *Gärtn. fruct.* 2. 179. *Krock. files.* n. 564. *Blackw. t.* 492. *Plenck,* 283.
- Lapathum folio acuto rubente.* *Baub. pin.* 115. *Raii hist.* 174. *syn.* 142. *Petiv. brit. t.* 2. f. 5. *Mor. hist.* 2. f. 5. t. 27. f. 6.
- L. rubens.* *Dod. pempt.* 650. 2. *Camer. epit.* 229.
- L. sanguineum.* *Munt. brit. t.* 113. *Baub. hist.* 2. 988. *Park. theat.* 1226. 10.
- L. sativum sanguineum.* *Ger. emac.* 390.
- β. *Rumex viridis.* *Green-veined Dock.*  
*Sibth. oxon.* n. 353. β. *Smith, brit.* 390. 1. β.  
*R. acutus.* *Curt. lond.* 3. 21. *descr.* *Wither. arr.* ed. 3. 354. *Wade Dubl.* 103. *Huds.* 155. β.  
*L. viride.* *Dill. in Raii syn.* 141.  
*Bloodless Dock.* *Petiv. brit. t.* 2. f. 6.  
*Flowers hermaphrodite; valves quite entire oblong, and chiefly graniferous, leaves cordate-lanceolate.*
- [3. *Rumex spathulatus.* *Spatula-leaved Dock.*  
*Lin. spec. ed. Willd.* 2. 250. *Thunb. prodr.* 67.  
*Leaves obovate obtuse, valves graniferous.*
4. *Rumex verticillatus.* *Whorl-flowered Dock.*  
*Lin. spec.* 476. *Reich.* 2. 115. *Willd.* 2. 250.  
*Lapathum aquaticum, &c.* *Gron. virg.* 39.  
*Flowers hermaphrodite; valves quite entire, all graniferous; leaves lanceolate, sheaths cylindrical.*
5. *Rumex Britannica.* *Virginian Dock.*  
*Lin. spec.* 476. *Reich.* 2. 115. *Willd.* 2. 250. *Cold. noveb.* 83. *Gron. virg.* 39. (*Lapathum.*)  
*Flowers hermaphrodite; valves quite entire, all graniferous; leaves lanceolate, sheaths obsolete.]*
6. *Rumex crispus.* *Curled Dock.*  
*Lin. spec.* 476. *syn.* 346. *Reich.* 2. 115. *Willd.* 2. 251. *hort. cliff.* 138. *fl. lapp. n.* 129. *succ.* n. 314. *Huds. angl.* 153. *Wither. arr. ed.* 3. 353. *Smith, brit.* 391. *Lightf. scot.* 188. *Curt. lond.* 2. t. 20. *Relb. cant. n.* 281. *Sibth. oxon.* n. 352. *Abbot, bedf.* 81. *Gunn. norv. n.* 35. *Hoffm. germ.* 128. *Roth. germ.* 1. 160. 2. 421. *Pollich pal. n.* 356. *Krock. files.* n. 563. *Neck. gallob.* 175. *Scop. carn. n.* 441. *Villars dauph.* 3. 267. *Gmel. fib.* 3. 112. *Lour. cochinch.* 216. *ed. Willd.* 269.
- Lapathum fol. crispis, &c.* *Hall. belv. n.* 1589.
- L. folio acuto crispo.* *Baub. pin.* 115. *Raii hist.* 173. *syn.* 141. *Petiv. brit. t.* 2. f. 2.
- L. longifolium crispum.* *Munt. brit. t.* 104. *phyt.* t. 190.
- L. acutum crispum.* *Baub. hist.* 2. 988.
- L. acutum minus.* *Park. theat.* 1226. n. 2.
- L. acuti varietas folio crispo.* *Ger. emac.* 387.
- Hydrolapathum minus.* *Ger.* 312. 4.  
*Flowers hermaphrodite; valves ovate entire all graniferous; leaves lanceolate waved acute.*
- [7. *Rumex persicarioides.* *Arsmart-leaved Dock.*  
*Lin. spec.* 477. *Reich.* 2. 116. *Willd.* 2. 252.  
*Flowers hermaphrodite; valves toothed, awl-shaped at the tip, all graniferous; leaves lanceolate.]*
8. *Rumex ægyptius.* *Egyptian Dock.*  
*Lin. spec.* 477. *syn.* 346. *Reich.* 2. 116. *Willd.* 2. 252. *hort. upf.* 89. *Wach. ultr.* 391. *Till. pis.* 43. t. 37. f. 1. (*Lapathum.*)  
*Flowers hermaphrodite; valves trifid-setaceous, one graniferous; leaves oblong.*
- [9. *Rumex dentatus.* *Dentated Dock.*  
*Lin. spec.* 477. *syn.* 346. *Reich.* 2. 116. *Willd.* 2. 253. *mant.* 226. *Dill. elth.* 191. t. 158. f. 191. (*Lapathum.*)  
*Flowers hermaphrodite; valves toothed, lanceolate at the tip, all graniferous; leaves lanceolate.]*
10. *Rumex acutus.* *Sharp-leaved Dock.*  
*Lin. spec.* 478. *syn.* 346. *Reich.* 2. 117. *Willd.* 2. 253. *hort. cliff.* 138. *fl. succ. n.* 316. *mat. med.* 98. *Huds. angl.* 155. *Smith, brit.* 391. *engl. bot.* 724. *Curt. lond.* 3. 21. *quoad fig.* *Relb. cant. n.* 283. *Pollich pal. n.* 357. *Neck. gallob.* 175. *Hall. belv. n.* 1591. *Scop. carn. n.* 443. (*Lapathum.*) *Kniph. cent.* 3. n. 78.  
*R. paludosus.* *Wither. arr. ed.* 3. 354. *Hull.* 77.  
*Lapathum folio acuto.* *Baub. pin.* 115. 1. *Blackw. t.* 491. *Munt. brit. t.* 189.

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- L. acutum.* *Raii hist.* 175. *syn.* 142. *Petiv. brit. t.* 2. f. 3.—f. *Oxylapathum.* *Baub. hist.* 2. 983. *Lob. ic.* 284.
- Oxylapathum.* *Fuchs. hist.* 491.
- β. *Lapathum acutum minimum.* *Baub. hist.* 2. 985. *Dill. in Raii syn.* 141. *Petiv. brit. t.* 2. f. 4.  
*Flowers hermaphrodite; valves oblong somewhat toothed, all graniferous; leaves cordate-oblong acuminate, racemes leafy.*
11. *Rumex obtusifolius.* *Blunt-leaved Dock.*  
*Lin. spec.* 478. *Reich.* 2. 118. *Willd.* 2. 254. *Gärtn. fruct.* 2. 179. *Huds. angl.* 155. *Wither. arr. ed.* 3. 357. *Smith, brit.* 392. *Curt. lond.* 3. t. 2. 168. *Lightf. scot.* 189. *Relb. cant. n.* 284. *Sibth. oxon.* n. 354. *Abbot, bedf.* 81. *Hoffm. germ.* 129. *Roth. germ.* 1. 161. 2. 423. *Pollich pal. n.* 358. *Leers, herb. born. n.* 278. *Krock. files.* n. 567. *Villars dauph.* 3. 268. *Gmel. fib.* 3. 115. n. 91. *Hall. belv. n.* 1592. (*Lapathum.*) *Plenck, ic.* 284.
- Lapathum.* *Camer. epit.* 228.
- L. vulgare folio obtuso.* *Baub. hist.* 2. 985. 1. *Raii hist.* 173. *syn.* 141. *Petiv. brit. t.* 2. f. 9.
- L. folio minus acuto.* *Baub. pin.* 111. *Lob. ic.* 1. 285. 1. *Ger.* 312. 3. (*quoad fig.*) *emac.* 388. 3.
- L. sylvestre vulgatus.* *Park. theat.* 1225. 4.
- Hippolapathum vulgare album, folio subrotundo.* *Munt. brit.* 68. *phyt.* 187.
- H. sylvestre.* *Tabern.* 436.  
*Flowers hermaphrodite; valves toothed, one chiefly graniferous; root-leaves cordate blunt, stem somewhat rugged.*
12. *Rumex pulcher.* *Fiddle Dock.*  
*Lin. spec.* 477. *syn.* 347. *Reich.* 2. 118. *Willd.* 2. 254. *Huds. angl.* 153. *Wither. arr. ed.* 3. 356. *Smith, brit.* 393. *Lightf. scot.* 189. *Relb. cant. n.* 285. *Abbot, bedf.* 82. *Villars dauph.* 3. 269. *Allion. pedem. n.* 2034. *Desfont. atlant.* 319. *Hall. belv. n.* 1593. (*Lapathum.*) *Mor. hist.* 2. 580. f. 5. t. 27. f. 13. (*Lapathum.*)
- Lapathum arvense subhirsutum, folio retuso, caule longius brachiato.* *Till. pis.* 93. t. 37. f. 2. *Willch, illustr.* 5. *obs.* 17.
- L. pulchrum bononiense sinuatum.* *Baub. hist.* 2. 988. 3. *Raii hist.* 174. *syn.* 142. *Petiv. brit. t.* 2. f. 10.  
*Flowers hermaphrodite; valves toothed, one chiefly graniferous, root-leaves viol-shaped, stem smooth divaricate.*
13. *Rumex maritimus.* *Golden Dock.*  
*Lin. spec.* 478. *syn.* 346. *Reich.* 2. 117. *Willd.* 2. 253. *fl. succ. n.* 313. *Huds. angl.* 155. *Smith, brit.* 393. *engl. bot.* t. 725. *Hoffm. germ.* 129. *Roth. germ.* 1. 160. 2. 423. *Kniph. cent.* 7. n. 78.
- R. aureus.* *Wither. arr. ed.* 3. 356. *Abbot, bedf.* 81. *Hull.* 78.
- Lapathum folio acuto, flore aureo.* *Baub. pin.* 115. 4. *Raii hist.* 174. *syn.* 142. *Petiv. brit. t.* 2. f. 8.
- L. anthoxanthum.* *Baub. hist.* 2. 987.  
*Flowers hermaphrodite; valves deltoid setaceous-toothed graniferous; leaves linear, whorls clustered.*
14. *Rumex palustris.* *Yellow Marsh Dock.*  
*Smith, brit.* 394.
- R. maritimus β.* *Huds. angl.* 155.
- R. maritimus.* *Wither. arr. ed.* 3. 356. *Curt. lond.* 3. t. 23. 163.
- Lapathum aureum.* *Dill. in Raii syn.* 142. *Petiv. brit. t.* 2. f. 7.
- L. aquaticum luteolæ folio.* *Bocc. mus. t.* 104.
- Hydrolapathum minus.* *Lob. ic.* 1. 286. 1. *Park. theat.* 1225. 8. *Ger. emac.* 389. 2.  
*Flowers hermaphrodite; valves lanceolate graniferous toothed at the base; leaves linear-lanceolate; whorls distant.*
- \*\* *Hermaphrodites: having the valves destitute of a grain, or naked.*
15. *Rumex aquaticus.* *Water Dock.*  
*Lin. spec.* 479. *Reich.* 2. 119. *Willd.* 2. 255. *fl. succ. n.* 315. *mat. med.* 98. *Smith, brit.* 394. *Lightf. scot.* 190. *Hoffm. germ.* 129. *Roth. germ.* 1. 161. 2. 425. *Pollich pal. n.* 359. *Krock. files.*



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- filef. n. 568. Villars dauph. 3. 269. Hall. belv. n. 1588. (Lapathum.) Blackw. t. 490. Plenck, ic. 289.*
- R. Hydrolapathum. *Huds. angl. 154. Wither. arr. ed. 3. 355. Relb. cant. n. 286. Sibth. exon. n. 355. Abbt, bedf. 82. Woods. med. bot. 486. t. 178.*
- R. Britannica. *Huds. angl. ed. 1. 135.*
- Lapathum maximum aquaticum, f. Hydrolapathum. *Baub. hist. 2. 986. Raii. hist. 171. syn. 140. Petiv. brit. t. 2. f. 1.*
- L. aquaticum folio cubitali. *Baub. pin. 116.*
- Hydrolapathum magnum. *Lob. ic. 1. 285. Ger. emac. 389.*
- Hippolapathum. *Camer. epit. 232. Dalech. hist. 604.*
- Britannica antiquorum vera. *Munt. brit. t. 1. phyt. 202.*
- Flowers hermaphrodite; valves ovate entire naked (obsoletely graniferous, Smith;) leaves cordate-lanceolate acute.*
16. Rumex bucephalophorus. *Basil-leaved Dock.*  
*Lin. spec. 479. Reich. 2. 119. Willd. 2. 255. hort. upf. 90. hort. cliff. 139. Gært. fruct. 2. 180. Desfont. atlant. 319. Cavan. ic. 31. t. 41. f. 1.*
- Acetosa, ocymi folio, neapolitana. *Baub. pin. 114. Mor. hist. f. 5. t. 28. f. 14.*
- A. ocymi folio bucephalophorus. *Col. ecphr. 1. 151. t. 150.*
- A. annua italica. *Munt. brit. 189. phyt. t. 76.*
- Flowers hermaphrodite; valves toothed naked; pedicels flat reflexed incrassated.*
17. Rumex Lunaria. *Tree Sorrel.*  
*Lin. spec. 479. syst. 347. Reich. 2. 119. Willd. 2. 256. vir. cliff. 32. hort. cliff. 139. Pluk. phyt. t. 252. f. 3.*
- A. Lunaria. *Mill. dict. n. 6.*
- Lunaria magorum arabum. *Baub. hist. 2. 994?*
- Flowers hermaphrodite; valves even; leaves subcordate; stem arboreous.*
18. Rumex vesicarius. *Bladder Dock or Sorrel.*  
*Lin. spec. 479. Reich. 2. 120. Willd. 2. 256. hort. cliff. 130. upf. 90.*
- Acetosa americana, foliis longissimis pediculis donatis. *Baub. pin. 114. prodr. 54. Mor. hist. 2. 583. f. 5. t. 28. f. 7.*
- Flowers hermaphrodite geminate; all the valves very large membranaceous reflexed; leaves undivided.*
19. Rumex roseus. *Rose Dock.*  
*Lin. spec. 480. Reich. 2. 120. Willd. 2. 256. Desfont. atlant. 320.*
- Acetosa rosea. *Mill. dict. n. 7.*
- Flowers hermaphrodite distinct; the wing of one of the valves very large membranaceous netted, leaves gnawn.*
- [20. Rumex tingitanus. *Tangier Dock.*  
*Lin. spec. 479. Reich. 2. 120. Willd. 2. 257. Desfont. atlant. 320.*
- Acetosa dentata perennis. *Zanon. hist. 14.*
- A. vesicaria perennis repens frutescens folio deltoide sinuato. *Mor. hist. 2. 583. n. 8. f. 5. t. 28. f. 8. Raii hist. 179. 9.*
- A. ves. ting. per. rep. foliis longis sinuatis. *Zan. hist. 9. t. 6.*
- A. ægyptia, roseo feminis involucro, folio lacero. *Sharw, afr. 5. t. 5.*
- Flowers hermaphrodite distinct, valves cordate blunt quite entire, leaves hastate-ovate.]*
21. Rumex scutatus. *French Sorrel.*  
*Lin. spec. 480. Reich. 2. 120. Willd. 2. 257. vir. cliff. 32. hort. cliff. 138. upf. 89. mat. med. 99. Hoffm. germ. 129. Roth. germ. 1. 161. 2. 426. Pollich pal. n. 360. Krock. filef. n. 569. Villars dauph. 3. 270. Allion. pedem. n. 2036. Desfont. atlant. 321. Kniph. cent. 8. n. 79. Plenck, ic. 285. Hall. belv. n. 1594. (Lapathum.)*
- Acetosa scutata. *Mill. dict. n. 3.*
- A. romana. *Blackw. t. 306.—rotundifolia. Munt. phyt. t. 74. brit. 200.*
- A. hortensis. *Pauli dan. t. 154.—rotundifolia hort. Baub. pin. 114. Mor. hist. 2. 583. f. 5. t. 28. f. 9. Raii hist. 180. Tournes. inst. 503.*
- Oxalis rotundifolia. *Dod. pempt. 649.*
- O. rotunda. *Tabern. ic. 439. Dalech. hist. 605.*

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- O. sativa franca rotundifolia repens. *Lob. ic. 292.*
- O. sat. franca f. romana rotundif. *Park. theat. 742. 2. t. 743. f. 2.*
- O. franca f. romana. *Ger. 320. 4. emac. 397. 4.*
- O. folio rotundiore repens. *Baub. hist. 2. 991.*
- β. Acetosa scutata repens. *Baub. pin. 114. prodr. 55.*
- γ. Rumex glaucus. *Jacqu. collect. 1. 64. ic. rar. 1. t. 67.*
- Flowers hermaphrodite; leaves cordate-hastate; stem round.*
- [22. Rumex nervosus. *Nerve-leaved Dock.*  
*Vahl symb. 1. 27. Willd. spec. 2. 257.*
- R. perficarioides. *Forfk. descr. 76. n. 41.*
- Flowers hermaphrodite; valves quite entire naked; leaves oblong three-nerved.]*
23. Rumex digynus. *Mountain Dock or Sorrel.*  
*Lin. spec. 480. syst. 347. Reich. 2. 121. Willd. 2. 258. hort. cliff. 138. fl. lapp. n. 132. succ. n. 317. Huds. angl. 156. Wither. arr. ed. 3. 357. Smith, brit. 395. Lightf. scot. 190. Fl. dan. t. 14. Gunn. norv. n. 36. Krock. filef. n. 570. Villars dauph. 3. 271. Allion. pedem. n. 2037. Gmel. sib. 3. 111. n. 89. Jacqu. collect. 2. 30. Gært. fruct. 2. 180. Hall. belv. n. 1595. (Lapathum.)*
- Acetosa digyna. *Mill. dict. n. 4.*
- A. rotundifolia alpina. *Baub. pin. 55. prodr. 114. Park. theat. 745. 12. Raii hist. 180. 12.*
- A. rotund. repens Eboracensis, folio in medio deliquium patiente. *Mor. hist. 2. 583. f. 5. t. 36. f. penult. Raii syn. 143. Petiv. brit. t. 3. f. 4. Pluk. phyt. t. 252. f. 2.*
- A. britannica rotundifolia, fructu compresso. *Blair, obs. 67. t. 67.*
- Flowers hermaphrodite two-styled; valves ovate entire.*
- [24. Rumex lanceolatus. *Lance-leaved Dock.*  
*Thunb. prodr. 67. Willd. spec. 2. 258.*
- Leaves lanceolate reflex margined, stem angular.]*
- \*\*\* With declinous or male and female flowers separate.
25. Rumex alpinus. *Alpine Dock, or Monk's Rhubarb.*  
*Lin. spec. 480. syst. 347. Reich. 2. 121. Willd. 2. 259. mat. med. 99. Krock. filef. n. 571. Villars dauph. 3. 270. Allion. pedem. n. 2039. Pallas it. 195. Monnier obs. 165. Sauv. monsp. 111. Hall. belv. n. 1587. Zinn. gott. 38. (Lapathum.)*
- Blackw. t. 262. Plenck, t. 286.*
- Lapathum folio rotundo alpinum. *Baub. hist. 2. 987. Raii hist. 171.*
- L. hortense rotundifolium live montanum. *Baub. pin. 115.*
- L. rotundifolium. *Clus. hist. 2. 69.*
- Hippolapathum rotundif. *Ger. 313. f. 6. emac. 389. 4.—vulgare. Park. theat. 154. 2.*
- Flowers barren hermaphrodite and female; valves quite entire naked; leaves cordate obtuse wrinkled.*
- [26. Rumex spinosus. *Prickly-seeded Dock.*  
*Lin. spec. 481. syst. 347. Reich. 2. 122. Willd. 2. 259. hort. cliff. 139. upf. 89. Willich, obs. 16. Murr. prodr. 152. Gært. fruct. 2. 179.*
- Beta cretica femine aculeato. *Baub. pin. 118. prodr. 57.—fem. spinoso. Baub. hist. 2. 962.*
- Flowers androgynous, female calyxes one-leaved, outer valves reflexed and hooked.*
27. Rumex tuberosus. *Tuberous-rooted Dock.*  
*Lin. spec. 481. syst. 348. Reich. 2. 122. Willd. 2. 259.*
- Acetosa tuberosa radice. *Baub. pin. 114. Raii hist. 178. 4.*
- Oxalis tuberosa. *Dod. pempt. 649.—tuberosa radice. Park. theat. 744. 3.*
- Flowers dioecous; leaves lanceolate sagittate, books spreading.*
28. Rumex multifidus. *Multifid-leaved Dock or Sorrel.*  
*Lin. spec. 482. Reich. 2. 122. Willd. 2. 260.*
- Acetosa minor erecta lobis multifidis. *Bocc. mus. 2. 164. t. 126.*
- Flowers dioecous; leaves hastate, with the earlets palmate.*
29. Rumex thyrsoides. *Thyrse-like Dock or Sorrel.*  
*Desfont. atlant. 321.*
- Flowers dioecous; panicle contracted in manner of a thyrse; leaves hastate.]*



30. *Rumex Acetosa*. Common Sorrel.  
*Lin. spec.* 481. *Reich.* 2. 122. *Willd.* 2. 260.  
*vir. cliff.* 32. *hort. cliff.* 130. *ups.* 89. *fl. suec.*  
*n.* 318. *lapp. n.* 130. *mat. med.* 99. *Woodv.*  
*med. bot.* 193. *t.* 69. *Huds. angl.* 156. *Wither.*  
*arr. ed.* 3. 357. *Smith, brit.* 396. *engl. bot.*  
*t.* 127. *Lightf. scot.* 191. *Relb. cant. n.* 287.  
*Sibth. oxon. n.* 356. *Abbot, bedf.* 82. *Hoffm.*  
*germ.* 129. *Roth. germ.* 1. 162. 2. 426. *Pollich,*  
*pal. n.* 361. *Krock. files. n.* 572. *Neck. gallob.*  
*174. Villars dauph.* 3. 271. *Gmel. fib.* 3. 111.  
*Blackw. t.* 230. *Knorr. del. 2. t. A.* 13. *Plenck,*  
*ic. t.* 280.  
*Lapathum Acetosa*. *Scop. carn. n.* 438. *Hall. belv.*  
*n.* 1597. — *acetosum vulgare*. *Raii syn.* 143.  
*Petiv. brit. t. 3. f. 1.*  
*Acetosa pratensis*. *Baub. pin.* 14. *Mill. dict. n. 1.*  
*Mor. hist. f. 5. t. 28. f. 1.*  
*Acetosa*. *Brunf. herb.* 2. 68.  
*A. vulgaris*. *Park. theat.* 742. *Raii hist.* 178.  
*Oxalis*. *Dod. pempt.* 648. 4.  
*Oxalis vulgaris folio longo*. *Baub. hist.* 2. 990. 1.  
*O. f. Acetosa*. *Matth.* 447. *Ger.* 319. 1. *emac.*  
*396. 1.*  
*β. Acetosa pratensis flore albo*. *Tournef. inst.* 502.  
*γ. Oxalis crispata*. *Baub. hist.* 2. 990. *Tabern. ic.* 440.  
*Ger.* 320. *f. 5.*  
*δ. Acetosa montana maxima*. *Baub. pin.* 114. *Scheuch.*  
*alp.* 129. *Baub. hist.* 2. 990. *Raii hist.* 178.  
*Dill. in Raii syn.* 143.  
*Lapathum*. *Hall. belv. n.* 1598.  
*Flowers dioecous, valves graniferous, leaves oblong sagit-*  
*tate.*  
31. *Rumex Acetofella*. Sheep's Sorrel.  
*Lin. spec.* 481. *Reich.* 2. 123. *Willd.* 260. *vir.*  
*cliff.* 32. *hort. cliff.* 139. *fl. lapp. n.* 131. *suec.*  
*n.* 319. *Huds. angl.* 156. *Wither. arr. ed.* 3.  
*358. Smith, brit.* 396. *Curt. lond.* 5. *t.* 29.  
*Relb. cant. n.* 288. *Sibth. oxon. n.* 357. *Abbot,*  
*bedf.* 82. *Hoffm. germ.* 130. *Roth. germ.* 1. 162.  
*2. 427. Pollich pal. n.* 362. *Krock. files. n.* 573.  
*Neck. gallob.* 174. *Villars dauph.* 3. 271. *Gmel.*  
*fib.* 3. 110. *Gron. virg.* 153. *Kniph. cent.* 3.  
*n.* 77. *Knorr. del. 2. t. A.* 14. *Blackw. t.* 307.  
*Plenck, ic.* 281.  
*A. Acetofella*. *Mill. dict. n.* 2.  
*Lapathum Acetofella*. *Scop. carn. n.* 439. *Hall.*  
*belv. n.* 1596.  
*L. acetosum repens lanceolatum*. *Raii syn.* 143.  
*Petiv. brit. t. 3. f. 2, 4.*  
*A. sagittata alpina*. *Zanon. hist. t.* 5.  
*A. arvensis lanceolata*. *Baub. pin.* 114. *Raii hist.*  
*180. Mor. hist. f. 5. t. 28. f. 11, 12.*  
*A. minor lanceolata*. *Park. theat.* 745. 13. — & *an-*  
*gustifolia elatio.* 745. 15. *t.* 744. *f.* 15.  
*Oxalis f. Acetosa minor*. *Matth.* 448.  
*O. minor*. *Camer. epit.* 231.  
*O. parva auriculata repens*. *Baub. hist.* 2. 992.  
*O. ovata*. *Tabern. ic.* 440.  
*O. tenuifolia*. *Ger.* 320. 3. *emac.* 397. 3.  
*β. Acetosa lanceolata angustifolia repens*. *Baub. pin.*  
*14. prodr.* 55.  
*Oxalis minima repens 1.* *Tabern. ic.* 441.  
*γ. Acetosa arvensis minima non lanceolata*. *Baub. pin.*  
*114.*  
*Oxalis minima repens 2.* *Tabern. ic.* 441.  
*δ. Acetosa minor erecta, lobis multifidis*. *Bocc. mus.*  
*164. t.* 26.  
*Flowers dioecous, valves grainless, leaves lanceolate-*  
*hastate.*  
[32. *Rumex aculeatus*. Prickly Dock, or Candia Sorrel.  
*Lin. spec.* 482. *Reich.* 2. 124. *Willd.* 2. 261.  
*A. cretica, femine aculeato*. *Baub. pin.* 114. *prodr.* 55.  
*ic. Park. theat.* 743. *f.* 7. *Raii hist.* 181. 15.  
*Oxalis minor aculeata Candia*. *Baub. hist.* 2. 991.  
*Flowers dioecous; fruits reflexed, valves ciliate; leaves*  
*lanceolate petioled.*  
33. *Rumex luxurians*. Luxuriant Dock, or Buckwheat-  
*leaved Sorrel.*  
*Lin. syst.* 348. *Reich.* 2. 124. *Willd.* 2. 261.  
*suppl.* 212. *mant.* 64.  
*Acetosa fagopyri folio*. *Bocc. mus.* 165. *t.* 126.

*Flowers dioecous; outer valves awl-shaped, inner orbicu-*  
*lar; leaves cordate-hastate, stems angular diffused.*

34. *Rumex arifolius*. Halbert-leaved Dock.  
*Lin. syst.* 347. *Willd.* 2. 262. *suppl.* 212. *Ait.*  
*kew.* 1. 487.

*R. abyssinicus*. *Jacqu. hort.* 3. 48. *t.* 98.  
*Flowers dioecous; all the leaves petioled hastate, with*  
*simple divaricate earlets, stem upright.*

35. *Rumex bipinnatus*. Bipinnate-leaved Dock.  
*Lin. syst.* 348. *Willd.* 2. 262. *suppl.* 211.  
*Flowers dioecous, leaves bipinnate.*

36. *Rumex hostilis*.  
*Lour. cochinch.* 217. *ed. Willd.* 269.  
*Flowers dioecous, valves naked, stem prickly.]*

## DESCRIPTIONS, &amp;c.

1. Patience Dock has a large root, dividing into many thick fibres, which run downwards; the bark is brown, but the inside is yellow, with some reddish veins. Leaves broad, long, acute-pointed, on petioles of a reddish colour. Stems from four to six feet high, dividing towards the top into several erect branches, having a few narrow leaves on them, and terminated by spikes of large flowers, which appear in June.

[The seminal leaves are sagittate, like the leaves of *R. Acetosa* or Sorrel. The stem is grooved<sup>b</sup>.

Valves of the calyx larger, ovate, netted-veined. Seed ovate-acuminate, very sharply three-sided, of a bay colour, and shining<sup>c</sup>.

Gærtner considers what Linneus calls the corolla, as a part of the calyx. According to him therefore, the flowers in this genus have a six-leaved calyx, and no corolla. He remarks that the embryo, in this and all the species is *peripheral*, or placed by the side of the albumen.

Native of Italy, Hesse and some other parts of Germany. It was cultivated by Gerarde in 1597<sup>d</sup>; the herb being formerly used in the kitchen, by the name of Patience; and also in medicine, as Monk's Rhubarb, which is the *R. alpinus*. It is now wholly neglected, and therefore seldom seen in gardens at present.

2. [Root fusiform. Stem upright, branched, angular, leafy, smooth. All the leaves petioled, smooth, veined, somewhat curled about the edge: the root-leaves very large, cordate at the base. Racemes terminating, spreading, almost leafless; with the flowers in alternate bundles, pedicelled, nodding. Calyx quite entire. Petals oblong, quite entire, permanent, and constituting the valves which embrace the seed: one of them, and sometimes all, becoming graniferous. Seed small, sharply three-sided. The veins and petioles of the leaf abound in a blood-coloured juice<sup>e</sup>.

According to Gærtner, the valves of the calyx (corolla) when ripe are ferruginous, ovate, quite entire, small, all graniferous, or only two, or even but one; one grain however is constantly larger than the rest, and reddish-brown. The seed is small, brown, and shining. The embryo is lateral, but scarcely curved in a very slight degree.

Gerarde says it was sown in his time for a pot-herb in most gardens.—It is said by Linneus to be a native of Virginia; whence it migrated to England, and was first observed by Merret, in woody places about Hampstead.

It has been since found by Mr. Hudson about Maidstone; by Dr. Sibthorp, on Headington-hill, near Oxford; by Dr. Smith, at Lowestoft in Suffolk, and about Bristol; near Harefield in Middlesex, by Mr. Blackstone.

β. The green-veined Dock, so frequent in shady places, differs in no respect from the blood-wort, except in the colour of its veins.

Mr. Curtis and Dr. Withering have confounded this variety with the true *R. acutus* of Linneus.

3. Found at the Cape of Good Hope by Thunberg.

4. Leaves long, narrow, sharp. Flowers heaped in whorls at the joints.—Native of Virginia<sup>f</sup>.

<sup>b</sup> Linn. syst.    <sup>c</sup> Gærtner.    <sup>d</sup> Hort. kew.    <sup>e</sup> Smith.  
<sup>f</sup> Gronovius.



5. In the preceding the cylindrical membranaceous stipule sheaths the stem half way between the joints: it is not so in this, but as in the European species. The pedicels in the former are thicker, in this capillary. That has the flowers more in a spike; this has them rather in a panicle. Gronovius's specimen was not red either in the stem or ribs<sup>g</sup>.

The root is black or yellow on the outside and saffron-coloured within. Leaves long, wide, scarcely acuminate. All the calycine leaflets equal<sup>h</sup>.—Native of Virginia.

6. Curled Dock has a fusiform yellow root. Stem angular, grooved, smoothish. Leaves waved and curled about the edge: those on the stem almost linear and subsessile. Racemes not very spreading, but close and thick together, somewhat leafy towards the base. Valves of the fruit ovate, subcordate, netted-veined, entire, subrepand but not toothed, all graniferous: the grain or bead very large, ovate, gibbous, red. Seed larger than in the sanguineus<sup>i</sup>.

According to Dr. Stokes, the grains, or beads as he calls them, are one or three, rarely two. Dr. Withering adds, that they are pale when young, changing to blood-red and then to brown-red; and that the valves are large, brown-red when ripe.

Mr. Woodward remarks, that the curled Dock is the pest of Clover fields in Norfolk. Mr. Curtis has seen some in which it formed nearly half the crop.

The fresh roots bruised and made into an ointment or decoction cure the itch. The seeds have been given with advantage in the dysentery<sup>k</sup>.

Native of Europe, Siberia, Cochinchina, &c. in almost every soil and situation; as in wet meadows, by the sides of roads, and in cultivated ground, into which it is generally introduced with dung. It flowers from June to August.

The yellow root, waved leaves, and large seed-coverings, distinguish this species<sup>l</sup>.

7. This is an annual plant, a span high, and very much branched. Leaves petioled, even, waved, entire. The valves of the flower have three long teeth on each side, all covered with large pale grains.

Native of Virginia<sup>m</sup>. Introduced in 1773, by Chevalier Murray<sup>n</sup>.]

8. This also is an annual plant, about ten inches high, sending out a few horizontal branches towards the bottom; the leaves are about two inches long, and half an inch broad at the widest part. The flowers grow in whorls round the stalks, are very small, and the hair-like beards which adhere to the covering of the seed, being long, obscure the flowers, so that they are scarcely visible to the naked eye. It grows naturally in Egypt; [and was cultivated in 1739, by Mr. Miller<sup>o</sup>.

9. Root annual. Stem almost upright, a span high, roundish, branched at the base. Leaves petioled, oblique. Flowers clustered, lateral. Calyx spreading. The valves of the flower all have a white ovate grain, and on each side two lanceolate teeth at the edge, by no means longer than the valve or bristle-shaped.

Native of Egypt<sup>p</sup>. Cultivated in 1732, by James Sherard, M. D. at Eltham<sup>q</sup>.

10. Root perennial. Stem angular, grooved, smooth, rather flexuose. Leaves narrow, petioled, repand. Racemes from divaricate ascending, elongated. Flowers half-whorled, numerous, close, nodding; each whorl in general supported by a petioled spreading leaflet. Valves lanceolate-oblong, entire, but sometimes toothed at the base, all loaded with a very large, gibbous, red grain. Seeds small. Flowers male, female and hermaphrodite; some of the males having twelve stamens<sup>r</sup>.

Stem upright, branched. Branches upright. Leaves smooth, veined and keeled underneath. Petioles striated, half-embracing. Stipules membranaceous, within the petioles and without the peduncles. Valve serrate at the lower part, oblong, bluntish, one graniferous<sup>s</sup>.

<sup>g</sup> Linn. spec.      <sup>h</sup> Gronov. and Colden.      <sup>i</sup> Smith.  
<sup>k</sup> Withering.      <sup>l</sup> Curtis.      <sup>m</sup> Linn. spec.  
<sup>n</sup> Hort. kew.      <sup>o</sup> Idem.      <sup>p</sup> Linn. mant.  
<sup>q</sup> Hort. kew.      <sup>r</sup> Smith.  
<sup>s</sup> Lyons M.S. in Relh. cant.

Native of Europe, in woods, hedges, by road sides, in watery places and marshes.

Dr. Withering, in the second edition of his Arrangement, suspected his *R. paludifolius* to be a variety of *R. crispus*; but in his third edition he rather supposed it to be *R. acutus*, grown to a more than ordinary size. The valves, he says, are entire, all of them beaded, but in its younger flowering state, the bead appears only upon one or two of them. They have not the strongly-veined texture of *R. crispus*. In the smallness of the flowers, the distance of the whorls, and the position of the floral leaves it agrees with *R. acutus*.

$\beta$ . This variety is more twisted, the whorls are more frequent and denser, the leaflets under the whorls shorter. It is common in moist places<sup>t</sup>.

11. The root of the common broad-leaved or blunt-leaved Dock runs deeply and straightly into the earth, tapering, the thickness of the middle finger, on the outside of a dirty brown colour, within yellowish: in young plants it is simple, in old ones divided into many branches. Stem three feet high, upright, branched to the bottom, round, smooth except towards the top, where it is slightly rugged, (with short white transparent bristles, *With.*) grooved, solid, jointed; the joints covered with obsolete withered stipules. Root-leaves very large, blunt, veiny underneath, the midrib often very red and downy. Stem-leaves ovate-lanceolate, pointed, somewhat waved, all petioled. Dr. Withering remarks, that the petioles are shorter than the breadth of the leaves. Racemes nearly upright, furnished with few leaves. Flowers in half-whorls, on capillary peduncles, sprinkled near the top with white shining globules; and the pedicels surrounded near the base by an indistinct cartilaginous ring. Calyx-leaves boat-shaped, nearly as long as the petals; which are ovate, bluntish, spreading, membranous at the edges: these are permanent, close and contain the seed. They are then called valves, are toothed on one edge, and one of them bears a granule. According to Dr. Smith, they are large, cordate, veined, and have awl-shaped teeth: the granule on the outer valve is chiefly conspicuous, linear-oblong, and small in proportion to the valves. The seed is larger than in the preceding species. Dr. Withering says, that the valves are not very evidently toothed, that the valve with the largest grain is outermost when the fruit-stalk bends downwards, and has the longest teeth; but that none of the teeth are equal in length to the diameter of the valve<sup>u</sup>.

Native of Europe, in all sorts of cultivated ground, among rubbish, in farm-yards, courts, by the sides of ditches and paths: flowering in July and August.

This Dock is subject to as little variety as any of the species; its broad root-leaves readily distinguish it, and these, though they may differ somewhat in size, vary little in shape: in general, the younger the plant, the more obtuse are its radical leaves.

Of all our English Docks, this is one of the most common, and may be considered as a very pernicious weed, being very large and spreading, and refused by cattle in general<sup>v</sup>.

Dr. Withering remarks, that fallow deer eat both this and the *R. acutus* with avidity, biting it close to the root, so that it is very rare to see a Dock growing in a park. Dr. Stokes informs us, that the root of *R. acutus* is used by the dyers; and that it gives a great variety of shades, from straw-colour to a pretty fine olive, and a good deep-green to cloths which have been previously blued. The roots of this and other species of Dock would probably answer the same purpose.]

Mr. Miller says, that the leaves were formerly much used for wrapping up butter; and that hence this species was commonly known by the name of Butter Dock.

12. [Stem almost procumbent, much branched. Branches alternate, elongated, bent back, angular, smooth, having a linear-lanceolate leaflet under each.

<sup>t</sup> Dillen. in Raii syn.      <sup>u</sup> Curtis, Smith, Withering.  
<sup>v</sup> Curtis.



Root-leaves blunt, sinuated in the middle on both sides, so as to resemble the body of a violin: stem-leaves small, oblong, entire. Racemes leafy. Valves deltoid, toothed, netted-veined, one more evidently graniferous than the rest<sup>7</sup>.

*Rumex divaricatus* of Linneus, figured by Tilli, t. 3. f. 2. and found in Italy, is in all probability not different from this. Willich having observed, that the seeds of Tilli's plant, the first year, had leaves that were not sinuated; but that the second, they were panduriform or viol-shaped<sup>2</sup>.

13. Root perennial, consisting of twisted fibres, as in many water plants. Stem angular, grooved, sub-flexuose, somewhat rugged, often red. Leaves, linear, entire, bluntish, flat, not waved. Racemes leafy. Whorls closely clustered, of a golden colour. All the valves have an oblong granule, with about four bristle-shaped teeth on each side, longer than the valve<sup>3</sup>.

Mr. Woodward remarks, that the stems are very leafy; Dr. Withering, that the leaves are flat and smooth; the four teeth of the valves like the fingers spread out, and the whorls of flowers golden yellow, so closely crowded together as to assume the appearance of leafy spikes:—Ray, that the seeds are very small, lighter-coloured than in the other species, and that the leaves are paler and narrower. In the *Systema vegetabilium* the root is said to be red.

Native of several parts of Europe, in marshes, especially on the sea coast: but sometimes found far inland, as at Goldington in Bedfordshire, by Mr. Abbot.

14. Root tapering, reddish brown on the outside, bright red within. Stem from two to three feet high, branched, of a reddish colour, grooved and somewhat rugged. Root-leaves very large, on long foot-stalks, oblong-lanceolate, a little narrowed at the base, blueish green, flattish, but slightly waved and notched on the edge: the upper leaves linear-lanceolate, almost veinless above, usually curved upwards. Flowers mostly yellow, placed round the stem in numerous thick whorls<sup>b</sup>, which are distinct or even remote, and have a leaf at the base of each. Valves lanceolate, three-toothed at the base on each side with setaceous teeth, and much shorter than in the preceding species. Distinguished from the preceding by its more slender growth, distant whorls, less golden hue, and especially by the shortness of the teeth in the valves<sup>c</sup>.

The most striking character of the Marsh Dock, when in flower or seed, is the number and narrowness of the leaves on its branches; when viewed more closely, we are struck with the number and length of the teeth on the edges of the seed-valves, which valves are frequently though not always of a yellowish colour, and furnished with remarkably large and long grains: if any doubt remain respecting the species, the root on being cut across exhibits a beautiful red colour equal to any carmine.

Its natural situation is a moist one; as on the edges of wet ditches and rivulets, but it is not unfrequent in pastures or drier ground. In the former it will grow to the height of three or four feet, having root-leaves a foot long and three inches broad: in the latter it seldom grows more than a foot high, with root-leaves about six inches long, and one inch or somewhat more broad<sup>d</sup>.

Common about London. Observed in Tothill-fields by Plukenet, and in St. George's-fields by Curtis. Mr. Pitchford found it by Acle dam, Norfolk, and it grows probably in many parts of England.

It flowers in July, August and September, and is one of the species least noxious to the farmer. The roots are said to be frequently sold for those of *R. acutus*<sup>e</sup>.

Mr. Curtis says that he remembers once to have seen the leaves with red veins like those of the bloody Dock: but that is not uncommon in other species growing on a dry soil, when in their advanced state.]

15. The great Water Dock has large roots which strike deep in the mud, and send out leaves three feet long, and four inches broad in the middle. The stalks

rise four feet, when the plant grows in water, but in dry land not more than two: these have narrow leaves among the spikes of flowers to the top. The flowers stand upon slender peduncles which are reflexed; they are of an herbaceous colour, and appear in June, (rather July and August.) The seeds ripen in autumn.

[Root thick. Stem five feet high, straight, grooved, smooth. Leaves somewhat glaucous, lanceolate, acute; the lower ones cordate at the base. Whorls approximating. Pedicels capillary, thickening at the top, nodding. Valves large, veined, sometimes but rarely toothed a little, all having a small linear granule, frequently obsolete. Seed large<sup>f</sup>.

Root white within, black without. Leaves even at the base, a little toothed and waved at the edge. Petioles semicylindrical, those of the lower leaves sometimes fifteen inches long. Peduncles encompassed a little below the middle with an indistinct ring, in half whorls, from the alternate sides of the stem and branches, surrounded by a skinny sheath. Valves very slightly toothed, especially towards the base, the teeth becoming more and more evident as the seed ripens. Beads or granules greenish-white or purplish<sup>g</sup>.

Native of Europe, in ditches, pools and on the banks of streams.—Called *Candocks* in Walton's Angler.

Several of the Docks had formerly some repute in medicine. The leaves, which manifest considerable acidity, are said to possess a laxative quality, and have therefore been used to obviate costiveness. *R. Patientia* is highly spoken of by Allioni as serving this purpose. The roots are strongly astringent; and those of the Water Dock have been much employed both externally and internally for the cure of scurvy, especially when the gums are spongy and bleed. It is also recommended in various cutaneous eruptions, and in visceral obstructions. But many physicians still think this root does not peculiarly differ from other astringents, and place no faith in the great virtues ascribed to it by Muntingius and Sir John Hill<sup>h</sup>.

It is regarded however by Dr. Withering as a medicine of considerable efficacy, both externally applied as a wash for putrid spongy gums, and internally in some species of scurvy. In rheumatic pains, and chronic diseases, owing to obstructed viscera, it is said to be useful. The powdered root is said by Chevalier Murray to be one of the best things for cleaning the teeth.]

15. This is a low annual plant, with slender stalks, branching at the bottom, and about four inches high, the lower part having small ovate succulent leaves; the upper part has small herbaceous flowers growing in whorls, without any leaves between them. The seeds are small, with sharply indented reflexed covers.

[Root cortical, yellow, fibrous. Stems a foot high, upright, slender, smooth. Leaves alternate, smooth or very slightly pubescent, quite entire; the lower ones ovate and blunt, the upper ones narrow-lanceolate or linear. Stipules very thin, large, white, shining, acute. Flowers in spikes, three together, nodding; on compressed pedicels, thickening gradually from the base to the end. Calyx-leaves ovate, reflexed. Petals toothed, nearly equal to the calyx, red<sup>i</sup>. The peduncle becomes thick, compressed, recurved, and half-channelled, when the calyx is mature. Outer valves very small, reflexed, pressed close to the peduncle: inner valves much larger, bristle-toothed, and having a flatish reversed gland at the base. Seed small, bay, shining<sup>k</sup>.]

Native of Spain and Italy on moist swampy ground. [Found by Cavanilles in dry places near Mentrída, and on the heights of San Bernardino near Madrid; flowering in June: By Desfontaines on mount Atlas, and in corn fields of Barbary.—Cultivated in 1683, by Mr. James Sutherland<sup>l</sup>.]

17. The Sorrel-tree rises with a woody stalk ten or twelve feet high, covered with a smooth brown bark, and sending out many branches. Leaves smooth, roundish-heart-shaped, two inches long, and an inch

<sup>7</sup> Smith.<sup>2</sup> Haller.<sup>3</sup> Smith.<sup>b</sup> Curtis.<sup>c</sup> Smith.<sup>d</sup> Curtis.<sup>e</sup> Idem.<sup>f</sup> Smith.<sup>g</sup> Withering.<sup>h</sup> Woodville.<sup>i</sup> Cavanilles and Desfontaines.<sup>k</sup> Gärtner.<sup>l</sup> Hort. kew.



and half broad, alternate upon pretty long foot-stalks. The flowers come out in loose panicles towards the end of the branches: they are of an herbaceous colour, and are sometimes succeeded by triangular seeds with smooth covers; but the seeds rarely ripen in England.

The flowers are three-parted, not six-parted; and in a panicle opposite to a leaf<sup>m</sup>.

Native of the Canary Islands. Cultivated here in 1698, by the Dutchess of Beaufort<sup>n</sup>.]

18. This is an annual plant, with pretty thick succulent stalks a foot high, and dividing into many branches. Leaves round-heart-shaped, on very long foot-stalks. The flowers grow in loose spikes at the end of the branches: they are herbaceous. The seeds have large inflated covers, with broad membranaceous borders.

[Native of Africa. Cultivated in 1656, by Mr. John Tradescant, junior<sup>o</sup>.]

19. This is an annual plant, rising a foot and half high, and dividing at top into several branches. Leaves arrow-pointed, about three inches long, the sides of which are irregularly torn, as if they had been gnawed by insects; they stand upon pretty long foot-stalks, and have smooth surfaces. The flowers are disposed in loose spikes; some of which have only male flowers, and others hermaphrodite. Some plants also have only male, and others hermaphrodite flowers. The seeds are inclosed in large inflated covers of a deep red colour, having membranaceous borders.

[Stem branched, striated, erect, smooth. Leaves cordate, blunt, petioled, fleshy, glaucous, with lucid spots scattered over them, often curled and gnawn at the edge. Stipules large, membranaceous, white, very thin. Flowers nodding, solitary or in pairs, paniced. Pedicels capillary. Inner valves very large, cordate, obtuse, variegated with purple veins<sup>p</sup>: they are orbicular, an inch in diameter, netted, toothletted at the tip, and bifid at the base; which is not the case in *R. tingitanus*<sup>q</sup>.

Native of Egypt and Barbary, in corn fields. Cultivated in 1739, by Mr. Miller<sup>r</sup>.

20. Root perennial. Stems branched, striated, procumbent. Leaves stiffish, hastate, truncate at the base, unequally gnawn at the edge, often viol-shaped; on a petiole shorter by half than the leaf. Flowers in clustered whorls, nodding. Valves netted with purple veins<sup>s</sup>.

Leaves ovate, acuminate, somewhat rugged, subhastate at the base and gnawn there, very rugged and generally unequal at the edge. Racemes long, with five or three flowers at each tooth of the raceme<sup>t</sup>.

Native of Spain and Barbary: found in fields near the sea shore of the latter by Desfontaines; in the former by Alstroemer.—Cultivated in 1680, by Robert Morison, M.D.<sup>u</sup> to whom it was sent from the neighbourhood of Algiers by Alexander Balam.

21. Root of French Sorrel hard, fibrous, perennial. Stem from a foot to eighteen inches in height, very slightly angular, glaucous, smooth, dividing into alternate spreading branches. Leaves cordate or hastate, glaucous, smooth, soft, fleshy, blunt, entire, an inch and half in length and breadth, on petioles two or three inches long, channelled within. Flowers in a sort of whorls, forming all together spike-shaped racemes, nodding and coming out three or four together on capillary pedicels from a white sheathlet. Valves subcordate, large, bright rose-colour<sup>x</sup>, entire, without any grains<sup>y</sup>.

Native of Germany, Switzerland, Italy, the South of France and Barbary.—Cultivated here in 1633<sup>z</sup>.]

The round-leaved or French Sorrel is a more grateful acid than common Sorrel, and is therefore preferred for kitchen use, in soups, &c. for which it is much cultivated by the French.

[22. Stem suffruticose. Branches round, striated: internodes brown at the top, an inch long. Leaves

<sup>m</sup> Linn. spec. and syst.

<sup>n</sup> Hort. kew.

<sup>o</sup> Idem.

<sup>p</sup> Desfontaines.

<sup>q</sup> Linn. spec.

<sup>r</sup> Hort. kew.

<sup>s</sup> Desfontaines.

<sup>t</sup> Linn. spec.

<sup>u</sup> Hort. kew.

<sup>x</sup> Desfontaines and Pollich.

<sup>y</sup> Kreckner.

<sup>z</sup> Hort. kew.

acute, quite entire, very smooth, thick, veinless, glaucous, an inch long and more, on petioles the length of the leaves; the upper ones lanceolate. Stipules membranaceous, sheathing, truncate. Panicle terminating. Pedicels capillary, thickened under the flower, longer than the fruit. Calyx reflexed. Valves orbicular, smooth, quite entire, naked<sup>a</sup>.

Mountain Sorrel has almost all the leaves radical, on long petioles, kidney-shaped, emarginate, repand, veined, pale green. Stem naked or nearly so, a span high, paniced. Pedicels in bundles, capillary. Valves roundish or ovate, emarginate, quite entire, tinged with red, without any rudiments of granules<sup>b</sup>. Flower four-cleft, the calyx being two-cleft, and the corolla two-petalled. Stamens six. Styles two<sup>c</sup>. Stigmas pencilled<sup>d</sup>.

When the calyx is mature, according to Gartner, the four leaflets are unequal, free, reflex; two larger, rounded, erect, growing close to the seed, form a wide membranaceous margin about it. Seed ovate-acuminate, compressed, with a longitudinal ridge along the middle on both sides, and of a rusty red colour. Albumen shorter than the embryo; mealy, two-parted. Embryo placed in the axis of the seed, dividing the albumen.

Gartner would separate this from the other species, and approves of Hill's having given it the distinct name of *Oxyria*, in the tenth volume of his Vegetable System.

Native of the mountains of Lapland, England, Wales, Scotland, Switzerland, Silesia, Dauphiné, Piedmont, Siberia.—Observed by Lawson and Ray in Westmoreland and Cumberland. In Longleisdale near Buckbarrow-well, and all along the rivulet, by Mr. John Fitz-Roberts, and Mr. John Watts, apothecary in London. Mr. Miller observed it growing in great plenty in Yorkshire and Westmoreland: Mr. Baker on walls at Tortworth: Mr. Robson, about Kewick. Mr. Lhwyd found it on Snowdon above Llandberis, and on Cader-Idris above Llyn-cau lake. Mr. Lightfoot, on rocks by the sides of rivulets which run down from the highland mountains of Scotland, and in the islands of Rum and Skye.

24. Found at the Cape of Good Hope by Thunberg.

25. Alpine Dock, vulgarly called Monk's Rhubarb, from its having been used formerly for the same purposes as the true Rhubarb, has a very large perennial or biennial root, three or four inches in thickness, branched, woody, yellow within, running horizontally. Stem thick, striated, branched, jointed: at the joints, and at the base of the branches and petioles are very large, membranaceous, blunt, white, tender sheaths. Leaves at bottom large like those of Rhubarb, roundish or ovate, blunt, very wide, wrinkled, emarginate in form of a half moon next the petiole, which is very long, thick and channelled. Stem-leaves lanceolate; all are plaited along the edge. Flowers very abundant and close in long panicles. Valves large, veined, entire; but sometimes having a tooth or two<sup>e</sup>. Haller observed male and female flowers in the same panicle. Its round nervose leaves, cordate at the base; its thick low stems; and its polygamous flowers, are characters sufficiently distinctive of this species. It has the air, stature and size of Rhubarb, with nearly the same qualities in a less degree: a double dose at least must be taken to produce the same effect<sup>f</sup>.

Native of France, Switzerland, Silesia, Piedmont, Siberia. It was cultivated here in 1597, as appears from Gerarde's herbal<sup>g</sup>. Myself and others, says Gerarde, have them (this and the Patience Dock) growing for our use in physick and surgery.

The root of Bastard Rhubarb, (which is his name for Alpine Dock) purgeth after the same manner as the Rha of Barbary, but must be taken in greater quantity, as witnesseth that famous learned physician now living, Mr. Dr. Bright, and others who have experimented the same.

26. Calyx of the male flowers has the leaflets ovate, blunt, not reflexed but spreading. Petals a little less

<sup>a</sup> Vahl.

<sup>b</sup> Smith.

<sup>c</sup> Linn. spec.

<sup>d</sup> Smith.

<sup>e</sup> Krockner and Haller.

<sup>f</sup> Villars.

<sup>g</sup> Hort. kew.



than the calyx, one or two sometimes wanting. The female flowers have the calyx pressed close to the germ; with leaflets keeled, acute, from upright spreading. The petals are much smaller than in the male flower. Stigmas very small. Calyx and corolla both permanent and thickened to inclose the seed. The calyx-leaves, when mature, have pungent spines<sup>h</sup>; whence the trivial name.

Female involucre suberose, one-leaved, pyramidal, excavated like a net, armed with three reflex pungent spines at the top. Seed ovate-acuminate, three-sided above, rounded below, and having a wide umbilical scar at the base, yellow, shining. Albumen mealy, central. Embryo linear, white, circumferential, girding the whole albumen like a ring. Cotyledons very long, flat, incumbent. Radicle subcylindrical, short, superior<sup>i</sup>.

It is an annual plant, native of the island of Candia or Crete. Cultivated in the Edinburgh garden in 1683<sup>k</sup>.

27. This is so nearly allied to *R. Acetosa*, that it seems as if it were a mule plant derived from that: but the leaves gape more behind with hooks, and the stipules are longer. The root resembles altogether that of *Spiræa Filipendula*. Stem upright, simple<sup>l</sup>.

Native of Italy. Cultivated in 1748, by Mr. Miller<sup>m</sup>.

28. Native of the mountains of Calabria, Tuscany and the Levant.

29. Stem simple, upright, striated. Leaves curled and waved, often toothed about the edge; the lower ones petioled and blunt; the middle and upper ones embracing the stem. It is allied to *R. Acetosa*; but differs in having an upright dense thyrse-like panicle, and the calycine valves twice as large, and of a bright rose colour. Perhaps it may be a variety.

Native of Barbary, in uncultivated fields<sup>n</sup>.

30. Root perennial, running deep into the earth. Stem mostly simple, erect, round, deeply striated, leafy, from one to two feet high. The radical and lower stem-leaves on long foot-stalks, with a membranous cylindrical sheathing stipule embracing the stem and torn at the top; these leaves are arrow-shaped, blunt, entire or but little waved in their sides, but at the base cut into two or three large sharpish teeth pointing backwards, and not, as in some of the species, divaricated into a right angle with the outline of the leaf. Upper leaves sessile, gradually more entire, embracing, acute, a little rolled back; those at the top of the stem only slightly crisped at their base. A compound sort of whorled spike or branched panicle terminates the stem; its branches alternate and nearly erect. The barren flowers are on a separate plant from the fertile ones: calyx and corolla small, nearly similar in both. Stamens very short, with large yellow anthers. Styles short, with large crimson bearded stigmas. Valves ovate entire graniferous<sup>o</sup>.

The root of common Sorrel is astringent, like most of this genus. The whole herb is acid, with a degree of astringency, not unpleasant or unwholesome. Taken in considerable quantity, it is said to be of important advantage, where a refrigerant and antiscorbutic regimen is required: its effects will be the same as those of *Oxalis* or Wood Sorrel, before recited.

The leaves are eaten in sauces and salads. The Laplanders use them to turn their milk sour. In France Sorrel is cultivated for the use of the table, being introduced in soups, ragouts, fricasees, &c. In some parts of Ireland they eat the leaves plentifully with milk, also with fish, and other alkaliescent food. The dried root gives out a beautiful red colour when boiled. All domestic cattle will eat the plant<sup>p</sup>.

Sorrel is common in meadows and pastures, through the greater part of Europe, in almost all soils and situations; flowering early in June.

31. Great Mountain Sorrel, which Haller considers as a species distinct from the common one, has according to him a woody round thick capillated root. Leaves

flat, not waved; the lower ones petioled, bluntly sagittate; the stem-leaves sessile, embracing, about the petiole sometimes not cut but stretched right out, sometimes emarginate but not deeply: the edges flat, not wrinkled or plaited, with short hooks. Sheaths truncate, white. Flowering-branches, as in the other, naked, branched. In a garden, it grows bigger, but preserves its difference.

Native of the Alps; and found by Mr. Lhwyd near Harlech in Merionethshire.

31. Sheep's Sorrel is less by half than the Common Sorrel. Root creeping, perennial. Leaves lanceolate; the lower hastate, those on the stem often entire. Racemes paniced. Flowers half-whorled. Valves ovate, entire, without any grains<sup>q</sup>. Dr. Withering remarks, that the lobes at the base of the leaves point upwards or horizontally, whereas in the preceding species they always point backwards: and that it is subject to some slight variations in the shape of the leaves, as represented in Ger. 321. 6 and 7. and Ger. emac. 398. 6.

Native of Europe, in dry, gravelly and sandy pastures, banks and fallows, gravel walks, where charcoal is burnt, &c. Haller observes, that it ascends into the high Alps, and then becomes very small.

32. This resembles the preceding, but the leaves are attenuated at the base, without hooks. The inner valves of the female flowers are ciliate with very small prickles.

Native of the island of Crete or Candia, and of Spain<sup>r</sup>.

33. This has a tuberous root like that of *S. Filipendula*. Stems (in a garden) from a foot to eighteen inches in height, prostrate, copious, branched, five-cornered, striated. Leaves longer than those of *R. Acetosa*; of the same form with those of the common *Arum*, extremely acid, purplish about the edge, and waved, but scarcely crenulate. It differs from *R. scutatus*; in having the stem angular, not round; and the leaves cordate-hastate, not lanceolate-sagittate<sup>s</sup>.

The stem is very much branched, a foot high, angular, even, diffused. Leaves alternate, petioled, acuminate. Bractes intrafoliaceous, ferruginous. Panicle very large, divaricating, decomposed of alternate racemes. Pedicels capillaceous, the length of the fruit.—Native of the Cape<sup>t</sup>.

Willdenow thinks it probable that *R. spinosus* of Thunberg's prodromus may belong to this species.

Native of the mountains about Bologna.

34. Stems round fistular very smooth glaucous little branched. Leaves on long petioles triangular cordate at the base and subhastate ferrulate acute seven-nerved veined very smooth. Stipules sheathing lanceolate smooth opposite to a leaf membranaceous. Panicles terminating. Seeds with cordate very smooth naked entire valves, with the calyx reflexed. Cultivated in the open ground it becomes near a fathom in height, with leaves of the same size as in *R. alpinus*; but in a pot it is contracted and shrubby<sup>u</sup>.

Native of Africa. James Bruce, Esq. Introduced in 1775<sup>v</sup>.

Dr. Smith remarks, that *R. arifolius* of Linneus's Supplement is more certainly a native of the Alps than of Abyssinia. He found it on Mount Cenis, in the pastures surrounding the lake, below the remarkable white limestone rocks, before the post-house<sup>w</sup>.

35. Root perennial. Stems a span high, ascending, even. Leaves cordate, bipinnatifid, with the segments distinct almost to the midrib, each pinnate or dichotomous. Stipules membranaceous diaphanous white. Raceme terminating compound, with the racemelets simple. Calyx blunt.—Native of Morecco<sup>x</sup>.

36. Stems three feet high, upright, round. Leaves lanceolate, quite entire, flat, spreading. Flowers in spikes: all the valves naked, quite entire, smooth, unarmed.—Native of Cochinchina<sup>y</sup>.]

#### PROPAGATION AND CULTURE.

All the Docks rise easily from seeds, and if introduced into a garden, will become troublesome weeds,

<sup>h</sup> Willich.

<sup>i</sup> Linn. spec. and syst.

<sup>l</sup> Smith.

<sup>k</sup> Gartner.

<sup>m</sup> Hort. kew.

<sup>n</sup> Withering and Woodville.

<sup>o</sup> Hort. kew.

<sup>p</sup> Desfontaines.

<sup>q</sup> Smith.

<sup>r</sup> Linn. suppl.

<sup>s</sup> Travels, 3. 136.

<sup>t</sup> Linn. spec.

<sup>u</sup> Idem.

<sup>v</sup> Linn. suppl.

<sup>w</sup> Linn. mant.

<sup>x</sup> Hort. kew.

<sup>y</sup> Loureiro.



if their seeds be permitted to scatter; therefore few persons care to propagate any of them, except for their use in medicine or the kitchen. The seeds should be sown in autumn soon after they are ripe. When the plants come up, thin them and keep them clean. They all delight in a moist rich soil.

16. 18. 19. Grow freely from seed, sown in a bed of light earth in the spring, where the plants are designed to remain. Thin them and keep them clean.

17. The tree Sorrel is easily propagated by cuttings, planted during any of the summer months in a bed of loamy earth, and shaded from the sun until they have taken root. Then take them up, and plant them in pots filled with kitchen-garden earth, placing them in the shade till they have taken new root; after which move them to a sheltered situation, with other hardy green-house plants till autumn, when they must be removed into the green-house, and treated in the same way as other plants which only want protection from frost.

30. Common or Meadow Sorrel is commonly cultivated in gardens, and though small in the field, yet in a garden will produce fair large leaves. Sow it early in the spring in a shady moist border; and if the plants be afterwards removed into another shady border, at the distance of four or six inches square, they will produce larger leaves, and continue longer.

21. Round-leaved or French Sorrel is a great runner at the root, by which means it is easily propagated. The roots should be planted at the distance of two feet square at least. It will agree better with an open situation than the common sort. If the flower-stems and rambling branches be cut off in the beginning of July, the roots will soon put out new leaves, which will be tender and much better for kitchen use than the older leaves; so that by cutting down the shoots of some plants at different times, there will always be a supply of young leaves.

23. As this sort grows naturally in shady moist places, it must be planted on a north border in a moist soil.

25. Alpine Sorrel is full as hardy as the common sort. The leaves having as pleasant an acid taste as that, being larger and more succulent, are better than that for kitchen use. This may be increased by seeds, or by parting the roots. The plants ought to be at least a foot distant from each other, especially in good ground.

#### [Destruction of Docks.]

Mr. Curtis affirms it to be a false notion, that whilst any part of a Dock-root remains, the plant will grow again; that the use of the Docking-iron therefore is not necessary, but that frequent mowing most certainly destroys it, and frequent spudding would probably have the same effect; though unless it be done carefully and at stated periods, little good is to be expected.

I do not deny that frequent mowing and spudding may in the end destroy Docks; at least it will prevent one great evil, by keeping them from seeding. But I am certain that pulling up the young plants by hand after a ground rain, and using the docking-iron for old plants, or such as having been mowed or spudded will not come up by hand, is a remedy far more effectual; and I believe upon the whole not more expensive.

It has been mentioned before, that fallow deer keep down Docks, by biting them close to the root. Mr. Marshall mentions an instance of a bed of Docks being destroyed by swine or by mowing. The fact was, a large patch of Docks, as thick as they could grow upon the ground, was liable to the bite of swine, some of which will feed on Docks with avidity: what they left was repeatedly mown off, perhaps twice or thrice in a summer, for a succession of years. At length they vanished as by a charm, and were succeeded by a thick sward of the finer grasses.

Mr. Marshall observes upon this with his usual judgement, that perhaps neither the swine nor the scythe could in strictness be said to have killed these Docks; for they evidently died of old age. No vegetable is everlasting; and the age or natural life of pe-

renial herbs has not been attended to. We may however take it for granted, that all plants which propagate their species by seed alone, may be subdued by persevering to prevent their seeding. All that we want to know from experience is their several ages, in order that we may calculate the difference between the expense of heading them from time to time, and that of destroying them at once by eradication<sup>b</sup>.

Mr. Marshall farther observes, that Docks mature their seeds quickly and in great abundance, but having no wings to scatter them at a distance, they fall at the foot of the plant. This renders a creeping root unnecessary. Nature's chief care seems to have been to establish the parent plant firmly in the soil, and to guard against its destruction. To this end it is furnished with a very strong tap-root; which, if divided below the crown, sends forth sapling shoots from the part left in the ground, and this from almost any depth, provided it have head-room and the soil be loose. The upper part too, if cut a few inches deep, will survive the amputation. Even when inverted by the plough it will recoil, and find its way to the surface again.

Hence land much infested with Docks should be gone over with the drawing or docking iron some time before the plough be put into it, that the tops may be removed, and the rootlets left in the ground may have time to rot before the land be ploughed. With this precaution, and with a person to follow the plough with a spadelet to grub up the bottoms, and disengage the tops of such as may have escaped the previous weeding, the roots of Docks may with great certainty be extirpated.

The seeds of Docks are to be destroyed by the plough, the harrow and the roller; but the intervals between the ploughings should be short, for if they once get themselves established in the soil, it is, without a favourable season, out of the power of tillage to extirpate them.

Docks are sometimes sown upon the land with corn, and very frequently with clover. From corn and pulse the seed may be separated by the screen, and still more effectually by the sieve. But from clover seed, the seeds of Docks cannot be easily separated, being nearly of the same size and weight. Singular caution therefore ought to be had in purchasing this seed. And the growers of clover ought to be assiduous in weeding their seed clover from this pernicious weed. To suffer a Dock which has ripened its seed to be thrashed with seed clover, is a crime, which ought, among farmers, to be deemed unpardonable<sup>c</sup>. I always pull out by hand all the young plants of Dock from crops of Clover, the first year, and if necessary the second year. It is easily done, and at no great expense, by women and children, after a day's rain or a heavy shower.

RUMEX. See *Begonia*.

RUMPHIA. (So named by Linneus, in honour of George Everhard Rumphius, M.D. consul at Amboina; author of *Herbarium Amboinense*, 1750, &c. fol. Died 1706, aged 69.)

Lin. gen. Reich. n. 51. Schreb. n. 64. Juss. 370.

Rumphia. Lin. gen. ed. 6. n. 47.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Terebintaceæ*, Juss. *Dubii*, Linn.

An *Sapindis*, affiniore. Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, trifid, erect, flat.

COR. *Petals* three, oblong, obtuse, equal.

STAM. *Filaments* three, awl-shaped, the length of the corolla. *Anthers* small.

PIST. *Germ* roundish. *Style* awl-shaped, the length of the stamens. *Stigma* three-cornered.

PER. *Drupe* coriaceous, turbinate, three-grooved.

SEED. *Nut* ovate, entire, three-celled.

#### ESSENTIAL CHARACTER.

Cal. three-cleft. Pet. three. Drupe three-celled.

<sup>b</sup> Rural economy of Yorkshire, 2. 12.

<sup>c</sup> Idem, vol. 1. 366 to 369.



# R U P

## SPECIES.

1. *Rumphia amboinensis*.  
*Lin. spec.* 49. *Reich.* 1. 92. *Willd.* 1. 187.  
*Myxa pyriformis*, officulo trispermo. *Raii hist.* 1556.  
*Tsjem-Tani.* *Rbeede mal.* 4. 25. t. 11.

## DESCRIPTION, &c.

This is a lofty tree, with an ash-coloured bark. Leaves alternate petioled cordate acute toothletted rugged. Racemes axillary.

Native of the East Indies<sup>d</sup>.

**RUPALA.** (If it be derived from *ροπαλον* a club, as one may suppose from the shape of the unexpanded flower, then Schreber's name is right.)

*Vahl, symb.* 3. 20. *Willd. spec.* 1. 536. *Roupala.*

*Aubl. t.* 32. *Lamarck, encycl. t.* 55. *Juss.* 79.

*Rhopala.* *Lin. gen. Schreb. n.* 144.

*Class.* 4. 1. *Tetrandria Monogynia.*

*Nat. order of Contortæ. Proteæ, Juss.*

## GENERIC CHARACTER.

*CAL.* none.

*COR.* Petals four, oblong, narrow at the base, blunt, concave above, convex beneath, deciduous.

*STAM.* Filaments four, very short, inserted into the petals. Anthers oblong, obtuse, when the flower is closed concealed in the cavity of the petal, when the corolla is expanded, erect.

*PIST.* Germ roundish, surrounded at the base with glands. Style filiform. Stigma subovate.

*PER.* one-celled.

*SEED* one.

## ESSENTIAL CHARACTER.

*Cal.* none. *Pet.* four, cohering at the base. *Stam.* inserted into the middle of the petals. *Peric.* one-celled, one-seeded.

## SPECIES.

1. *Rupala montana*.  
*Willd. spec.* 1. 536. *Vahl, symb.* 3. 20.  
*Roupala montana.* *Aubl. guian.* 1. 83. t. 32. *Lamarck encycl. t.* 55.  
Leaves ovate petioled.
2. *Rupala fessilifolia*.  
*Willd. spec.* 1. 537.  
*Roupala fessilifolia.* *Richard. æt. soc. hist. nat. par.* 1. 106.  
Leaves cuneate-oblong sessile.

## DESCRIPTIONS, &c.

1. Branches round, smooth, with a brown bark, scarred from the fall of the leaves and peduncles, tubercled, leafless: the younger ones leafy and flowering, from the end of the branches of the preceding year, often in pairs, with an ash-coloured bark. Leaves alternate, four or five inches long or less, elliptic, attenuated to both ends, nerved and veined, quite entire, smooth on both sides, shining above, pale beneath. Petioles convex beneath, flattish above. Stipules none. Buds small often in pairs, axillary, oblong, ferruginous-tomentose, the rudiments of peduncles. Racemes from the last axils, solitary or in pairs, peduncled, three or four inches long, villose, having ferruginous villose hairs at the base, as also the axils of the pedicels; which are alternate and two together. Flowers small, ash-coloured at the base, as are also the pedicels, smooth above, club-shaped before they expand. Bractes none. Tube of the corolla filiform: segments or petals linear, spreading, widening a little outwards. Filaments in the middle of the tube. Anthers linear, the length of the corolla. Germ superior, oblong, attenuated, villose.—Native of Cayenne<sup>e</sup>.

2. Native of Cayenne.

**RUPPIA.** (So named by Linneus, in memory of Henry Bernhard Ruppian, a German physician, author of *Flora Jenensis*, 1718 and 1726, oct.—augmented and corrected by Haller, 1745. oct.)

*Lin. gen. n.* 175. *Reich. n.* 187. *Schreb. n.* 235 and p. 821. *Gærtn. t.* 84. *Juss.* 19. *Buccaferrea.* *Mich. t.* 35.

*Class.* 4. 3. *Tetrandria Tetragynia.*

*Nat. order of Inundatæ. Naiades, Juss.*

<sup>d</sup> Willdenow.

<sup>e</sup> Vahl.

# R U P

## GENERIC CHARACTER.

*CAL.* Spathe besides the sheaths of the leaves scarcely any.

*Spadix* subulate, quite simple, straight, when the fruit ripens curved inwards, fenced in a double row by the fructifications.

*Perianth* none.

*COR.* none.

*STAM.* Filaments none. Anthers four, sessile, equal, roundish, subdidymous.

*PIST.* Germs four or five, subovate, converging. Style none. Stigmas blunt.

*PER.* none. The seeds are placed each on its peculiar filiform pedicel, the length of the fruit.

*SEEDS* four or five, ovate, oblique, terminated by a flat orbicular stigma.

*OBS.* *Buccaferrea*, Mich. is distinguished from this, and referred to *Monoecia Polyandria*, by *Candida* in *Act. acad. Neap. and Petagna* in *Instit. Botan.* 5. 1826. S.

According to *Micheli and Dillenius*, the male parts are far removed from the females, and these are placed in distinct filiform spadixes. *Gærtn.*

## ESSENTIAL CHARACTER.

*Cal.* none. *Cor.* none. *Seeds* four, pedicelled.

## SPECIES.

1. *Ruppia maritima.* *Sea Ruppia* or *Tassel Pondweed*.  
*Lin. spec.* 184. *Juss.* 169. *Reich.* 1. 359. *Willd.* 1. 717. *hort. cliff.* 436. *fl. succ. n.* 154. *Gærtn. fruct.* 2. 23. *Huds. angl.* 77. *Wither. arr. ed.* 3. 215. *Smith, brit.* 198. *engl. bot. t.* 136. *Lightf. scot.* 124. t. 8. f. 1. *Fl. dan. t.* 364. *Roth. germ.* 1. 75. 2. 208. *Hoffm. germ.* 59. *Krock. files. n.* 264. *Allion. pedem. n.* 2109. *Guet. stamp.* 2. 416. *Pallas, it.* 1. 431.  
*Buccaferrea maritima*, foliis acutissimis. *Mich. gen.* 72. t. 35.  
*Potamogeton maritimum pusillum alterum.* *Raii hist.* 190. n. 10. *Pluk. phyt. t.* 248. f. 4.  
*P. marit. gramineis longioribus foliis, fructu fere umbellato.* *Raii syn.* 134. t. 6. f. 1. *Petiv. brit. t.* 6. f. 1.  
*Gramen marit. fluitans cornutum.* *Bauh. pin.* 3. *prodr.* 7. n. 17. *Reliq. Rudb.* 21. f. 1.  
*Gr. aquæ innatans cum utriculis, f. Fœniculacea marina.* *Bauh. hist.* 3. 784.  
*Fucus ferulaceus.* *Lob. ic.* 2. 255. 2. *obs.* 653. 1. *Ger. emac.* 1573. 7.  
*F. folliculaceus fœniculi folio longiore.* *Bauh. pin.* 365. 6.  
*Muscus marinus ferulaceus.* *Park. theat.* 1289. f. 5.

## DESCRIPTION, &c.

This plant, when not in fruit, very much resembles *Potamogeton pectinatus* or *marinum*, but the leaves are scarcely distich, rather alternate, very long and slender, pointed. The stipules also are not produced at the end, acute and bifid, but retuse. The stems are filiform, and very much branched. About four flowers on a spike, or from one to four, though commonly two, one terminating and one sessile. The spike emerges from the water, and therefore the peduncle or flower-stalk is of very different lengths, according to the depth of the water. Dr. Goodenough has remarked that it is convoluted or spiral, as that of *Vallisneria* is described to be, and relaxes or contracts as the depth of the water increases or diminishes. Anthers sessile, bursting at top into two hemispheres. Germs ovate, after impregnation each elevated on its proper pedicel. Stamens, germs and seeds four in each flower<sup>f</sup>.

*Gærtner* thus describes the fruit. Nuts four or more, aggregate, peduncled, ovate-acuminate, corticate: rind coriaceous-membranaceous, very thin: shell crustaceous, black, one-celled, valveless. Seed ovate-globular, often slightly acuminate, pale.—*Linneus* marks this plant as annual, *Hudson* as perennial.

Native of several parts of Europe in salt-water ditches. In Britain not uncommon. Ray observed it

<sup>f</sup> Smith, Withering, Robson.

between



between Malden and Goldhanger in Essex. Dillenius in the Isle of Shepey. Mr. Woodward near Yarmouth. Mr. Robson near the mouth of the Tees. Mr. Stackhouse in Cornwall. Mr. Lightfoot at Glen-Elg in Invernesshire. It flowers in July.

RUPPIA. See *Zostera*.

RUPTURE-WORT. See *Herniaria*.

RUSCUS (or Ruscum, a prickly shrub, mentioned by Varro, Columella and Virgil. Derivation unknown: unless it be from rufus, as some conjecture, from the colour of the fruit.)

Lin. gen. n. 1139. Reich. n. 1246. Schreb. n. 1559. Tournef. t. 15. Dill. elth. 250. 251. Juss. 42. Gertn. t. 16.

Class. 22. 14. Dioecia Syngenesia.

Nat. order of *Sarmentaceæ*. *Asparagi*, Juss.

#### GENERIC CHARACTER.

\* Male.

CAL. Perianth six-leaved; from erect-spreading: leaflets ovate, convex, with the lateral margin reflexed.

COR. Petals none, unless the alternate calyx-leaves be called so.

Nectary central, ovate, the size of the calyx, inflated, erect, coloured, perforated at the top.

STAM. Filaments none. Anthers three; spreading, placed on the top of the nectary itself, united at the base.

\* Female.

CAL. Perianth as in the male.

COR. Petals as in the male.

Nectary as in the male.

PIST. Germ oblong-ovate, concealed within the nectary. Style cylindric, the length of the nectary. Stigma obtuse, prominent beyond the mouth of the nectary.

PER. Berry globular, three-celled.

SEEDS two, globular.

OBS. There is a species with hermaphrodite flowers, in which the calyx is globular with the mouth six-cleft only.

R. racemosus has hermaphrodite flowers.

In these, and the genera allied to them (*Smilax*, *Rajania*, *Tamus*, &c.) all the seeds seldom arrive at maturity; but one only growing large chokes its brethren.

This genus has great affinity to *Asparagus* and *Medeola*. Juss.

#### ESSENTIAL CHARACTER.

Cal. six-leaved. Cor. none. Nect. central, ovate perforated at the top.

FEM. Style one. Berry three-celled. Seeds two.

#### SPECIES.

1. *Ruscus aculeatus*. Prickly Butcher's-broom.

Lin. spec. 1474. Syst. 896. Reich. 4. 284. hort. cliff. 463. upf. 300. mat. med. 218. Woodv. med. bot. suppl. 68. t. 237. Hudf. angl. 437. Wither. arr. ed. 3. 68. Relb. cant. n. 735. Sibth. oxon. n. 62. Hall. helv. n. 1238. Scop. carn. n. 1230. Villar's dauph. 3. 274. Allion. pedem. n. 2117. Hasselqu. it. 492. Desfont. atlant. 373. Bulliard herb. t. 243. Mill. illustr. Berg. phyt. 2. 35. Blackw. t. 155. (fem.) Sabb. hort. 1. t. 8. Kniph. cent. 1. n. 77. (male) Regnault, bot. (le Houx frelon.)

*Ruscus*. Baub. pin. 470. Baub. hist. 1. 579. Trag. 919. Lonic. 1. 78. 2. Camer. epit. 935. Matth. 1214. Lob. obs. 362. 1. ic. 1. 637. 2. Tabern. ic. 863. Dalech. hist. 243. Raii hist. 664. syn. 262. Park. theat. 253. Mor. hist. f. 13. t. 5. f. 1.

R. f. *Ruscus*. Ger. 759. emac. 907.

R. *myrtifolius aculeatus*. Tournef. inst. 79. Shaw afr. n. 518. Dubam. arb. 2. 236. t. 57.

*Ruscum*. Dod. pempt. 744.

β. *Ruscus rotundifolius*. Barrel. ic. 517.

R. *vulgaris folio ampliore*. Dill. elth. 333, 334. t. 251. f. 324.

Leaves ovate mucronate-pungent, above floriferous naked, branches stiff.

2. *Ruscus Hypophyllum*. Broad-leaved Butcher's-broom.

Lin. spec. 1474. Reich. 4. 284. hort. cliff. 465. upf. 300. Fabr. helmst. 39. Desfont. atlant. 374.

R. *latifolius fructu folio innascente*. Tournef. inst. 79. Shaw afr. n. 517.

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*Laurus alexandrina*. Lob. adv. part. alt. 509. Baub. hist. Raii hist. 663. 2.

L. A. *fructu folio insidente*. Baub. pin. 305. Mor. hist. f. 13. t. 5. f. 3. Blackw. t. 194.

L. A. *Chamædaphne*. Col. ecphr. 1. 364. t. 165. f. 1.

L. A. *genuina*. Park. theat. 700. 1. & *Chamædaphne vera* Dioscoridis. 700. 2.

L. A. *altera*. Matth. 841. Tabern. ic. 862. Dalech. hist. 208. Barrel. ic. 250.

L. A. *vera*. Clus. hist. 278. Raii hist. 663. 3.

β. *Ruscus latifolius*, fructu ex medio foliorum extra pendente. Dill. elth. 333. t. 251. f. 323.

Leaves floriferous underneath naked.

3. *Ruscus Hypoglossum*. Double-leaved Butcher's-broom.

Lin. spec. 1474. Reich. 4. 285. hort. cliff. 466.

upf. 300. mat. med. 218. Scop. carn. n. 1231.

Allion. pedem. n. 2118. Sabb. hort. t. 9. Desfont.

atlant. 374. Kniph. cent. 1. n. 78. (male.)

R. *angustifolius*, fructu folio innascente. Tournef. inst. 79.

*Hypoglossum*. Lob. adv. 284. ic. 638. Blackw. t. 128. Barrel. ic. 250.

H. *Dioscoridis & Lauritaxa* Plinii. Col. ecphr. 1. 166.

*Hypoglossum*. Dod. pempt. 745. Matth. 1195.

H. *mas & femina*. Ger. 761.

H. f. *Bislingua*. Park. theat. 702.

*Laurus alexandrina fructu pediculo insidente*. Baub. pin. 304. Raii hist. 663. 1. Mor. hist. f. 13. t. 5. f. 2.

*Radix idæa* Dioscoridis. Col. phyt. 63.

*Uvularia*. Brunf. 3. 96 & 97.

*Bonifacia f. Bislingua*. Baub. hist. 1. 575.

Leaves floriferous underneath beneath the leaflet.

4. *Ruscus androgynus*. Climbing Butcher's-broom.

Lin. spec. 1474. Reich. 4. 285. hort. cliff. 464.

R. *latifolius e foliorum sinu florifer & baccifer*. Dill. elth. 332. t. 250. f. 322.

*Laurus alexandrina palmenfis baccis e crenis foliorum prodeuntibus*. Pet. mus. n. 258.

Leaves floriferous at the edge.

5. *Ruscus racemosus*. Alexandrian Laurel.

Lin. spec. 1474. Syst. 896. Reich. 4. 285. hort.

cliff. 496. Gouan monsp. 511. Du Roi barbecc.

2. 381. Sabb. hort. 1. t. 10. Fabric. helmst. 39.

R. *angustifolius*, fructu summis ramulis innascente.

Tournef. inst. 79. Mich. pif. 82. Dubam. arb. 4.

*Laurus alexandrina angustifolia ramosa fructu ad extremum ramoso*. Mor. hist. 3. 541. f. 13. t. 5. f. 14.

L. A. *fructu e summitate caulium prodeunte*. Herm. lugdb. 679. t. 681. Raii hist. 663. 4.

Raceme terminating hermaphrodite.

#### DESCRIPTIONS, &c.

1. [Roots thick, white, twining about each other, putting out frequent fibres like those of *Asparagus*, oblique, striking deep in the ground. Stem suffruticose, tough, stiff, green, round, striated, from eighteen inches to three feet in height, sending out from the sides many short branches; having many leaves on them, nearly of the same shape and size with those of *Myrtle*, but very stiff, and ending in sharp prickly points: they are alternate, about half an inch long, and one-third of an inch broad near the base, ovate, quite entire, sessile. From the middle of the leaf above comes out a single flower, on a very short pedicel, it is small and yellowish green or purplish; when it first appears, it is the size and shape of a small pin's head; when expanded composed of three outer widish calyx-leaves, and three inner narrower like rays, ending in a narrow point. The three last some consider as petals; and Mr. Stackhouse found a male flower fallen from the plant, which had only three leaves corresponding with those of the calyx. Mr. Woodward remarks, that the flower does not properly grow out of the leaf, but on a pedicel from the bosom of the leaf, which is immersed beneath the outer coat, whence it may with ease be dissected. The female flowers are succeeded by berries, which are red, bigger than those of *Asparagus* and almost as large as some *Cherries*, of a sweetish taste; having two large orange-coloured seeds



seeds in each, gibbous on one side, flat on the other, and extremely hard. The flowers come out in march and april, and the seeds ripen in winter<sup>g</sup>.]

The green shoots are cut, bound into bundles and sold to the butchers for sweeping their blocks, whence its common name in English.

[It is very frequently made into besoms in Italy.

The hucksters there also place the boughs round their bacon and cheese to defend them from the mice<sup>h</sup>. From Virgil's account of the *Ruscus*, it seems as if it was used in Italy to tie up the vines. But the second sort was more adapted to that purpose. Or perhaps it was Miller's *flexuosus*, observed in Italy by Micheli; which is five feet high with very pliant branches.]

The young shoots in the spring are sometimes gathered and eaten by the poor like those of *Asparagus*; and the branches with the ripe fruit on them were formerly stuck up in sand, with the stalks of male Peony, and wild Iris or Gladwyn, full of their ripe seeds, which all together made a show in rooms during winter. Planted under trees or shrubs the *Ruscus* will spread into large clumps, and as it retains the leaves all winter, will have a good effect.

[The root has a bitterish taste, and was formerly much recommended as an aperient and diuretic in dropsies, urinary obstructions and nephritic cases. Dioscorides speaks highly of its deobstruent and diuretic powers, under the name of *μυρσιν αργία*; Riverius relates a case of dropsy successfully treated by a decoction of the roots. Bauhin and others give strong cases of its effects in dropsy; but at present this plant is very rarely, if ever, employed in medicine<sup>i</sup>. It may however hereafter take its turn with Hemlock, Foxglove, Mezereum, &c.

Native of Europe, but not in the northern parts. It is said that it will not bear the winters of Sweden. Native also of Asia and Africa. In England it is not uncommon in woods, thickets and hedges. Mr. Ray remarked it at Black Notley in Essex, where he lived. Bobart, in the woods of Berkshire and Oxfordshire. Mr. Crowe, in Hethel woods near Norwich. Mr. Woodward, near Lowestoft, in Suffolk. Dr. Withering, in the New Forest, near Stony Cross. Mr. Ray, at Anglesey Abbey in Cambridgeshire. Dr. Sibthorp, between Caverham and Maple Durham in Oxfordshire. Blackstone, in Perry wood, near Feverham in Kent. In Ray's synopsis it is said to be common on heaths about Woolwich. Mr. Blackstone has it in his catalogue of plants about Harefield in Middlesex. It has been found on Hampstead heath by Gerarde. I have observed it in Norwood, Surry. Butcher's Broom does not seem to have been found in Scotland, or in the very northern counties of England. It is known by the names of Knee-holly, Knee-holm or Knee-hulver, pricking or wild Myrtle; and prickly Pettigree. In French it is called le Houx frelon, petit Houx, Buis piquant, and Fragon piquant.

β. Dillenius has figured two single leaves, which are larger than in the common sort, and seem to be a variety only of that.

Mr. Fairbairne, gardener to the company of Apothecaries at Chelsea, presented to the Linnean Society, in 1796, a living specimen of a *Ruscus*, which though long cultivated there, had been overlooked as a variety of the *aculeatus*. It has this specific character given by the President: leaves elliptic acute at both ends mucronate-pungent above floriferous naked, branches loose. From this last circumstance Dr. Smith named it *Ruscus laxus*<sup>k</sup>.]

2. The roots of this have large knotty heads, with long thick fibres like those of the preceding sort; from which arise many tough limber stalks near two feet high. Leaves stiff, ovate-oblong ending in points, more than two inches long and almost one broad, placed alternately. Flowers produced on the under surface of the leaves near the middle, sitting close to the midrib; they are small and herbaceous. The female flowers are succeeded by small red berries about the size of those of Juniper.

[Stems suffruticose, green, simple, very slightly striated. Leaves perennial, coriaceous, shining, quite entire; the lower ones in whorls. Petioles very short, accompanied by an acute scale at the base. Flowers glomerate, from the middle and generally from the lower surface of the leaves. Pedicels filiform, unequal, one-flowered. Calycine segments linear, white, reflexed. Stamens six: filaments united into a cylinder. The female has six barren stamens. Berry red, shining, pendulous. Seed commonly one, horny, white, round; with two others that are abortive<sup>l</sup>.

Native of Italy and Africa. It flowers in may and june; and was cultivated in 1683, by Mr. James Sutherland<sup>m</sup>.

Parkinson, who makes two of this, says that he had one by means of Dr. Flud, and the other from his good friend Master John Tradescant.

β. Dillenius figures and describes a plant which he regards as intermediate between this and the next species.]

3. Root like the preceding. Stems about ten inches high. Leaves lanceolate, about three inches long, and one inch broad in the middle, drawing to a point at both ends, and having several longitudinal veins running from the foot-stalk to the point: they are mostly alternate, but sometimes opposite. On the middle of the upper surface comes forth a small leaf of the same shape; and at the same point, from the bottom of the small leaves, come out the flowers, which are of a pale yellow colour. The berries are almost as large as those of the first sort; they are red and ripen in winter.

[According to Scopoli, the stem is a cubit in height, simple, grooved, of the same colour with the leaf. Leaves oblong, nerved; the lower in whorls; the upper alternate. Flowers two or three, from a scaly nest. Peduncles longer than the flowers, but shorter than the fruit, covered by a lanceolate leaflet. Berry red, ovate. Seeds one or two, bony, hemispherical.

Desfontaines regards it as a variety of the preceding, differing only in having narrower leaves; and the flowers emerging from the middle of the leaf under a leaflet.

Native of Italy, Idria, Hungary, Africa about Algiers.—It flowers in april and may; and was cultivated by Gerarde in 1597<sup>n</sup>.]

4. This sends out pliant stalks which rise seven or eight feet high, and have several short branches proceeding from their sides. Leaves stiff, about two inches long, and one inch broad towards their base, where they are rounded to the foot-stalk, but they end in acute points; many longitudinal veins run from the foot-stalk to the point. The flowers are produced in clusters on the edges of the leaves, and are white. Berries yellowish red, not so large as those of the first sort.

[Stems two or three cubits in length, green, the size of a finger or more at bottom, from the middle upwards the size of a straw, whence, at the distance of about two inches from each other, spring branches from a hand to a span in length, having six, seven or eight leaves on them, placed alternately, except in the terminating branch, whereon they are opposite: the leaves are evergreen, smooth and even, shining, contracted towards the base, and pointed at the end, marked with slender parallel veins: all together having the appearance of a pinnate leaf. Some of these leaves are entire; others, especially the upper ones, in their wider part have a sinus, next to which from the lower part of the leaf, in the month of may, spring greenish globules in a ball, which in five or six weeks expand into so many flowers, larger than in the other species, divided down to the base into six equal segments, naked, on very short pedicels, pale at first, but turning yellower as they advance. Berry round, first green, then yellowish, and finally red. Seed large, globular, horny.

This differs from the other species in having androgynous flowers divided into six equal segments to the

<sup>g</sup> Ray hist. Withering.

<sup>h</sup> Idem.

<sup>i</sup> Woodville.

<sup>k</sup> Linn. trans. 3. 334.

<sup>l</sup> Desfontaines.

<sup>m</sup> Hort. kew.

<sup>n</sup> Idem.



bottom, but falling off in one piece, and arising from the edge, and not the disk of the leaf<sup>a</sup>.

Native of the Canary Islands. Cultivated in 1713, in the Royal Garden at Hampton Court. It flowers most part of the summer<sup>b</sup>.]

5. Roots like those of the other species. Stalks slender and much more pliable: they rise about four feet high, and send out many side branches. Leaves oblong, acute-pointed, about two inches long, and one-third of an inch broad, rounded at the base, smooth, of a lucid green, placed alternately, and sessile. Flowers in long bunches at the end of the branches, of an herbaceous yellow colour. Berries like those of the first sort, but smaller; ripening in winter: [—superior, globular, fleshy, smooth, red, with a round coriaceous white disk at the base, three-celled. In each cell one seed, but frequently one only in the whole berry, ovate-globular, obscurely angular, at the top slightly acuminate, and marked with a lateral umbilicus near the tip, below blunt, pale yellow or the colour of honey. The umbilicus of the seed is inserted into a small scar in the upper part of the partitions. It frequently happens that one seed only ripens, and then the berry becomes one-celled. Haller has given an instance of this in hort. goetting. Sometimes the berry is two-celled: but the natural number of cells is three, and that is the most common. The embryo of the seed is one-lobed, nearly cylindric, but with one end more turgid and exterior; the other attenuated, slightly compressed and interior: it scarcely exceeds one-third of the albumen in length, and is placed in the lower part of it, opposite to the umbilicus<sup>c</sup>.

Native of Portugal, (Linneus and Miller say, the Islands of the Archipelago.) It was cultivated in 1739, in the botanic garden at Chelsea<sup>d</sup>. Mr. Ray says (1686) that he saw it in the Royal Garden at Paris. Could it be above half a century in travelling from Paris to England?

The Alexandrian Bay, (or Alexandrian Laurel, as it is now generally called) is supposed to be the plant, with which the ancients crowned their victors. The stalks, being very pliable, might easily answer this purpose; and the leaves having a great resemblance to those which are represented on the ancient busts.

[The same story was told of the second species, before this was so well known<sup>e</sup>. But there is no foundation for the opinion that either of them graced the heads of ancient heroes. See *Laurus nobilis*.

The Alexandrian Laurel is a beautiful elegant shrub, and should appear in the front of all ornamental plantations.]

Mr. Miller has three other species:—

1. *Ruscus trifolius*, n. 5. with ovate-acuminate leaves placed by threes, and flowers on their upper sides. This he says, is a native of Zante, and some other Greek islands. The stalks are about two feet high, slender, pliable, with leaves about two inches long and an inch broad rounded at both ends, terminating in acute points, having several longitudinal diverging veins running from the footstalk to the point, and placed by threes round the stalk. The flowers grow on the under side of the leaves, fastened to the midrib; they are naked, and have pretty long footstalks, and their segments are very narrow. There is little doubt of this being a variety of the second species. Mr. Miller contradicts himself in the specific character and the description.

2. *Ruscus flexuosus*, n. 6. with ovate-acuminate leaves, bearing flowers on their upper sides, and flexible stalks.—*R. latifolius* major fructu folio innascente, of Micheli.

It is a native of Italy, where it was discovered by Micheli. The roots are much longer than those of the first sort; the stalks rise near five feet high, are very pliant, and send out several side branches their whole length. The leaves are stiff, an inch long, and half an inch broad. The flowers are produced on the upper surface of the leaves sitting close to the midrib,

small and herbaceous. The berries are smaller than those of the first sort, and of a pale red when ripe. This can be nothing more than a variety of *R. aculeatus*. May it not be the *R. laxus* of Dr. Smith?

3. *Ruscus frutescens*, n. 8. with a shrubby branching stalk, lanceolate stiff leaves, and flowers growing upon foot-stalks terminating the branches.—*R. latifolius frutescens*, floribus racemosis rubris. *Hoult. MSS.*

This was discovered by Dr. Houstoun at Carthægena in New Spain. It rises with shrubby stalks eight or ten feet high, and dividing into many branches. Leaves three inches long, and one inch broad in the middle, ending in acute points: some are in whorls, others opposite. The flowers are produced in loose bunches at the end of the branches, on slender foot-stalks; they are small, of a red colour, and shaped like those of the first sort.

#### PROPAGATION AND CULTURE.

1. 2. 3. 5. All these sorts being very hardy, and thriving in almost any soil or situation, are very proper for planting round the verges of close woods, or under large trees in wilderness quarters; and as they are always green, they make a good appearance in winter, after the deciduous trees have cast their leaves. They are easily increased by parting their roots in autumn; but when this is performed, if they are divided into small parts, it will weaken them so much, that they will make little figure, until they have had two or three years growth. They may also be propagated by the seeds, but this being a very tedious method, is seldom practised.

4. This being tender must be planted in pots filled with fresh earth, and in winter removed into the greenhouse; but it should be placed where it may have free air in mild weather, for it only requires to be screened from frost, and in summer must be set abroad with other hardy greenhouse plants. With this management the plants will send forth stems six or eight feet high, furnished with leaves from bottom to top, and in June will be closely set with flowers upon their edges, which make a very beautiful and odd appearance, and render it worthy of a place in every good collection of plants. This is also propagated by parting the roots as the former, which should not be done very often; because, if the roots are not permitted to remain some time to get strength, they will produce but weak shoots, and very few flowers; and in the strength of their shoots and number of flowers, the greatest beauty of these plants consist. This sort may also be propagated from seeds; but these commonly lie in the ground a year before the plants come up, so should be sown in pots filled with fresh earth, and placed under a hot-bed frame in winter, to screen the seeds from the frost, and the following spring the plants will appear.

[Rush. See *Juncus*.

—, Flowering. See *Butomus*.

—, Sweet. See *Acorus* and *Andropogon*.

RUSSELIA. (So named by Jacquin, in honour of Alexander Russel, M.D.F.R.S. born in Scotland; died 1768. Author of the Natural History of Aleppo, Lond. 1756. —Second edition, revised, &c. by his brother Patrick Russel, M.D.F.R.S. 1794. Patrick published a fine work on Serpents collected on the coast of Coromandel, Lond. 1796. fol.)

Lin. gen. Schreb. n. 1041. Jacqu. amer. 178. Juss. 118.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Scrophulariæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-leaved, permanent: leaflets ovate, concave, acuminate, small, erect.

COR. one-petalled. Tube cylindric, compressed a little, erect, very long, internally under the lower lip hairy. Border two-lipped: upper lip roundish, flat, emarginate, spreading, with the tip reflexed: lower lip trifid; segments oblong, obtuse, flat, spreading very much, a little longer than the upper.

STAM. Filaments four, filiform, erect; a little shorter than the tube; two of them longer. Anthers ovate.

PIST. Germ. ovate. Style filiform, erect, the length of the shorter stamens. Stigma globular.

PER.

<sup>a</sup> Dillenius. <sup>b</sup> Hort. kew. <sup>c</sup> Gartner. <sup>d</sup> Hort. kew.

<sup>e</sup> Mor. hist. 3. 541.



# R U T

**PER.** Capsule roundish, pointed by part of the style which is permanent, one-celled, two-valved, the length of the calyx.

**SEEDS** numerous, very small.

## ESSENTIAL CHARACTER.

**Cal.** five-leaved, setaceous at the end. **Cor.** tube very long, hairy at the throat: border two-lipped; lower lip trifid. **Caps.** acuminate, one-celled, two-valved, many-seeded.

## SPECIES.

1. *Russelia farmentosa*.

*Jacqu. amer.* 178. *piet.* 171.

## DESCRIPTION, &c.

Stems shrubby, four-cornered, wandlike, smooth, very long and weak, numerous, supported on neighbouring shrubs three or four feet in height, and then bending down again. Leaves ovate, serrate, acute, somewhat hirsute on the upper surface and at the edge, smooth on the under surface, on very short petioles, opposite, an inch long, and placed at two or three inches distance from each other. Peduncles axillary, opposite, three-flowered or two-flowered, only half the length of the leaves, in the direction of the stem; the pedicels reflexed after the flowers fall. At the base of each pedicel a lanceolate bracte. Flowers handsome, of a fine red colour, but without scent, almost an inch over.

Found by Jacquin about Havana, in close woods and coppices.

Jussieu remarks that the fruit requires more accurate examination.

**RUSSELIA.** *Linn. suppl.* See *Vahlia*.]

**UTA.** (Adopted by the Romans from the Greek *Purn*. Varro: which is from *puo*, *servo*, being reputed a great preserver of health. Vossius. *Purn* seems to have been the more ancient name, particularly in Peloponnesus; and Πύρνον the more modern. The latter is from πύρνον, constringo. Plutarch, &c.)

*Lin. gen.* n. 523. *Reich.* n. 563. *Schreb.* n. 725.

*Tournef.* t. 133. *Juss.* 297. *Gartn.* t. III.

*Pseudo-Ruta.* *Mich.* 19.

**Class.** 10. 1. Decandria Monogynia.

**Nat. order of** *Multifloræ.* *Rutaceæ*, *Juss.*

## GENERIC CHARACTER.

**CAL.** Perianth five-parted, short, permanent.

**COR.** Petals five, spreading, subovate, concave; with narrow claws.

**STAM.** Filaments ten, awl-shaped, spreading, the length of the corolla, widest at the base. Anthers erect, very short.

**PIST.** Germ gibbous, inscribed with a cross, surrounded at the base by ten honey dots; raised on a receptacle punctured with ten honey pores. Style erect, awl-shaped. Stigma simple.

**PER.** Capsule gibbous, five-lobed, half-five-cleft, five-celled, opening into five parts between the tips.

**SEEDS** very many, rugged reniform-angular.

**Obs.** *R. graveolens*, in all the flowers, except the primary one, loses a fifth part of the number in every part of the fructification; and has the petals ciliate at the base.

## ESSENTIAL CHARACTER.

**Cal.** five-parted. **Pet.** concave. **Recept.** surrounded by ten honey dots. **Caps.** lobed.

## SPECIES.

1. *Ruta graveolens.* *Common Rue.*

*Lin. spec.* 548. *Juss.* 397. *Reich.* 2. 265. *Willd.*

542. *hort. cliff.* 145. *upf.* 102. *mat. med.* 113.

*Woodv. med. bot.* 108. t. 37. *Gartn. fruct.* 2.

138. *Willd. arb.* 330. *Hall. belv. n.* 1103.

*Scop. carn. n.* 477. *Krock. files. n.* 621. *Villars,*

*dauph.* 3. 584. *Allion. pedem. n.* 1024. *Ludw.*

*est. t.* 20. *Blackw. t.* 7. *Kniph. cent.* 3. n. 79.

*Plenck, ic.* 332.

*R. sylvestris major.* *Baub. pin.* 336. *Park. theat.*

133. 3. *Raii hist.* 874. 3. *Mor. hist.* 2. 507.

f. 5. t. 14. f. 3. *Tournef. inst.* 257. *Dubam.*

*arb.* 2. 61. *Garid.* 416.

*R. montana.* *Ger.* 1071. 4. *emac.* 1255. 4.

‘ Jacquin.

# R U T

β. *Ruta hortensis.* *Mill. dict. n.* 1.

*R. hort. latifolia.* *Baub. pin.* 336.

*R. hortensis.* *Ger.* 1070. 1. *emac.* 1255. 1.

*R. hort. major.* *Park. theat.* 133. 1.

*R. sativa vel hortensis.* *Baub. hist.* 3. 197. *Raii hist.* 874. 1.

*R. graveolens hortensis.* *Dod. pempt.* 119.

γ. *R. hort. latif. arbusculæ similis.* *Boerb. lugdb.* 1. 260.

*R. africana maxima.* *Swert. hort.* 24.

Leaves superdecompound, leaflets oblong, the end one obovate, petals quite entire.

2. *Ruta montana.* *Mountain Rue.*

*Lin. spec. ed. Willd.* 543. *Ait. kew.* 2. 57. *Loeffl.*

*it.* 140. *Clus. hist.* 2. 136. *Park. theat.* 134.

*Villars dauph.* 3. 582. *Hall. belv. n.* 1004.

*R. legitima.* *Jacqu. collect.* 1. 74. *ic. rar.* 1. t. 76. *Allion. pedem. n.* 1023.

*R. tenuifolia.* *Desfont. atlant.* 336.

*R. sylvestris.* *Mill. dict. n.* 3.—minor. *Baub. pin.* 336.

*Camer. epit.* 495. *Tabern. ic.* 134. *Baub. hist.* 3. 200.

*Raii hist.* 874. 4. *Mor. hist. f.* 5. t. 14. f. 4. *Tournef.*

*inst.* 257. *Lcb. ic.* 2. 54. *Dalech. hist.* 973.

*R. sylv. minima.* *Dod. pempt.* 120. *Ger.* 1071. 3. *emac.* 1255. 3.

*R. sylv. tenuifolia.* *Matth.* 541.

*R. montana legitima.* *Clus. hist.* 2. 136.

Leaves superdecompound, all the leaflets linear, petals quite entire.

3. *Ruta chalepensis.* *African Rue.*

*Lin. syst.* 397. *Reich.* 2. 265. *Willd.* 543. *mant.*

69. *Villars dauph.* 3. 583. *Lour. cochinch.* 269.

*ed. Willd.* 330.

α. *R. chalep. latifolia,* *florum petalis villis scatentibus.* *Tournef. inst.* 257.

*Broad-leaved African Rue.*

β. *R. chalep. tenuifolia,* *florum petalis villis scatentibus.*

*Mor. hist.* 2. 508. f. 5. t. 35. f. 8.

*Narrow-leaved African Rue.*

Leaves superdecompound oblong, the end one obovate, petals ciliate-toothed.

[4. *Ruta pinnata.* *Wing-leaved Rue.*

*Lin. suppl.* 232. *Juss.* 397. *spec. ed. Willd.* 544. *Ait.*

*kew.* 2. 58.

Leaves pinnate, leaflets lanceolate attenuated at the base, serrate-crenate; petals quite entire.]

5. *Ruta patavina.* *Three-leaved Rue.*

*Lin. spec.* 549. *Juss.* 398. *Reich.* 2. 266. *Willd.*

544.

*Pseudo-Ruta patavina trifolia,* *floribus luteis umbellatis.* *Mich. gen.* 22. t. 19.

Leaves ternate sessile linear quite entire attenuated at the base.

6. *Ruta linifolia.* *Flax-leaved Rue.*

*Lin. spec.* 549. *Juss.* 398. *Reich.* 2. 266. *Willd.*

544. *hort. cliff.* 146. *Desfont. atlant.* 336.

*R. sylvestris linifolia hispanica.* *Bocc. mus.* 2. 82.

t. 73. *Barrel. ic.* 1186.

β. *Ruta montana,* *foliis integris subrotundis.* *Buxb.*

*cent.* 2. 30. t. 28. f. 2.

Leaves simple lanceolate smooth, filaments ciliate, stem simple herbaceous.

[7. *Ruta fruticulosa.* *Shrubby Rue.*

*Lin. spec. ed. Willd.* 545. *Billard. syr.* 1. 13. t. 4.

*R. orientalis linariæ foliis,* *flore parvo.* *Tournef. cor.* 19.

*Buxb. cent.* 2. 30. t. 28. f. 1.

Leaves simple linear spatulate pubescent, filaments woolly, stem branched shrubby.

## DESCRIPTIONS, &c.

1. Root woody, branched. Stems frutescent, covered with a rugged, gray, striated bark, eighteen inches high and more. Branches, especially the young ones, smooth and pale green. Leaves glaucous, pulpy, dotted, divided like the umbellate plants, doubly pinnate, or more properly what Linneus calls superdecompound. Leaflets obovate, sessile; the lower ones smallest; the end one commonly trifid with the middle lobe much larger than the rest. Flowers in a branching corymb on subdivided peduncles. Haller calls it a semiumbellated raceme; and Linneus a panicle, the first branches of which are two-parted, with the rest of the flowers alternate. The flower that first opens, and



and is below the others on a very short pedicel, has a five-parted perianth, and a five-petalled corolla; with ten stamens; this Linnaeus calls the primary flower, and takes the character of the class from it. The other flowers have a four-parted perianth, and a four-petalled corolla, with eight stamens. In all the calyx is small; the petals concave or boat-shaped, spreading out wide from each other almost horizontally, and of a yellow colour with a tinge of green in the middle; the stamens alternately merged in the hollow of each petal and spreading straight out in the middle between them. Germ very large dark green.

Gærtner thus describes the fruit: It is a subglobular capsule, with the surface scrobicular dotted, the upper half dividing into five lobes in the primary flower, and into four lobes in the rest, within divided into as many cells, and opening into as many parts between the lobes. Receptacles five or four, ovate, fleshy, excavated, fastened to each internal angle of the cells. Seeds about six in each cell, oblong, angular-reniform, rugged with very minute wrinkles, ash-coloured.

Native of the South of Europe, and flowering from June to September. It appears from Turner, our oldest botanical writer, that it was cultivated in England in 1562<sup>u</sup>. But its medical qualities having been rated so high, there can be little doubt of our having had Rue in our gardens some centuries earlier.

Rue was anciently also named in English *Herb Grace* or *Herb of Grace*; if I am not mistaken, it is to this day called *Ave-Grace* in Sussex, in allusion doubtless to *Ave Maria gratia plena*: and it is remarkable that Mary in Hebrew signifies bitter. Warburton says that Rue had its name *Herb of Grace* from its having been used in exorcisms. But although this plant be celebrated as a cure for almost every disease, as a counterpoison, and as good against the pestilence; yet I do not find this excellence of it recorded. When Ophelia, in Shakspeare's *Hamlet*, says to the Queen—"there's Rue for you, and here's some for me: we may call it Herb of Grace o' Sundays:"—the fair moralist has no reference to this plant being used in exorcisms performed in churches on Sundays; but means only, that the queen may with peculiar propriety, on Sundays, when she solicits pardon for that crime which she has so much occasion to rue and repent of, call her Rue *herb of grace*. It was indeed the common name for Rue in Shakspeare's time: and Greene, in his *Quip* for an upstart Courtier, has this passage:—"some of them smiled and said, Rue was called *Herbegrace*, which though they scorned in their youth, they might wear in their age, and that it was never too late to say *miserere*."

The Gardener in Richard II. says of the Queen:

"Here did she drop a tear; here in this place,  
"I'll set a bank of Rue, your *herb of grace*:  
"Rue even for ruth, here shortly shall be seen,  
"In the remembrance of a weeping queen."

Here the gardener plays upon the name, and might mislead an etymologist who knew no better. He might with more truth have called Rue bitter than four; and he whimsically enough makes it take the place of Rosemary; which was the emblem of *remembrance*, as Rue was of *grace*. Thus Perdita, in the *Winter's Tale*—

—"Reverend sirs,  
"For you there's Rosemary and Rue; these keep  
"Seeming and favour all the winter long:  
"Grace and remembrance be to you both."

They are both evergreens, retaining their appearance and taste during the whole year, and therefore are proper emblems of remembrance and grace.

Rue seems to have been used formerly in nosegays; for the Clown in *All's well that ends well*, having said of the Countess, "she was the sweet-marjoram of the salad, or rather the herb of grace." Lafau replies; "they are not salad-herbs, you knave, they are nosegay-herbs." Upon which the Clown, in character, re-

marks; "I am no great Nebuchadnezzar, sir, I have not much skill in grass:" thus punning upon the name of Grace, as the Gardener did upon the other name of Rue.

Rue was much used by the ancient: Hippocrates commends it as a resolvent and diuretic, and attributes to it the power of resisting contagion and poisons; which is now very little credited, though so highly extolled by Boerhaave. It is doubtless a powerful stimulant, and may be considered, like other medicines of the fetid kind, as having attenuating, deobstruent and antispasmodic powers: and as peculiarly adapted to phlegmatic habits, or weak and hysterical constitutions, suffering from retarded or obstructed secretions. *Ruta* is directed by the London College in the form of an extract, and it is also an ingredient in *Pulvis e myrrha compositus*. By some it is employed in the way of tea<sup>r</sup>.

β. The description given above is chiefly from the wild plant. The garden shrub differs little from this except in size. In hot climates it is said to become a tree.]

Mr. Miller distinguishes two garden species: the first, which he calls *Ruta hortensis*, rising to the height of five or six feet. The second, *Ruta altera*, is only three or four feet high, and has narrower leaves. The flowers grow in longer and looser bunches. The seed-vessel is smaller. This being hardier than the first, has almost supplanted it in the gardens about London.

2. The lower leaves are composed of several parts; which are joined to the midrib in the same manner as other branching winged leaves, and have linear leaflets standing without order. Stalks from two to three feet high, branching out from the bottom, and garnished with leaves divided into five parts, and those at the top into three, which are as small and narrow as the bottom leaves; they are of a gray colour, but not so fetid as those of the preceding. The flowers grow at the end of the branches in loose spikes, which are generally reflexed. The petals are yellow. The seed-vessels are small, and filled with angular black seeds.

[It is now generally agreed that this which Mr. Miller distinguished under the name of *R. sylvestris*, is a distinct species. Haller says it is very different; having a branched stem, two feet high, the leaves much more finely divided, with the last segments linear and very sharp.

According to Villars, the leaves are decomposed, and the leaflets cylindric, very narrow, a little resembling those of *Seseli glaucum*. Stem straight and simple; the flowers though alternate, are turned to one side, and borne on branches which spring nearly from the same point, so that they appear to be in an umbel. The petals are entire, a little concave, with the border membranous and entire.

It differs, says Desfontaines, from *R. graveolens*, in having the leaves multifariously decomposed, with the leaflets very narrow and linear. The plant is corrosive, and has a very strong smell.

Native of the South of Europe, and Barbary. It flowers in August and September; and was cultivated by Mr. Miller in 1739<sup>z</sup>.

3. This is very like *R. graveolens*, and is its offspring. The first flowers are five-cleft, and the others four-cleft, as in that. The petals are concave with a waved margin, as in *R. graveolens*; but the stem is loftier. The petals are ciliate at the edge<sup>a</sup>.

Leaves thick, blunt, singly winged or ternate. Petals hollowed like the bowl of a spoon, with great flattened hairs like the eye-lashes round them. They smell insupportably strong. It seems only to be a variety of *R. graveolens*<sup>b</sup>.

Stem three feet high, upright, round, very much branched. Leaves superdecompound, oblong-ovate, smallish, cinereous, smooth, strong-smelling. Flowers in a terminating panicle. Segments of the calyx four, acute, spreading. Petals four, ovate, concave, ciliate, yellow. Pores of the nectary ten. Stamens eight. Capsule four-lobed, rugged, four-celled<sup>c</sup>.

<sup>r</sup> Woodville.

<sup>z</sup> Hort. kew.

<sup>a</sup> Linn. mant.

<sup>b</sup> Villars.

<sup>c</sup> Loureiro.

<sup>u</sup> Hort. kew.  
<sup>x</sup> Malone and Henley in Steevens's Shakspeare.



## R U T

β. This variety differs in having the claws of the petals longer, and the lobes of the capsule approximating, not distant<sup>d</sup>.]

Mr. Miller describes *R. chalepensis* as having strong shrubby stalks about three feet high, dividing into many branches; leaves larger than those of the common sort, with a stronger odour; the flowers disposed almost in form of an umbel at the end of the branches, having five concave yellow petals whose borders are set with fine hairs, and ten stamens of equal length with the petals; the seed-vessels much larger than those of the common sort.

[Native of Africa: of Arabia, according to Linneus; of Dauphiné, according to Villars, of Aleppo and the Cape of Good Hope, according to Miller, cultivated in China and CochinChina, according to Loureiro. In 1722, it was cultivated in the botanic garden at Chelsea. It flowers from June to September<sup>e</sup>.

Linneus having observed that the Rue moves one of its stamens every day to the pistil, Dr. Smith examined this species, which differs very little from the common Rue, and found many of the stamens in the position which he describes, holding their anthers over the stigma; while those which had not yet come to the stigma were lying back upon the petals, as well as those which, having already performed their office, had returned to their original situation. Trying with a quill to stimulate the stamens, he found them all quite devoid of irritability: they are stout, strong, conical bodies, and cannot, without breaking, be forced out of the position in which they happen to be. The same phenomenon has been observed in several other flowers; but it is no where more striking, or more easily examined than in the Rue. Hence Dr. Smith concludes, that these plants are endued with a kind of spontaneous motion<sup>f</sup>. This is not a very philosophical conclusion. To a similar effect we are taught to assign the same cause: and because we cannot excite the irritability, it does not therefore follow that the subject is not irritable.

4. Stem as in the other species. Leaves pinnate, composed of three pairs with an odd leaflet: the lateral leaflets opposite, linear, entire or crenulate, dotted; the odd leaflet subovate, serrate<sup>g</sup>.—Native of the Canary Islands by Masson. Introduced in 1780. It flowers in March<sup>h</sup>.]

5. The stalk rises singly from the root, is about a foot high, and herbaceous. Leaves alternate, narrow. The stalk branches at the top in form of an umbel, sustaining many yellow flowers, composed of five entire plane petals, having no hairs on their borders. It seems to be a plant of short duration.

[This species was first discovered by Micheli near Arqua, not far from Padua. He considered it as a distinct genus, because it has five flat naked petals. It was cultivated by Mr. Miller in 1768.]

6. This rises with several single stalks from the root near a foot and half high. Leaves three quarters of an inch long, and one eighth of an inch broad, of a yellowish green colour, alternate, sessile; at their base one or two very small, but of the same shape and colour. Flowers in small clusters at the end of the stalks: petals five, oblong, yellow. Stamens ten, equal in length to the petals, terminated by awl-shaped anthers.

[The lateral branches of the panicle, bifid, three-flowered, with the middle flower sessile. Petals five, sessile, entire, ovate. Filaments hairy at the base, closely confining the receptacle pricked with melliferous pores. The pericarp has raised dots<sup>i</sup>.

Stems herbaceous, smooth, round, upright, often many from the same head, simple or scarcely branched. Leaves scattered, smooth, quite entire, spatulated-lanceolate, blunt, thickish, running down the petiole: the lower ones smaller. Flowers in terminating corymbs. Bractes linear-lanceolate, leafy. Calyx five-toothed. Petals entire, concave, ovate, blunt. Filaments ciliate at the base. Germ surrounded by five villose tubercles<sup>k</sup>.

<sup>d</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>f</sup> Philos. trans. vol. 78. for 1788. p. 162.

<sup>g</sup> Linn. suppl.

<sup>h</sup> Hort. kew.

<sup>i</sup> Linn. spec.

<sup>k</sup> Desfontaines.

## R U Y

Native of Spain, and Tunis. Cultivated by Mr. Miller in 1759.

β. Buxbaum's plant is not different from that which grows in Spain<sup>l</sup>.

7. Stem a span high, most branched at bottom: branches hairy, round. Leaves alternate, entire, sessile; the upper ones smaller. Calyx very small, hairy, with blunt teeth. Petals entire, sessile, slightly concave, yellowish. Filaments widening and lanuginous at the base, shorter than the petals. Anthers four-grooved. Germ five-lobed, hairy. Style club-shaped, twice as long as the stamens. Capsule hairy, retuse, hollow-dotted. The fructification is very seldom four-parted<sup>m</sup>.

The flowers are as small again as in the preceding species, and the petals are more clawed.—Native of Media, and of Syria near Damascus<sup>n</sup>.]

### PROPAGATION AND CULTURE.

All these plants may be propagated either by sowing their seeds, or by planting slips or cuttings; both of which may be done in the spring. The manner of propagating them from cuttings being the same as for Lavender, Stæchas, and other hardy aromatic plants, need not be here repeated; and if they are propagated by seeds, there needs no farther care but to dig a bed of fresh earth in the spring, making it level; then to sow the seed thereon, and rake the ground smooth; after which, keep the beds clear from weeds until the plants are come up about two inches high, when they should be transplanted out into fresh beds, where they may remain for use.

The Aleppo Rue, and the wild Rue are tenderer than the common sort, so require shelter in winter; but the Aleppo Rue will endure our ordinary winters very well in the open air, especially if it be planted on a dry soil.

All the sorts of Rue will live much longer, and are less liable to be injured by frost in winter, when they grow in a poor, dry, rubbishy soil, than in good ground; for in rich moist land the plants grow very vigorously in summer, and are so replete with moisture, that a small frost will kill their tender shoots; whereas in poor dry ground, or when they grow upon old walls, their growth will not be great, but their shoots will be hard and compact, and thus more able to resist the cold.

The first sort was formerly used to plant for edgings on the sides of borders; but it was by no means proper for this use, for the plants shoot so vigorously, that there is no keeping them within the bounds of an edging; besides when they are kept closely sheered, they appear to be very ragged and stumpy, and their roots spread so far as to exhaust the goodness of the soil, so that the other plants are deprived of their nourishment, which has caused it to be wholly neglected for this purpose; so that at present it is chiefly cultivated for medicinal use, or to furnish the balconies for the citizens in the spring, especially that with a variegated leaf.

5. This is propagated by seeds, sown in autumn, soon after they are ripe. The plants will come up the following spring. Whereas when the seeds are sown in the spring, the plants seldom rise the same year. On poor ground or among rubbish, in a warm situation, it will live in the open air without covering; but in rich ground it is frequently killed in winter.

6. This also will live through the winter in the open air, on a poor dry soil, and will perfect seeds the second year; but as it is of short duration, young plants should be raised annually, to keep up a succession.

[RUTA. See *Peganum* and *Thalictrum*.

— canina. See *Scrophularia*.

— muraria. See *Acrostichum*, *Asplenium*, *Osmunda*, *Pteris*.

RUYSCHIA. (So named by Jacquin, in memory of Frider. Ruysch, professor of anatomy and botany at Amsterdam.)

Lin. gen. Schreb. n. 363. Jacq. amer. 75. Juss.

428. Souroubea. Aubl. t. 97. Juss. 428.

Class. 5. 1. Pentandria Monogynia.

<sup>l</sup> Willdenow.

<sup>m</sup> Billiardiere.

<sup>n</sup> Willdenow.



## GENERIC CHARACTER.

CAL. *Perianth* five-leaved, permanent: *leaflets* roundish, concave, blunt, converging, imbricate, augmented at the base by a three-leaved involucre: one leaflet bent down, difform.

COR. *Petals* five, ovate, flattish, blunt, reflexed; three times as long as the calyx.

STAM. *Filaments* five, awl-shaped, flat, patulous, shorter than the petals. *Anthems* oblong, incumbent.

PIST. *Germ* ovate-roundish. *Style* none. *Stigma* quadrangular, cruciform, flat.

PER. *Berry* four-celled?

SEEDS many.

OBS. *Stigma* five-rayed. *Pericarp* five-celled. Aubl. —two-celled, many-seeded. Swartz.

## ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled, reflexed. Style none. Berry? many-seeded.

## SPECIES.

1. *Ruyfchia clusiæfolia*.

Lin. spec. ed. Willd. 1. 1116. Swartz, prodr. 50. descr. 1. 502. Jacqu. amer. 75. t. 51. f. 2. pist. t. 76.

Leaves obovate obtuse veinless.

2. *Ruyfchia Surubea*.

Lin. spec. ed. Willd. 1. 1116. Swartz, prodr. 50. descr. 1. 504.

Souroubea guianensis. Aubl. guian. 1. 244. t. 97.

Logania pentacrina. Scop. introd. gen. 1076. Gmel. syst. 422.

Leaves obovate obtuse mucronate veined.

## DESCRIPTIONS, &amp;c.

1. This is a parasitical undershrub, with round smooth branches. Leaves alternate, entire, without nerves or veins, thick, shining, very smooth, pale green, three or four inches long, on short plano-convex petioles. Racemes at the ends of the branches, simple, a foot long, nearly upright, many-flowered; the common peduncle round, thick, somewhat succulent, smooth; flowers scattered, alternate, small, on pedicels three lines in length. Calyx-leaves ovate, smooth, incumbent: under the calyx two opposite leaflets, pressed to it, small, ovate, between which is a sessile, obovate, acute, thick, deflexed, concavo-convex bracte, bigger than the lateral leaflets, dotted with red. Petals purple, deciduous. Filaments five, (or according to Jacquen six or seven) the length of the petals, into which they are inserted at the base; they are widish, upright, purple. Style none, or very short and thick. Stigma plano-convex, four or five-rayed. The fruit appears to be a berry; and as far as can be judged from the upright germ, two-celled and many-seeded.

Native of Martinico, in the vast moist woods, flowering in April.

2. Stem sarmentose, round; with long, divaricate, flexile, declining, round, fragile branches. Leaves alternate, acuminate at the base, emarginate at the top, mucronate in the middle with a minute toothlet; smooth on both sides, thickish, fleshy; on short round petioles channelled above. Racemes terminating, simple, long, many-flowered. Flowers alternate, somewhat remote from each other, large; on round fleshy pedicels, an inch in length. Calyx-leaves five, (according to Aublet, five or six,) roundish, concave: two lateral leaflets at the base of the calyx opposite, longer than the calyx, lanceolate, blunt, concave, diverging, bent down, red; the third above cylindric-club-shaped, tubular, scarlet. Petals oblong, deciduous, yellow. Filaments yellow, wider at the base. Anthers brown. Germ oval, five-cornered. Style scarcely any. Stigma fleshy, flat, five-rayed.

Native of the woods in Guiana, by the banks of the river Gallion. Found there by Aublet.

RUYSCHIANA. Boerb. and Miller. See *Dracocephalum*.

RYANIA. (So named by Vahl, in honour of John Ryan, M.D.F.R.S. who collected plants at Santa Cruz, Montserrat, &c.)

Vahl, ecl. 1. t. 9.

Class. 13. 1. Polyandria Monogynia.

° Swartz.

° Jacquin.

° Swartz.

## GENERIC CHARACTER.

CAL. *Perianth* inferior, permanent, five-leaved: *leaflets* lanceolate, attenuated, spreading; very finely nerved; coloured.

COR. none.—*Nectary* between the germ and stamens; pitcher-shaped, very villose, the height of the germ.

STAM. *Filaments* numerous, (sixty) in a double row, a little shorter than the calyx, awl-shaped, having a few hairs scattered at the base, in other parts smooth: *Anthems* erect, awl-shaped, three times shorter than the filaments, torulose; mucronate; smooth, after the pollen is discharged waved about the edge.

PIST. *Germ* ovate, very villose. *Style* smooth, the length of the stamens. *Stigmas* four; convex.

PER. *Berry* suberous, elliptic-spheroid, brown, scrobicular.—*Receptacles* five, formed out of the sides of the berry, suberous, oblong, attenuated both ways, having minute tubercles scattered over them in transverse rows.

SEEDS abundant, ovate-subglobular, having a few minute hairs scattered over them, brown, arilled. *Aril* incomplete, covering the base and belly of the seed, membranaceous, three-winged, the wings doubled.

## ESSENTIAL CHARACTER.

Cal. five-leaved, permanent, coloured. Cor. none. Stigmas four. Berry suberous, one-celled, many-seeded.

## SPECIES.

*Ryania speciosa*.

Vahl, ecl. 1. 51. t. 9. Willd. spec. 1. 1164.

## DESCRIPTION, &amp;c.

This is a tree with handsome flowers, and round ash-coloured boughs, covered with a very fine nap towards the end. Leaves alternate, a span long, elliptic, (or oblong) acuminate, smooth on both sides, obliquely nerved, quite entire: the midrib underneath mealy; the nerves raised, and between these very fine, frequent, simple, transverse veins. Petiole very short; channelled above. Stipules awl-shaped; hoary, a little longer than the petiole, deciduous. Peduncles axillary, very short, solitary or sometimes two together, and then one is abortive, one-flowered. Calycine leaflets an inch and half long. Berry double the size of a Walnut. Seeds a little bigger than Coriander.

It seems to be allied to *Laetia*; but differs in having the calyx permanent; in the nectary; in having the anthers awl-shaped not round; four stigmas; the berries subglobular, not scored with lines or having a cartilaginous membrane within; finally in the seeds not being angular. The leaves resemble very much those of *Caraipa longifolia* of Aublet; but the fruit is totally different. It was found in the Island of Trinidad by Ryan, to whom the genus is consecrated.

RYE. See *Secale*.

RYE-GRASS. See *Hordeum* and *Lolium*.

## S.

SAMOUNA. See *Æsculus Pavia*.

SABDARIFFA. See *Hibiscus*.

SABICEA. See *Schwenkfeldia*.]

SABINA. See *Juniperus*.

SACCHARUM (of Pliny. In Greek *σακχαρ*, η *σακχαρις* or *σακχαρον*; from the Arabic *sacchar*, or *zuchar*. Vossius: or rather from the Indian *Shukur*.)

Lin. gen. n. 73. Reich. n. 79. Schreb. n. 104.

Gartn. t. 82. Juss. 30.

Class. 3. 2. Triandria Digynia.

Nat. order of *Gramina*, *Gramineæ* or *Grasses*.

° Vahl



## S A C

## GENERIC CHARACTER.

- CAL. Glume two-valved, one-flowered: valves oblong-lanceolate, acuminate, erect, concave, equal, awnless, surrounded with a long lanugo at the base.  
 COR. two-valved, shorter, sharpish, very tender.  
*Nectary* two-leaved, very small.  
 STAM. Filaments three, capillary, the length of the corolla. Anthers somewhat oblong.  
 PIST. Germ oblong. Styles two, feathered. Stigmas plumose.  
 PER. none. Corolla invests the seed.  
 SEED single, oblong.  
 OBS. In *Saccharum* the wool is without the calyx; in *Arundo* it is within it.

## ESSENTIAL CHARACTER.

- Cal. two-valved, involucred with a long lanugo. Cor. two-valved.

## SPECIES.

- [1. *Saccharum Teneriffæ*. *Teneriffe Sugar-cane*.  
*Lin. syst.* 103. *Willd.* 1. 320. suppl. 106.  
*Leaves awl shaped flat, flowers paniced awnless, hairy involucre none, calyx very villose.*
2. *Saccharum spontaneum*. *Wild Sugar-cane*.  
*Lin. syst. ed.* 13. 88. 14. 103. *Reich.* 1. 147. *Willd.* 1. 321. *mant.* 183. suppl. 106. *Gærtn. fruct.* 2. 11. *Lour. cochinch.* 52. *ed. Willd.* 65.  
*S. biflorum.* *Forfk. descr.* 16. n. 50.  
*Kerpa.* *Rheed. mal.* 12. 85. t. 46.  
*Leaves convolute; panicle effused, spikes capillary simple, flowers remote involucred geminate, one of them peduncled.*
3. *Saccharum japonicum*. *Japan Sugar-cane*.  
*Lin. spec. ed. Willd.* 321. *Lin. transf.* 2. 328.  
*S. polydactylon.* *Thunb. jap.* 42. (excl. synonym.)  
*Fuku vulgo Tikufits.* *Kämpf. aman.* 5. 899.  
*Boo vulgo Obanna.* *Kämpf. aman.* 5. 899.  
*Racemes in bundles; petals ciliate, the outer ones awned.]*
4. *Saccharum officinarum*. *Common Sugar-cane*.  
*Lin. spec.* 79. *Reich.* 1. 147. *Willd.* 1. 321. *hort. cliff.* 26. *mat. med.* 46. *Woodv. med. bot.* 535. t. 196. *Brown. jam.* 129. *Lour. cochinch.* 52. *ed. Willd.* 66. *Plenck, ic.* 40.  
*Arundo saccharifera.* *Baub. pin.* 18. *theat.* 293. *Sloan. jam.* 1. 108. t. 66. *Rumph. amb.* 5. 186. t. 74. f. 1. *Piso, bras. l.* 4. c. 1. *Marcgr.* 82. *Monti prodr.* 33. *Regnault, bot.*  
*A saccharina.* *Baub. hist.* 2. 531. *Ger.* 35. *emac.* 38. *Raii hist.* 1278. *Hernand.* 109.  
*Harundo saccharifera.* *Park. theat.* 1210. 5.  
*Calamus saccharatus.* *Munting. cult.* 284.  
*Canna mellea.* *Cesalp.* 182.  
*Flowers paniced, leaves flat.*
- [5. *Saccharum polystachyon*. *Many-spiked Sugar-cane*.  
*Lin. spec. ed. Willd.* 322. *Stewartz, prodr.* 21. *descr.* 127.  
*Flowers paniced, spikes filiform very long fastigiate, florets rather remote.*
6. *Saccharum arundinaceum*. *Reedy Sugar-cane*.  
*Lin. spec. ed. Willd.* 322. *Retz. obs.* 4. 14. n. 34.  
*Panicles clustered with the peduncles divided, florets two together one sessile the other pedicelled, corollas three-valved polygamous.*
7. *Saccharum benghalense*. *Bengal Sugar-cane*.  
*Lin. spec. ed. Willd.* 322. *Retz. obs.* 5. 16.  
*Panicles clustered with the peduncles divided, florets two together one sessile the other pedicelled, corollas two-valved hermaphrodite.*
8. *Saccharum repens*. *Creeping Sugar-cane*.  
*Lin. spec. ed. Willd.* 322.  
*Panicle patulous, florets two together sessile awned, leaves flat, sheaths hairy.*
9. *Saccharum Ravennæ*. *Italian Sugar-cane*.  
*Lin. syst.* 103. *Reich.* 1. 147. *Willd.* 322. *Desfont. atlant.* 53.  
*Andropogon Ravennæ.* *Lin. spec.* 1481.  
*Arundo calycibus unifloris extus lanuginosis.* *Ger. prov.* 105. n. 4.  
*A. farcta alpium Ravennæ.* *Zanon. hist.* 1. 64. t. 24. *Mor. hist.* 3. 221. f. 8. t. 8. f. 32. *Segu. ver.* 1. 361.  
*Gramen arundinaceum ramosum plumosum album.*

## S A C

- Baub. pin.* 7. *prodr.* 14. *theat.* 95. *Scheuch. gram.* 136. t. 3. f. 7. a, b.  
*Panicle loose with the rachis woolly, flowers awned.*  
 10. *Saccharum cylindricum*. *Cylindric Sugar-cane*.  
*Lin. spec. ed. Willd.* 323. *Lamarck, encycl.* 1. 588. t. 40. f. 2. *Desfont. atlant.* 54.  
*S. Koenigii.* *Retz. obs.* 5. 16. n. 28.  
*S. diandrum Koenig.* *Dryand. in Lin. transf.* 2. 217.  
*Lagurus cylindricus.* *Lin. spec.* 120. *syst.* 123. *Reich.* 1. 226. *Ger. prov.* 104.  
*Imperata arundinacea.* *Cyrill. ic. rar.* 2. t. 11.  
*Arundo epigeios.* *Forfk. descr.* 23. n. 82.  
*Gramen pratense alopecurum, fericea panicula.* *Barr. ic.* 11.  
*Gr. alop. spica longa tomentosa candicante.* *Baub. hist.* 2. 474. *Monti prodr.* 59. t. 88.  
*Gr. alop. maritima repens, spica longiore.* *Mor. hist.* f. 8. t. 4. f. 4.  
*Gr. tomentosum alopecuros.* *Dalech. hist.* 450.  
*Gr. tom. spicatum.* *Baub. pin.* 4. *Tourn. inst.* 518.  
*Gr. tom. creticum spicatum, spica purpurea.* *Scheuch. gram.* 57.  
*Panicle spiked cylindric, peduncles one-flowered, flowers awnless two-stamened, leaves flat, joints bearded.*  
 11. *Saccharum Thunbergii*. *Thunberg's Sugar-cane*.  
*Lin. spec. ed. Willd.* 323. *Retz. obs.* 5. 17.  
*Panicle spiked cylindric, peduncles one-flowered, flowers awnless two-stamened, leaves convolute, joints smooth.*

## DESCRIPTIONS, &amp;c.

1. This grass is a foot high and more. Culm jointed, with the joints approximating leafed. Leaves short, straight, very smooth. Panicle of a middling size, like that of *Holcus lanatus*. Calycine valves ovate, ferruginous, hirsute, with white spreading hairs. Anthers yellow. It differs from the other species in having the calyx hirsute, whereas in the others it is naked. It has not the involucre of the floscules, which in the others consists of long straight villose hairs. The glumes of this are ovate, and not subulate as in the next species.

Native of the island of Teneriffe; where it was found by Masson.

2. Culm twelve feet high, but not at all arborescent, the thickness of a goose quill, even, covered by the sheaths of the leaves, hollow. Leaves two feet long, convolute at the sides, even, of the breadth common in grass. Panicle large, simple, consisting of capillary, very simple and long spikes, nearly erect; in which the florets are at the teeth of the rachis, within a white wool longer than they, in pairs; one sessile, the other peduncled surrounded by its proper wool. Corolla one-valved.

Native of Malabar, in watery places; observed by Koenig. In the Society Isles. Loureiro says it is frequent in Cochine China in marshes and wet places; that it creeps at the root, and thus diffuses itself far and wide, especially near rivers.

Gærtner says, that he could not discover the one-valved corolla, which Linneus attributes to it, in his specimens.

3. Culm frutescent, round, smooth, simple, a fathom in height. Leaves linear-ensiform, gradually drawing to a point at the end, serrate, smooth, striated; the midrib thick, keeled, entire. Flowers paniced: panicle patulous, thinly and little branched; but the racemes capillary, flexuose, smooth, very long, even a span in length. Pedicels in pairs alternately, recurved, one-flowered, smooth, one a line in length, the other shorter by half. Calyx smooth: glumes equal, acute. One valve of the corolla concealed within one of the glumes of the calyx, awnless; the other awned: the awn a little twisted, twice as long as the calyx. Down at the outer base of the calyx, hairy, upright, unequal, white, a little longer than the calyx.—Native of Japan; flowering in July.

There is a variety of this, which is only three feet high; with a simple spreading panicle, consisting of long simple racemes in bundles, wandlike or subfastigate, angular, smooth, a span long. Valves of the

\* Linn. suppl.

† Linn. mant. and suppl.



corolla equal, very thin, ciliate, one of them awned: the awn on the longer-pedicelled floret shorter, on the shorter-pedicelled floret twice as long as the calyx, twisted, always from the tip of the corolla. All the florets have both stamens and pistils, and therefore there is no polygamy in this species.

Native of Japan: that in water near the shore opposite to Nagasaki, flowering in July; this about Nagasaki, flowering in September<sup>a</sup>.]

4. The root of the Sugar-cane is jointed, like that of other sorts of Cane or Reed. From this arise four, five, or more shoots, proportionable to the age or strength of the root, eight or ten feet high, according to the goodness of the ground. In some moist rich soils, Canes have been measured near twenty feet long; but these are not near so good as those of middling growth; abounding in juice, but having little of the essential salt. The Canes are jointed, and these joints are more or less distant, in proportion to the soil. A leaf is placed at each joint, and the base of it embraces the stalk to the next joint above its insertion, before it expands; from hence to the point it is three or four feet in length, according to the vigour of the plant; there is a deep whitish furrow or hollowed midrib, which is broad and prominent, on the under side; the edges are thin and armed with small sharp teeth, which are scarcely to be discerned by the naked eye, but will cut the skin of a tender hand, if it be drawn along it. The flowers are produced in panicles at the top of the stalks; they are from two to three feet long, and are composed of many spikes nine or ten inches in length, which are again subdivided into smaller spikes; these have long down inclosing the flowers, so as to hide them from sight. The seed is oblong-pointed, and ripens in the valves of the flower.

[Loureiro thus describes the Sugar-cane of Cochin-China.—Culm ten feet high, simple, round, solid, juicy, thick, jointed, perennial. Leaves lanceolate-linear, flat, rough, striated, acuminate, embracing, four feet long, and three inches wide. Flowers terminating, in a large, diffused panicle, composed of long, simple spikes, with a long down or lanugo, or rather very long, flexuose, very fine hairs, instead of a calyx, there being none in this species.

He mentions three remarkable varieties, differing in the culm, not in the flower. 1. *White Sugar-cane*; with the culm long, white, of a middling size, very sweet, the knots distant. — 2. *Red Sugar-cane*; with the culm short, thicker, red, very juicy, the knots approximate. — 3. *Elephantine Sugar-cane*; with the culm very thick, red, long, less sweet, the knots approximate.

Sir George Staunton describes the Sugar-cane of China, as being longer jointed than that of the West Indies, with an equal diameter; the internodes of the former being generally six inches in length, whereas those of the latter seldom exceed four. Doubtless in a plant so extensively cultivated as the Sugar-cane, the varieties must be numerous.

The French have introduced into their West Indian islands plants from the East Indies, and thence they have been introduced into some of the English islands. Sir John Laforey planted them in Antigua, and proved their superiority over the old Canes of the West Indies. He gives this account of these, and the Canes from Otaheite.—One brought from the island of Bourbon, reported by the French to be the growth of the coast of Malabar. Another from Batavia. A third from the island of Otaheite. The two first are much alike, both in appearance and growth: but the last is much larger than the common Sugar-cane of the West Indies, the joints of some plants measuring eight or nine inches in length, and six in circumference. The colour of the canes, and of the leaves is also different. They are ripe enough to grind at the age of ten months, and are said to make the finest Sugar. They appear to stand dry weather better; and are not liable to be attacked by that destructive insect called the *borer*.—The Batavian Canes are a deep purple on the outside; they grow short-jointed, and small in circumference: but bunch exceedingly, and vegetate so quick,

<sup>a</sup> Thunberg.

that they spring up in one third of the time that common canes do<sup>\*</sup>.

Native both of the East and West Indies, China, Cochin-China, Africa, and the islands of the South Sea.

It has been asserted that the Sugar-cane is not indigenous of America; but that it migrated through the Europeans from Sicily and Spain to Madeira and the Canary islands; and afterwards to the West Indian islands and to Mexico, Peru and Brazil. On the discovery of the western hemisphere however the Sugar-cane was found on the continent, and in some of the islands; but the art of making Sugar, it is said, never was practised by the native inhabitants of the islands or South America. Of this there may be some doubt with respect to Mexico.

Thus far is certain, that before the discovery of the West Indies in 1492, by the Spaniards; before the discovery of the East Indies by the Portuguese in 1497; and before the discovery of the Brazils by the same nation in 1500; abundance of Sugar was made in the islands of Sicily, Crete, Rhodes and Cyprus. The Sugar-cane is supposed to have been brought to these islands originally from India by the Saracens; and thence transplanted into some parts of Italy; and to Spain from Africa, by the Moors. In Spain the Sugar-cane was first planted in Valencia, and afterwards in Granada and Murcia. Sugar was formerly produced in great quantity in these southern provinces, and some is still made in the two latter.

From Valencia the cultivation and manufacture of Sugar were carried by the Spaniards to the Canary islands in the 15th century: but prior to this period, the Portuguese, in 1420, carried the cane, and the manufacture from Sicily to Madeira. Hence the culture of the Sugar-cane, and the art of making Sugar, were extended to the West Indian islands and the Brazils. The Canary islands were conquered by the Spaniards between 1400 and 1495.

But the Sugar-cane itself was found growing near the mouth of the Mississippi, when Europeans first went to that part of America. Father Hennepin, who was there in 1680, says that the banks of that river were full of Canes, from thirty leagues below Maroa down to the sea.

Francis Ximenes, Hernandez and Pifo all affirm that the Sugar-cane grows spontaneously near the Rio della Plata.

Jean de Lery, who went to Rio Janeiro in Brazil in 1556, says he found every where near that river a great quantity of Sugar-canes.

According to Labat, the first French settlers in St. Christopher, Martinique and Guadaloupe found Sugar-canes wild in different parts of those islands.

America therefore possessed the plant, but had not found out the art of cultivating it, and manufacturing it into Sugar, except in Mexico and Peru.

In 1506, according to Antonio Herrera, the Cane was carried from the Canaries to the island of Hispaniola or St. Domingo, by Aguillon or Aquilon, an inhabitant of la Vega. — Bachiller Velloso and Pedro Atiença were the first who extracted Sugar from them; and they yielded so well, that in a short time there were on the island forty water and horse mills. But in the island of St. Thomas under the line, on the coast of Africa, Sugar was made much earlier than in the West Indies. It was discovered in 1405, and Dapper says that the Portuguese had sixty-one sugar works there, before the Dutch destroyed them in the year 1610.

The same nation first established sugar works in the Brazils in 1580. The Dutch had acquired seven of the fourteen captainships there, but being dispossessed of them; the remainder, about six or seven hundred in number, in 1655 carried the art of planting the Cane and making Sugar in a proper manner to the West Indies.

Sugar indeed was made at Barbadoes in 1643, by the English. But when Ligon arrived there in 1647, they were but bare Muscovadoes; so moist and full of melasses, and so ill cured, as to be hardly worth sending

<sup>\*</sup> Edward's hist. pref. Moseley, p. 23.



to England. In 1650, when he left the island, they were much improved, but not so good as those of Brazil.

The English made Sugar in the island of St. Christopher in 1643, and the French soon after. In 1648, the latter made it at Guadaloupe. The English did not make it in Jamaica till 1664. On the reduction of the island by them in 1656, the Spaniards had only three small plantations on it<sup>1</sup>.

Our Gerarde says; "Myselfe did plant some shootes thereof in my garden, and some in Flaunders did the like: but the coldnes of our Clymate made an end of mine, and I think the Flemmings will have the like profit of their labour." This was in 1597, when we had no stoves for exotic plants in Europe.

Though the West Indies now chiefly supplies Europe with Sugar, yet it was first brought to it from Arabia and the East Indies, or rather from the latter through the former. Dioscorides, Pliny, Galen and Paulus Aegineta all describe it as white like salt, brittle between the teeth, and sweet like honey. This substance has been commonly taken for the *Tabaxir*, which has been noticed under *Arundo Bambos*, but that was not sweet; and there is little doubt of its being crystallized Sugar.

There have ever been, since our knowledge of the East, two sorts of Sugar made there; raw or muscovado Sugar, and Sugar-candy; the first used only for culinary purposes, the second for every other purpose of diet, luxury and exportation. The former is, and we have reason to suppose ever has been made in Bengal and other districts of the East Indies: but China and Cochinchina seem to be the only countries in the East where the bright transparent Sugar-candy is made in perfection. It is exported from China to every part of India, even where abundance of Sugar is made: and Du Halde says, that it constitutes a great trade to Japan<sup>2</sup>. Father Loureiro informs us that Sugar is cultivated to a much greater extent in Cochinchina than in China; and that crystallized Sugar is exported from that country in great quantities. He thus describes the method of making it. The raw Sugar being purified, by putting it into conical earthen vessels, with a thin stratum of moist clay on the top, and discharging the impurities through a small hole in the bottom; this whitened, or as we call it, clayed Sugar is dissolved in water over a fire, and boiled to the consistence of a thick syrup; it is then exposed in a cool place during the night, with some slender rods cut from the Indian reed spread over it; the syrup, as it is condensed by the nocturnal cold, adheres to these rods, and is formed into beautiful crystals.

None of the Eastern nations much esteem any other Sugar than this, which probably has its name from two Indian words *Shukur* and *Kband*, both signifying Sugar in general. They use it in tea, coffee and all other beverages: and this may account for the art of refining this article into loaf-sugar having been little practised in the East. The manufacture of loaf-sugar is said to be the discovery of a Venetian at the end of the 15th or beginning of the 16th century. It was first practised in England in 1544.

The Venetians, before the year 1148, imported considerable quantities of Sugar from India by the Red Sea, and also from Egypt. Sugar was likewise made before that time in Sicily. With the produce of this island, and the Sugar imported from India and Egypt, the Venetians carried on a great traffic, and supplied all the markets of Europe with this commodity. Indeed the Venetian history informs us, that even prior to 991, the Venetians, then forcing their commerce with the Saracens into Syria and Egypt, brought back thence in return, not only Rice, Dates, Sena, Cassia, Flax, &c. but also Sugar<sup>3</sup>.

Sugar, when first introduced, was used only medicinally. Pliny leaves no room for doubt on this point. Even in Arabia, in Avicenna's time, though Sugar was an article of commerce from the East, there is no record of its being used for dietetic or culinary purposes, for several centuries afterwards.

Sugar was employed originally to render unpleasant and nauseating medicines grateful to the sick: and in pharmacy, in syrups, electuaries, confections and conserves.

Actuarius was the first physician who substituted Sugar for Honey in medicinal compositions. Dr. Moseley supposes him to have written in the year 1000; but others place him three centuries later.

Dioscorides, who is the first that mentions Sugar by name, is also the first who speaks of its medicinal qualities.

Galen recommends it among the articles to be used for the regimen of the sick in fevers. And Paulus Aegineta advises a piece of the Indian salt, which in appearance resembles common salt, but in sweetness, honey; to be kept in the mouth to moisten it in fevers.

The Arabians recommend Sugar for the same purpose, for assuaging thirst and opening the bowels.

Among the moderns Simon Paulli, Theophilus Garencieres, Dr. Thomas Willis, and Mr. Ray, condemned the use of Sugar, as injurious to the lungs, as having contributed to the increase of consumption and scurvy in England.

Others, as Baptista Porta, Pomet, Lemery, Geoffroy, Boerhaave, were much in favour of Sugar, and particularly Dr. Frederick Slare, whose unqualified praises of it may be opposed to the no less unqualified censures of Garencieres and his followers. No man has been more lavish in the praises of Sugar as a dietetic than Dr. Benjamin Moseley<sup>4</sup>.

As a medicine, Sugar cannot be considered as possessing much power. Dr. Cullen classes it with the attenuants; and Bergius states it to be saponaceous, edulcorant, relaxing, pectoral, vulnerary, antiseptic, nutritive. In catarrhal affections both this and Honey are frequently employed: it has been advantageously used in calculous complaints; and from its known power in preserving animal and vegetable substances from putrefaction, it has been given with a view to its antiseptic effects. Sugar-candy or Barley-sugar, by dissolving slowly in the mouth, are well suited to relieve tickling coughs and hoarseness. The use of Sugar in various medicinal compositions is too obvious to require being particularly pointed out<sup>5</sup>.

Two centuries have scarcely elapsed, since it can be properly said, that Sugar has become an ingredient in the popular diet of Europe. There are now very few persons, who do not mix more or less of it in their daily food; excepting the poor remote inhabitants of the interior and northern parts.

When Sugar was first introduced into England, it is difficult to ascertain: though it was in use in 1466, yet it was chiefly confined to feasts and to medicine, until it was brought from the Brazils, about 1580, to Portugal, and imported from thence.

The quantity consumed in England has always kept increasing; though the whole consumption for near a century subsequent to this period was inconsiderable.

The importation in 1700 amounted to 481,425 hundred weight, or 48,142 hogsheds, at ten hundred weight each. The price then was 32s. the hundred weight.

The average importation into England and Scotland for 1787, 1788, 1789, and 1790, amounted annually to 1,952,262 hundred weight.

The annual exportation during this period was 296,996 hundred weight, which leaves the annual consumption in England and Scotland 1,655,266 hundred weight, or 118,233 hogsheds, of fourteen hundred weight each. Thus we find 185,389,792 pounds of Sugar are annually consumed in England and Scotland. But the latter does not consume more than 12,000 hogsheds: the consumption therefore of England only is 166,573,344 pounds. Now taking the population of England at eight millions, each individual, at an average, has about twenty pounds of Sugar in the year. Ireland consumes annually 20,000 hogsheds<sup>6</sup>.

<sup>1</sup> Moseley, 14 to 40.

<sup>2</sup> Ib. 61 to 66.

<sup>3</sup> Ib. 67 to 71.

<sup>4</sup> Treatise on Sugar, part 3.

<sup>5</sup> Moseley, 154.

<sup>6</sup> Woodville.



The Sugar in common use, is prepared from the expressed juice of the cane, boiled with quick lime, or common vegetable alkali, to imbibe the superfluous acid. The boiling is repeated in smaller and smaller vessels, during which it is often necessary to scum the impurities, and employ additional alkali; when the juice acquires a due consistence, it is suffered to cool in a proper vessel, and the saccharine matter concretes into a crystallized mass. This, after being separated from the melasses, is sold under the name of brown or moist Sugar. This may be purified in conical moulds, by spreading on the upper broad surface some moist clay, which gradually transfuses its moisture through the mass of Sugar, and carries with it a considerable part of the remaining treacly matter: it is then called clayed Sugar. Loaf Sugar is prepared in this country from the other Sugar boiled in water; lime water and bullock's blood or eggs, commonly both, being added to it, in order to clarify it, by incorporating with the oily and mucilaginous parts, and forming a scum, which is carefully taken off. After sufficient clarification it is strained through a woollen cloth, and boiled again until it becomes of a proper consistence; it is then poured into a refrigerator, and when duly cooled, into conical clay moulds, perforated at the apex, which is placed downwards; at first this aperture is stopped up, but as the Sugar concretes it is opened, in order that the syrup or melasses may drain off. By this draining, the cone of Sugar shrinks at the base below the edges of the mould, which, to render the loaf still whiter, is filled up with moist clay closely applied to the base of the Sugar-cone: lastly, the cone is placed upon its base, taken out of the mould, wrapped in paper, and dried or baked in a close oven<sup>c</sup>.

Sugar is manifestly a neutral saline substance, consisting of a peculiar acid, united to a small quantity of alkali and much oily matter. It crystallizes in hexaedral truncate prisms: and affords by distillation an acid phlegm, with a few drops of empyreumatic oil; the residue is a spongy light coal, which contains a small quantity of vegetable alkali.

Dissolved in water it undergoes fermentation, and acquires first a vinous, then an acetous flavour. The vinous liquor distilled yields a strong ardent spirit, commonly known under the name of Rum.

Bergman separated the acid of Sugar, and exhibited it in a crystalline form. But this acid is found in a variety of other substances, not only vegetable, as gums, resins, galls, starch, salt of sorrel, lemon juice, spirit of wine, &c. but animal; Berthollet having obtained from wool more than half its weight of this acid.

Sugar, or the saccharine matter, may be extracted from most vegetables, particularly the maple, the birch, beet, parsnep, grapes, &c. but the Sugar-cane affords it in larger quantities, and more readily than any other<sup>f</sup>.

5. Height from three to four feet. Culm round, jointed, smooth. Leaves widish, keeled, linear, acute, entire, smooth: sheaths smooth, except at the neck, which is hairy. Panicle terminating. Spikes near a foot long, fastigiate, loofish, in a sort of whorl: rachis filiform, slightly flexuose. Spikelets on very short pedicels, remote, mostly directed one way, small. Calycine valves flattish, narrower than the corolla, but longer and more tender, pellucid; the outer a little longer than the inner. Down or lanugo three times as long as the valves, whitish and shining, inserted at the base into the sides of the valves, in bundles. Valves of the corolla equal, ovate, acute, one convex the other flat, yellowish, smooth.—It very much resembles *S. polydactylon* of Thunberg; (*S. japonicum*) but that is distinct from this, in having the spikes in bundles, the glumes of the corolla ciliate, the outer ones awned.

Native of the Island of St. Christopher; where it was found by Masson<sup>g</sup>.

6. Culms as high as ten feet, thick, half void, leafy.

<sup>c</sup> Woodville.

<sup>f</sup> Moseley, 108 to 125.

<sup>g</sup> Swartz.

Leaves wide, in whorls, approximating to the stem. Panicle two feet long, contracted, with a four-cornered rachis. Peduncles in whorls, three-sided, jointed. Of the two florets which grow together, the sessile one is hermaphrodite, and that which is pedicelled is often male. Calyx-glumes equal, with the wool three times as long as they. Corolla most frequently three-valved; the valves hyaline, less than the calyx; one longer, acuminate. Nectary, two or three very tender hyaline scalelets. The male flowers have frequently only two stamens. Styles bearded, blackish.

Native of the East Indies, whence it was sent by Koenig. It is cultivated by hedges and on the banks of pools near Tranquebar. The Tamules call it *Pee-Carumbo*, or Devil's Sugar. The entire culms are often used for the lower covering of roofs, but they are a harbour for serpents, lizards, and other vermin. Koenig<sup>h</sup>.

7. This is so like to *S. arundinaceum*, that it might very easily be taken for the same; but it differs in having the corollas two-valved, all the florets hermaphrodite, and the stigmas of a yellowish brown colour.

Native of Bengal, whence it was sent by Koenig<sup>i</sup>.

8. Culm a foot high, simple, ascending. Leaves smooth, short. Whitish hairs at the edge of the sheath. Panicle the size of that in *Holcus lanatus*: branches covered with white scattered hairs. Florets fenced with white shining villose hairs. Calyx smooth. Corolla awned.—Native of Guinea<sup>k</sup>.

9. Culm the thickness of the finger or thumb, upright, smooth. Leaves smooth, as large as those of *Arundo Donax*, ferrate, with the midrib white. Flowers very numerous, in a long loose panicle, which is silky, silvery and much branched. Calyx-glumes narrow, nearly equal, villose on the outside, with silvery hairs longer than the flowers. One glume of the corolla longer than the other, with a short bristle-shaped awn. It is a very beautiful plant; and the Arabs make tobacco-pipes of the straw<sup>l</sup>.

Native of Italy, Provence, and Mount Atlas, on the banks of streams.

10. Roots long, slender, twisted, white. Culm often branched at the base. Leaves glaucous, smooth, hard, convolute. Spike cylindrical, silky, long, dense, branched. Calyx surrounded with numerous, long, snowy bristles. Corolla very short. Anthers and styles violet-coloured. It keeps together driving sands<sup>m</sup>.

Culm slender, from a foot to a foot and half in height, with white, erect, bearded hairs at the joints. Root-leaves many, flat: stem-leaves few, sheathing. The whole panicle appears quite white with wool, three times as long as the florets. Stamens two, with yellow anthers. Stigmas villose, brown.

Koenig sent this species under the name of *S. dianthum*, and Thunberg from Japan, by the name of *S. spicatum*<sup>n</sup>: but it is not *S. spicatum* of Linneus.

Native of the South of France, Italy, Sicily, Candia, Smyrna, Barbary, and the East Indies.

11. This is a very tall Grass; with the panicle more contracted and twice as long as in the preceding, with the wool rather yellowish. Joints of the culm quite naked. Leaves rigid. Flowers twice as big. Corolla only half the size of the calyx, thin, of a very shining white colour.

Native of the East Indies: gathered by Thunberg<sup>o</sup>.]

#### PROPAGATION AND CULTURE.

The Sugar Cane is preserved by way of curiosity in several gardens in England, but being too tender to thrive here, unless it is preserved in a warm stove, it cannot be brought to any great perfection. I have seen some of the plants growing which were seven or eight feet high, and at the bottom as large as a common walking cane, but they have not produced their panicles of flowers here.

It is here propagated by slips taken from the sides of the older plants; those which grow near the root and

<sup>h</sup> Retz.

<sup>i</sup> Idem.

<sup>k</sup> Willdenow.

<sup>l</sup> Desfontaines.

<sup>m</sup> Idem.

<sup>n</sup> Retzius.

<sup>o</sup> Idem.



have fibres to them, will most certainly grow; so that when the shoots are produced at some distance from the ground, the earth should be raised about them, that they may put out fibres before they are separated from the mother plant. These slips should be planted in pots filled with rich kitchen-garden earth, and plunged into a moderate hot-bed of tanners bark, being careful to shade them from the sun until they have taken new root, after which they must be treated in the same way as other tender plants from the same countries. They must be constantly kept plunged in the tan-bed in the stove; and as their roots increase in size, the plants should from time to time be shifted into larger pots; but this must be done with caution, for if they are over-potted they will not thrive: they will require to have water frequently in warm weather, but it must not be given them in too great plenty, especially in cold weather. As the leaves of the plants decay, they should be cleared from about the stalks; for if these are left to dry upon them, it will greatly retard their growth. The stove in which this plant is placed, should be kept in winter to the same temperature of heat as for the Pine-apple, and in hot weather there should be plenty of free air admitted to the plants, otherwise they will not thrive.

I shall here subjoin some account of the method of propagating and cultivating the Sugar Cane in America, with some observations and experiments which have been made by a few curious persons in the British Islands, and shall propose some farther trials to be there made, in the culture and management of this useful plant, which are founded upon the experience I have had in the culture of some plants which are similar in their growth with the Sugar Cane.

The land which is most proper for the growth of Sugar Canes, is such as has a sufficient depth of soil, and is not too moist and strong, but rather light and easy to work; for although strong moist ground will produce much taller and bigger Canes than the other, yet the quantity of Sugar will be much less, not near so good, and will require a greater quantity of fuel, and a longer time to boil, before the Sugar can be made; which is also the case with all fresh land, where there has not been any Canes growing before; therefore many of the most expert planters burn their land when it is first cleared for planting of Canes, to abate its fertility; but if when land is first cleared of the wood, and the roots of bad weeds, it is sown with Indigo, which such fresh ground will produce much better than the old, or such as has been long cultivated, there may be two or three crops of this taken, which will prepare the land for the Sugar Canes, without being at the trouble of burning it; but the growing of Indigo has been so little practised in the British Islands of America for many years past, as to be esteemed unworthy the notice of a Sugar planter; whereas if they would sometimes change their crops to other species, they would soon find an advantage in the growth, not only of their Canes, but also of their other crops: however, the usual practice is to continue the Canes always upon the same land as long as it will produce them, without changing the species, or allowing the ground a fallow to rest and recover itself. By this method there are some plantations so much exhausted, as that the crop of Sugar will scarce defray the expense of culture.

Another thing should always be observed in the planting of fresh land with Canes, which is to allow them more room than is generally done; for as the ground is strong, so there will be a greater number of shoots come out from each plant, and not having room to spread at bottom, they will draw each other up to a great height, and be full of watery juice, the sun and external air being excluded from the Canes by the multiplicity of leaves, which are both absolutely necessary to ripen and prepare the salts during the growth of the Canes.

If the ground is proper for the Sugar Canes, and they are planted at a good distance from each other, and the land is carefully managed, the same plantation may be continued about twenty years without replanting, and produce good crops the whole time; whereas

in the common method, they are generally replanted in six or seven years, and in some poor land they are continued but two or three.

The Canes are in those warm countries propagated by cuttings or joints, of proper lengths; these are from fifteen to twenty inches long, in proportion to the nearness of their joints or eyes. These cuttings are generally taken from the tops of the Canes, just below the leaves; but if they were chosen from the lower part of the Canes, where they are less succulent and better ripened, they would not produce so luxuriant shoots, and their juice would be less crude, and contain a greater quantity of salts, which will be obtained by less boiling than those Canes in the close manner they are commonly planted; this is well known to the judicious to be the case, in most kinds of vegetables; and it is by thus carefully propagating all kinds of esculent plants, either in the choice of the best seeds or cuttings, that most of the kinds have been so greatly improved of late years.

The distance which the Canes are usually allowed in planting, is from three to four feet, row from row, and the hills are about two feet asunder in the rows; in each of these hills they plant from four to seven or eight cuttings, which is a very great fault, and is the cause of most of their blights so much complained of lately; for if all these grow, which is often the case, they rob each other of their nourishment; and if a dry season happens before they have acquired strength, they are very soon stunted in their growth, and are then attacked by insects, which spread and multiply so greatly, as to cover a whole plantation in a little time: when this happens, the Canes are seldom good after, so that it will be the better way to root them entirely up when they are so greatly injured, for they very rarely recover this disorder; for although the insects are not the cause of the disease, yet they confirm it, and cause it to spread.

Therefore, if instead of planting so many, there was but one good cutting planted in each hill, or to prevent miscarriage, two at most; and if both succeeded, the weakest were drawn out soon after they had taken root, it would be found of great service to prevent these blights; and although the number of Canes will not be near so great from the same space of ground, yet the quantity of Sugar will be full as much, and will require little more than a fourth part of fuel to boil it.

I have been assured by two of the most sensible and judicious planters of Sugar in America, that they have made some experiments of the horse-hoeing culture for their Canes, which answered much beyond their expectations; one of those gentlemen told me, he planted one acre in the middle of a large piece of Canes, in rows at five feet asunder, and the hills were two feet and a half distant, and but one cutting to each hill. The ground between the rows was from time to time stirred with the horse plough, to destroy the weeds and earth the plants; with this culture the Canes were double the size of those in the same piece, which were cultivated in the usual way; and when the Canes were cut, those which had been thus planted and managed were ground and boiled separately; the produce of Sugar was full as great as the best acre in the same piece, and the expense of boiling was little more than a sixth part of the other, and he sold the Sugar for six shillings per hundred weight more than he could get for the other.

The time for planting the Canes is always in the rainy seasons, and the sooner they are planted after the rains have begun to fall, the more time they will have to get strength before the dry weather sets in; for when they have put out good roots, and are well established in the ground, they will not be so liable to suffer by the drought, as those which have but newly taken root.

The season being come for planting, the ground should be marked out by a line, that the rows of Canes may be straight, and at equal distances; but first it will be proper to divide the piece into lands of sixty or seventy feet broad, leaving intervals between each of about fifteen feet; these will be found of great use when



when the Canes are cut, for roads in which the carriages may pass to carry off the Canes to the mill; for where there is not such provision made, the carriages are obliged to pass over the heads of the Canes to their no small prejudice: besides, by these intervals, the sun and air will have freer passage between the Canes, whereby they will be better ripened, and their juice will be fuller of salts; therefore when the Canes are ground, they will not require so much fuel to boil their juice. The middle of these intervals may be planted with Yams, Potatoes, or other esculent plants, which may be taken off before the Canes are cut, that the passages may be clear for the carriages; but a path should be left on the sides of each land, for the more convenient riding or walking of the overseer of the plantation, to view and observe how the labour is performed.

The common method now practised in planting of the Canes is, to make a trench with a hoe, which is performed by hand; into this one negro drops the number of cuttings intended for planting, at the distance the hills are designed; these are by other negroes placed in their proper position, then the earth is drawn about the hills with a hoe, all this is performed by hand; but if the right use of ploughs was well known in those countries; the work might be much better performed, and for less than half the expense; if instead of making a trench with a hoe, a deep furrow were made with a plough, and the cuttings properly laid therein, the ground would be deeper stirred, and there would be more depth for placing the Canes.

If the ground is to be afterwards kept clean with the horse hoe, the rows of Canes should be planted five feet asunder, that there may be room for the horse and plough to pass between them; and the distance of the hills from each other should be two feet and a half, and but one Cane should be permitted to remain in each hill. After the Canes are planted and have made some shoots, the sooner the horse plough is used the better will the Canes thrive, and the ground will be easier kept clean from weeds; for if these are torn up when they are young, they will presently die; whereas when they are suffered to grow large before they are disturbed, they are with great difficulty destroyed.

As the growth of the Canes is promoted according to the cleanness of the ground, so there cannot be too much care taken to keep the Canes perfectly clear of weeds; and the beginning of this work soon will render it less troublesome, and it may be performed at a less expense, than when it is neglected for some time. When this is performed with a plough, the earth in the interval should be thrown up to the rows of Canes, first on one side of the row, being careful not to disturb the roots of the Canes, as also not to bury their new shoots; and in the second operation, the earth should be turned over to the other side of the rows, with the same care as before. By this turning and stirring of the land, it will be rendered looser, and the earthing of the plants will greatly strengthen them; so that from each hill there will be as many shoots produced as can be well nourished, and the sun and air will have free ingress among the rows, which will be of the greatest service to the Canes.

When the Canes are from seven to ten feet high, and of a proportionable size, the skin smooth, dry, and brittle, if they are heavy, their pith gray, or inclinable to brown, the juice sweet and glutinous, they are esteemed in perfection.

The time for cutting the Canes is usually after they have grown six months; but there should not be a fixed period for this, for in some seasons and in different soils, there will be more than a month's difference in their maturity; and those who have made the experiments of cutting their Canes before they were ripe, and letting others stand till after they were ripe, have found the Sugar made from the latter, was much finer than that of the former, though the quantity was not quite so great; however, it will always be best to let them stand till they are in perfection before they are cut, but not longer.

They have also found those Canes which are cut to-

wards the end of the dry seasons, before the rains begin to fall, have produced better Sugar than those which are cut in the rainy seasons, when they are more replete with watery juice, and there has been much less expense of fuel to boil it, which is a material article in large plantations; therefore the better the Canes are nourished in their growth, and the more sun and air is permitted to pass between the rows, the less expense will be incurred in boiling and preparing the Sugar.

[The manner of preparing the stiff soils in the West Indian islands for Sugar, is to burn the trash and weeds upon it, as soon as the Canes are cut down; the ashes being a proper manure; and the best compost for such land is ashes, sand and rotten cane-trash. This land should always be hoe-ploughed, and after continuing about a month in this state, it should be *boled*. The cane-holes should not be very deep, so as to bring up the stiff clay. It is better to hoe-plough the bottoms of the cane-holes, just before throwing in the manure; and if they are not planted soon after, the manure should be covered with a little mould, taken from the sides of the banks. The plants must be laid dry, and not more than two inches below the surface, unless you are forced to plant in dry weather, which seldom happens.

The Cane rattoons better in stiff than in light soil. Coffee, Cocoa and Plantains thrive very well in it.

In light soils, such as sand, gravel and all poor dry moulds, with lime-stone or rock of any kind under it; the trash and weeds should be dug into the ground at the time of holing. No ploughing is necessary, but labour is best bestowed in preparing and carrying on good rich manure, without which these light soils will never make a proper return to the planter.

The manure must be laid on heaps to ferment and rot, and if it is not arrived at a sufficient state of putrefaction at the time of planting, it may be distributed to the young plants, when they are a foot or eighteen inches above the ground. This work should be done in rainy weather, that the salts may the sooner penetrate to the roots of the young Canes.

In these soils you must plant either very early or very late. If you plant in may or june, which is termed spring-planting, and the weather proves favourable, the plants may be fit to cut in april or may following. But where situation, dry weather, a late crop, want of strength in slaves or cattle, &c. prevent this early planting; the month of december will be the best time—or even early in january. In light soils you can hardly make your cane-holes too deep, and the business of planting may succeed immediately to that of holing.

Cotton, Indian Corn and most of the roots flourish best in these light soils.

In both soils, when the plants are about six inches high, they should be weeded with the hand, and no weeds should be suffered at any time to cover the ground, so as to retard the growth of the Cane. Perhaps in a very dry season, low weeds may be of service, by keeping the ground moist, and preventing the scorching sun from penetrating to the roots of the Canes.

At every weeding, a small portion of the banks is to be pulled down with the hoe, and spread round the young plants; but this should be done sparingly, that part of the banks may remain, to be drawn round the rattoons.

In twelve months from the time of planting, or as soon as the arrows have dropped, it is proper to go through them, to strip off the exuberant leaves and trash, in order to admit the sun and air, and ripen the Canes more expeditiously. This is particularly necessary in rich or level lands.

In all deep gray soils, rich black and chocolate-coloured mould, manure is not so necessary, and in these happy situations crops will be produced almost without rule.

It is the general practice to plant closer in poor than in rich land: but this is an erroneous method founded probably on a notion that two Canes must always be better than one; without considering that



One good strong plant will yield more Sugar than half a dozen small ones. One healthy plant is sufficient for a hole of four feet square. In rich flat land, this thin method of planting is also very proper; for, were this sort of soil to be planted close, the Canes when grown up would exclude the rays of the sun, and want that free circulation of air, so necessary to prevent diseases in the Cane, as well as for the necessary concoction of its juices.

All exposed situations indeed, where the Canes are apt to lodge, should be planted close; and two, or even three plants may be put in a hole of the above dimensions; that the Canes may the better resist the violence of the wind, and support one another.

The great pests of the Sugar-cane are the Cane-ants, and the blast supposed to be occasioned by minute insects which accompany them. Rats also are very destructive to it, and Knot-grass is the most pernicious weed. It is thought by some that rich oily manures, or a thick dressing of marl, is the best cure for the ants. But many Sugar-plantations have been totally abandoned, such are the ravages of these insects; and the best course to pursue in this calamity, is to adopt the culture of cotton, where the situation is not too wet or cold. Blasts that come without the ants may in the beginning be stopped by burning the parts affected; by washing the young plants with salt-water or weak lime-water; and a good season, that is heavy showers, will sometimes put a stop to it. When it returns, the Canes should be planted thinner, to give them a free circulation of air: the quincunx mode of planting may in this case be adopted with advantage. And if the leaves affected are stripped off, and the diseased stems cut down, and burnt to windward; and the roots covered with good fresh mould; this with salt or lime water, may prove a cure for the *greasy fly* and *yellow fly*; as well as for those destructive worms called the *borer* and the *grub*<sup>p</sup>.

The planters endeavour to get all their Canes off the ground before the end of april: because heavy showers frequently fall the end of may, when some ground should be holed for a spring plant, which should be put in before the end of june. The young Canes must also be weeded in these two months, and the produce should be carted before the roads are broke up by the heavy rains. In july, august and september old dung should be carried out, and new prepared: and weeding continued.

In august and the two following months is the proper season for holing stiff land. September and october are generally rainy months; and the proper time for throwing rotten dung on the holed land. The land should be planted in november and the beginning of december<sup>q</sup>.

It is near half a century since Mr. Miller recommended the use of the plough in the culture of the Sugar-cane. Mr. Long afterwards, in 1774, earnestly exhorted his countrymen to profit by experiments that had been made with the plough in Jamaica. Some pieces were ploughed at an estate in the parish of Clarendon, and left to lie for some time before they were holed by the negroes, who found it uncommonly easy to work. Before ploughing it was spread over with manure; and the Canes planted upon it turned out near three hogsheds of fine Sugar on an acre, which was one hogshed more than it had been used to yield from the common method of culture. It was found that one plough turned up as much ground in a day as a hundred negroes could with their hoes, and in a much better manner. One benefit among others from the use of the plough is, that it makes the bottom of the furrows even, so that the rain water never lodges, but either soaks in, or runs clear and gradually off; whereas the ground dug with hoes retains the water some time, which checks the growth of the Canes, makes

them short-jointed, and in consequence less yielding, nor do they bear the dry weather so well. The plough is of signal use in stiff or heavy clay land; the turning up of which with hoes is a most laborious tedious task, and has injured multitudes of negroes; who can scarcely get through it, except in very favourable open weather, which does not always happen at the holing season. In planting in the furrow after the plough, children will serve as well as grown negroes. The Canes used for this purpose, may be cut short, three or four eyes in each junk, and one row laid in each furrow; thus with the greatest expedition a furrow will no sooner be cut than planted, and the whole covered in at the next return of the plough: after the planting is finished, the able negroes may cover the ridges well, raising them highest towards the middle; rake the loose earth out of the trenches; and cut cross drains where necessary; all which will be an easy task, after the surface has been well broke and opened. Even they who prefer holing, will find their advantage in first turning it up with the plough; for the negroes will be able to finish the work in half the time. In this case the land need not be cut so deep as when it is intended to plant in the furrow: in either case, one or two ploughings at most will be sufficient, unless the land is extremely foul. More ground can be turned up and planted in one day by this method, than can be holed and planted in the usual way in three, and with a tenth less number of able negroes; for as the young boys and girls, or what is commonly called the grass-gang, may, with the slightest instruction, cut and lay the junks in the furrow; and a few of the abler hands will serve to cut and supply them with the Cane plants; the remainder of the able field hands may be occupied about other necessary work, of which there is always sufficient on a large plantation.

Some may object, that the plough will not leave a due space between the Canes: but this is a mistaken opinion; for a single line of plants, in every furrow, will not shoot up too thick, the ground will be all over smooth and even, and the wind will have a free course from whatever quarter it may blow; besides, the many trenches will contribute to an open ventilation, whereas in the ordinary method of planting with the hoe, and leaving high banks, the Canes, especially when young, are deprived of a very necessary refreshment. In hot dry weather they are scorched and blighted by the reflection of the sun-beams, which is very great from the high mounds on each side of them; and in time of heavy rains they are buried in a kind of wet ditch, which cannot fail of retarding their vegetation by chilling the stool or root. With the plough, rightly managed, that disagreeable operation of supplying Canes is, in a great measure, prevented; for if the season prove wet, the Canes are safe from being chilled by water; and if dry, their stools being well covered in, are at a sufficient depth beneath the surface to retain their moisture for a long time. It has been observed, that in ploughed ground the plants come up much stronger than in hoed land; this may be accounted for, not only by the more effectual loosening of the soil, but by giving a free vent to all noxious water; for although Canes cannot flourish without a good supply of water, yet too much of it, lodging in puddles about the roots, is greatly prejudicial, and destroys many acres of Canes.

It is not easy to calculate the work of a plough in Sugar-grounds, on account of the great variety of soil: but in moderate land, neither very stiff nor very light, it will work twenty-four acres a week; and it is certain, that at six hours a day, it will perform what would require the labour of six hundred negroes, employed during the same space eight hours in a day. The plough therefore both saves the labour of many negroes, and enables the planter to cultivate many acres more than he could otherwise do; besides that the Canes so planted yield more Sugar, and of a superior quality. Stronger inducements there cannot be for planters to break through the force of prejudice and custom, and bring this method of culture into use, wherever their land is not so steep as to render it impracticable: and even

<sup>p</sup> Extracted from a pamphlet, entitled Letters to a young Planter, &c. written by an old Planter on the Island of Grenada. Lond. 1785. oct. See also, an Essay upon Planterhip, by Samuel Martin, Esq. of Antigua; reprinted in Young's Annals, vol. 18. p. 236, &c.

<sup>q</sup> Idem.



even where the plough cannot be used, terraces might be formed, after the manner of the Chinese<sup>1</sup>.

Dr. Stokes, who communicated the above, to be reprinted in Mr. Young's *Annals*, adds:—"in imitating Britain, they (the Planters in the West Indies) will, I trust, at length discover that their own interests and those of humanity are the same<sup>2</sup>."

*Saccharum paniceum*. See *Perotis polystachya*.

— *spicatum*. See *Perotis latifolia*.

SACRED HERB. See *Ocimum sanctum*.

SÆLANTHUS. See *Cissus*.

SAFFLOWER. See *Carthamus*.]

SAFFRON. See *Crocus*.

[—, Bastard. See *Carthamus*.

—, Meadow. See *Colchicum*.]

SAGE. See *Salvia*.

[— of Jerusalem. See *Phlomis*.

—, Wood. See *Teucrium*.

SAGINA. (From *σαγίνα*, which is from *σαλῶ*, *onero*. This genus is so named, either because it comes plentifully in lands that have been dunged; or because, wherever it is found, it grows abundantly.)

*Lin. gen. n. 176. Reich. n. 188. Schreb. n. 236.*

*Gartn. t. 129. Juss. 300. Alsinella. Dill. gen. 6.*

Class. 4. 3. Tetrandria Tetragynia.

Nat. order of *Caryophyllei* or *Caryophylleæ*.

#### GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate, concave, spreading very much, permanent.

COR. Petals four, ovate, obtuse, shorter than the calyx, spreading.

STAM. Filaments four, capillary. Anthers roundish.

PIST. Germ subglobular. Styles four, awl-shaped, recurved, pubescent. Stigmas simple.

PER. Capsule ovate, straight, one-celled, four-valved.

SEEDS numerous, very small, fastened to the receptacle.

Obs. *S. procumbens* varies with petalous and apetalous flowers.

*S. apetala* never has any petals.

*S. erecta* has calyx-leaves lanceolate, acuminate.

*S. virginica* differs in several marks from its congeners.

#### ESSENTIAL CHARACTER.

Cal. four-leaved. Pet. four. Caps. one-celled, four-valved, many-seeded.

#### SPECIES.

1. *Sagina cerasioides*. Tetrandrous Pearl-wort.

*Smith in Linn. trans. 2. 343. Willd. spec. 1. 718.*

*Engl. bot. t. 166. Dickf. hort. succ. 10. 4. Dryandr.*

*cat. 3. 244. Wither. arr. ed. 3. 216.*

*Cerastium tetrandrum. Curt. lond. 6. t. 31. Smith, brit. 498.*

Stem diffused dichotomous, leaves spatulate and obovate recurved, fruiting peduncles reflexed.

2. *Sagina procumbens*. Procumbent Pearl-wort.

*Lin. spec. 185. fyst. 169. Reich. 1. 359. Willd. 1.*

*718. fl. lapp. n. 157. succ. n. 155. Hudf. angl.*

*73. Wither. arr. ed. 3. 215. Smith, brit. 199.*

*engl. bot. t. 880. Curt. lond. 3. t. 12. Relb. cant.*

*n. 143. Sibth. oxon. n. 210. Ard. spec. 2. 23.*

*t. 8. f. 2. Gartn. fruct. 2. 225. Thunb. jap. 80.*

*Gmel. fib. 4. 159. Jacqu. vind. 26. Neck. gallob.*

*96. Pollich, pal. n. 178. Roth. germ. 1. 71.*

*2. 200. Hoffm. germ. 59. Scop. carn. n. 183.*

*Krock. files. n. 265. Villars, dauph. 3. 654.*

*Allion. pedem. n. 868. Guett. stamp. 2. 277.*

*Kniph. cent. 10. n. 75. Berg. phyt. 2. 81.*

*Alfine tetrastrum, foliis lanceolatis connatis. Hall.*

*helv. n. 861. Pluk. phyt. t. 74. f. 1. Segu. veron.*

*421. t. 5. f. 3. Lind. hort. alfat. t. 8.*

*A. minima flore fugaci. Tournef. inst. 243. paris.*

*Raii hist. 3. 501.*

*Alsinella muscosa flore repens. Dill. giff. 81. Raii*

*syn. 345. Petiv. brit. t. 59. f. 10.*

*Caryophyllus minimus muscosus. Park. theat. 1340. 6.*

β. *S. graminea pusilla, foliis brevioribus, crassioribus &*

*succulentioribus. Raii syn. 345. 4.*

Stems procumbent smooth, petals very short.

<sup>1</sup> Hist. of Jamaica, vol. 1. p. 448—452.

<sup>2</sup> Vol. 18. p. 148 to 157.

3. *Sagina apetala*. Annual small-flowered Pearl wort.

*Lin. fyst. 169. Reich. 1. 360. Willd. 1. 719.*

*mant. 559. Wither. arr. ed. 3. 216. Smith,*

*brit. 199. Engl. bot. t. 881. Curt. lond. 5. t. 14.*

*Sibth. oxon. n. 211. Abbot, bedf. 39. Dickf. hort.*

*sicc. 3. 6. Ard. spec. 2. 22. t. 8. f. 1. Hoffm.*

*germ. 59. Villars, dauph. 3. 655. Allion. pedem.*

*n. 870.*

*Saxifraga anglica alpinefolia annua. Plot, oxf. c. 6.*

*§. 9. t. 9. f. 7. Pluk. phyt. t. 74. f. 2. Raii syn.*

*345. 3. Petiv. brit. t. 59. f. 11.*

Stems almost upright pubescent, petals obsolete.

4. *Sagina erecta*. Upright Pearl-wort.

*Lin. spec. 185. fyst. 169. Reich. 1. 360. Willd. 1.*

*719. Hudf. angl. 73. Wither. arr. ed. 3. 216.*

*Smith, brit. 200. engl. bot. t. 609. Curt. lond. 2.*

*t. 12. Relb. cant. n. 144. Sibth. oxon. n. 212.*

*Abbot, bedf. 40. Dickf. hort. succ. 6. 6. Dryand.*

*cat. 3. 244. Hoffm. germ. 59. Roth. germ. 1. 72.*

*2. 201. Pollich, pal. n. 179. Krock. files. n. 266.*

*Allion. pedem. n. 869. Ger. prov. 402. n. 1.*

*Guett. stamp. 2. 276. Berg. phyt. 2. 83.*

*Moenchia quaternella. Ehrh. Beitr. 2. 177.*

*Alfine verna glabra. Magn. monsp. 14. Vaill. par. 6.*

*t. 3. f. 2.*

*Alsinella foliis caryophylleis. Dill. giff. 47. Raii syn.*

*344. t. 15. f. 4. Petiv. brit. t. 59. f. 9.*

Stem upright one or two-flowered, calyx-leaves acute, pe-

tals entire.

5. *Sagina virginica*. Virginian Pearl-wort.

*Lin. spec. 185. Reich. 1. 360. Willd. 1. 719.*

*Saginæ affinis planta minima, floribus albis. Clayt. mfs.*

*649.*

Stem upright, flowers opposite.

#### DESCRIPTIONS, &c.

1. Root fibrous, branched, annual. Herb bright green, many-stemmed, branched, hirsute, somewhat viscid. Stems diffused, leafy, dichotomous, scarcely panicled. Leaves elliptic-oblong; the upper ones ovate. Peduncles generally three times as long as the calyx, erect, bent back when the flowering is over, but becoming erect as the seed ripens. Calyx-leaves hirsute, acuminate, four; two of them interior, narrower, with a membranous margin. Petals four, shorter than the calyx; obcordate, white. Stamens four, sometimes but seldom five. Capsule cylindric, a little longer than the calyx, bursting at the top with eight blunt teeth. Seeds somewhat rugged on the outside. The flowers expand only in bright weather. In the wild plant they are always four-cleft and four-stamened; in cultivated luxuriant plants they are sometimes five-cleft and five-stamened.

Native of Scotland, on sandy shores and rocks, on walls and in rubbishy places; flowering in may and june. Dr. Smith first observed it on walls about Edinburgh, as well as on the Calton hill and Arthur's seat, in 1782, and communicated it to Dr. Hope. It has since been found by Mr. Dickson on Inch Keith and Inch Combe in the Frith of Forth, and also on the beach below Preston Pans.

Mr. Curtis insists that this plant in structure and habit is a *Cerastium*; and Dr. Smith, who at first considered it as a *Sagina*, from the number of parts in the fructification, has since subscribed to Mr. Curtis's opinion. Having been noticed too late for me to insert it under *Cerastium*, I have thought it better to introduce it here, than to omit it entirely.

2. Trailing Pearl-wort has a fibrous root, according to some annual, according to others perennial; Mr. Curtis says it is generally annual, but in shady places often perennial. Stems numerous, in shady moist places procumbent, rooting; in dry situations upright, two or three inches in length, round, smooth, jointed, branched and proliferous. Leaves half an inch long, connate, linear, mucronate, smooth, deep green; root-leaves in tufts. Peduncles axillary, solitary, longer than the leaves, one-flowered, nodding before the flowers open. Calyx spreading; leaflets obtuse. Petals very small, twice or thrice shorter than the calyx, entire, white, spreading; often imperfect. Capsule

<sup>1</sup> Smith.

<sup>2</sup> Curtis and Smith.



surrounded with the permanent calyx, ovate, thin, one-celled, four-valved, opening beyond the middle. Receptacle columnar, free, hispid, a little longer than half the capsule. Seeds more than fifty, nearly kidney-shaped, smooth, ferruginous<sup>a</sup>.

Villars says that he has often seen this plant without any petals, with a five-leaved calyx, ten stamens, and five pistils, thus approaching to *Spergula*. The calyx and other parts of the flower appear in this case to increase at the expense of the corolla; the latter however is often wanting without an augmentation of the other parts.

Mr. Curtis remarks, that few plants assume a greater variety of appearance than this, but that in all situations the singular appearance of the seed-vessels, placed on the calyx, like a cup on a saucer, will easily distinguish it.

Native of most parts of Europe, Siberia and Japan, in barren pastures, on walls, &c. Being fond of a sandy and gravelly soil, it is a troublesome little weed in garden walks and paved courts, where it flowers and seeds during the whole summer<sup>y</sup>.

3. Annual Pearl-wort has a root certainly and constantly annual, small and fibrous. Stems several, nearly upright, or if they spread never taking root, from one to three inches or more in height, round, filiform, jointed, clothed with short scattered hairs. Leaves opposite, linear-subulate, short, mucronate, frequently hairy, and always fringed at the base. Peduncles slender, at first nodding but afterwards upright, often but not always hairy. Petals white, frequently emarginate, very minute, and often altogether wanting. Capsule one-celled: valves larger than the leaves of the calyx. Seeds generally marked with a black line on their outer edge, but this is not absolutely invariable<sup>z</sup>.

Linneus was not well acquainted with the differences between this species and the preceding, with which he certainly confounded *Spergula subulata*<sup>a</sup>.

Mr. Ray considered this as distinct from the *procumbens*; and informs us, that it differs from it not only in the colour of its stalks and leaves, which are of a browner hue, but that it has an annual root, and that it does not put forth roots at the joints, as the *procumbens* does.

Linneus at first considered this as a variety of that, but afterwards, convinced by Arduini, he adopted it in his second Mantissa as a species. Mr. Hudson continued it as a variety.

The distinction of an annual and perennial root, though it cannot perhaps be admitted in all cases as a specific character, must be allowed to have considerable weight. The *apetala* is as regular an annual as the *Draba verna*, while the *procumbens* continues green through the winter. The preceding is always procumbent; and when it grows, as it commonly does, in moist situations, it mats and spreads on the ground. The stalks of the *apetala*, when the plant is young, spread on the ground; but as it advances to maturity they rise up, and if several grow together, become quite erect. Where the plants grow singly, and in a dry situation, they neither acquire the same height, nor the same degree of uprightness. Sometimes it is found on moist shady walls, but taller and more branched than common; but whether the plants be small or large, their stalks and leaves are hairy; whereas in the *procumbens* they are perfectly smooth: the hairs are visible to the naked eye, and when magnified, have no little globules at their extremities, as in those of *Spergula saginoides*, which comes very near in its appearance to Pearl-wort. The *apetala* is a smaller plant than the *procumbens*, and much finer in its stalks: its leaves are also shorter by almost one half, and less succulent.

From its latin trivial name, one should be led to suppose, that it is perfectly apetalous; accordingly both Linneus and Arduini describe it as such: it is however generally found with petals, but so minute, as almost to require a magnifier to render them visible.

Mr. Ray does not appear to have an idea of its being a common plant, for he mentions the particular

spots where it was to be found: but it is scarcely less frequent than the preceding, in more dry, barren and open places; on walls, in gravel walks, where it is a troublesome weed, and on barren heaths; flowering in may and june. There is perhaps scarcely any plant that is quicker in ripening its seeds<sup>b</sup>.

Besides England, it is native of France, Italy and Germany.

4. Upright Pearl-wort has an annual, simple, fibrous root. The whole herb is smooth and glaucous. Stems two or three inches high, upright, straight, round, purplish, jointed, very few, but sometimes more numerous and divaricated. Leaves opposite, linear-lanceolate, acute; the lower ones sessile, rigid, grooved: those on the stem connate, often bent back, broader and more pointed. Peduncles solitary, very long, frequently purplish, one or two on a stalk. Calyx-leaves lanceolate, acute, with a membranous edge. Petals white, about as long as, or a little shorter than the calyx, undivided. Germ ovate. Stigmas almost sessile, villose. Capsule cylindric, undivided, opening with eight or ten teeth, one-celled; containing many rugged kidney-shaped seeds, of an orange-brown colour<sup>c</sup>.

This is a little plant of considerable neatness and elegance in its structure, much stronger than either of the two preceding; growing frequently on dry gravelly pastures and heaths among grass, flowering in april and may<sup>d</sup>.

The calyx never opens far, so that the corolla is not suffered fully to expand. If the season proves dry, the stalk is generally simple; but if the ground be moist, it throws out many stalks, which first spread on the earth, and afterwards become upright<sup>e</sup>.

The fruit, says Dr. Smith, as Mr. Curtis has admirably observed, is altogether that of *Cerastium*, but its entire petals, and the number of parts in the flower, by no means agree with that genus; nor does the habit correspond either with *Cerastium* or the other *Saginas*. It may perhaps form a distinct genus.

Mr. Curtis was at a loss, whether to consider this little plant as a new genus, or to arrange it with *Sagina*: for though it agrees with *Sagina* in having a calyx and corolla each of four leaves, together with four stamens and as many pistils, yet in its seed-vessels it greatly resembles a *Cerastium*; while the whole plant, in its habit and glaucous appearance, approaches nearly to *Stellaria holostea*. As there are few genera however, where the species do not vary considerably in the parts of fructification, he thinks it most eligible to continue it a *Sagina*; especially as it retains those characters, which obviously distinguish it from any of the decandrous plants.

To this determination I heartily subscribe, notwithstanding Ehrhart has made it a new genus by the name of *Moenchia*; and, as Dr. Smith thinks, perhaps not unjustly.

5. Stem filiform, a finger's length. Leaves opposite, awl-shaped, remote, very small. One flower terminating, and some opposite, each on its proper peduncle. Calyx four-parted, upright. Petals four, oblong. Stamens four, the length of the calyx. Germ conical, the length of the calyx. No style. Stigma blunt. Capsule pyramidal, beaked, one-celled. Seeds numerous. Perhaps it may be of a genus peculiar to itself.

Native of Virginia, where Clayton found it among moss on the brink of springs<sup>f</sup>.

Here is another doubt concerning the genus of a species of *Sagina*. The first species is removed to *Cerastium*. The fourth and fifth are thought worthy of making each a distinct genus. Thus we may have almost as many genera as species; scarcely any two species agreeing in their habit, and in all the parts of their fructification.

The several species may easily be increased by their seed, which they shed abundantly.

SAGINA. See *Stellaria*.

SAGITTA. See *Sagittaria*.

SAGITTÆ SIMILIS. See *Pontederia*.]

<sup>a</sup> Gartner. <sup>y</sup> Curtis. <sup>z</sup> Curtis, Smith. <sup>b</sup> Smith. <sup>c</sup> Curtis. <sup>d</sup> Engl. bot. <sup>e</sup> Smith, Curtis. <sup>f</sup> Linn. spec.



SAGITTARIA. (From the form of the leaves resembling the head of an arrow.)

Lin. gen. n. 1067. Reich. n. 1164. Schreb. n. 1441. Gärtn. t. 84. Juss. 46. Sagitta. Dill. gen. 4. Vaill. aët. gall. 1719.

Class. 21. 7. Monoecia Polyandria.

Nat. order of Tripetaloideæ. Junci, Juss.

GENERIC CHARACTER.

\* Male Flowers many.

CAL. Perianth three-leaved: leaflets ovate, concave, permanent.

COR. Petals three, roundish, blunt, flat, spreading, three times as large as the calyx.

STAM. Filaments numerous (often twenty-four) awl-shaped, collected into a head. Anthers erect, the length of the calyx.

\* Female Flowers fewer, below the males.

CAL. Perianth as in the male.

COR. Petals three, as in the male.

PIST. Germs numerous, compressed, collected into a head, gibbous outwards, ending in very short Styles. Stigmas acute, permanent.

PER. none. Receptacle globular, collecting the seeds into a globe.

SEEDS numerous, oblong, compressed, girt longitudinally with a membranaceous margin, which is wide, gibbous on one side, acuminate at both ends.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. three-petalled.

MALE. Filaments commonly twenty-four.

FEM. Pist. many. Seeds many, naked.

SPECIES.

1. Sagittaria sagittifolia. Common Arrow-head.

Lin. spec. 1410. fyst. 856. Reich. 4. 155. Fl. lapp. n. 344. Suec. n. 869. Gärtn. fruct. 2. 21. Hudf. angl. 420. Wither. arr. ed. 3. 512. Engl. bot. t. 84. Relb. cant. n. 710. Sibth. oxon. n. 509. Fl. dan. t. 172. Pollich pal. n. 907. Roth. germ. 1. 406. 2. 480. Neck. gallob. 388. Villars dauph. 3. 756. Allion. pedem. n. 863. Roemer fl. europ. 57. ic. Gmel. sib. 4. 207. Gron. virg. 116. Thunb. jap. 242. Lour. cochinch. 570. ed. Willd. 698.

Sagitta. Camer. epit. 874.—minor. Dod. pempt. 588. 2. Matth. 1139. Baub. bist. 789. Raii bist. 618. syn. 258. 1. Pet. brit. t. 43. f. 11.

S. foliis acuminatis. Hall. belv. n. 1185.

S. major. Scop. carn. n. 1181.

S. aquatica minor latifolia. Baub. pin. 194. 2.

S. minor latifolia. Park. theat. 1247. 2.

Sagittaria minor. Lob. obs. 161. 2. ic. 1. 302. 1. Ger. 336. 2. emac. 416. 2.

β. Sagitta aquatica minor angustifolia. Baub. pin. 194. 3.

γ. S. aquatica major. Baub. pin. 194. 1. Ger. 336. 1. emac. 416. 1.

S. major. Dod. pempt. 588. 1. Matth. 1138. Petiv. brit. t. 43. f. 10.

δ. S. aquatica foliis variis. Loef. pruss. 234. t. 74.

S. minor. Mill. dict. n. 2.

Gramen bulbosum aquaticum. Baub. prodr. 4.

ε. S. aquat. omnium minima. Pluk. alm. 326. Raii syn. 258. Petiv. brit. t. 43. f. 12.

Sagittaria minor angustifolia. Ger. 337.

S. parvifolia. Sibth. oxon. n. 509. β. Withering var. 2.

Leaves arrow-shaped acute.

[2. Sagittaria obtusifolia. Blunt-leaved Arrow-head.

Lin. spec. 1410. Reich. 4. 155. Pluk. phyt. t. 200. f. 7.

S. obtusa. Thunb. jap. 242.

Culitamar. Rheed. mal. 11. 93. t. 45.

Leaves arrow-shaped obtuse, stem branched.

3. Sagittaria lancifolia. Lance-leaved Arrow-head.

Lin. spec. 1411. fyst. 856. Reich. 4. 156. Amoen.

5. 409. Jacqu. amer. 248. piët. 121. Brown.

jam. 345. Plum. spec. 7. ic. 116. f. 1.

Leaves lanceolate-ovate.

4. Sagittaria acutifolia. Sharp-leaved Arrow-head.

Lin. fyst. 856. suppl. 419.

Leaves awl-shaped.

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5. Sagittaria trifolia. Three-leaved Arrow-head.

Lin. spec. 1410. Reich. 4. 156. Pet. gaz. 29. t. 19. f. 5.

Leaves ternate.

DESCRIPTIONS, &c.

1. Root perennial, consisting of a tuber fixed deeply in the mud. Stem and petioles triangular, very spongy, by which they are supported in the water in consequence of the air generated within them: they discharge a white milky juice, an uncommon circumstance in aquatic plants<sup>2</sup>.] The petioles are in length proportioned to the depth of the water in which the plant grows, and are sometimes almost a yard long. [Leaves all from the root: the first, which are always under water, long and linear: the succeeding leaves, which rise above the water, are arrow-shaped, very entire, smooth, with parallel ribs, and a net-work of veins. Flowers three in each whorl, each having a small oval-lanceolate bracte at the base of the pedicel, embracing the stem. One or two of the lower whorls have female, the rest male flowers. The pedicels of the latter are an inch long; of the former about half an inch, and stronger. Calyx of one leaf with three divisions<sup>h</sup>. Corolla white, with a purplish tinge at the claws of the petals, soon falling off<sup>i</sup>; but there is a succession of the flowers through the months of July and August<sup>k</sup>. Stamens three, according to Gärtner, who considers what Linneus calls the seeds as utricular capsules, before maturity lenticular-compressed, but afterwards membranaceous-bracted, subsemilunar, terminated by a very short recurved style, one-celled, not opening, of a pale straw-colour. Common receptacle globular, naked, covered with small dots: proper receptacle, a short filiform cord stretched from the base of the capsule within the cell, supporting the seed; which is ovate-oblong, having a longitudinal streak on each side from the navel, thus appearing as if it were doubled; it is covered with very minute dots, and is rufescent.

Dr. Stokes remarks, that the flowers which are called male, have from one to five pistils, and that there are none with stamens only. Dr. Smith says, that he has observed three or four pistils in some of the male flowers; but whether they ever ripen is uncertain. They should therefore rather be called imperfect hermaphrodites.

The young plant with linear leaves is well figured in Flora danica: not so, in Petiver, t. 43. f. 9. Roemer's figure is copied from English Botany. The two figures of the great and small Arrow-head in Ger. emac. and Parkinson are from Dodonæus. The least Arrow-head of Gerarde is omitted by both these, but copied by Petiver.

Native of Europe, Siberia, China, Cochinchina, Japan and Virginia in pools, ditches and flow streams; of which it is one of the most beautiful ornaments throughout England.

The bulb or tuber, which fixes itself in the solid earth below the mud, constitutes a considerable part of the food among the Chinese, and upon that account they cultivate it<sup>l</sup>. The roots are larger there; in the East Indies, where they are also eaten; and in America. In Europe they are neglected, being probably acrid and caustic.

Arrow-head varies much in size, and has leaves of different forms; hence several varieties, and pretended species of old authors<sup>m</sup>. Loeselius's variety (δ of Linneus) is imaginary; for Arrow-head has always both sagittate and linear leaves: Mr. Miller however (n. 2.) is tempted to consider it as a different species. With respect to Plukenet's least Arrow-head, he is willing to impute the smallness of the leaves, and the shortness of the petioles and peduncles to situation; it being covered only at high water, which may stint its growth, and give it the peculiar appearance which it puts on.

[2. This differs from the preceding in having the anterior part of the leaves twice as wide as in that.—Native of Asia<sup>n</sup>.

<sup>2</sup> Engl. bot.

<sup>k</sup> Engl. bot.

<sup>h</sup> Stokes in With.

<sup>i</sup> Withering.

<sup>n</sup> Linn. spec.

<sup>l</sup> Withering.

<sup>m</sup> Engl. bot.



3. Leaves acuminate both ways, quite entire, shining, coriaceous, on round and very long petioles. Spikes of flowers a foot or two longer than the leaves. Of these there are four partial ones; the middle longer than the three outer. Peduncles one-flowered, three together. Flowers twice as large as those of the common sort; with a reddish calyx, white petals, and yellow anthers. Fruit depressed.

The stem grows very luxuriant in general, and rises frequently to the height of two or three feet above the foliage. The branches of the lower whorls seldom exceed three in number, and are commonly subdivided in the same manner themselves; but those of the higher orders consist chiefly of five long simple flower-stalks, and those about the top of three only. The flowers that grow about the extremities of the stem and branches are generally male, and stand on longer peduncles than the female flowers, which commonly occupy the lower part of the main and lateral flower-spikes. Both the stalk and branches are smooth and roundish.

Native of Jamaica and Cuba in stagnant waters.

4. This has the stature of the common sort. Leaves sheathing at the base, convex outwards, sharp at the edge, gradually attenuated into a compressed cusp without any widened leaf. Flowers resembling those of the first sort. Stamens many. Fruit a very close globe of acute seeds.—Native of Surinam, in water.

5. Native of China.

SAGITTARIA. See *Alisma*.

SAGO-TREE. See *Cycas*.

SAGONA. See *Hydrolea*.

SAINT ANDREW'S CROSS. See *Ascyrum*.

SAINT BARNABY'S THISTLE. See *Centaurea*.

SAINT FOIN. See *Hedysarum Onobrychis*.

SAINT JOHN'S BREAD. See *Cerätoria*.

——— WORT. See *Hypericum*.

SAINT PETER'S WORT. See *Hypericum quadrangulum*.

SAJOR. See *Plukenetia*.

SALACIA. (*The goddess of the sea. Dea quam putabant salum ciere. Festus.—The retiring of the surge from the shore. Venilia unda quæ ad litus venit; salacia quæ ad salum redit. Varro.*)

Lin. gen. Reich. n. 1105. Schreb. n. 1380. Juss. 424.

Class. 20. 2. Gynandria Triandria.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, very short, spreading: segments ovate, acute, permanent.

COR. Petals five, roundish, sessile.

STAM. Filaments none. Anthers three, twin, divaricate at the base, placed on the apex of the germ.

PIST. Germ roundish, larger than the calyx. Style very short, between the anthers. Stigma simple.

PER. Berry one-celled, three-seeded.

SEEDS roundish, even.

OBS. By the character, this genus is near allied to *Stilago*, but it is of a different habit. *Stilago* is referred to *Antidesma*.—Jussieu thinks that *Salacia* may possibly be dioecous.

#### ESSENTIAL CHARACTER.

Monogynous or one-styled. Cal. five-parted. Cor. five-petalled. Anthers placed on the apex of the germ.

#### SPECIES.

1. *Salacia chinensis*.

Lin. syst. 820. Reich. 4. 44. mant. 293.

Stem shrubby, leaves quite entire alternate, flowers several axillary.

2. *Salacia cochinchinensis*.

Lour. cochinch. 526. ed. Willd. 642.

Stem shrubby, leaves subserrate opposite, flowers heaped axillary.

#### DESCRIPTIONS, &c.

1. Branches angular, even, divaricating very much, thickish at the base. Leaves petioled, remote, oval, like those of the Plum, sharpish, even. Flowers many from each germ, on one-flowered peduncles shorter than the petiole.—Native of China.

\* Jacquin.

\* Browne.

\* Linn. suppl.

\* Linn. mant.

2. Stem almost upright, six feet high, with many twisted branches. Leaves ovate, subacuminate, smooth, petioled. Flowers of a reddish yellow colour, small. Berry roundish, unequal, reddish, middle-sized, eatable. Calyx inferior, coloured. Petals concave, spreading, longer than the calyx. Filaments none. Anthers roundish, two-lobed, distant. Germ round-flatted. Style none. Stigma a very small point.—Native of Cochinchina, among bushes.

SALICARIA. See *Lythrum*.

SALICORNIA. (*From Sal, salt, and Cornu, a horn.*)

Lin. gen. n. 10. Reich. n. 10. Schreb. n. 14.

Tournef. t. 485. Juss. 86. Gærtn. t. 127.

Class. 1. 1. Monandria Monogynia.

Nat. order of *Holoraceæ*. *Atriplices*, Juss.

#### GENERIC CHARACTER.

CAL. four-cornered, truncate, ventricose, permanent.

COR. none.

STAM. Filaments one, (or two) simple, longer than the calyx. Anther one, oblong, twin, erect.

PIST. Germ ovate-oblong. Style simple, under the stamens. Stigma bifid.

PER. none. Calyx ventricose, inflated.

SEED single.

OBS. I saw long since one stamen in a cultivated plant of the annual species: others afterwards observed two filaments. In another species from Virginia, of which I had a living specimen lately under view, the calyx was an ovate scale, concave like a snail's shell, and upright: it had certainly two stamens, and a superior pistil. Syst. veg. p. 51. Forster and Moebing both reckon two stamens in *Salicornia herbacea*. Baster only one.

#### ESSENTIAL CHARACTER.

Cal. ventricose, entire. Pet. none. Stam. one or two.

Seed one covered by the calyx.

#### SPECIES.

1. *Salicornia herbacea*. Herbaceous Marsh Sampire or jointed Glasswort.

Lin. spec. 5. syst. 52. Reich. 1. 8. Willd. 1. 23.

hort. cliff. 490. fl. suec. n. 1. mat. med. 36.

Woodv. med. bot. 387. Wither. arr. ed. 3. 4.

Smith, brit. 2. Relb. suppl. 2. 1. Fl. dan. t. 303.

Scop. carn. n. 1. Jacqu. vind. p. 1. Grim. in nov.

act. nat. cur. 3. app. 252. & 5. app. 120. Roth.

germ. 1. 1. 2. 1. Hoffm. germ. 1. Krock. filef.

n. 1. Allion. pedem. n. 1893. Ger. prov. 328. 1.

D'Affo arag. n. 1. Gmel. sib. 3. 8. Pallas, it. 1.

app. n. 89. Desfont. atlant. 3. Blackw. t. 598.

Plenck, ic. t. 8. Lamarck, illustr. n. 33. t. 4.

f. 8.

S. fruticosa. Mill. dict. n. 1.

S. annua. Afzel. Mfs. 1. Bast. opusc. 2. 105. t. 10.

Engl. bot. t. 415. Sauv. monsp. 7.

S. europæa α. Hudf. angl. 1.

Salicornia. Dod. pempt. 82. 1. Raii syn. 136.

Petiv. brit. t. 9. f. 3.

S. geniculata annua. Tournef. cor. 51.

S. f. Kali geniculatum. Ger. emac. 535. 1. Park.

theat. 280. 4.—vermiculatum. Lob. adv. 170. 2.

Kali. Matth. 465. Camer. epit. 247.

K. geniculatum. Barrel. ic. 192.—f. Salicornia.

Baub. hist. 3. 705. 2. n. 1, 2, 3.—majus. Baub.

pin. Mor. hist. f. 5. t. 33. f. 8. Raii hist. 211.

β. *Salicornia erecta*, foliis brevibus, cupressiformis.

Dill. in Raii syn. 137. n. 5.

S. biennis. Afzel. Mfs. 2.

S. europæa β. Hudf. angl. 1.

Woody jointed Glasswort. Petiv. brit. t. 9. f. 4.

γ. *S. myosuroides procumbens*, furculis longissimis.

Dill. in Raii syn. 137. n. 3.

S. europæa δ. Hudf. angl. 1.

δ. *S. ramosior procumbens*, foliis brevibus purpurascens.

Dill. in Raii syn. 137. n. 4.

S. europæa η. Hudf. angl. 1.

ε. *Kali geniculatum majus sempervirens humilius*.

Schola bot. 37. Dill. in herb. Sherard. Smith, brit. 2.

\* Loureiro.

Joirts



- Joints compressed emarginate, internodes obconical, spikes peduncled attenuated towards the top.
- [2. *Salicornia perennans*. Perennial jointed Glasswort.  
*Lin. spec. ed. Willd.* 1. 24.  
*S. herbacea* β. *Pallas itin.* 1. app. n. 89. t. D. f. 1.  
*Herbaceous, patulous, joints compressed at the top emarginate-bifid, spikes axillary in threes peduncled, scales acute, root perennial.*]
3. *Salicornia fruticosa*. Shrubby Marsh Sampire or jointed Glasswort.  
*Lin. spec.* 5. syst. 52. *Reich.* 1. 9. *Willd.* 1. 24.  
*Smith, brit.* 3. *Afzel. Mfs.* 3. *Ger. prov.* 328.  
*u.* 2. *Gmel. fib.* 3. 8. t. 1. f. 1? *Desfont. atlant.* 2.  
*Lamarck, illustr. n.* 34. t. 4. f. 2.  
*S. europæa* γ. *Hudf. angl.* 1.  
*S. perennis*. *Mill. dict. n.* 2.  
*S. geniculata sempervirens*. *Tournef. cor.* 51. t. 485.  
*S. sempervirens*. *Sauv. monsp.* 7.  
*Kali geniculatum majus*. *Baub. pin.* 289. *Raii hist.* 211. 1.  
*K. genic. perenne fruticosius procumbens*. *Raii syn.* 136.  
*Kali*. *Camer. epit.* 246.  
*Joints round entire, internodes equal, spikes subsessile, cylindrical obtuse.*
- [4. *Salicornia strobilacea*.  
*Lin. syst. Gmel.* 15. n. 7. *Willd.* 25. *Pallas, it.* 1. 481. t. B. f. 1, 2. *Gertn. fruct.* 2. 210.  
*S. arborefcens sine geniculis*. *Buxb. cent.* 1. 6. t. 10. f. 2.  
*Stem prostrate shrubby, joints truncate alternately spike-bearing, spikes naked very short opposite.*
5. *Salicornia virginica*. Virginian jointed Glasswort.  
*Lin. spec.* 5. syst. 52. *Reich.* 1. 9. *Willd.* 1. 25.  
*Herbaceous erect, branches quite simple.*
6. *Salicornia arabica*. Arabian jointed Glasswort.  
*Lin. spec.* 5. syst. ed. 13. 51. ed. 14. 53. *Reich.* 1. 9. *Willd.* 1. 25. suppl. 81. *Pallas, it.* 1. app. n. 92. t. D. f. 3. *Desfont. atlant.* 3.  
*S. perfoliata*. *Forfk. arab.* 3. n. 4?  
*Kali geniculatum alterum vel minus*. *Baub. pin.* 289.  
*Mor. hist.* 2. 610. f. 5. t. 33. f. 7. *Raii hist.* 211.  
*Joints obtuse thickened at the base, spikes ovate.*
7. *Salicornia foliata*. Leafy jointed Glasswort.  
*Lin. syst.* 53. *Willd.* 1. 25. suppl. 81. *Pallas, it.* 1. app. n. 93. t. F.  
*Leaves linear alternate embracing and decurrent.*
8. *Salicornia amplexicaulis*. Claspingleaved jointed Glasswort.  
*Lin. spec. ed. Willd.* 1. 26. *Vahl, symb.* 2. 1.  
*Leaves cordate embracing.*
9. *Salicornia caspica*. Caspian jointed Glasswort.  
*Lin. spec.* 5. *Reich.* 1. 9. *Willd.* 1. 26. *Lepech.* it. 1. 254. *Pallas it.* 1. app. n. 90. t. D. f. 2.  
*Kali arborefcens, tamarisci facie*. *Buxb. cent.* 1. t. 11. f. 1.  
*Joints cylindric, spikes filiform.*

## DESCRIPTIONS, &amp;c.

1. Root fibrous, small, annual or biennial. Stem for the most part upright, subdivided at the base, branched at top: branches opposite, simple, upright, very succulent, leafless, jointed; joints flatted, widening at the end, emarginate. Spikes opposite, with one at the end larger than the rest, peduncled, round, gradually attenuated towards the top, sharpish, jointed. Flowers opposite, near together, mostly three on each side in the clefts of the joint.

The variety β has a more branching stem, with longer and thicker spikes:—γ a diffused stem, with very long spikes:—δ a very branching stem, with small purplish spikes:—ε a very branching stem, firmer than in the others, with short green spikes<sup>1</sup>.

The young plants are herbaceous, the older ones suffrutescent, or somewhat woody at bottom; in this state they have been sometimes mistaken for the next species<sup>2</sup>: that however is distinct, and a native of England as well as this; which may be known from it by its herbaceous stem being much shorter and more branched, but especially by the marks given in the specific characters.

<sup>1</sup> Smith.<sup>2</sup> Withering.

This plant is common on the coast of Europe, Asia, Africa and America, where the shore is flat and oozy: and flowers with us in august and september. The three first varieties were found by Mr. Stonefleet, in a little salt-marsh on the east side of Pool in Dorsetshire: the last was also gathered by the same gentleman, but in what place is not mentioned.

The whole plant has a saltish taste, and is greedily devoured by cattle. Steeped in salted vinegar, the tender shoots are made into a pickle, which is taken for the true Sampire, or *Critbnum maritimum*; which see. Hence its name of *Marsb Sampire*.

2. Native of Siberia, by the Jaik in drier marshes.

3. Root woody, perennial. Stem suffruticose, ascending, very much branched; branches and branchlets opposite and less fleshy. All the internodes almost cylindric. Spikes commonly sessile, altogether cylindric, blunt, many-flowered, with very short joints<sup>3</sup>.

Native of Europe and Africa, in the same situation. In England Sir Hans Sloane found it near the Isle of Shepey; Dillenius in greater plenty in the Isle of Grain; Mr. Yalden on the shore all the way from Weymouth turnpike to Rhodipole.

These plants are burnt, and from the ashes a fossil alkali is obtained, which is in great request for making soap and glass. Hence their names of *Glasswort* and *Saltwort*. It is chiefly made on the coast of the Mediterranean, where it is called Soda<sup>4</sup>. The Tunicians collect these and other sea plants, and when they are almost dry, burn them in a pit made for the purpose. The French merchants purchase the salt, and send it to Marseilles for making soap<sup>5</sup>.

Linneus says, that they have no plant more adapted to the making of Soda; but though the quantity of fossil alkali which it yields is very considerable, a great portion of it is mixed with the muriatic acid, and therefore it contains much common salt<sup>6</sup>. Many other plants are used for this purpose, but of these see under the article SALSOLA.

4. Native of the Caspian sea.

5. Branches opposite, undivided, terminated by a long jointed spike. It is distinct from the first species, which is also found in Virginia. *S. virginica*, observed by Scholler in salts in Germany, is only a variety of that<sup>7</sup>.

6. This is a shrub, with alternate divided branches. Leaves fleshy, blunt, covering the branchlets, opening on one side alternately.

Native of Arabia<sup>8</sup>, and Barbary: observed by Rauwolff about Tripoli. This is burnt for Kelp or Soda.—Cultivated in 1758, by Mr. Miller<sup>9</sup>.

7. This is a shrub, with alternate almost simple branches. Leaves fleshy.—Native of Siberia, where it was found by Gmelin<sup>10</sup>.

8. Stem decumbent, frutescent at the base, a hand or little more in height, very much branched: branches from all the axils of the leaves, alternate, spreading very much, an inch and half long, two together very near each other. Leaves small, alternate, bluntish, beneath convex, above flattish; on the younger branches imbricate. On the shores of a lake near Bardo in the kingdom of Tunis<sup>11</sup>.

9. In muddy places by the Caspian sea, and in Media<sup>12</sup>.

Forster has a species (prodr. n. 489.) found in New Zealand, which he has named *Salicornia australis*.

SALISBURIA. (So named, by Dr. Smith, in honour of Richard Anthony Salisbury, Esq. F.R.S. and F.L.S.)

*Lin. trans.* 3. 330.

Class. 21. 8. Monoccia Polyandria.

GENERIC CHARACTER.

\* Male Flowers.

CAL. Ament naked, filiform.

COR. none.

STAM. Filaments many. Anthers incumbent, deltoid: cells connected only at the top.

\* Female Flowers solitary.

CAL. Perianth four-cleft, permanent.

<sup>3</sup> Smith.<sup>4</sup> Withering.<sup>5</sup> Desfontaines.<sup>6</sup> Woodville.<sup>7</sup> Linn. syst. & Willd.<sup>8</sup> Linn. suppl.<sup>9</sup> Hort. kew.<sup>10</sup> Linn. suppl.<sup>11</sup> Vahl.<sup>12</sup> Pallas.



# S A L

COR. none.

PIST.

PER. *Drupe* superior, globular.

SEED. *Nut* triangular: *nucleus* oval, narrowed at the base.

## ESSENTIAL CHARACTER.

MALE. Ament. *Anthers* incumbent, deltoid.

FEMALE. Solitary. *Cal.* four-cleft. *Drupe*, with a triangular shell.

## SPECIES.

1. *Salisburia adiantifolia*.

*Smith in Lin. transf.* 3. 330.

*Ginkgo biloba.* *Lin. mant.* 313. *Dist. nostr.*

## DESCRIPTION, &c.

This large and not inelegant tree is cultivated in China and Japan. It has been long (upwards of forty years) admired for its handsome fan-shaped leaves, cloven about half way from their summit; but they can by no means be termed two-lobed, that denomination requiring that the segments should be rounded. These leaves are also irregularly notched like those of the *Zamia*, thickened at the margin, smooth, striated on each side with numerous parallel nerves.

The fruit is a pale-brown drupe, of a globular form; the flesh or pulp hard and thick; the shell is thin, bony, oval, triangular, smooth, sharp at the top and one-celled; the seed or kernel solitary, filling the shell, having two coats brown and membranous, one adhering to the shell, the other to the seed; albumen greenish-white, of the same form with the seed, like that of the almond; embryo yellow, inserted into the base of the albumen, straight, dicotyledonous. The fruit is not produced till the tree arrives at a considerable age.

This genus should be placed in the Linnean system between *Quercus* and *Juglans*. In that of Monf. de Jussieu it belongs to the fifth order of his fifteenth class (*Coniferæ*) after *Taxus*; though it is not very nearly allied to any genus whatever.

Dr. Smith has preferred *adiantifolia* for the specific name, because *biloba* is not correct, and *adiantifolia* has not only been used long ago by Kæmpfer and Thunberg, but is peculiarly apposite in this case, Mr. Salisbury preferring such comparative specific names to all others.

The generic name of *Ginkgo*, being equally uncouth and barbarous, was retained by Linneus in an appendix, only till the flowers should be discovered, and the plant referred to its proper place in the system<sup>b</sup>.

For the rest see GINKGO.]

SALIX. (*A saliendo*; from the quickness of its growth.—

*Gr. ἰταξ, πᾶσα το ἰσως*; on the same account.)

*Lin. gen. n.* 1098. *Reich. n.* 1201. *Schreb. n.* 1493.

*Tournef. t.* 364. *Juss. 408.* *Gertn. t.* 90.

*Hoffm. 17.*

*Class.* 22. 2. *Dioecia Diandria.*

*Nat. order of Aménaceæ.*

## GENERIC CHARACTER.

\* Male.

CAL. Ament oblong, imbricate every way, (constructed of an involucre from the bud,) consisting of Scales one-flowered, oblong, flat, spreading.

COR. Petals none.

Nectary a gland cylindric, very small, truncate, melliferous, in the centre of the flower.

STAM. Filaments two, straight, filiform, longer than the calyx. Anthers twin, four-celled.

\* Female.

CAL. Ament and Scales as in the male.

COR. none.

PIST. Germ ovate, attenuated into a Style scarcely distinct, a little longer than the scales of the calyx. Stigmas two, bifid, erect.

PER. Capsule ovate-subulate, one-celled, two-valved: valves revolute.

SEEDS numerous, ovate, very small, crowned with a simple hirsute pappus or down.

Obs. In some species, the male flowers have three or five stamens of unequal length; three have

<sup>b</sup> Smith in Linn. transf.

# S A L

them monadelphous, another as in the class Syn-gensia.

S. hermaphrodica is the only species known to us which has hermaphrodite two-stamened flowers.

S. purpurea and Helix have only one stamen to the flowers.

## ESSENTIAL CHARACTER.

Cal. Ament composed of scales. Cor. none.

MALE. Nectary a melliferous gland.

FEM. Style bifid. Caps. one-celled, two-valved. Seeds downy.

## SPECIES.

\* Leaves smooth serrate.

[1. *Salix hermaphrodica.* Hermaphrodite Willow.

*Lin. spec.* 1442. *Reich. 4.* 222. *fl. succ. n.* 873. *lapp. n.* 370.\*

Leaves serrate smooth, flowers hermaphrodite two-stamened.]

2. *Salix triandra.* Long-leaved three-stamened Willow.

*Lin. spec.* 1442. *Reich. 4.* 223. *Hoffm. sal. 1.* 45. *t. 9.* 10. & *t. 23. f. 2.* *Huds. angl.* 425. *Wither. arr. ed. 3.* 45. *Curt. lond. 6.* *t. 72.* *Smith in Linn. transf. 6.* 118. *Sibth. oxon. n.* 45. *Hall. helv. n.* 1637. *Scop. carn. n.* 1214. *Neck. gallob. 394.* *Leers, herb. n.* 745. *Pollich pal. n.* 916. *Gmel. fib. 1.* 155. *t. 34. f. 3.* *Pallas, ross. 1.* 78. *Du Roi barbecc. 2.* 384. *Gouan, illustr. 76.* *Villars dauph. 3.* 762.

S. folio amygdalino utrinque aurito, corticem abjiciens. *Raii hist.* 1421. 6. *syn.* 448.

Three-stamened, leaves linear-oblong serrate smooth, germs pedicelled.

3. *Salix pentandra.* Bay-leaved Willow.

*Lin. spec.* 1442. *Reich. 4.* 223. *hort. cliff. 454.* *fl. succ. n.* 879. *lapp. n.* 370. *t. 8. f. 3.* *Huds. angl. 426.* *Wither. arr. ed. 3.* 46. *Lightf. scot. 595.* *Smith in Linn. transf. 6.* 120. *Hall. helv. n.* 1639. *Villars dauph. 3.* 764.

S. folio laureo seu lato glabro odorato. *Raii hist.* 1420. 5. *syn.* 449.

Five-stamened, leaves elliptic-lanceolate, crenulate smooth, germs smooth subsessile.

[4. *Salix phylicifolia.* Tea-leaved Willow.

*Lin. spec.* 1442. *Reich. 4.* 223. *fl. lapp. n.* 351. *t. 8. f. d. succ. n.* 880. *Smith in Linn. transf. 6.* 123.

Leaves lanceolate wave-crenate smooth glaucous underneath, stipules subulate.

5. *Salix nigricans.* Dark broad-leaved Willow.

*Smith in Linn. transf. 6.* 120.

S. philicifolia β. *Lin. spec.* 1442. *fl. lapp. n.* 350. *t. 8. f. c.*

Leaves elliptic-lanceolate crenate smooth glaucous underneath, germs pedicelled lanceolate acuminate silky.

6. *Salix laurina.* Shining dark-green Willow.

*Smith in Linn. transf. 6.* 122.

Leaves elliptic acute toothlet-serrate smoothish glaucous underneath, germs pedicelled lanceolate silky.

7. *Salix petiolaris.* Dark long-leaved Willow.

*Smith in Linn. transf. 6.* 122.

Leaves lanceolate serrate smooth glaucous underneath, germs pedicelled ovate silky, stigmas sessile two-lobed.

8. *Salix japonica.* Japan Willow.

*Lin. syst.* 879. *Thunb. jap. 24.* *Kämpf. amoen. 5.* 908.

Leaves serrate smooth lanceolate glaucous underneath, the younger ones villose.]

9. *Salix vitellina.* Yellow Willow.

*Lin. spec.* 1442. *Reich. 4.* 224. *hort. ups. 295.* *Hoffm. sal. 1.* 57. *t. 11. f. 1. 8. t. 12. f. 2. 3. 4. t. 24. f. 1. fol.* *Huds. angl. 426.* *Wither. arr. ed. 3.* 47. *Sibth. oxon. n.* 46. *Neck. gallob. 394.* *Du Roi barbecc. 2.* 393. *Pallas ross. 1.* 76. *Leers herb. n.* 747. *Allion. pedem. n.* 1960. *Hall. helv. n.* 1635. β. *Villars dauph. 3.* 762. *Cord. in. Diosc. l. c.* 137.

S. fativa lutea, folio crenato. *Baub. pin.* 473.

S. tenuifolia dentata. *Munting. ic.* 12.

S. lutea tenuior, fativa viminea. *Baub. hist. 1.* 214. *Raii hist.* 1421. n. 7.

Salicis alterum genus. *Fuchf. hist.* 335.



- Leaves ferrate ovate-lanceolate acute smooth above, serratures cartilaginous.
10. *Salix amygdalina*. Broad-leaved three-stamened Willow.  
*Lin. spec.* 1443. *Reich.* 4. 224. *fl. lapp.* n. 348? *suec.* n. 881. *Huds. angl.* 426. *Wither. arr. ed.* 3. 47. *Lightf. scot.* 596. *Relb. cant.* n. 715. *Smith in Linn. transf.* 6. 119. *Du Roi barbecc.* 2. 395. *Leers herborn.* n. 748? *Pollich pal.* n. 917? *Villars dauph.* 3. 763. *Hall. belv.* n. 1636?  
*S. folio auriculato splendente flexilis.* *Raii hist.* 1420. 4. *syn.* 448. *cant.* 144. 4.  
 Three-stamened, leaves ovate oblique ferrate smooth, germs pedicelled, stipules very large.
- [11. *Salix hastata*. Hallert-leaved Willow.  
*Lin. spec.* 1443. *Reich.* 4. 225. *fl. lapp.* n. 354. *t.* 8. *f. g. suec.* n. 882. *Hall. belv.* n. 1654. *Leers herborn.* n. 749. *Gmel. fib.* 1. 156. n. 10. *Pallas roff.* 1. 84. *Villars dauph.* 3. 774. *Allion. pedem.* n. 1962.  
*S. latifolia non hirsuta.* *Baub. hist.* 1. 216.  
 Leaves ferrate smooth subovate acute sessile, stipules subcordate.
12. *Salix ægyptiaca*. Egyptian Willow.  
*Lin. spec.* 1444. *synt.* 879. *Reich.* 4. 225. *amoen.* 4. 295. *Desfont. atlant.* 361. *Poiret. itin.* 2. 26.  
*S. nitida.* *Gmel. it.* 3. 282. *t.* 18. *Retz. obs.* 3. 43. n. 93.  
*S. syriaca*, folio oleagineo argenteo. *Baub. pin.* 274. *Calaf. f. Ban. Alp. ægypt.* 61. *t.* 62. *Biedmusk. Brun. it.* 191. *t.* 72.  
 Leaves subserrate lanceolate-ovate naked veined, petioles simple without stipules.]
13. *Salix fragilis*. Crack Willow.  
*Lin. spec.* 1443. *Reich.* 4. 225. *fl. lapp.* n. 349. *t.* 8. *f. 6. fl. suec.* n. 883. *Huds. angl.* 426. *Wither. arr. ed.* 3. 47. *Lightf. scot.* 597. *Relb. cant.* n. 716. *Sibth. oxon.* n. 47. *Hunt. Evel. sylva.* 1. 245. 2. 238. *Woodv. med. bot.* 542. *t.* 198. *Du Roi barbecc.* 2. 395. *Leers herborn.* n. 750. *Pollich pal.* n. 918. *Villars dauph.* 3. 761. *Baub. pin.* 474. *prodr.* 159. *Park. theat.* 1431?  
*S. folio lato splendente fragilis.* *Raii cant.* 143. *hist.* 1420.  
*S. fol. longo latoque splendente fragilis.* *Raii syn.* 448. 8.  
 Leaves ferrate smooth ovate-lanceolate, petioles tooth-glandular.
14. *Salix babylonica*. Weeping Willow.  
*Lin. spec.* 1443. *Reich.* 4. 226. *hort. cliff.* 454. *Gron. orient.* 307. *Du Roi barbecc.* 2. 397. *Medic. in obs. soc. æcon. Lutr.* 1774. *p.* 287. *Gouan illustr.* 77. *Gmel. it.* 3. 309. *t.* 34. *f.* 2. *Lour. cochinch.* 609. *ed. Willd.* 747. *Pallas roff.* 1. 78.  
*S. orientalis*, flagellis deorsum pulchre pendentibus. *Tournef. cor.* 41. *Dubam. arb.* 20.  
*S. arabica* foliis atriplicis. *Baub. pin.* 475. *Raii hist.* 1424.  
*S. humilis arab. fol. atripl.* *Park. theat.* 1433. 7. *Garb arabum.* *Rauw. itin.* 183. *Dalech. app.* 30.  
 Leaves ferrate smooth linear-lanceolate, branches pendulous.
15. *Salix purpurea*. Bitter purple Willow.  
*Lin. spec.* 1444. *synt.* 879. *Reich.* 4. 226. *fl. suec.* n. 884. *Huds. angl.* 427. *Smith in Linn. transf.* 6. 113. *Teesd. in Linn. transf.* 5. 71. *Pollich pal.* n. 919.  
*S. monandra.* *Hoffm. sal.* 1. 18. *t.* 1. *f.* 1, 2. *t.* 5. *f.* 1. *t.* 23. *f.* 1. *Wither. arr. ed.* 3. 45. *Curt. lond.* 6. *t.* 71. *Sibth. oxon.* n. 48.  
*S. humilior*, foliis angustis subceruleis, ex adverso binis. *Raii cant.* 144. n. 5. *hist.* 1421. n. 9. *syn.* 448.  
 One-stamened, leaves obovate-lanceolate ferrate smooth, stigmas very short ovate subsessile.
16. *Salix Helix*. Rose Willow.  
*Lin. spec.* 1444. *Reich.* 4. 226. *Huds. angl.* 427. *Smith in Linn. transf.* 6. 114. *Teesd. in Linn. transf.* 5. 71. *Hall. belv.* n. 1640. *Desfont. atlant.* 362. *Dalech. hist.* 277. *f.* 2.

- Salicis racemi* f. nucamenta, rosæ & capitula squamata. *Baub. hist.* 1. 2. 213.  
 One-stamened, leaves lanceolate acuminate ferrulate smooth, style elongated filiform, stigmas linear.
- [17. *Salix filia*. Basket Ofier.  
*Hoffm. sal.* 1. 61. *t.* 13. 14. *Smith in Linn. transf.* 6. 115.  
 Monadelphous, leaves lanceolate acute somewhat toothblotted smooth glaucous underneath.
18. *Salix rubra*. Green Ofier.  
*Huds. angl.* 428. *Wither. arr. ed.* 3. 49. *Smith in Linn. transf.* 6. 116.  
*S. virescens.* *Villars dauph.* 3. 785. *t.* 51. *f.* 30.  
*S. minime fragilis*, foliis longissimis utrinque viridibus non ferratis. *Raii syn.* 449. n. 14.  
*S. nerii* folio utrinque virente. *Vaill. par.* 175. *ed. Mart.* 2. 227.  
*S. rubra minime fragilis* folio longo angusto. *Baub. hist.* 1. 215. *Raii hist.* 1421. n. 8.  
 Monadelphous, leaves linear-lanceolate elongated acute toothblotted smooth, of the same colour on both sides.
19. *Salix Croweana*. Broad-leaved monadelphous Willow.  
*Smith in Linn. transf.* 6. 117.  
 Monadelphous, leaves elliptic subserrate very smooth, glaucous underneath.
20. *Salix myrsinites*. Whortle-leaved Willow.  
*Lin. spec.* 1445. *Reich.* 4. 227. *fl. lapp.* n. 353. *t.* 8. *f. f. & t.* 7. *f.* 6. *suec.* n. 885. *Hoffm. sal.* 1. 71. *t.* 17. 18. *Gunn. norv.* n. 595. *Gouan illustr.* 76. *Leers, herborn.* n. 753. *Hall. belv.* n. 1645.—*sec. Hoffm.* 1647. *Villars dauph.* 3. 769. *t.* 50. *f.* 12.  
*S. retusa.* *Dickf. in Linn. transf.* 2. 288. *Wither. arr. ed.* 3. 48.  
*S. alpina pumila myrsinites.* *Ponted. comp.* 149.  
*S. alp. foliis angustioribus splendentibus ferratis.* *Scheuch. alp.* 340.  
 Leaves ferrate smooth ovate veined.
21. *Salix arbutifolia*.  
*Lin. spec.* 1445. *synt.* 879. *Reich.* 4. 227. *fl. lapp.* n. 360. *f. m. suec.* n. 886. *Gmel. fib.* 1. 166. *Pallas roff.* 1. 80. 83. *Gouan. illustr.* 76. *Jacqu. austr.* 5. *t.* 408. *Hall. belv.* n. 1647. *Retz. obs.* 6. 34. *Villars dauph.* 3. 771.  
 Leaves subserrate smooth subdiaphanous glaucous underneath, stem suffruticose.
22. *Salix herbacea*. Herbaceous Willow.  
*Lin. spec.* 1445. *synt.* 879. *Reich.* 4. 228. *fl. lapp.* n. 355. *t.* 7. *f.* 3. 8. *f.* 4. 9. & *t.* 8. *f.* 4. *suec.* n. 887. *Hoffm. sal.* 1. 74. *t.* 20. *f.* 1, 2, 3, 4. *Huds. angl.* 427. *Wither. arr. ed.* 3. 48. *Lightf. scot.* 600. *Gunn. norv.* 51. n. 3. *Fl. dan.* *t.* 117. *Jacqu. vind.* 296. *Gouan illustr.* 77. *Pallas it.* 3. 33. *roff.* 1. 85. *Hall. belv.* n. 1649. *Villars dauph.* 3. 773. *Allion. pedem.* n. 1967.  
*S. faxatilis minima.* *Baub. pin.* 474. *prodr.* 159.  
*S. alpina min. lucida repens* *Alni rotundo folio.* *Bocc. mus.* 2. 19.—item, *S. alp. Alni rot. folio repens.* *Ej. t.* 1. *f.* ult. *Raii hist. suppl.* 12. *syn.* 448. 7.  
 Leaves ferrate smooth orbicular.
23. *Salix retusa*. Blunt-leaved Willow.  
*Lin. spec.* 1445. *Reich.* 4. 228. *Hall. belv.* n. 1648. *Gouan. illustr.* 76. *Villars dauph.* 3. 772. *Pallas roff.* 1. 85.  
*S. alpina angustifolia repens non incana.* *Baub. pin.* 474. *prodr.* 159.  
*S. alp. ferpylli folio lucido.* *Bocc. mus.* 2. 18. *t.* 1.  
*S. pusilla humilis.* *Camer. epit.* 104.  
 Leaves subserrate smooth obovate very blunt.
24. *Salix decipiens*.  
*Hoffm. sal.* 2. 9. *t.* 31.  
 Leaves ferrate smooth lanceolate petioled, the lower ones smaller obovate reflex.
25. *Salix arbutifolia*. Arbutus-leaved Willow.  
*Pallas roff.* 1. 79.  
*S. pumila folio ovali basi ferrato.* *Gmel. fib.* 1. 160. *t.* 35. *f.* 2?  
 Leaves obovate acute ferrate smooth.
26. *Salix divaricata*. Straddling-branched Willow.  
*Pallas roff.* 1. 80.  
 Leaves ovate-lanceolate wave-ferrate smooth, branches divaricate.
27. *Salix*



27. *Salix rhamnifolia*. Buckthorn-leaved Willow.  
Pallas roff. 1. 84. Gmel. fib. 1. 159. n. 13. t. 35.  
f. 1. A.  
Leaves ovate obtuse serrate smooth glaucous underneath.
28. *Salix berberifolia*. Barberry-leaved Willow.  
Pallas roff. 1. 84. t. 82. itin. 3. app. 759. n. 134.  
t. Kk. f. 7. Gmel. fib. 1. 191. t. 35. f. 3.  
Leaves sessile ovate tooth-serrate veined shining.

\*\* Leaves smooth quite entire.

29. *Salix reticulata*. Round-leaved or Net-work Willow.  
Lin. spec. 1446. syst. 879. Reich. 4. 229. fl. lapp.  
n. 359. t. 7. f. 1. 8. f. 2. 9. t. 8. f. 6. fol.  
suec. n. 888. Hoffm. sal. vol. 2. p. 3. t. 25. 26.  
27. Hudf. angl. 428. Wither. arr. ed. 3. 49.  
Lightf. scot. 601. Fl. dan. t. 212. Gunn. norv.  
51. n. 110. Hall. belv. n. 1650. Villars dauph.  
3. 779. Lamarck franc. 2. 228. Allion. pedem.  
n. 1967. Jacqu. vind. 296. Gouan. illustr. 77.  
Pallas roff. 1. 85.  
S. pumila folio rotundo. Baub. hist. 1. 2. 217.  
Scheuch. it. alp. 1. 43. 4. 340. Raii hist. 1423.  
syn. 449. Tournef. inst. 591.  
Leaves quite entire smooth ovate obtuse.
30. *Salix myrtilloides*. Bilberry-leaved Willow.  
Lin. spec. 1446. Reich. 4. 229. fl. lapp. n. 357.  
t. 8. f. i. k. fol. suec. n. 889. Pallas it. 3. 33.  
roff. 1. 79. Gouan. illustr. 77. Hall. belv. n.  
1646.  
S. caesia. Villars dauph. 3. 768. t. 50. f. 11.  
S. alpina pumila rotundifolia repens inferne subcinerea.  
Baub. pin. 474.  
Leaves entire smooth ovate acute.
31. *Salix integra*.  
Lin. syst. 880. Thunb. jap. 24.  
Leaves entire smooth linear oblong obtuse.
32. *Salix glauca*. Glaucous-leaved Willow.  
Lin. spec. 1446. Reich. 4. 229. fl. lapp. n. 363.  
t. 7. f. 5. t. 8. f. p. fl. suec. n. 890.  
S. fericea. Villars dauph. 3. 782. t. 51. f. 27.  
S. alpina pyrenaica. Baub. pin. 474. prodr. 159.  
Leaves quite entire very finely villose underneath ovate-oblong.
33. *Salix caspica*. Caspian Willow.  
Pallas roff. 1. 74.  
Leaves linear-lanceolate quite entire smooth.

\*\*\* Leaves quite entire villose.

34. *Salix aurita*. Round-eared Willow.  
Lin. spec. 1446. Reich. 4. 230. fl. lapp. n. 369.  
t. 8. f. y. suec. n. 891. Hoffm. sal. 1. 30. t. 4.  
f. 1, 2. & t. 5. f. 3. Wither. arr. ed. 3. 50.  
Lightf. scot. 602. Neck. gallob. 395. Leers  
herborn. n. 754. Pollich pal. n. 921. Hall.  
belv. n. 1652.  
S. folio rotundo minore. Dill. giff. 38. app. 37. Raii  
syn. 450.  
S. caprea ♂, ♀. Hudf. angl. 430.  
Leaves quite entire villose on both sides obovate appendi-  
cled.
35. *Salix lanata*. Woolly-leaved Willow.  
Lin. spec. 1446. Reich. 4. 230. fl. lapp. n. 368.  
t. 7. f. 7. & t. 8. f. x. fl. suec. n. 892. Hall.  
belv. n. 1651. Pallas it. 3. 449. fl. roff. 1. 82.  
t. 81. f. 1.—item, lanuginosa. p. 83. Wither.  
arr. ed. 3. 50. Villars dauph. 3. 777.  
S. humilis latifolia erecta. Baub. pin. 474. prodr.  
159. Raii hist. 1426.  
β. S. depressa. Lin. lapp. n. 361. t. 8. f. n. suec. n.  
899.  
Leaves woolly on both sides roundish acute.
36. *Salix lapponum*. Lapland Willow.  
Lin. spec. 1447. Reich. 4. 230. fl. lapp. n. 366.  
t. 8. f. t. suec. n. 893. Pallas it. 3. 33.  
roff. 1. 82. Gouan. illustr. 78. Hall. belv. n.  
1643?  
Leaves quite entire hirsute lanceolate.
37. *Salix arenaria*. Sand Willow.  
Lin. spec. 1447. Reich. 4. 231. fl. lapp. n. 362.  
t. 8. f. o. q. suec. n. 894. Neck. gallob. 395.  
Gouan. illustr. 78. Pallas it. 3. 33. roff. 1. 74.  
Du Roi harbecc. 2. 408. Pollich pal. n. 922.

- Fl. dan. t. 197. Gartn. fruct. 2. 55. Hall. belv.  
n. 1642. Gmel. fib. 1. 164. t. 36. f. 1. Dubam.  
arb. 10.  
S. lapponum. Lightf. scot. 604. Wither. arr. ed.  
3. 51.  
S. helvetica. Villars dauph. 3. 783.  
S. pumila, foliis utrinque candicantibus & lanuginosis.  
Baub. pin. 474. Raii syn. 447.  
Leaves entire ovate acute subvillose above, tomentose un-  
derneath.
38. *Salix incubacea*. Trailing Willow.  
Lin. spec. 1447. Reich. 4. 231. fl. suec. n. 895.  
Pallas roff. 1. 75.  
Leaves quite entire lanceolate, underneath villose shining,  
stipules ovate acute.
39. *Salix repens*. Creeping dwarf Willow.  
Lin. spec. 1447. Reich. 4. 231. fl. suec. n. 896.  
Hudf. angl. 428. Wither. arr. ed. 3. 51. Engl.  
bot. 183. Relb. cant. n. 719. Abbot, bedf. 213.  
n. 701. Scop. carn. n. 1213. Villars dauph.  
3. 767.  
S. depressa. Hoffm. sal. 1. 63. t. 15. 16. Sibth. oxon.  
n. 49.  
S. pumila angustifolia inferne lanuginosa—& pum.  
angust. prona parte cinerea. Raii syn. 447.—item,  
S. alpina pum. rotundifolia repens inferne subci-  
nerea. Ibid 448.  
S. pumila latifolia 1. Clus. hist. 1. 85.  
S. pumila prior. Dod. pempt. 843. 2.  
S. humilis. Ger. 1205. 6. emac. 1391. 6.  
S. hum. latifolia & alpina repens. Park. theat. 1432.  
n. 2, 3. t. 1433. f. 2, 3.  
Leaves quite entire lanceolate, somewhat downy on both  
sides; stem decumbent creeping; style simple, stigma in  
four nearly equal segments; capsules smooth.
40. *Salix fusca*. Brown dwarf Willow.  
Lin. spec. 1447. syst. 880. Reich. 4. 232. fl. lapp.  
n. 364. t. 8. f. r. suec. n. 897. Hoffm. sal. 2. 7.  
t. 28. 29. Wither. arr. ed. 3. 51. Jacqu. vind.  
297. austr. 5. t. 409. collect. 2. 200. Neck.  
gallob. 396. Pallas it. 3. 33. roff. 1. 80. Gouan  
illustr. 78. Mill. illustr.  
S. pumila foliis utrinque candicantibus & lanuginosis.  
Baub. pin. 474. Raii syn. 447. 3. t. 19. f. 3.  
Leaves quite entire ovate pubescent underneath.
41. *Salix rosmarinifolia*. Rosemary-leaved Willow.  
Lin. spec. 1448. Reich. 4. 232. fl. suec. n. 898.  
Hall. belv. n. 1644. Pallas roff. 1. 74.  
S. humilis angustifolia. Baub. pin. 474.  
S. humilis repens angustif. Baub. hist. 1. 214. Lob.  
ic. 2. 137.  
Leaves quite entire lanceolate-linear strict sessile tomentose  
underneath.
42. *Salix Gmelini*. Gmelin's Willow.  
Pallas roff. 1. 77. Gmel. fib. 1. 163. n. 19.  
Leaves elliptic-lanceolate entire silky underneath.
43. *Salix serotina*. Late Willow.  
Pallas it. 3. 759. app. n. 135. t. Nn. roff. 1. 77.  
Leaves oblong acute quite entire silky, stipules lanceolate  
deciduous.
44. *Salix arctica*. Arctic Willow.  
Pallas roff. 1. 86.  
Leave quite entire obovate-rounded villose underneath.

\*\*\*\* Leaves subserrate villose.

45. *Salix sibirica*. Siberian Willow.  
Pallas roff. 1. 78. t. 81. f. 3.  
Leaves ovate-lanceolate subserrate tomentose stiffish, sti-  
pules ovate somewhat toothed.]
46. *Salix caprea*. Round-leaved Sallow.  
Lin. spec. 1448. Reich. 4. 232. fl. lapp. n. 365.  
t. 8. f. f. suec. n. 900. Hoffm. sal. 1. 25. t. 3. &  
t. 5. f. 4. Wither. arr. ed. 3. 53. Hall. belv. n.  
1653. Fl. dan. t. 245. Gunn. norv. n. 252.  
Gmel. fib. 1. 157. Neck. gallob. 395. Leers  
herborn. n. 756. Pollich pal. n. 923. Villars  
dauph. 3. 774. Du Roi harbecc. 2. 404. Gouan  
illustr. 78. Pallas roff. 1. 81.  
S. latifolia rotunda. Baub. pin. 474. Raii syn. 449.  
S. latif. inferne hirsuta. Baub. hist. 1. 2. 215.  
S. caprea rotundifolia. Ger. 1203. 3. emac. 1390. 3.  
S. caprea latifolia rotunda. Park. theat. 1432. 1.  
S. caprea



- S. caprea* latif. *Tabern. ic.* 1038.  
 β. *Lin. lapp. n.* 367. *t.* 8. *f. u.* *Hoffm.* 28. *var.* 1.  
 γ. *Gmel. fib.* 1. 163. *n.* 19. ♀. *Hall. belv. n.* 1651?  
*Hudf. angl.* 429. *var.* γ.  
*Leaves ovate wrinkled tomentose underneath waved toothletted above.*
47. *Salix acuminata.* *Long-leaved Sallow.*  
*Hoffm. sal.* 1. 39. *t.* 6. *Lin. lapp. n.* 367. *t.* 8.  
*f. u.* *Witber. arr. ed.* 3. 53. *Sibth. oxon. n.* 52.  
*Pallas ross.* 1. 81.  
*S. caprea acuto longoque folio.* *Raii syn.* 450.  
*Leaves ovate-oblong tomentose underneath, the upper ones entire, the lower crenate.*
- [48. *Salix pedicellata.* *Stalk-capsuled Sallow.*  
*Desfont. atlant.* 362.  
*Leaves lanceolate wrinkled tomentose underneath, capsules pedicelled smooth.*
49. *Salix tristis.* *Narrow-leaved American Willow.*  
*Ait. kew.* 3. 393.  
*Not stipuled, leaves linear-lanceolate petioled wrinkled tomentose underneath.]*
50. *Salix viminalis.* *Osier.*  
*Lin. spec.* 1448. *Reich. 4.* 233. *fl. suec. n.* 901.  
*Hoffm. sal.* 1. 22. *t.* 2. & *t.* 5. *f.* 2. *Hudf. angl.*  
 430. *Witber. arr. ed.* 3. 54. *Lightf. scot.* 608.  
*Sibth. oxon. n.* 53. *Hall. belv. n.* 1641. *Neck.*  
*gallob.* 397. *Leers, herb. n.* 757. *Pollich pal.*  
*n.* 924. *Scop. carn. n.* 1211. *Villars dauph.* 3.  
 785. *Pallas ross.* 1. 76. *Gmel. fib.* 1. 162. *n.*  
 16. *Du Roi barbecc.* 2. 403.  
*S. folio longissimo.* *Raii cant.* 146. *syn.* 450.  
*S. foliis angustis & longissimis crispis subtus albicanti-*  
*bus.* *Baub. hist.* 1. 212. 2. *Raii hist.* 1423. 2.  
*Not stipuled, leaves lanceolate-linear very long almost*  
*quite entire flat silky underneath.*
- [51. *Salix cinerea.* *Cinereous-leaved Sallow.*  
*Lin. spec.* 1449. *Reich. 4.* 234. *fl. lapp. n.* 358.  
*suec. n.* 902. *Leers herb. n.* 758. *Pallas ross.*  
 75. *Witber. arr. ed.* 3. 54.  
*S. caprea.* *Hudf. angl.* 429. *Lightf. scot.* 607.  
*Sibth. oxon. n.* 51.  
*S. ulmifolia.* *Villars dauph.* 3. 776.  
*S. caprea retuso folio, non auriculata.* *Sherard phytop.*  
*Mss.*  
*Leaves subserrate oblong-ovate subvillose underneath, sti-*  
*pules half-cordate.]*
52. *Salix alba.* *White Willow.*  
*Lin. spec.* 1449. *Reich. 4.* 234. *hort. cliff.* 473. *fl.*  
*suec. n.* 903. *mat. med.* 211. *Hoffm. sal.* 1. 41. *t.*  
 7. 8. *Hudf. angl.* 430. *Witber. arr. ed.* 3. 55.  
*Lightf. scot.* 609. *Neck. gallob.* 396. *Scop. carn.*  
*n.* 1212. *Pollich pal.* n. 925. *Leers herb. n.*  
 759. *Hall. belv. n.* 1635. *Villars dauph.* 3.  
 760. *Gmel. fib.* 1. 158. *Gouan. illustr.* 78. *Du*  
*Roi barbecc.* 2. 400. *Blackw. t.* 327. *Regnault*  
*bot.*
- Salix.* *Matth.* 199. *Dod. pempt.* 843. 1. *Lob. obs.*  
 567. 2. *ic.* 2. 136. 3. *Ger.* 1203. 1. *emac.* 1389. 1.  
*Raii syn.* 447.  
*S. arborea angustifolia alba vulgaris.* *Park. theat.*  
 1430. 1.  
*S. vulgaris alba arborefcens.* *Baub. pin.* 473.  
*S. maxima fragilis alba hirsuta.* *Baub. hist.* 1. 2. 212.  
 1. *Raii hist.* 1419.  
*S. folio utrinque glauco, viminibus albidioribus.* *Raii*  
*cant.* 142. 2.  
*Leaves lanceolate acuminate serrate pubescent on both*  
*sides, the lowest serratures glandular.*
- [53. *Salix tetrasperma.* *Four-seeded Willow.*  
*Roxb. corom.* 66. *t.* 97.  
*Leaves broad-lanceolate acuminate serrulate, smooth above*  
*whitish below.*

## DESCRIPTIONS, &amp;c.

Linneus remarked, almost half a century ago, that the species of the genus *Salix* are not to be extricated without extreme difficulty: that the soil and situation, marshy, sandy, mountainous, hot and cold, produced a considerable change in them, inasmuch that botanists frequently hesitated whether they should pronounce many differences to constitute species or varieties only: add to this, that the descriptions of the old authors are in general imperfect and barbarous.

He advises therefore the history of Willows to be taken up afresh, rejecting the old names, and describing the several species accurately by means of skilful persons who have an opportunity of viewing them in their natural places of growth; and who should attend to the following circumstances. 1. Whether the buds are one-valved; or many-valved. 2. The situation and folding of the leaves within the bud. 3. Whether the aments or catkins come from the same or a distinct bud from the leaves, above or below them. 4. Whether the leaves are serrate or quite entire about the edge, naked or pubescent on the surfaces. 5. What is the number of stamens. 6. Whether they are trees, shrubs, or creeping.

To these hints of Linneus Dr. Smith has added, that Willows require to be examined at three periods of their growth: first when in flower, at which time the leaves in general scarcely appear; next when the capsules are fully formed and nearly ripe, and the leaves just expanded with their stipules; lastly when the leaves have attained their full size, and all remains of the fructification have disappeared. In this last state the true form, and pubescence or smoothness of the leaves is to be known; in the second the nature of the stipules, which frequently are very deciduous, and the figure and surface of the capsules; whereas in the first state the very discriminative and curious parts of the flower, the stamens, nectaries, and above all, the proportion and structure of the germ, style and stigmas, are only to be learnt. Dr. Smith recommends these last-mentioned parts as affording much better characters for making natural subdivisions of the genus, than the margin or pubescence of the leaves, if we could at all times command them: but the dioecous nature of these plants militates against a general arrangement of them according to parts, which it is an even chance whether we meet with or not, and which are so very transient<sup>h</sup>.

Ray so far back as the year 1660 distinguished and described very well ten species, which he observed himself about Cambridge; separating the Willows with a more compact leaf, from the Sallows and Osiers which have a leaf of a looser texture; and correcting the error of old authors in supposing that the rose-like excrescences at the ends of the twigs in some Willows formed a distinct species.

Dillenius's edition of Ray's synopsis, in 1724, has twenty-two species of English Willows, some of which are only varieties. Mr. Hudson, in 1778, has only sixteen, but he has several varieties, which are real species. Mr. Lightfoot, in 1777, has the same number, but not the same species. He has described most of them at length; and Dr. Smith having compared his specimens with those in the Linnean herbarium, all difficulties respecting his species will be removed.

Haller, in 1768, has twenty-one species, but it is not easy to ascertain them all with any degree of certainty. Scopoli, in 1772, has only twelve sorts, which he has named and described with little reference to other authors. With his usual modesty he confesses himself to be unfortunate in extricating the species; and after all his attempts, owns that he has found only still greater difficulties and mistakes, the more he has consulted writings even of the first reputation. Villars, in 1789, enumerates thirty species, natives of Dauphiné: he has taken much pains in describing and ascertaining them.

George Francis Hoffmann published the first fasciculus of his elaborate history of Willows in 1785, and completed his first volume in 1787; it contains twelve species, completely described, and beautifully figured. The first fasciculus of his second volume, containing three species, came out in 1791. This is all I have seen of a work, so full, so accurate, I might almost say so perfect, as far as it goes, in the opinion of the judicious president of the Linnean Society. If Dr. Hoffmann goes on to describe and figure the other species in the same manner, little or no doubt can remain concerning them. In the mean time we may expect most of the difficulties respecting the Bri-

<sup>h</sup> Linn. trans. 6. 111.



tish species to be cleared up by Dr. Smith, in his *Flora Britannica*, so far at least as can be expected without figures. The opportunity he has of studying Linneus's original specimens, and of comparing them with Mr. Lightfoot's: the assistance he has received from his accurate and indefatigable friend Mr. Crowe, who has for many years collected Willows, both indigenous and exotic, from all quarters, carefully noticing their peculiar uses and properties, distinguishing the truly wild from the naturalized, and watching them with a most discriminating eye through all their stages of growth in his garden<sup>1</sup>: together with his own accurate research, and happy judgement, give Dr. Smith an advantage which has not perhaps fallen to the lot of any other man. The editor of this Dictionary has to lament that this article goes to press before he can profit by all the observations and corrections which may be expected in the *Flora Britannica*; at the same time that he is happy to acknowledge the assistance he has received from Dr. Smith's learned remarks, printed but not yet published in the *Transactions of the Linnean Society*; as well as that candid information by letter which he is ever ready to afford.

We may observe in general of this genus, that it contains trees or shrubs, some few species suffruticose or even subherbaceous; that the flowers and fruits are in separate axillary or terminating aments or catkins, which, when young, are covered with a single scale like a veil<sup>k</sup>. All the species except four are natives of Europe; and thirty-four or thirty-five are indigenous of Britain.

Willows, says Scopoli, support the banks of rivers, supply bands or withs, feed a great variety of insects, rejoice the bees, yield abundance of fire-wood, dry marshy soil, afford nourishment to cattle with their leaves, and yield a succedaneum to Jesuit's bark.

The uses of the Willow, including the Sallow and Osier, are thus minutely detailed by the venerable Evelyn.—All kinds of basket-work; for which even our rude forefathers were in estimation at Rome—

“Barbara depictis veni Bascauda Britannis;  
“Sed me jam mavult dicere Roma suam.”

Martial.

For pill-boxes, cart-saddle trees, gun-stocks and half-pikes, harrows, shoemaker's lasts, heels, clogs for pattens, forks, rakes especially the teeth, pearches, rafters for hovels, ladders, poles for hops vines kidney-beans, &c. hurdles, sieves, lattices; for the turner in making great town-tops, platters, little casks and vessels, especially to preserve verjuice in: pales, dorsers, fruit-baskets, cans, hives, trenchers, trays, boards for whetting table-knives, coals, particularly for painter's scribbles; bavin and excellent sweet firing without smoke. The wood will even endure a good while for poles, &c. if it be peeled and steeped in water for some months.

The ancient Britons made boats of wicker covered with skins (coracles) with which they passed rivers and arms of the sea; so light as to be carried by a single man. Modern Britons wield bats of Willow, in the game of Cricket.

1. This agrees with *S. pentandra* in its smooth leaves, bluntly ferrate with glands, convolute, commonly six from each bud, yellowish; and in having villose aments of the same size and habit: but it differs from it in having the branches of a pale russet-colour, not purplish; the upper surface of the leaves with scored not raised veins; protuberant glands at the base of the petioles; in flowering earlier, and producing a greater abundance of galls than the next species. Native of Sweden about Upsala<sup>l</sup>, but not common. It is generally and almost wholly covered with a red coccus, so small as almost to escape the sight. In the year 1754 all the flowers excluded their stamens, and in their place appeared sessile rudiments of anthers, on each side of the nectary, like three glands<sup>m</sup>.

The real *hermaphroditica* of the Linnean herbarium is closely allied to *S. pentandra* except in the fructifi-

cation; and has no right to a place among British plants. Hudson introduces it with a mark of doubt; and *S. latifolia folio splendente* of Ray, seems by Dillenius's remark, to be a variety of the Sallow. What is found in the gardens under the name of *hermaphroditica*, is merely a broad-leaved variety of *S. pentandra*, which is dioecous and has five stamens: whereas the true *hermaphroditica* has but two stamens, and those in the same flower with the pistil. It does not seem to be known out of Sweden<sup>n</sup>.

2. This is naturally a tree thirty feet or more in height, but being one of the best Osiers for the use of Basket-makers is generally cut and kept low. The bark of the stem and branches peels off spontaneously, almost like that of the plane-tree. The branches are upright, long, slender, pliable and tough, though somewhat brittle at their insertion; their bark is brownish and smooth. Leaves about three or four inches long, tapering away towards the base, and their breadth on each side the nerve is as nearly equal as possible; they terminate in a point; their margin is thickly ferrate, the ferratures incurved and rounded, a little glandular; both sides smooth, the under rather glaucous. Stipules ovate, oblique, crenate, veiny, smooth, but often wanting. Catkins at the ends of small leafy young branches, erect, slender, yellowish, with blunt downy scales. Stamens generally three to each scale, very rarely (in the same catkin) only two. Germ ovate, pointed, warty. Stigmas short, spreading, notched. Capsule very smooth, green<sup>o</sup>.

Mr. Curtis remarks that the leaves are more strongly ferrate than most others; that the branches in autumn are usually furnished with stipules, but not always; and that towards the top they are angular or grooved, in a greater degree than any other Willow he has examined. It is not usual for Willows to flower both in spring and autumn, but he has frequently found this species to do so.

Native of many parts of Europe; as Britain, Germany, Switzerland, France, Flanders, Carniola, Piedmont, &c. common also in Siberia.

This species may be admitted into ornamental plantations, the male catkins being very numerous, of a bright yellow colour, and of an agreeable scent. The male tree should on this account be preferred for ornament; and also because the females quickly shed their catkins and make a litter<sup>p</sup>. Mr. Wood remarks that the male tree is very frequent, and that he had seen the female only once. He observed it about Leeds; and Mr. Crowe at Lakenham near Norwich. The bark in doses of one or two drams will cure an ague<sup>q</sup>. It flowers in april or may. Villars says that the female flowers much later, namely in june; that the wood of these is more brittle, the leaves narrower, smooth on both sides, and harder: but perhaps it may be a different species.

Some authors confound this with the *amygdalina*; and give Ray's synonym of *S. folio auriculato splendente flexilis*, which belongs to that species.

Ray has marked their difference. The leaves of this, says he, are longer and narrower than in the *amygdalina*, produced into very long slender points, of a dark green shining as if polished, approaching in form to those of the Almond or Peach, elegantly toothed about the edges, having an appendix at the base on each side more conspicuous than in other sorts of Willow, besides the earlets (stipules) at the base of the petioles on each side fastened to the twigs, which are smaller in this than in the *amygdalina*. The bark of the stem and older branches is ash-coloured, chopped, and parts readily from the wood; this is also the case in the *amygdalina*, but not so manifestly. The colour of the twigs is yellow.

3. The sweet or bay-leaved Willow is sufficiently well known by its broad odoriferous leaves, the ferratures of which exude a copious yellow resin, and its numerous stamens, commonly about five to each flower<sup>r</sup>.

It frequently grows to a tree ten or twelve feet high, with a trunk as large as a man's thigh: the twigs are

<sup>l</sup> Linn. trans. 112.

<sup>k</sup> Jussieu.

<sup>1</sup> Linn. spec.

<sup>m</sup> Linn. succ.

<sup>n</sup> Smith in Linn. trans. 6. 112.

<sup>o</sup> Idem, 118.

<sup>p</sup> Curtis.

<sup>q</sup> Withering.

<sup>r</sup> Smith in Linn. trans.



of a reddish colour tinged with yellow: the leaves are stiff, shining smooth on both sides, finely serrate with close numerous cartilaginous teeth; when full grown they are about three inches long, and an inch and half wide: their footstalks are short, broad, and sprinkled with glands: each scale in the male catkin has usually five stamens, but often six, and sometimes seven. These catkins are very sweet-scented\*.

According to Mr. Gough, there are eleven leaves on the barren, and six or eight on the fertile shoots, the two lower comparatively small and obovate. The nectaries are often wanting in the flowers at the extremity of the catkin, in room of which there are three additional perfect stamens.

Dr. Stokes remarks, that the nectaries are three, yellowish brown, two near the spike-stalk, and the third next the scale:—and Mr. Stackhouse, that the catkins terminate the new shoot of the year, and do not appear until may.

This species, says Villars, is easily known by its broad leaves like those of Bay, green on both sides, a little clammy, having regular sharp teeth, by its five stamens, and its yellow long thin catkins; and yet sometimes *S. fragilis* approaches so near to it as scarcely to be distinguished, except by the clamminess of the leaves.

Ray describes the young twigs as very dark-coloured; the leaves wider than in any other Willow, smooth, dark green and shining above, paler beneath, from two to three inches long, an inch and half or more in breadth, with small notches on the edge, on short petioles, alternate, sweet-scented: they are shorter and wider in proportion than those of *S. fragilis*.

Native of several parts of Europe, as Britain, Switzerland, Dauphiné, Piedmont; also of Siberia.—In Westmoreland and Yorkshire, frequent, as about Kendal and Bradford. About Kilnsey and Carr end Wensledale, where it is the most common species. Near Stafford, and in Mr. Boulton's plantations, Soho, Birmingham. Near Bungay in Suffolk, Coombe wood, and near Wimbledon in Surry. Scotland.

Much used in Yorkshire for making the larger sort of baskets; the branches are cut to make springles; the leaves afford a yellow dye; the wood crackles greatly in the fire†. The down of the seeds, mixed with a third part of cotton, has been proved to be a very good substitute for cotton itself, and has been used for stuffing cushions, wicks for candles, &c. Goldfinches and some other birds line their nests with the down of this and other species of Willow‡.

Variety β of Flora Suecica seems to be a distinct species, not yet found in England\*.

4. This appears to be a shrub, with smooth slender spreading branches. Leaves alternate, petioled, exactly lanceolate, rather acute, with broad and unequal crenatures principally about the middle, and between these in a manner sinuate; the margin is a little more thickened than ordinary; the base and extremity of each leaf are entire, destitute of glands; all the leaves are either perfectly smooth in every part or a little sprinkled with minute inconspicuous hairs; dark green above, glaucous and reticulated with veins beneath. Footstalks slender, smooth. Stipules crescent-shaped, mostly serrate, various in size‡.

Native of Lapland, and the northern parts of Sweden: about Herborn, according to Leers: and on the highlands of Scotland, where it was found at Finlarig, Breadalbane, with several others, by the Rev. Mr. Stuart, junior, of Killin, in Breadalbane, and communicated to Mr. Lightfoot, in whose herbarium this was discovered by Dr. Smith, and by him added to the British Flora.

5. The trunk scarcely rises to the height or form of a tree. The branches are upright, round, rather brittle, smooth. Leaves two or three inches long, acute, a little rounded at the base, crenate in almost every part, but more slightly in the female plant; dark green and very smooth above; glaucous, veiny, rarely a little hairy beneath. Foot-stalks very broad

at their base. Stipules, if present, rather large, obliquely heart-shaped, serrate, smooth. Catkins from an inch to an inch and half long, thickish, with obovate brown hairy scales. The two stamens are distinct, and more or less hairy about their base. Style short, smooth. Stigmas thick, ovate, united at their base, permanent, undivided. Capsules on foot-stalks, long and tapering, clothed with long silky down, as are the general and partial stalks.

The leaves in the female plant are shorter and less crenate, as well as more tapering towards the base. Such differences between the two sexes of Willows are rare, but I can hardly conceive these to be different species, as they agree in every part besides.

No writer except Linnæus appears to have known this Willow. In his *Flora Lapponica* he distinguished it, but in his *Species Plantarum* he made it a variety of the *phylicifolia*, from which it differs in the much greater size of all its parts, as well as in the totally different form of its serratures, a part so peculiarly characteristic of the *phylicifolia*. It is named *nigricans* from the dark colour of its branches, as well as its black-hue when dried, which last indeed is not absolutely peculiar to it.

Native of Lapland; and found at Wrongay fen, Norfolk, and in other grounds in other places not uncommon, by Mr. Crowe.

6. Very nearly related to the last, but certainly a distinct species. It essentially differs in the male catkins, which are but half the size of those last described, and their stamens are shorter, perfectly smooth, not hairy at their base. The leaves also are of a brighter green, their margin inclined to be revolute, and rather toothed than crenate. The germ also is shorter, blunter, and less tapering.

Found in other-holts and marshy grounds by Mr. Dickson, flowering in april and may.

7. This species has most affinity with the two preceding, but has longer and more slender twigs. The leaves are four or five inches long, about an inch broad, pointed, somewhat revolute, generally a little unequal at the base, bright green, smooth and shining above, glaucous and sometimes a little hairy beneath. In drying they turn a purplish black. The footstalks are peculiarly long, linear, and slender, silky on the upper side. Stipules small, crescent-shaped, toothed, smooth. Female catkins scarcely an inch long, with black, hairy, obovate, often notched scales. Germs on long footstalks, small, ovate, silky. Stigmas perfectly sessile, ovate, obtuse, divided into two lobes.

It was sent to Mr. Crowe by Mr. Dickson along with the last as of British growth. It flowers in april‡.

8. This is a middle-sized tree, with round flexuose upright cinereous smooth divided branches. Leaves alternate, acuminate, smooth on both sides, except while young, when they are villose; they are a finger's length and the petioles are very short. Flowers from the same bud with the leaves.—Native of Japan, and flowering there in march‡.

Loureiro suspects that this is not specifically distinct from the *babylonica* or weeping Willow, although the branches are flexuose only, not pendulous.

9. The Yellow Willow is a middle-sized tree, much branched at the top: branches upright. Bark gray, chopped, cinnamon-coloured within, bitter and astringent. The female trees, when left to themselves, have pendant branches, but when lopped, are stiff and straight. Male catkins at first upright, then turned down; cylindrical, slender, serpentine, two inches long or more; on fruitstalks half an inch long. Nectaries two. Stamens two. Female catkins from two to three inches in length, on fruitstalks from an inch to an inch and half long. Leaves alternate, upright, slightly serrate, with a yellowish midrib; they are about three inches long and one inch broad, but always broader in the female tree. Stipules none. Glands very few. The male tree is generally smaller and less common than the female.

Native of the more temperate parts of Europe.

\* Lightfoot. † Withering. ‡ Haller and Lightf.

§ Smith in Linn. trans. ¶ Idem.

• Smith in Linn. trans.

\* Thunberg.



Common in England, but doubtful whether it be indigenous. Haller regarded it as a variety of *S. alba*; and had a notion that if it were left wholly to itself it might degenerate into that species.

The shoots are used by basket-makers. The wood is white and very tough. The cotton will make ordinary paper, and may serve some of the purposes of genuine cotton. The bark may be used in dyeing, and medicinally in agues<sup>b</sup>. It is common all over Russia, and is used for Palms at Easter in the Greek churches<sup>c</sup>.

10. This never rises into a tree. The bark is deciduous, as in *S. triandra*, which added to the triandrous flowers, perhaps led to the suspicion that there existed no specific difference between the two species: the leaves however will sufficiently serve to discriminate them. Those of *S. amygdalina* are shorter, scarcely two inches long, of a broadish ovate figure rounded at the base, by no means linear; they are moreover oblique, the width of the two sides being unequal. The stipules are remarkably large, varying from a roundish to an half-heartshaped form, crenate, deciduous. Female flowers and capsules much as in *S. triandra*<sup>d</sup>.

There is much confusion in the synonyms of this species. Ray calls it the round-eared shining Willow, and has marked it very well by its large stipules, three stamens, and other characters.—Villars suspects it to be n. 1638. of Haller. It is certain that the illustrious Swiss assigns the same synonym of Ray to his n. 1638, that we do to this.

Native of several parts of Europe, in osier-holts and marshes. Observed by Mr. Crowe, on Badley-mere by Dereham, Norfolk.

11. This is distinguished by its sessile ovate smooth leaves, sharply and very finely but scarce apparently ferrate; and its subcordate stipules.—It becomes a tree, but never tall. Branches round, very straight, cinereous. Leaves hard, with very minute and scarcely visible ferratures, cinereous beneath, but smooth on both sides, rigid, appendicled with two ovate entire leaflets<sup>e</sup>.

Native of Lapland, Westrobothnia, Germany, Switzerland, Russia and Siberia.—Introduced about 1780, by Messrs. Kennedy and Lee.

12. This tree grows to a considerable height. Leaves oblong, very large, hoary beneath, crenate about the edges<sup>f</sup>.—Native of Egypt, and of Barbary near la Calle.

Retzius refers *S. nitida* of Gmelin to this species, although the leaves of that are said to be entire and somewhat hairy. A sweet water is distilled from the catkins, whence the Persian name of *Biedmusk* or *Baedmusk*, signifying Water-musk.

13. This grows to be one of the largest trees of the genus. The branches break off easily at the shoot of the preceding year. Leaves large, four inches long, an inch and half broad, distinctly and deeply ferrate, smooth and shining on the upper side, glaucous underneath. Stipules scarcely any, but instead of them the footstalks are dotted with prominent glands. The catkins have two or three fugacious leaves at the base of the peduncle<sup>g</sup>.

Villars remarks, that though the branches are brittle on the tree, yet they are pliant when it is young or kept down for osiers; and that the male flowers have sometimes three stamens.

Native of the greater part of Europe especially the northern parts; also of the temperate and southern parts of Russia to the limits of Caucasus.

This tree is of quick growth and soon forms a shade in wet places; the males are fittest for this purpose. Bees are fond of the male flowers<sup>h</sup>.

The bark of the branches manifests a considerable degree of bitterness to the taste, and is also astringent; hence it has been thought a good substitute for the Peruvian bark, and has been recommended in cases requiring tonic or astringent medicines. Not only the

bark of this species, but that of several others, possesses the same qualities, particularly the *alba* and *pentandra*. The bark of the latter is perhaps the best; at least its sensible qualities give it a decided preference<sup>i</sup>.

14. The Weeping Willow grows to a considerable size, I have one in my view whilst I am writing which is four feet and a half in circumference at three feet above the ground, and is at least thirty feet in height; the age is thirty-four years. This tree is remarkable and generally esteemed for its long slender pendulous branches, which give it a peculiar character, and render it a beautiful object on the margin of streams or pools. Leaves minutely and sharply ferrate, smooth on both sides, glaucous underneath, with the midrib whitish; on short petioles. Stipules, when present, roundish or semilunar and very small; but more frequently wanting, and then in their stead a glandular dot on each side. Catkins axillary, small, oblong: in the male the filaments longer than the scale, with two ovate erect glands fastened to the base: the female, on two leaved peduncles scarcely longer than half an inch<sup>k</sup>.

Native of the Levant. Every where in the Chersonesus Taurica, but probably not indigenous there. Spontaneous on the coast of Persia<sup>l</sup>. Frequent in China. Cultivated, but not commonly in Cochinchina<sup>m</sup>. According to an account of rare plants, with figures, published by the London gardeners, it was cultivated here in 1730<sup>n</sup>.

The St. James's Chronicle (n. 6817. aug. 25 to 27. 1801.) has the following paragraph, but on what authority I know not. "The famous and admired Weeping Willow, planted by Pope, which has lately been felled to the ground, came from Spain, inclosing a present to the late lady Suffolk. Mr. Pope was in company when the covering was taken off; he observed that the pieces of stick appeared as if they had some vegetation, and added, perhaps they may produce something we have not in England. Under this idea he planted it in his garden, and it produced the Willow tree that has given birth to so many others."

15. This is a bushy shrub three or four feet high, with long slender tough purple shining branches. Leaves some opposite others alternate, nearly linear, but broadest upwards, ferrate chiefly towards the summit, very smooth, glaucous beneath, destitute of stipules. The male catkins are very slender, scarcely an inch long, nearly sessile, consisting of many thick-set flowers, the uppermost of which expand first. Scales black at the tip, hairy. Nectary a solitary gland opposite to each scale. Stamen one solitary simple, never dividing, bearing an orange-coloured double or four-lobed anther. Female catkins exactly like the male in size and form. Germ sessile, small, of an ovate or rather elliptic form, silky. Style very short or scarcely any. Stigmas small, sessile, somewhat ovate, undivided, marked with a longitudinal furrow on the upper side. Capsule ovate, small, silky<sup>o</sup>.

The present species is particularly distinguished by the length, as well as delicate slenderness of its twigs, and its subglaucous spurge-like leaves, but above all, by their extreme bitterness when chewed. The leaves vary greatly both in size and breadth, and still more in their notchings. The stalks also vary much in colour, being sometimes almost yellow. The leaves on the summits of the twigs are sometimes found towards the end of august of a brilliant red colour. The tops of the branches are found expanded into little squamous heads (as in the *alba* and others), somewhat resembling roses; this is the work of an insect. The anthers, before they open, are of a bright orange colour<sup>p</sup>.

Native of many parts of Europe. It grows sparingly in the neighbourhood of London, commonly in hedges, sometimes in osier-grounds, where it is introduced accidentally: in some parts of the north of

<sup>b</sup> Hoffmann & Withering. <sup>c</sup> Pallas.  
<sup>d</sup> Smith in Linn. trans. <sup>e</sup> Linn. succ. & lapp.  
<sup>f</sup> Desfontaines. <sup>g</sup> Linn. spec. & succ. Lightfoot.  
<sup>h</sup> Linn. succ.

<sup>i</sup> Woodville. <sup>k</sup> Linn. spec. Loureiro, Pallas.  
<sup>l</sup> Pallas. <sup>m</sup> Loureiro. <sup>n</sup> Hort. kew.  
<sup>o</sup> Smith in Linn. trans. <sup>p</sup> Curtis.



England, there is no Willow more common. Mr. Teesdale marks it about Beverley, and observes that female plants seem to be rare. I have frequently gathered it in the place marked by Ray in his Cambridge catalogue. He calls it the yellow dwarf Willow. It is the earliest in bloom of any of the species, flowering in mild seasons by the end of february, usually before the *caprea*.

The extreme bitterness of the leaves and twigs, renders it very valuable for many purposes. When used as a band or withe, it is never eaten by vermin; nor, when formed into a hedge, is it browsed on by cattle; even insects prey on it much less readily than on the other species. In some parts of Yorkshire, its twigs are used for making the finest sorts of basket work. By some observations I have made, says Mr. Curtis, I should think it might be advantageously cultivated for such purposes. Planting cuttings of all the common Willows one year by way of experiment, he found that this species gave the longest one year's shoot, exceeding even that of *S. viminalis*, or *Osier*<sup>a</sup>.

Linneus celebrates it for its toughness: *rami tenacissimi omnium*; and says that they are red, *sanguineo-corallini*; or as he expresses it in the *Flora suecica*—*verno tempore saturate purpurei*. In bands for thatching he says it lasts above a century in Scania; he recommends it as the best sort for basket work, and most excellent for hedges.

The leaves become of a blueish black colour in drying. The bark, from its extreme bitterness, may probably prove the most efficacious of any in agues<sup>r</sup>.

16. This rises to the height of nine or ten feet, and is a small slender tree. Even in the form of its leaves it differs from the *purpurea*, being more truly lanceolate and taper-pointed, by no means obovate. The female catkins are somewhat longer, and twice as thick as in the last, and stand on longer stalks. The germ is sessile, ovate and silky; but the style is considerably lengthened out, quite smooth and naked. The stigmas also, instead of being short and ovate, are linear and considerably elongated. The leaves are less glaucous beneath, and not so bitter as those of *S. purpurea*. From the size which Haller ascribes to his *Salix*, n. 1640, Dr. Smith ventures to presume he intended this plant, and not the *purpurea*, he therefore borrows from Haller the character of one stamen, having never seen the male of this species himself.

Haller and Ehrhart seem to have led Professor Hoffmann into the error of confounding this with the preceding. Mr. Curtis, and some others of our more recent writers have followed Hoffmann, perhaps without ever having seen the true *S. Helix*. Mr. Crowe first pointed out to Dr. Smith the different heights of the two plants and sizes of the catkins; and on a critical examination of the female flowers our acute President found farther marks of distinction. It occurs in osier-holts and marshes: flowering in march and april<sup>s</sup>.

The rose-like excrescencies are more common at the ends of the branches in this species; whence its name of Rose-Willow<sup>t</sup>.

Mr. Teesdale observed the following distinctions between the *Helix* and *purpurea* in their native places of growth. In the month of march, previous to their flowering, the bark of the young shoot of *S. purpurea* is of a dark purple, and the scales of the buds are a fine red, almost scarlet, generally tipped with black, and before they drop off they turn wholly black: at the same time, the bark of the young shoots of *S. Helix* is of a yellowish brown, and the scales of the buds are always of a pale brown or chestnut colour<sup>u</sup>.

Desfontaines describes the branches as slender, rod-like, often purplish; the leaves smooth, narrow-lanceolate, serrulate but sometimes quite entire, glaucous beneath, on short petioles; the lower alternate, the upper ones opposite. Both male and female catkins slender. One stamen. The down long.

Haller informs us, that this Willow is planted about Aigle, to keep up gravelly banks and the shores of

rivers.—Native of several parts of Europe, in osier-holts and marshes: flowering in march and april.

17. This is a shrub four or five feet high, with upright flexible and very tough branches, of a yellowish ash-colour, often purplish. Leaves alternate, on footstalks, two or three inches long, minutely toothed or somewhat serrate, principally towards the top; smooth on both sides except when very young; dark green above, glaucous beneath. Stipules none. Catkins on short stalks, cylindrical, blunt, first red, then yellow, flowering first at the top. The two stamens are united from the base about half way to the top. Anthers two-lobed, yellow. Germ ovate, acute, hairy. Style short. Stigmas oblong, blunt, undivided<sup>x</sup>.

Native of some parts of Europe on the sandy banks of rivers, flowering in april, and ripening the seed in may<sup>y</sup>.

With us it is cultivated in the fens, and preferred to all other Willows or Osiers for basket-work.—Observed in several osier-grounds near Lynn in Norfolk, by Mr. Crowe; at Prickwillow near Ely, by the Rev. Mr. Hemsted; and at Fincham in Norfolk, by the Rev. Joseph Forby<sup>z</sup>.

Hoffmann suspects that it may be the *Salix Eleagnos* of Scopoli, n. 1210.

18. The branches of this shrub are very long, slender, tough, smooth, gray or purplish. Leaves about four inches long when full grown, slightly toothed or serrate by no means entire, of a bright green on both sides, smooth in general but sometimes sprinkled with a few slender hairs beneath. Stipules, if present, linear-lanceolate, a little toothed; but generally wanting. The female catkins differ but little from the preceding, except in having thicker almost ovate stigmas. Dr. Smith presumes from analogy that the male catkins have monadelphous stamens; but he has not seen them.

This species appears to be little known, though among the most valuable as an Osier. The habit of the plant, figure and length of its leaves, agree with the common Osier; (*S. viminalis*) but their bright green colour on both sides, and want of all pubescence, except when very young, render them easily distinguishable from that species, whilst their great length, linear form, and narrowness, and their colour being not at all glaucous, prevent their being confounded with *S. fissa*. Hudson's name *rubra* is less apposite than might have been wished: *virens* or *concolor* would better have expressed the peculiar character of the species<sup>a</sup>.

Native of England and France in osier-holts, but less common; it flowers in april and may. In the osier-holts between Maidenhead and Windsor. Found afterwards by the river near Salisbury, by Mr. James Sherard in company with Mr. Rand<sup>b</sup>. In an osier-holt near Ely, by the Rev. Dr. Goodenough; at Prickwillow near Ely, by the Rev. Mr. Hemsted; near Bedford, by the Rev. Mr. Abbot<sup>c</sup>.

19. This scarcely rises to the height of a tree. The branches are short and spreading, rather brittle, clothed with a shining yellowish or purplish bark. Leaves on footstalks, elliptical or inclining to obovate, somewhat pointed, scarcely an inch and half long, slightly serrate or rather crenate, smooth on both sides, bright green and shining above, glaucous and veiny beneath. Catkins nearly sessile, of a short somewhat ovate form. Scales obovate, black, very hairy. Stamens pale lemon-coloured, longish, their filaments united from the base to a greater or less distance, sometimes almost to the top. Anthers reddish.

This species seems to have escaped the notice of every botanist hitherto. Dr. Smith has therefore given it the name of its discoverer. It is most certainly very distinct from all others, and easily known by its united stamens, and short broad leaves. It is destitute of the valuable properties of an Osier, having short and rather brittle, not long and flexible twigs. It has therefore to all appearance never been cultivated, but is truly wild in Norfolk; where Mr. Crowe found it, among other places at Cranberry fen in

<sup>a</sup> Curtis.<sup>r</sup> Idem.<sup>s</sup> Smith in Linn. transf.<sup>t</sup> Haller.<sup>u</sup> Teesd. in Linn. transf. 5. 71.<sup>x</sup> Smith in Linn. transf.<sup>y</sup> Hoffmann.<sup>z</sup> Smith.<sup>a</sup> Idem.<sup>b</sup> Ray syn.<sup>c</sup> Smith in Linn. transf.



the parish of East Winch. It flowers in april and may<sup>a</sup>.

20. This is a shrub some feet in height, with a smooth bark of a dark brown or blackish colour, and diffused but upright branches. Leaves during the flowering ovate or obovate, smooth on both sides, thin and nearly transparent, finely and acutely toothed, on short stiff leaf-stalks: afterwards an inch broad and more than an inch long, both sides of the same colour, ferrate all round, pointed at the end. Leaflet often an inch and half long, furnished with stipules of a squarish irregular figure, and ferrate. Male catkins crowded, oblong or ovate-oblong, from an inch to an inch and half in length, on short fruit-stalks: stamens two: nectary one. Female catkins shorter than the other when in flower, ovate-oblong. Capsule on a pedicel, very smooth<sup>c</sup>.

Linneus describes it as a shrub from a foot to two feet in height: very much branched; branches purplish and tough. Leaves alternate but in clusters, streaked with veins, having glandular serratures about the edge, when they first come out a little hairy, but afterwards smooth on both sides; on little or no petioles. Stipules none. Catkins villose, cinereous. Anthers brown. Peduncle from the same bud with the leaves. Germ cinereous-villose, but becoming smooth as it ripens<sup>f</sup>.

Native of the mountains of Scotland, Lapland, Norway, Germany, Switzerland, Dauphiné and Italy. Mr. Dickson, who took it for *S. retusa*, found it on Ben Lawers in 1789<sup>g</sup>.—Hoffmann's figure in t. 19. and t. 24. f. 2. are Dr. Smith's *prunifolia*, which is the *myrsinites* of Lightfoot, but not of Linneus<sup>h</sup>.

21. Scarcely a foot high, growing in form of a little tree. Stems slender, filiform, branched, reddish. Leaves lanceolate, acuminate at both ends, on very thin loose petioles, ferrate on both sides with eight or five notches so small as to be scarcely visible<sup>i</sup>. Stipules none. In the Flora Suecica three varieties are set down, agreeing in place, appearance and stature, all having leaves so thin as to be almost transparent, and glaucous beneath; the capsules in all silky-villose<sup>k</sup>. But the third of these varieties is a distinct species, according to Afzelius, who has named it *foliolosa*. The leaves are quite entire and ovate-oblong<sup>l</sup>.

In cultivation it grows to the height of a man, and has thicker leaves<sup>m</sup>.

Pallas has it twice, in p. 80 and 83 of his Flora Rossica.

According to Retzius, the *arbuscula* of Jacquin does not seem to be the same with that of Lapland, where it grows in sandy moistish ground. I can scarcely think it to be Haller's n. 1647. But it seems to be the *arbuscula* of Villars.

22. This, though named *herbacea*, is not properly an herbaceous plant, but truly a shrub or tree, and the smallest yet known; being only from one to three inches in height. The bark is ash-coloured or brown. Branches irregular, knotty, scarcely an inch in length, striking root, having seldom more than three leaves. Leaves roundish or ovate, very minutely ferrate, the largest near an inch in diameter, blunt or slightly notched at the end, smooth, petioled. In the male they are nearly orbicular or wider than they are long, a little notched at the top: in the female rather cordate and not emarginate. Lightfoot compares their size with that of a silver penny. Stipules none. Peduncle from the same bud with the leaves. Catkins terminating, upright. Males some lines in length, yellow, on peduncles as long as themselves: stamens two: nectaries two. Females shorter than the males, red, smooth, on peduncles of the same length<sup>n</sup>.

Native of many parts of Europe, on high mountains. In the northern counties of England, Scotland and Wales: flowering in june and july.

Mr. Lightfoot has gathered it nine inches high, with some of the leaves as big as a shilling. It puts on

this appearance when it grows out of the crevices of rocks, and is very old. Linneus (in Flora lapp.) has figured the male plant of the largest size that it ever appears in Lapland.

23. This contends for the prize of littleness with the preceding. The leaves have parallel veins<sup>o</sup>.

A foot high. Leaves very smooth and shining, elliptic, the younger and lower ones perfectly round, on the longer branches lanceolate, ferrate. Catkins constantly smooth, with large ovate blunt smooth scales, and two long stamens; they have few flowers, and on the highest alps occur with one flower only<sup>p</sup>.

Stem quite prostrate, not unfrequently with all the branches on one side. The flowering buds are mixed with the leafing or branching buds. Catkins very long, with widish concave scales, often emarginate. Primary leaves suborbiculate, the rest oblong, sometimes acute, often blunt and emarginate; either quite entire or serrulate about the middle without any stipules. This is quite distinct from the *myrtilloides*, although Haller has united them<sup>q</sup>.

Native of Dauphiné, Switzerland, Austria, Italy.—Introduced in 1763, by the Earl of Coventry<sup>r</sup>.

24. This is a tree or shrub with abundance of diffused scattered branches, brittle especially at the joints: bark shining green or yellow somewhat cinereous. Male catkins two to five, scattered, alternate, first upright then horizontal, flexuose, subhirsute, ovate-oblong becoming cylindrical, from an inch to an inch and half in length, on a round peduncle, half an inch long, smooth or very finely villose. Stamens two, seldom three. Nectaries two. Female catkins also scattered, more numerous than the males, alternate, erect, cylindrical, from two to three inches long, subhirsute, on a peduncle half an inch in length, subtomentose and round. Germ ovate-attenuated, greenish, peduncled; style scarcely distinct, depressed in the middle; stigmas four, blunt, yellow. Nectary simple short truncate blunt, on the peduncle of the germ. Capsule ovate-oblong, acuminate, peduncled, when ripe yellowish green or brownish. Down long, silky.

Several species besides this, snap off easily at the joints, like the *fragilis*, and are probably confounded with that, from this obvious circumstance.

Hoffmann has named this *decipiens*, because it resembles another species so much, that an incurious observer might easily be deceived in taking them for the same.

Native of Europe, on the banks of rivers: flowering in may. The capsules ripen in june<sup>s</sup>.

25. Branches upright, testaceous-brown; annual shoots short, alternate, very leafy. Leaves without stipules, on very short petioles, attenuated towards the petiole, becoming gradually almost entire. About the lake Baikal, and in all the east of Siberia to Kamtchatka. It is a low shrub.

26. Trunk the thickness of the human finger or thumb, very much and forkedly branched from the very bottom: branches very short, rigid, pressed close to the ground, brownish yellow. Leaves at the ends of the branches frequent, in some lanceolate, almost entire; in others ovate-lanceolate, largely toothed with blunt and somewhat waved serratures. Very smooth and without stipules. Female aments among the leaves, subsessile, leafless, scarcely an inch long, clustered, having a thick close down.

It approaches very near to the *phyllicifolia* of Linneus, in its leaves.

On Sochondo one of the loftiest mountains of Dauria, spreading itself on the granite rocks.

27. Twigs scarcely a foot long, bay-coloured, and branched a little. Leaves very smooth, produced towards the petiole, rounded at the top, bluntly ferrate or crenulate, more or less glaucous beneath.

In the subalpine marshes of Siberia from Obo to Baikal.

28. This is a little shrub, spreading over rocks that are covered with moss, about the size of *Arbutus alpina*, with a trunk at most the size of the little finger,

<sup>a</sup> Smith in Linn. transf.

<sup>c</sup> Withering from Hoffmann.

<sup>f</sup> Fl. suec. and lapp.

<sup>g</sup> Linn. transf.

<sup>h</sup> Smith, information by letter.

<sup>i</sup> Linn. lapp.

<sup>k</sup> Succ. n. 886.

<sup>l</sup> Lapp. n. 356. ed. Smith.

<sup>m</sup> Linn. spec.

<sup>n</sup> Hoffm. Linn. lapp. and suec.

<sup>o</sup> Linn. spec.

<sup>p</sup> Haller.

<sup>q</sup> Gouan.

<sup>r</sup> Hort. kew.

<sup>s</sup> Hoffmann.



with a yellowish and somewhat jointed bark, more rugged on the trunk; with shortish branches crowded and twisted together. (In Kamtchatka, the twigs are a foot or a foot and half long, and more slenderly stretched out.) Leaves on the outmost branches very much clustered, small, netted with thickish veins, rigid; toothlets distant, spreading a little, acuminate, unequal. Male catkins among the old leaves, from the terminating buds, the length of the leaf, thin, with distant villose scales, two-stamened or three-stamened. Female catkins shorter than the leaf, with few, biggish, clustered capsules. On the male shrub, the branches are more slender and lengthened out; the leaves are smaller, with more frequent imbricate serratures.

Native of Russia, in watery places throughout the temperate and southern parts to the limits of Caucasus<sup>1</sup>.

29. This is a shrub, with the branches not much more than a finger's length and prostrate. Leaves pointed, rounded or emarginate, thick and rigid; when fully grown smooth on both sides, but marked with a network of veins, whence the name: three arise from a bud, supported each on a footstalk. Stipules none. Male catkin mostly terminating, rather woolly, an inch long, on a long slender peduncle: stamens two: nectary double. Female catkin terminating, seldom more than one on a branch, cylindrical, rather longer than the male, on a very long peduncle<sup>2</sup>.

Native of high mountains in many parts of Europe. Northern counties of England, Wales and Scotland: flowering in may.

30. This is a small shrub, scarcely a foot high, having the stature and appearance of *Vaccinium uliginosum*. The upper branches are purplish, the uppermost flesh-coloured. Leaves quite entire, smooth and green on both sides, or a little cinereous beneath, with the edge in old leaves a little bent back; in some they are more rounded, in others more lengthened out. Peduncles few, furnished with leaves. Stipules none. Germs pedicelled, smooth. Flowers yellow, from the same bud with the leaves. Fruit commonly purplish, with the base brown<sup>3</sup>.

In Ingria it is a foot or eighteen inches in height, and grows like a little tree, with a trunk often thicker than a straw or reed. The Siberian plant is more tender, scarcely a foot high, with a trunk rather more slender. Branches alternate, pretty closely leafed. Leaves without stipules, in form and colour like those of *Vaccinium Myrtillus*, some of them bluntish: in the Siberian plant more tender and smaller, always glaucous beneath. Male aments half an inch long, villose, with small leaves on the peduncle, long stamens, and floscules thin set. Female capsules few, smooth, on longer peduncles. In the eastern part of Siberia, in a lower situation, it grows higher, and has longer looser catkins<sup>4</sup>.

Villars thus describes his *caesia*, which is supposed to be the same with this, though he himself refers it to the *glauca* of Linneus. Height three or four feet. So like *S. Helix*, that it would seem to be a variety, if we did not examine the fructification. The wood supple and hard; the bark ash-coloured, smooth, reddish, on the young twigs brown or green. Leaves oblong, elliptic, lanceolate, smooth, very entire, glaucous beneath, very even above; the lateral veins very frequent and very open, which is a singular character in this species. Catkins small, elliptic, supported by four or five linear leaves, slightly villose. The scales and capsules are also a little villose.

Native of Sweden and Iceland, Switzerland, the South of France, Ingria and Siberia.—Introduced in 1772, by the right hon. Sir Joseph Banks, Bart. K.B. It flowers here in may<sup>5</sup>.

31. Stems round, long, cinereous, smooth. Leaves several from a bud, sessile, smooth on both sides, spreading, half an inch long or more. Flowers from the same buds with the leaves.—Native of Japan<sup>6</sup>.

32. This is a shrub from two to three feet in height. Stems red, smooth. Leaves lanceolate, nerved be-

neath, having a few hairs scattered over them above, and clothed with whitish hairs on the under surface: the lower ones rather blunt, the upper ones sharper and rather oblong. Stipules none. Male catkin ovate, so woolly that none of the scales are visible. Peduncle leafy. Wool longer at the base of the petioles<sup>7</sup>.

According to Villars it is a creeping and very singular shrub, with a large twisted trunk, of a greenish ash-colour; branches short; bark greenish or blackish on the younger branches, a little villose at the end. Leaves lanceolate, quite white with the thick down which covers their surfaces. Male catkins oblong, flowers having two yellow stamens. Female catkins oblong, with capsules of the same shape, villose, shining white almost silvery; flowers remaining hid under the leaves.

Native of the mountains of Lapland, the Alps and Pyrenees.

33. This is a slender shrub, often the height of a man and seldom exceeding a fathom. Twigs slender, pliant, yellow, very smooth and shining. Leaves stiff, without stipules, very narrow and sharp, glaucous beneath. Female catkins below the leaves naked, scarcely longer than an inch, upright, with the scales not very close. Down very tender, not very long. It differs from *S. rosmarinifolia* in the catkins and smoothness of the leaves; the colour also of the shrub is very different, and the leaves are longer. In the slenderness of the twigs it almost emulates the Weeping Willow.

Native of Russia, in the sands between the southern Volga and the Rhymsus towards the Caspian sea, and by the rivers Sarpa and Cuma very abundant<sup>8</sup>.

34. This is a shrub, a few feet high, sometimes growing up to be a small tree, about the height of a man, (or from a yard to eight feet.) Bark grayish, smooth, entire. Branches numerous, spreading, smooth, tough, blackish or brownish. Leaves roundish or obovate, sometimes waved at the edge, blunt or with a short taper point at the end; above dark green and somewhat woolly, paler cottony and reticulated beneath; on short, cylindrical cottony footstalks. The leaves when young are soft, even, an inch long; when old rigid, wrinkled, and two inches or more in length. (According to Lightfoot, the leaves are about the size of a sixpence when full grown, not quite round, but obversely oval, wrinkled with large swelling veins, and when young woolly on both sides; but the pubescence wears off in some degree from the upper side as the leaves grow older.) Stipules (or auricles) two, at the base of each leaf-stalk, kidney-shaped, scalloped and toothed. Male catkins upright, ovate, blunt, half an inch long or more, three or four lines broad, on a short peduncle: stamens two: nectary single. Female catkins upright or spreading, ovate-oblong or cylindrical, blunt, from half an inch to an inch in length, and half as broad, on longer peduncles. It sometimes flowers a second time in the autumn<sup>9</sup>.

Native of Europe, particularly the northern parts, in woods and marshes; flowering in may. The capsules ripen in june. Mr. Lightfoot says it is frequent in woods and hedges in Scotland. Mr. Woodward, that it is frequent about Bungay in Suffolk. The shoots are slender and tolerably flexible.

35. The branches are covered all over with a white pubescence. Leaves subovate or roundish, quite entire, downy with a long and loose wool, especially when young, so close that the veins are not visible. Hence the whole tree appears white and villose. Stipules none. Two catkins generally come out at the ends of the twigs of the foregoing year; and the capsules are smooth<sup>10</sup>.

This is a dwarf tree, a span high, from a trunk scarcely as thick as the human finger, branching very much and diffused: branches subfastigate, with a brown bark; the extreme ones covered with a silky down. Leaves thickish, subacute, sessile, very closely covered on both sides with a silky pubescence. Stipules on the uppermost branches ovate-acute, villose

<sup>1</sup> Pallas. <sup>2</sup> Hoffmann. <sup>3</sup> Linn. suec. and lapp.  
<sup>4</sup> Pallas. <sup>5</sup> Hort. kew. <sup>6</sup> Thunberg.

<sup>7</sup> Linn. suec. <sup>8</sup> Pallas. <sup>9</sup> Hoffmann.  
<sup>10</sup> Linn. lapp. and suec.



also. Female aments biggish, lateral, peduncled, accompanied with one or two leaflets. Capsules white with cotton.

Pallas seems to have repeated this under the name of *lanuginosa*; which he describes as a span high or scarcely larger, with a slender trunk divaricating into branches, and a yellow bark: the younger twigs pubescent. Leaves ovate-lanceolate, quite entire, tender, pale green, and clouded on both sides with a very tender lanugo, so that Linneus has ill named it *lanata*. Under this he refers to Linneus. In his *lanata*, which he has figured, he gives no reference; and says it is very distinct from *caprea* and *acuminata*, but very nearly allied to *fragilis*<sup>f</sup>.

Native of the mountains of Lapland, &c.

The *lanata* of Lightfoot is not the *lanata* of Linneus; Dr. Smith names it *sphacelata*.

β. *S. depressa*, which Linneus made a distinct species in Flora lapponica and suecica, in Species plantarum is considered as a variety of *lanata*.—In the leaves it approaches very near to *S. caprea*, but they are more compact. It does not grow up into a tree, but close to the ground, spreading all round scarcely a span in length. The bud is a valve deeply emarginate. Catkin from the same bud with three leaves, white with curled woolly hairs, and the scales brown at the tip.—Native of the mountains of Lapland<sup>g</sup>.

36. This approaches so near to *S. arenaria*, that perhaps it is only a variety; differing from it in having the upper surface of the leaves more villose, the leaves themselves longer and waved.—In habit it approaches very near to *S. glauca*. The leaves are tomentose on both sides, but underneath more so. The peduncles are furnished with leaves. The germs are hirsute with white cotton. This, together with *Betula nana* supports the perpetual fire of the Laplanders<sup>h</sup>.

It grows to the height of a man, with a smooth stem, pale flesh-coloured or rufset, the young twigs white with hairs. Leaves alternate, wrinkled along the veins. The capsules are covered with a white and very thick pubescence.

Native of Lapland, where it abounds in all the valleys of the high mountains<sup>i</sup>. Probably also native of Russia. Perhaps of Switzerland. Not of Scotland, Lightfoot's *S. lapponum* being the *arenaria* of Linneus.

37. A shrub the height of a man. Stems upright, little branched, cinereous or red. Leaves alternate, erect, thick, green above, wrinkled along the veins, and having very fine scarcely visible villose hairs thinly scattered, beneath snow-white, covered thickly with hairs and nerved<sup>k</sup>. Catkins both male and female ovate, very frequent from the leaf-buds: male very villose with diandrous flowers; female subvillose, the glumes terminated by a brown stigma.—Gartner thus describes the fruit—Capsule ovate-beaked. Seeds from eight to sixteen, crinite all over, with silky-white simple hairs, the length of the capsule: fastened to the inner surface of the valves, in an erect position.

Mr. Lightfoot describes it, under the name of *S. lapponum*, as a shrub four or five feet high; the bark smooth and reddish, the young twigs white and hoary. Leaves alternate, lanceolate and entire, very woolly on both sides, but mostly on the under side; about an inch and quarter long, and half an inch wide: the longitudinal nerve sometimes divides the leaf unequally, and the edges are often slightly waved. The capsules are covered with a thick woolly down. The upper surface of the leaves, when old, loses most of its down, and becomes of a dark green colour.

Monf. Villars describes it under the name of *S. belvetica*. Height from one to two feet, with a greenish bark, but yellowish on the branches. Leaves lanceolate, quite entire, thick, netted, very dark green above, snow-white beneath; the veins however are visible through this pubescence, which is very fine; the upper surface of the leaves is not destitute of this pubescence, but it is distinct and makes little alteration in the colour. Male catkins oblong, diandrous, about

an inch long: females attain an inch and half; scales and capsules villose, silky.

The *arenaria* of Lightfoot is distinct both from *arenaria* and *lapponum* of Linneus; Dr. Smith names it *argentea*. Mr. Lightfoot thus describes it.—This species is an humble diffuse prostrate shrub, seldom above two feet high. Leaves of a thick substance, alternate and elliptical, the largest an inch long, and half an inch wide, the smallest three quarters of an inch long, and a quarter of an inch wide. They are covered with white filken hairs on both sides, but particularly on the under side. The dark green colour of the upper surface appears through the hairs, as Villars describes in his *belvetica*. At the base of the leaves are sometimes found small stipules; but they are generally without them. The scales and capsules are hoary.

Native of Scotland, on the sea shores, among blowing sand.

*Arenaria* is native of many parts of Europe.

38. This resembles the preceding, but differs from it in the leaves, which in that are rather ovate, in this rather lanceolate; in that having hairs irregularly scattered over the upper surface, in this quite smooth; in that, the lower surface white-tomentose, in this, having contiguous white hairs; in that, by no means shining, in this shining like silk. The branches also in that are red, in this whitish-green<sup>l</sup>.

Native of Sweden, and perhaps some other parts of Europe, if the synonyms be right. Pallas says that it is found in the wet pastures of northern Russia; that it is frequent in some parts of Siberia, scarcely an ell in height; that it abounds in the marshes of Ingria, where it is quite a dwarf; and that Gmelin's species, vol. 1. 162. n. 17. does not seem to differ from this.

Introduced in 1775, by the Doctors Pitcairn and Fothergill<sup>m</sup>.

39. The true creeping Willow, for it has been much mistaken, has a very strong woody root, dark brown or black, throwing out many prostrate or widely spreading stems, of which the flowering branches are generally erect. Leaves lanceolate or elliptical, silky when young, and seldom quite smooth beneath, when old; without stipules. Catkins not long; scales obtuse, hairy. Germ oval, silky, with a short undivided style and a yellow spreading stigma, cloven almost equally into four lobes. Capsule, when ripe, smooth, lanceolate. The style and stigma must be particularly noticed in discriminating some of these small Willows<sup>n</sup>.

Linneus describes the stem as being the thickness of the human finger; the branches rod-like, decumbent; the branchlets with scattered white hairs. Leaves ovate or ovate-oblong, quite entire, smooth on both sides, glaucous beneath, petioled. Stipules none. The lowest leaves opposite, transversely and little hairy. Catkins lateral. Capsules of the female rufescent<sup>o</sup>. This is the least of all the common Willows, indeed scarcely larger than *S. herbacea*, being immersed in the marsh, so that only the tops of the branchlets appear<sup>p</sup>.

Hoffmann, despairing of reconciling the synonyms of various authors, has given this species the name of *depressa*, not intending by it however the *depressa* of Linneus.

Native of many parts of Europe. Almost every moist sandy heath abounds with this Willow, which flowers in may, and ripens its fruit in june and july; when, as in most of this genus, the leaves arrive at their full size. The varieties are numerous, differing in the breadth of their leaves, and in the greener or browner colour of the whole plant; hence Hudson and others thought they had discovered *S. fusca* and *rosmarinifolia* among them, whereas the former is *S. arenaria* of our British writers, but not of Linneus, and the latter is not of British growth. Professor Gouan of Montpellier mistook a widely different and nondescript species for *S. repens* of Linneus<sup>q</sup>.

40. This is a very low shrub, for the most part procumbent, and creeping. Leaves very small, alter-

<sup>f</sup> Pallas ross.

<sup>g</sup> Linn. succ.

<sup>h</sup> Idem.

<sup>i</sup> Linn. lapp.

<sup>k</sup> Idem.

<sup>l</sup> Linn. succ.

<sup>m</sup> Hort. kew.

<sup>n</sup> Engl. bot.

Spec.

<sup>p</sup> Linn. succ.

<sup>q</sup> Engl. bot.



nate, almost sessile, blunt, smooth and dark green above, beneath glaucous with a few silky-white hairs. Bud one-valved, two-parted. Flowers peduncled, at the end of the branchlets of the year preceding; they are very many, with brown scales, and yellow filaments and anthers. The catkins have no leaves, and commonly turn black<sup>a</sup>.

The silkiness on the back of the leaves vanishes with age. The readiest mark of distinction betwixt this and the preceding species, is that the catkins are on the sides of the branches in that, and terminating in this<sup>r</sup>.

Linneus remarks that these small Willows, *arenaria*, *incubacea*, *repens* and *fusca* are closely allied.

Native of several parts of Europe. In Britain, by Landown castle, between Southampton and Winchester, between Kilnsey and Arncliffe in Yorkshire, and in Scotland.

41. Leaves linear, acute, beneath shining, silky, villose. Stipules none<sup>s</sup>.—Native of Sweden, Switzerland, Russia &c.

42. This occurs with taller and lower stems, with thicker shoots, yellow or brownish. Leaves hoary above, silvery beneath. Stipules none on adult plants. Catkins among the leaf-buds, sessile, naked: males an inch long, more slender than a straw, pale-villose. In the autumn the leaves become very long, with a subrepand margin, and almost naked above.—This species, which approaches nearer to *viminialis* than to *caprea*, is considered by Linneus as a variety of the latter.—Native of Dauria<sup>t</sup>.

43. This is a shrub the height of a fathom in the water, but in a drier situation it becomes a tree, with a trunk the size of the human arm. Shoots thick, rather brittle, stiff and upright, of a greenish gray colour. The younger leaves are ovate-lanceolate, silky-silvery; the older ones oblong and acute, often more than a great span in length, soft, beneath very much veined and hoary. Stipules for the most part none, but on the luxuriant branchlets linear-acute. Catkins from the lateral buds, on a peduncle with a few small leaves on it: males an inch and half long, hirsute, with close scales, and very long stamens; females shorter, with the capsules biggish, frequent, white with nap. It bears a great affinity to the preceding, but yet it seems distinct. Perhaps it is allied to *S. ægyptiaca* of Linneus.

Native of Russia, in the sandy shallows and islands of the southern Volga, between Zarizin and Astrachan; where it does not unfold its buds and put forth its catkins till the beginning of June, when the river begins to subside, a little later than *S. pentandra*.

44. This is a small tree, almost like *S. fusca*, with a trunk the thickness of a swan's quill, lying on the ground, with a few thickish straddling branches a finger's length, quite from the bottom, the bark of which is of a yellowish bay colour. Stipules none. Leaves biggish in proportion to the plant, thickly netted, above shining, very finely villose beneath, petioled. Female catkin large, two inches long, the thickness of the little finger, on a long peduncle from the side of the branches, accompanied by two or three biggish leaves. Capsules clustered, thickish, conical, tomentose-hairy on the outside. It grows within the Arctic Circle, by the Icy Sea.

45. Twigs yellow, straight, little branched, rod-like; the younger ones hoary with nap, frequently all over. Leaves frequent, alternate, on short petioles, subserrate with few and very obscure toothlets, much nerved, in some white-tomentose on both sides, in others beneath only, and sometimes without any pubescence. Stipules permanent, very sharp, with a toothlet or two. On the banks of rivers it grows like a tree a fathom high or more, with very smooth leaves, and very branching twigs of a full yellow and as it were polished; without any stipules: but in moist open vallies it becomes rod-like and tomentose.

Native of the farther Siberia by the subalpine streams

of the Jenisea, especially about Karysch, and in the wet subalpine plains of Dauria<sup>u</sup>.

46. This not unfrequently becomes a large tree. Branches when young palish, downy. Leaves slightly tapering to a point at both ends, above green and scarce sensibly downy, underneath pale green with a very thin woolliness: edge marked with some notches which are scarcely apparent unless carefully examined, but from the middle downwards evidently waved<sup>x</sup>. The lower buds produce leaves, the upper ones catkins not leafy<sup>y</sup>.

Bark ash-coloured, cracks very fine. Leaves roundish, ovate, obovate or ovate-oblong, four or five inches long, about three broad, smooth or downy above and dark green; blueish gray and cottony on the back, and marked with a network of veins. Stipules only to the uppermost leaves, roundish and finely scalloped. Male catkins ovate-oblong, one or two inches long, often an inch broad, on short peduncles, which are woolly, furnished with eight or twelve leaflets, in a double or triple series; the upper flowering first: stamens two: nectary one. Female catkins oblong or cylindrical, from one to two inches or more in length, half an inch broad, on peduncles which have six or seven leaflets.—Gleditsch found on this species both male and female flowers, and others that were hermaphrodite<sup>z</sup>.

Our common Sallow was generally supposed to be this species; but it is now known to be the *cinerea* of Linneus.

Linneus says, that no species of *Salix* requires such a dry soil as this does. The bark is used in dyeing leather by the Laplanders; and the best gloves are prepared with it in Scania. The wood is soft, light and flexible, fit for several uses of the turner, the handles of tools, knife-boards, &c.<sup>a</sup> The coal is esteemed good for making gunpowder, and is used in drawing. It is of considerable service to bees, both on account of its flowering early, and having a great abundance of anthers<sup>b</sup>.

47. This is a shrub six feet high, often resembling a small tree: bark smooth, ash-coloured: branches numerous, upright but diffused. Leaves ovate-oblong or ovate-lanceolate, entire or a little serrate, two inches long and nearly one broad; those on the lower branches a little scalloped at the edge, dark green above with little or no pubescence, cottony on the back, pale or glaucous and reticulated. Stipules kidney-shaped, waved and toothed at the edge, seldom found on the upper leaves. Male catkins ovate or ovate-oblong, an inch or more in length, half an inch broad, blunt, on a peduncle about two lines long, having four or six lanceolate scales: stamens two: nectary one, bellying below, with a slender tapering neck, truncate at the end. Female catkins the size and shape of the other, but on longer peduncles<sup>c</sup>.

Linneus has made this a variety of the *caprea*, from which, according to Pallas, it is altogether different, and may easily be distinguished, by having the leaves less wrinkled and veined, more acuminate, more tender, and whitish underneath with a very tender nap.

According to Hoffmann, it is an intermediate species between *caprea* and *aurita*, but different from both.

Native of several parts of Europe, flowering in March and April: the capsules ripen in May. It was first observed in England by William Sherard; and is frequent about Oxford. Dr. Withering marks it at Kirkstall abbey in Yorkshire.

48. This is allied to *caprea*. Leaves obovate-oblong, above wrinkled and smooth, beneath tomentose and ash-coloured. Capsules smooth, pedicelled.—Native of the kingdom of Tunis<sup>d</sup>.

49. Native of Pennsylvania. Mr. William Young. Introduced in 1765. It flowers in April<sup>e</sup>.

50. The Osier is a very tall slender obsequious quick-growing shrub. Leaf and flower-buds distinct as in *S. caprea*. Leaves rolled back at the edges before they unfold<sup>f</sup>.

<sup>u</sup> Pallas.

<sup>x</sup> Linn. lapp.

<sup>y</sup> Linn. spec.

<sup>z</sup> Hoffmann.

<sup>a</sup> Linn. succ.

<sup>b</sup> Hoffmann.

<sup>c</sup> Idem.

<sup>d</sup> Desfontaines.

<sup>e</sup> Hort. kew.

<sup>f</sup> Linn. spec. and succ.

<sup>s</sup> Linn. spec. succ. lapp.

<sup>r</sup> Withering.

<sup>t</sup> Linn. succ. and spec.

<sup>u</sup> Pallas.



Frequently arboreſcent. Bark grayiſh, ſmooth, with here and there a crack. Branches very long, ſtraight, ſlender, tough. Leaves, eſpecially the lower ones, a ſpan long or more, waved at the edge. Male catkins ovate or oblong, from an inch to an inch and half in length, three or four lines in breadth, on very ſhort peduncles: ſtamens two: neſtary one. Female catkins ovate-oblong or cylindrical, of the ſame length with the male, half an inch broad; peduncle two lines long. The leaves being ſilvery underneath; the neſtary in the male flower being long and ſlender; and the ſtyle in the female flower being very long, are ſufficient marks to diſtinguiſh this and its varieties from the other ſpecies<sup>g</sup>.

Leaves above deep ſhining green, underneath grayiſh, cloſely beſet with very fine ſhort hairs lying cloſe to the ſubſtance of the leaf. Leaf-ſtalks about half as long as the breadth of the leaf. A ſmall tongue-ſhaped glandular ſubſtance fixed to the ſtem juſt above the inſertion of the leaf-ſtalk, in the upper part of which there is a hollow to receive it. Leaf-ſcales (ſtipules) minute, one on each ſide of the baſe of each leaf-ſtalk<sup>h</sup>.

Mr. Lightfoot remarks, that the nerves of the leaves underneath are parallel, but diverge almoſt to right angles with the midrib; that the edges are either ſlightly toothed or undulated, but being turned back this is ſcarcely perceptible; that at the baſe of the leaves, eſpecially near the top of the twigs, there are generally ſome linear awl-ſhaped ſtipules; that the catkins are ſeſſile, cylindrical, and ſhorter than the leaves; that the ſcales are oval and fufcous, and the capſules downy. He notes a variety, the leaves of which on the under ſide are of a paler green than the upper, but without any viſible hoarineſs.—Some of the above remarks are from Haller.

This is the true *Oſier*, ſays Ray, at leaſt ſo called in Eſſex and Cambridgſhire.—Varieties of it, and different ſpecies are doubtleſs cultivated under this name.

Native of moſt parts of Europe, in moiſt boggy land, woods and hedges. Much cultivated in oſier-holts, for making hoops and the larger ſorts of baſkets, hampers, cradles, bird-cages, &c. It is planted to prevent the banks of rivers from being waſhed away by the force of the current, and it forms a hedge very uſeful in keeping off winds<sup>i</sup>.—Putcheons and weels for catching eels are made of the twigs<sup>k</sup>.

Evelyn enumerates many varieties of *Oſier* known among baſket-makers in his time. We have in England, ſays he, three vulgar ſorts: one of little worth, being brittle, and very much reſembling the Sallow, with reddiſh twigs, and more greeniſh and rounder leaves. A ſecond, called *Perch*, of limber and green twigs, having a very ſlender leaf. The third totally like the ſecond, only the twigs not altogether ſo green, but yellowiſh. This is the very beſt for uſe, tough and hardy. The moſt uſual names by which baſket-makers call them about London are, the *Hard-Gelſter*, the *Horſe-Gelſter*, *Whyning* or *Shrivelled-Gelſter*, *Black-Gelſter* in which Suffolk abounds. Then follow the *Goldſtones*, the hard and ſoft, brittle and worſt of all the *Goldſtones*; the ſharp and ſlender-topped yellow *Goldſtone*; the fine *Goldſtone*. Then there is the *yellow Oſier*, the *green Oſier*, the *ſnake* or *ſpeckled Oſier*, *Swallow-tail* and *Spaniard*. To theſe we may add, the *Flanders Willow*, which will arrive to be a large tree: with theſe coopers tie their hoops to keep them bent. Laſtly, the *white Sallow*, uſed for green-work; and if of the tough-eſt ſort to make *quarter can-hoops*, of which our ſeamen provide great quantities<sup>l</sup>.

Innumerable varieties are cultivated in the oſier-grounds for the baſket-makers; and the ſame frequently under different names in different places; ſo that it would be difficult and of little uſe to enumerate them. The Dutch and Wire *Oſiers* are eſteemed about London. Dr. Smith informs me, that Mr. Crowe has lately made out the true Velvet *Oſier*, which is a valuable ſort, to be diſtinct from *viminalis*.

<sup>g</sup> Hoffmann. <sup>h</sup> Withering. <sup>i</sup> Linn. ſuec. Withering.  
<sup>k</sup> Stokes in Withering. <sup>l</sup> Silva, b. 1. c. 19. § 17. 19.

51. In woods more than fix and ſometimes near twelve feet high; in expoſed boggy ground it ſpreads more, but does not riſe ſo high. Leaves alternate, rude, rugged, wrinkled and green above, beneath rough with hairs, the veins indiſtinct, the edge ſerrate, on looſe petioles two lines in length. Stipules in ſhape of half a heart, on each ſide ſerrate with three glands. Catkins browniſh, placed below the leaves, on a peduncle with a few ſmall ſpear-ſhaped leaflets<sup>m</sup>.

Branches tough, cylindrical, ſmooth, reddiſh. Leaf-ſtalks conſiderably ſhorter than half the breadth of the leaves, nearly cylindrical, with a gland on each, juſt above the baſe. Stipules minute on each leaf, at the baſe of the foot-ſtalk. Catkins ovate, an inch and quarter long, and three quarters of an inch wide<sup>n</sup>.

The young twigs whitish and downy. Leaves variously ſhaped even upon the ſame branch, ſome acute, others obtuſe; they are generally ſlightly ſerrate towards the upper part, and undulated towards the baſe; their upper ſurface is downy at firſt, but afterwards ſmooth, or the veins at moſt only hairy; the under ſurface wrinkled, hoary, ſoft and downy. Catkins cylindrical, ſhort and thick. Capſules downy at firſt, but when ripe almoſt ſmooth.

The inhabitants of the Highlands and Hebrides frequently uſe the bark to tan leather. The wood is ſmooth, ſoft, white and flexible. It is often uſed to make handles for hatchets, prongs, ſhades, &c. and furniſhes ſhoemakers with cutting-boards, and whetting-boards to ſmooth the edges of their knives upon<sup>o</sup>.

About Palm Sunday, the children, in many parts of our iſland, gather the flowering branches, calling them Palms<sup>p</sup>.

This is our common Sallow, and Engliſh botaniſts took it for the *caprea* of Linneus, till they were taught better by Mr. Afzelius, and by conſulting the Linnean herbarium.

Native of Europe in moiſt woods and hedges, not in a dry ſoil. It flowers in april<sup>q</sup>.

52. The common or White Willow, when ſuffered to grow without lopping, becomes a large and lofty tree. It is quick of growth, and when lopped ſoon decays. The trunk is ſtraight with a gray rough bark full of cracks. Branches numerous, upright but diſuſed, gray or browniſh green, the upper ones often duſky red. The inner bark is green; whereas in *vitellina* it is yellow, and in *babylonica* purple. Leaves ſharply and elegantly ſerrate; ſhining but pubeſcent above, white and ſilky underneath. Male catkins cylindrical, blunt, from an inch and half to two inches in length, four lines in breadth, on peduncles half an inch long. Stamens two. Neſtaries two, one before the ſtamens obcordate, the other behind them oblong. Female catkins ſlender, cylindrical, two inches long, three or four lines broad, on peduncles near an inch in length<sup>r</sup>.

Native of Europe. It flowers in april and may, and the capſules ripen in june. It loves a moiſt and open ſituation.

The wood is white, light and tough. Hanbury ſays, it is agreeable to burn, becauſe it does not ſmoke, and gives a regular heat; it is not however generally eſteemed for the fire. The old branches are brittle, the young ones pliant.

The bark will tan leather, and dye yarn of a cinnamon colour. The inner bark has afforded a miſerable ſubſtitute for bread to the neceſſitous inhabitants of Kamtſchatka.

The wood is uſed for poles, ſtaves, hoops, &c. Cattle will feed on the leaves. The Arabs diſtil their celebrated *Calaf* water from the catkins of any ſpecies in which they are fragrant. They uſe this water as a cooling beverage, or as a febrifuge. In the ſummer ſeaſon the leaves have been obſerved to diſtil a dear liquor, which Scopoli affirms to be owing to the liquefaction of the ſpume (cuckoo-ſpittle, vulg.) which envelops the *Cicada ſpumaria*<sup>s</sup>.

Mr. Stone (in Philoſ. Tranſ. 53. 195.) gives an account of the great efficacy of the bark of this tree in

<sup>m</sup> Linn. ſpec. ſuec. lapp. <sup>n</sup> Withering. <sup>o</sup> Lightfoot.  
<sup>p</sup> Stokes. <sup>q</sup> Withering. <sup>r</sup> Hoffmann. <sup>s</sup> Lightfoot.



curing intermitting fevers. He gathered the bark in summer, when full of sap, dried it by a gentle heat, and gave a dram of it powdered every four hours between the fits. In a few obstinate cases he mixed it with one fifth part of Peruvian bark. It is remarkable that intermittents are most prevalent in wet countries, and this tree grows naturally in such situations. Whilst the Peruvian bark remained at its usual moderate price it was hardly worth while to seek for a substitute; but now its price is so great, and the supply from South America hardly equal to the consumption, we may expect to find it more adulterated every year. The white Willow bark is therefore likely to become an object worth the attention of physicians, and if its success upon a more enlarged scale of practice should prove equal to Mr. Stone's experiments, the world will be much indebted to that gentleman for his communication. The bark of *S. triandra*, *fragilis*, &c. have the same properties. (See *triandra*, n. 2. *fragilis*, n. 13. and *Helix*, n. 16.) A set of experiments should therefore be instituted to ascertain which of the species ought to be preferred<sup>1</sup>.

53. Trunk erect but short, as thick as a man's body; with a large and very branching head; the branchlets are rod-like. Leaves alternate, broad-lanceolate, acuminate, most minutely serrate, smooth above, whitish beneath, from two to four inches long, on short petioles. Male catkin filiform; its peduncle often leaf-bearing, issuing from the dry smooth brown involucre-like scales of the bud. Filaments six to eight, retrofracted: anthers twin, singly orbicular and grooved. Female catkins shorter than the male. Germ on a long pedicel: style of the same length with the capsule; with two spreading stigmas. Capsule heart-shaped, opening from the apex, one-celled, four-seeded. Seeds oblong, involved in much fine white cotton, which does not adhere to them, but is inserted with them into the bottom of the capsule.

This is the only species of Willow yet found in India. It is a middle-sized tree, growing on the banks of rivulets and in moist places far among the mountains. It flowers in the cold season<sup>2</sup>.

There are other species of Willow not yet sufficiently ascertained; and many varieties which are well known and have distinct names among those who cultivate them for use. The Mountain, Upland or Red Willow, and the Huntingdon Willow, for the propagation of which premiums are offered by the Society of Arts, Manufactures and Commerce, I am not able to reduce to their proper species.]

There are some other sorts of Willows which are planted in the osier-grounds, and are distinguished by the basket-makers and dealers in them, under titles which they have applied to them, which are little known to others; these are annually cut down, and always kept low, but when they are not cut down, and have room to grow, will rise to a considerable height, and some of them will become large trees; so that they may be planted for the same purposes as the White Willow, and will make a variety when intermixed with it, though they are commonly cultivated for their twigs, which produce good profit to the owner of the land.

#### PROPAGATION AND CULTURE.

All the sorts of Willows may be easily propagated by planting cuttings or sets, either in the spring or autumn, (but the spring is the surest season) which readily take root, and are of a quick growth. Those sorts which grow to be large trees, and are cultivated for their timber, are generally planted from sets, which are about seven, eight or nine feet long; these are sharpened at their larger end, and thrust into the ground two feet and a half by the sides of ditches and banks, where the ground is moist; in which places they make a considerable progress, and are a great improvement to such estates, because their tops will be fit to lop every sixth or seventh year. This is the usual method now practised in most parts of England, where the trees are cultivated, as they are generally intended for present profit; but if they are designed for large

trees, or are cultivated for their wood, they should be planted in a different manner; for those which are planted from sets of seven or eight feet long always send out a number of branches towards the top, which spread, and form large heads fit for lopping, but their principal stem never advances in height; therefore, where regard is paid to that, they should be propagated by short young branches, which should be put almost their whole length in the ground, leaving only two, or at most but three buds out of the ground; and when these have made one year's shoot, they should be all cut off, except one of the strongest and best situated, which must be trained up to a stem, and treated in the same way as timber trees. If these are planted with such design, the rows should be eight feet asunder, and the sets four feet distance in the rows; by planting them so close, they will naturally draw each other upward, and, when they are grown so large, as to cover the ground and meet, they should be gradually thinned, so as at the last to leave the rows about twelve feet asunder, and the plants in the rows eight. If they are so treated, the trees will grow to a large size, and rise with upright stems to the height of forty feet or more.

When these cuttings are planted, it is usual to sharpen those ends to a point which are put into the ground, for the better thrusting of them in; but the best way is to cut them horizontally just below the bud or eye, and to make holes with an iron instrument in the ground where each cutting is to be planted, and when they are put in, the ground should be pressed close about the cuttings with the heel to settle it, and prevent the air from penetrating deep into the ground.

The after care must be to keep them clear from weeds the two first seasons, by which time they will have acquired so much strength, as to over-power and keep down the weeds; they will also require some trimming in winter to take off any lateral shoots, which, if suffered to grow, would retard their upright progress.

There are great tracts of land in England fit for this purpose, which at present produce little to the owners, and might, by planting of these trees, turn to as good account as the best Corn land. The larger wood, if found, is commonly sold for making wooden heels for shoes; as also to turners for many kinds of light ware.

The Sallows are commonly planted in cuttings made from strong shoots of the former year, about three feet long; these are commonly thrust down two feet deep into the ground, and are one foot above it. The cuttings should be placed about five feet row from row, and two feet asunder in the rows, observing always to plant the rows the sloping way of the ground (especially if the tides overflow the place;) because, if the rows are placed the contrary ways, all the filth and weeds will be detained by the sets, which will choke them up.

The best season for planting these cuttings in the osier-grounds is february, for if they are planted sooner, they are apt to peel, if it proves hard frost, which greatly injures them. These plants are always cut every year, and, if the soil be good, they will produce a great crop, so that the yearly produce of one acre has been often sold for fifteen pounds, but ten pounds is a common price, which is much better than Corn land; so that it is great pity these plants are not more cultivated, especially upon moist boggy soils, upon which few other things will thrive.

[In order to raise a bed of Oziers, the ground being properly dug over or ploughed, cuttings must be procured of two year's wood, though the bottom parts of the strongest one year shoots may do; they should be two feet and a half long, a foot and half to be thrust into the ground, and the other foot to remain for the stool: put them in at two feet distance every way. The first summer the weeds must be kept under, and the next the tallest must be hacked down. In three years the sets should all be cut down to the first-planted head. They will sell well to the hurdle-maker; and there will be a regular quantity of proper stools for an annual crop of twigs, which will be worth

<sup>1</sup> Withering, p. 56.

<sup>2</sup> Roxburgh.



five or six pounds, or more, an acre, for the basket-maker.

If osier-holts are overflowed by the tide, the rows should go the same way with the stream, and should be at a greater distance from each other, that the weeds, &c. may have free course; in this case the cuttings may be planted closer in the rows.

Plantations designed to be cut every six or seven years for poles, may be raised in the same manner; only that the cuttings must be a yard asunder: but when intended for hurdles, the distance need not be so great.

In osier-holts they commonly mix with the true Osier, the Sallow, the long-shooting green Willow, the Crane Willow, the Golden Willow, the Silver Willow, the Welsh Wicker, &c. for different purposes of the basket-maker.

For timber, the cuttings should be of the last year's shoot; a foot and half long, a foot of which should be thrust into the ground: they should be planted at the distance of three feet every way. The end of may, or the beginning of june, the sets that have shot too luxuriantly should have all the branches removed, except the leading shoot<sup>\*</sup>.

In planting Willows, where the ground is too wet, or subject to be flooded, lay it out in beds three or four yards wide, with a ditch on each side, three feet wide at top, and one foot at bottom, two feet and a half deep, throwing the earth out of the ditch upon the bed: there should be a yard of earth above the common level of the water.

The sets or truncheons should be from twenty inches to two feet in length. Dibble them in by an iron crow fourteen or twenty inches, so that not more than six, nor less than four inches appear above.

The cuttings should be from poles of three years growth. Set them three feet asunder, in a quincunx order. The time of planting from january to the end of march. The sets should be cut from december to the end of february.

The late Mr. Bakewell had different small plantations of the Dutch Willow, one of which he used to cut down annually at seven years growth; they ran very long, and some of them very large, and were split and used for posts, gates, rails, &c. for which they are very excellent. He used no other wood for those purposes.

The Osier, says Mr. Marshall, in low moist situations, may be cultivated, on a small scale at least, with great advantage to every farm, for binders, thatching rods, hurdles, edders, stakes, rake and scythe handles, &c. and for poles and rails of almost any length.

The first step is to throw the soil into beds, so as to lay the surface sufficiently dry; the Osier disliking an unbound situation.

This work should be done in autumn: and in march following, these beds being firmly established, and their surfaces in good working order, the soil should be thoroughly trenched with the spade, and truncheons inserted.

Put in the sets two feet from each other, dibbling in a Potatoe plant between them. During summer keep the surface clean hoed, and the Potatoes earthed up.

In autumn, after the Potatoes are taken up, draw the soil towards the roots of the plants, leaving channels between them, to carry off the winter's rains. The ensuing spring look the plants over, and replace such as have failed with fresh strong sets.

After this, little more will be necessary than to keep down the taller weeds: if however the plants do not overcome the weeds in the course of three or four years, they must be cut down to the stub, the spaces dug, the rubbish turned in, and the roots of the plants freed from incumbrances, with the hoe.

Notwithstanding the Osier is usually planted near water, it affects a sound, if not a dry soil. The places it most delights in are drained moors, and the banks of large rivers, both peculiarly dry situations: it has

no dislike to being flooded occasionally, but seems to be invigorated by such irrigation: the sand banks therefore which are frequently thrown up by the sides of rivers, and sometimes lie for half a century before they become profitable, are peculiarly eligible to be converted into Osier-grounds.

The method of planting an Osier-ground is this: the soil being laid perfectly dry, and its surface made clean; cuttings of the second or third year's growth, and about twelve inches long are planted in drills, about two feet and a half asunder, in the month of march. The cuttings ought to be thrust in seven or eight inches deep, leaving four or five inches of head above ground.

The intervals should be kept stirred with a small plough; or the first year, a crop of Potatoes may be taken; the drills in either case must be kept perfectly clean with the hand-hoe; and at the approach of winter, the intervals should be split, and the mould thrown to the roots of the young plants, to lay them dry and warm during winter. The following spring the first year's shoots may be trimmed off, and the plants which have failed must be replaced.

The second summer, the intervals must be kept stirred, the drills hoed, and the plants earthed up, as before, against winter.

The ensuing spring, the stools must again be cleared; although the twigs as yet will be of little value. But at the third cutting they will produce marketable ware, and will increase in quantity and value, until the profits arising from them will be very great. In situations which the Osier affects, and in countries where the twigs are in demand, Osier grounds have been known to pay an annual rent of ten pounds an acre. Under ordinary circumstances they will, if properly managed, pay four or five<sup>v</sup>.

Willow Pollards, it is well known, are planted with great profit, by the sides of brooks and rivulets; and might, in many others, be planted with equal benefit.

An error, too frequently committed, in planting Willow poles for pollards, is to set them within the banks of the rivulet or brook. The proper situation for them is some feet, not less than half a rod, from the brink of the channel. The roots soon reach the moisture, and afford shade to cattle in hot weather, without danger to themselves, or injury to the channel or its banks<sup>z</sup>.

It is generally imagined, says Dr. Anderson<sup>a</sup>, that the Willow can be made to thrive no where except in wet or boggy ground. Experience however has sufficiently convinced me that it will not only grow, but thrive, in any rich well cultivated soil, even although it be of a very dry nature.

He recommends it as a fence for dividing any extensive field of rich ground into separate inclosures. For this he advises to mark off the boundaries in winter or early in the spring, in order to give a complete fallow to a ridge six or eight feet broad, in the middle of which the hedge is intended to be planted the ensuing winter. Plough it frequently during the summer; and in autumn manure it well with dung, lime, or both, and form it into a ridge before winter.

Be provided with a sufficient number of plants previously reared in a nursery as near the field to be inclosed as possible; for as they are very bulky, long carriage will be expensive. Plant as early in winter as can conveniently be done.

All the large kinds of hoop Willows may be used for this purpose; but there is a sort with stronger and more taper shoots, covered with a dark-green bark when young, which, upon the older shoots, becomes of an ash gray, of a firm texture, and a little rough to the touch: the leaves are not so long as, but much broader than those of the common Hoop Willow, pretty thick, and of a dark-green colour. This becomes very quickly of a large size at the root, and being strong and firm, deserves to be preferred for this purpose.

The shoots ought to be of two or three years growth, and should never be less than eight or nine feet in length.

<sup>v</sup> Planting, woodlands, vol. i. p. 183 to 187.

<sup>z</sup> Idem. 183.

<sup>a</sup> Essays, i. 87.

<sup>\*</sup> Hunter's Evelyn.



Having stretched a line along the middle of the ridge, put in the sets at the distance of eighteen or twenty inches from one another, slanting a little to one side, in a direction parallel to the line. Then begin at the opposite end of the line, and plant another row in the intervals between the plants of the former row; making these incline as much as the others, but in a contrary direction. Then plaiting these basket-wise, work them into lozenges, like a net, fastening the tops by plaiting the small twigs with one another. Thus a tolerably good fence is formed immediately; but as these plants directly take root, and quickly increase in size, it becomes in a few years a very strong hedge.

A man may plant and twist about a hundred yards in a day, if the plants be laid down to his hand: and there is no fence which could be reared at such a small expense, so quickly, and continue so long. It will be greatly improved by putting a plant of Eglantine (Sweet-briar or wild Briar) between each two plants of Willow, which will quickly climb up and be supported by them, and by its numerous prickles would effectually preserve them from being browsed upon by cattle. (Brambles would answer the same purpose.)

Keep the ridge in culture for one year at least; stir the earth once or twice by a gentle horse-hoe in the beginning of summer, and in the month of June sow it with Turneps or plant it with Coleworts, which will abundantly repay the expense of the fallow.

In lands of indifferent value, divided into small fields, the produce of such hedges would in some places amount to the value of the land itself. As the Sallows are adapted to wet soils, so the red mountain Willow will thrive on dry grounds, and on most others<sup>b</sup>.

Nothing answers better against brooks, where the water and bank are not a complete fence of themselves, than the network fence of Willows or Sallows, provided it can be kept from cattle till it has sufficiently established itself.

Truncheons of live Willow make excellent posts in new inclosures, as they will often take root and grow, and therefore will not rot, nor be subject to the depredations of wood-stealers.

SALLOW. See *Salix*.

SALMASIA. (So named by Schreber, in memory of Claudius Salmasius (Claude Saumaise,) author of *Plinianæ exercitationes* in Solini polyhistora, &c. He died in 1653.)

*Lin. gen. Schreb. n. 513. Tachibota. Aubl. t. 112. Juss. 295.*

Class. 5. 3. Pentandria Trigynia.

Nat. order of *Cisti*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted: *segments* oblong, acute, permanent.

COR. *Petals* five, oblong, clawed, inserted into the receptacle, the length of the calyx.

STAM. *Filaments* five, capillary, the length of the corolla, inserted into the receptacle. *Anthers* roundish.

PIST. *Germ* three-cornered, superior. *Style* none. *Stigmas* three.

PER. *Capsule* three-cornered, three-celled, three-valved. *Partitions* contrary to the valves.

SEEDS very many, minute.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Style none. Caps. three-celled, three-valved, many-seeded.

#### SPECIES.

1. *Salmasia racemosa*.

*Lin. spec. ed. Willd. 1. 1502.*

*Tachibota guianensis. Aublet guian. 1. 287. t. 112. DESCRIPTION, &c.*

This is a shrub with round hirsute rufescent branches. Leaves alternate subsessile oblong acuminate quite entire smooth. Stipules linear hirsute deciduous. Flowers white in long axillary and terminating racemes. Peduncles hirsute.—Native of Guiana in woods<sup>c</sup>.

SALSIFY. See *Tragopogon*.

SALSILLA. See *Alstroemeria*.

SALSIRORA. See *Drosera*.

<sup>b</sup> Belcher, mfs. information.

<sup>c</sup> Willdenow.

SALSÖLA. (From the saltiness of the plant.)

*Lin. gen. n. 911. Reich. n. 339. Schreb. n. 437.*

*Gartn. t. 75. Juss. 85. Kali. Tournef. t. 128.*

Class. 5. 2. Pentandria Digynia.

Nat. order of *Holoraceæ*. *Atriplices*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* five parted: *segments* ovate, concave, permanent.

COR. none, unless the calyx be called so.

STAM. *Filaments* five, very short, inserted into the segments of the calyx.

PIST. *Germ* globular. *Style* three-parted or two-parted; short. *Stigmas* recurved.

PER. *Capsule* ovate, wrapped in the calyx, one-celled.

SEED single, very large, spiral.

Obs. Some species have three styles.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Caps. one-seeded. Seed screw-shaped.

#### SPECIES.

1. *Salsola Kali. Prickly Saltwort.*

*Lin. spec. 322. syst. 263. Reich. 1. 624. Willd. 1.*

*1310. hort. cliff. 86. fl. suec. n. 225. Woodv.*

*med. bot. 386. t. 143. Gartn. fruct. 1. 359.*

*Huds. angl. 107. Wither. arr. ed. 3. 278. Smith,*

*brit. 280. engl. bot. t. 634. Lightf. scot. 151.*

*Fl. dan. t. 818. Villars dauph. 2. 560. Allion.*

*pedem. n. 2064. Desfont. atlant. 216. Gmel.*

*fib. 3. 88. n. 69. Gron. virg. 28. Plenck, ic.*

*162.*

*Kali Soda. Scop. carn. n. 285.*

*K. spinosum cochleatum. Baub. pin. 289. Raii hist. 212. syn. 159.*

*K. spinoso affinis. Baub. pin. 289. Mor. hist. f. 5. t. 33. f. 11.*

*Tragum. Camer. epit. 779. Matth. 1035.*

*Tragus spinosus Matthioli f. Kali spinosum. Baub. hist. 3. 706.*

*Tragus Matthioli. Ger. 960. emac. 1117. 3. Park. theat. 1034.*

*Herbaceous, decumbent, leaves awl-shaped spiny rugged, calyxes margined axillary.*

2. *Salsola Tragus.*

*Lin. spec. 322. syst. 263. Reich. 1. 624. Willd.*

*1. 1310. amoen. 4. 311. Desfont. atlant. 217.*

*Kali Tragus. Scop. carn. n. 284.*

*K. spinosum cochleatum. Baub. pin. 289.*

*K. spin. foliis longioribus & angustioribus. Tournef. inst. 247.*

*Drypis Theophrasti. Tabern. hist. 423.*

*Herbaceous, erect, leaves awl-shaped spiny even, calyxes ovate.*

3. *Salsola rosacea. Rose-coloured Saltwort.*

*Lin. spec. 323. Reich. 1. 624. Willd. 1. 1310.*

*hort. upf. 56. Lerche in nov. act. nat. cur. 5.*

*app. 181. Cavan. ic. 3. 44. t. 286. Gmel. fib.*

*3. 96. n. 75. Buxb. cent. 1. 9. t. 14. f. 2.*

*(Kali.)*

*Herbaceous, leaves awl-shaped mucronate, calyxes spread out.*

4. *Salsola Soda. French Saltwort.*

*Lin. spec. 323. syst. 263. Reich. 1. 625. Willd. 1.*

*1311. mant. 347. Guett. stamp. 426. Sauv.*

*monsp. 7. Allion. pedem. n. 2065. Gmel. fib. 3.*

*87. n. 63. Desfont. atlant. 216. Jacqu. hort.*

*t. 68.*

*Kali. Dod. pempt. 81. 1.*

*K. majus cochleato femine. Baub. pin. 287. Ger. emac. 535. 2. Raii hist. 212. Mor. hist. f. 5. t. 33.*

*f. 1. Tournef. inst. 247.*

*K. majus cochleatum. Park. theat. 279. 1.*

*K. vulgare. Baub. hist. 3. 702.*

*Soda, Kali magnum, fedi medii folio. Lob. ic. 394. adv. 169.*

*Herbaceous, patulous, leaves unarmed.*

[5. *Salsola fativa. Spanish Saltwort.*

*Lin. spec. 323. Reich. 1. 625. Willd. 1. 1311.*

*Loefl. it. 132. Cavan. ic. 3. 46. t. 291. Plenck,*

*ic. t. 163.*

*Kali hispanicum fupinum annuum, fedi foliis brevioribus. Juss. act. par. 1715. p. 74.*

Kali



- Kali minus alterum. *Bauh. pin.* 283.  
Diffused, herbaceous, leaves round smooth, flowers conglomerate.
6. *Salsola spicata*. Spiked Saltwort.  
*Lin. spec. ed. Willd.* 1. 1311.  
*S. falsa*. *Cavan. ic.* 3. 46. t. 290.  
Herbaceous, leaves oblong obtuse semicylindric, flowers in threes axillary subspiked.
7. *Salsola altissima*. Grass-leaved Saltwort.  
*Lin. spec.* 324. *syft.* 263. *Reich.* 1. 625. *Willd.* 1. 1312.  
*Chenopodium altissimum*. *Lin. spec. ed.* 1. 221. *hort. upf.* 55. n. 3.—foliis succulentis. *Buxb. cent.* 1. 21. t. 31. f. 2.  
*Kali gramineo folio*. *Bauh. pin.* 289. *prodr.* 133.
8. *Salsola foliis filiformibus inermibus mucronatis, caule ramosissimo*. *Lin. hort. upf.* 56.  
*Lerchea foliis filiformibus acutis*. *Hall. goett.* 2. 22.  
Herbaceous erect very much branched, leaves filiform sharpish, pedunculiferous at the base.
8. *Salsola trigyna*. Trifid-styled Saltwort.  
*Lin. spec. ed. Willd.* 1. 1312.  
*S. altissima*. *Cavan. ic.* 3. 46. t. 289.  
Herbaceous erect, leaves filiform obtuse fleshy, flowers axillary sessile in threes, styles trifid.
9. *Salsola falsa*. Striped-stalk Saltwort.  
*Lin. spec.* 324. *syft.* 263. *Reich.* 1. 626. *Willd.* 1. 1312. *mant.* 347. *Pallas it.* 1. 420. *Lepech. it.* 1. 254. *Jacqu. hort.* 3. 44. t. 83. *Villars dauph.* 2. 560.  
*Chenopodium maritimum, foliis sedi teretibus*. *Buxb. cent.* 1. 21. t. 31. f. 1.  
Herbaceous, nearly upright, leaves linear somewhat fleshy awnless, calyxes succulent diaphanous.
10. *Salsola nudiflora*. Naked-flowered Saltwort.  
*Lin. spec. ed. Willd.* 1. 1313.  
Somewhat woody ascending, leaves filiform fleshy, flowers glomerate, leaves the length of the glomerules.
11. *Salsola flavefcens*. Yellow Saltwort.  
*Lin. spec. ed. Willd.* 1. 1313. *Cavan. ic.* 3. 45. t. 288.  
Somewhat woody erect, leaves round pubescent, flowers subglomerate.
12. *Salsola hirsuta*. Hairy Saltwort.  
*Lin. spec.* 323. *syft.* 263. *Reich.* 1. 626. *Willd.* 1. 1313. *Fl. dan.* t. 187. *Villars dauph.* 2. 560?  
*Chenopodium hirsutum*. *Lin. spec. ed.* 1. 221.  
*Kali minus villosum*. *Bauh. pin.* 89. *Raii hist.* 199.  
*K. parvum hirsutum*. *Bauh. hist.* 3. 702.  
Herbaceous diffused, leaves round obtuse tomentose.
13. *Salsola laniflora*. Woolly-flowered Saltwort.  
*Lin. syft.* 264. *spec. ed. Willd.* 1. 1314. *suppl.* 172. *Gmel. it.* 1. 160.  
*S. lanata*. *Pallas it.* 2. app. 104. t. P.  
Herbaceous, leaves round pubescent, flowers axillary, anthers coloured.
14. *Salsola hyssopifolia*. Hyssop-leaved Saltwort.  
*Lin. spec. ed. Willd.* 1. 1314. *Pallas it.* 1. app. n. 107. t. L.  
Herbaceous, leaves linear flat, glomerules of flowers axillary woolly.
15. *Salsola polyclonos*. Many-spiked Saltwort.  
*Lin. syft.* 263. *Reich.* 1. 626. *Willd.* 1. 1314. *mant.* 54. *Bocc. mus.* 2. t. 34. (*Anthylloides*.) *Barr. rar.* 214. t. 275. (*Pedicularis*.)  
Somewhat woody diffused, leaves oblong, calyxes margined glomerate coloured.
16. *Salsola prostrata*. Prostrate Saltwort.  
*Lin. spec.* 323. *syft.* 263. *Reich.* 1. 627. *Willd.* 1. 1315. *amoen.* 2. 346. *Loefl. it.* 151. *Pallas it.* 1. 490. *Gmel. fib.* 3. t. 18. f. 2. *Buxb. cent.* 1. t. 11. f. 2. *Jacqu. austr.* t. 294. *Hall. belv.* n. 1575. (*Chenopodium*.)  
*Chenopodium augustanum*. *Allion. pedem.* n. 2020.  
Frutescent, leaves linear hairy unarmed.
17. *Salsola monandra*. Fleshy-leaved Saltwort.  
*Lin. spec. ed. Willd.* 1. 1315. *Pallas it.* 3. app. 83. t. M. f. 1.  
Stem herbaceous branched fleshy almost leafless, leaves round fleshy, flowers one-stamened.]
18. *Salsola vermiculata*. Narrow-leaved Saltwort.  
*Lin. spec.* 323. *Reich.* 1. 627. *Willd.* 1. 1315.

- Pallas it.* 1. app. 103. *Loefl. it.* 129. *Barr. rar.* 501. t. 215. (*Kali*.)  
*S. microphylla*. *Cavan. ic.* 3. 45. t. 287.  
*Kali fruticosum, ericæ folio*. *Buxb. cent.* 1. 8. t. 14. f. 1?  
Frutescent, leaves in bundles round filiform, floral leaves ovate acute fleshy.
- [19. *Salsola Arbuscula*. Bushy Saltwort.  
*Lin. spec. ed. Willd.* 1. 1315. *Pallas it.* 1. app. n. 102. t. K.  
Shrubby, leaves in bundles round attenuated at the base, incurved; flowers solitary scattered.
20. *Salsola aphylla*. Leafless Saltwort.  
*Lin. syft.* 264. *Willd.* 1. 1316. *suppl.* 173. *Thunb. prodr.* 48.  
*Caroxylon Salsola*. *Thunb. nov. gen.* 2. p. 38.  
Arborescent leafless jointed, leaves very short ovate pressed close acute caducous.
21. *Salsola arborefcens*. Tree Saltwort.  
*Lin. syft.* 264. *Willd.* 1. 1316. *suppl.* 173.  
*Kali fruticosum incanum foliis exsuccis*. *Buxb. cent.* 1. 9. t. 15.  
Frutescent, leaves semicylindric, the lower conjugate.
22. *Salsola fruticosa*. Shrubby Saltwort.  
*Lin. spec.* 324. *syft.* 263. *Reich.* 1. 627. *Willd.* 1. 1316. *mant.* 347. *Desfont. atlant.* 217. *Hudf. angl.* 108. *Wither. arr. ed.* 3. 278. *Smith, brit.* 280. *engl. bot.* t. 635.  
*Chenopodium fruticosum*. *Lin. spec. ed.* 1. 221. *hort. cliff.* 86. *Guet. stamp.* 2. 425. *Dubam arb.* 1. 163. t. 62. *Allion. pedem.* n. 2019.  
*Lerchea foliis obtulis*. *Hall. goett.* 21.  
*Kali species vermicularis marina arborefcens*. *Bauh. hist.* 3. 704.  
*Vermicularis frutex minor*. *Ger. emac.* 523. 4.—fruticosa altera. *Park. theat.* 731.  
*Anthyllis Chamæpityides frutescens*. *Bauh. pin.* 282.  
*Sedum minus arborefcens*. *Munt. hist.* 469. t. 130.  
*Blitum marinum teretifolium Kali minus album dictum*. *Raii hist.* 198.  
B. fruticosum maritimum, *Vermicularis frutex dictum*. *Raii syn.* 156.  
Shrubby, leaves fleshy round obtuse imbricate.
23. *Salsola indica*. Indian Saltwort.  
*Lin. spec. ed. Willd.* 1. 1317.  
Shrubby, leaves linear fleshy half round, floral leaves oblong obtuse.
24. *Salsola sedoides*. Sedum-like Saltwort.  
*Lin. spec. ed. Willd.* 1. 1317. *Pallas it.* 1. app. n. 108. t. M. f. 1, 2.  
Suffruticose, leaves round filiform ciliate, flowers glomerate axillary.
25. *Salsola muricata*. Hairy Saltwort.  
*Lin. syft.* 263. *Reich.* 1. 628. *Willd.* 1. 1317. *mant.* 54. 512. *Vahl, symb.* 1. 24. *Desfont. atlant.* 217.  
*S. monobracæa*. *Forsk. descr.* 55. n. 85.  
*Bassia muricata*. *Allion. misc. taur.* 3. 177. t. 4. f. 2.  
*Chenopodium maritimum ramulis virgatis*. *Buxb. cent.* 3. 27. t. 49.  
*C. orientale fruticosum incanum Pfyllii folio*. *Tournef. cor.* 38?  
*Kali ægyptiacum villosum, calyce stellato aculeato*. *Vaillant. Petiv. herb.*  
Shrubby patulous, branchlets hirsute, calyxes spiny.
26. *Salsola didyma*. Twin-fruited Saltwort.  
*Lour. cochinch.* 173. *ed. Willd.* 216.  
Stem herbaceous decumbent, leaves oblong unarmed, cap-sules two-lobed two-seeded.
27. *Salsola Echinus*. Thorny Saltwort.  
*Billard. ic. syr.* 2. 10. t. 5.  
Shrubby, smooth, leaves subulate awnless, spines divaricate flowering.
28. *Salsola camphorosmoides*. Camphorosma-leaved Saltwort.  
*Desfont. atlant.* 218.  
*Kali orientale fruticosum spinosum, Camphoratae foliis*. *Tournef. cor.* 18.  
Shrubby, smooth, leaves filiform with axillary bundles.
29. *Salsola*



29. *Salsola brevifolia*. *Short-leaved Saltwort*.  
Desfont. atlant. 218.  
*Kali ficulum lignosum*, floribus membranaceis. Bocc.  
sic. 59.  
*K. vermiculatum incanum fruticans*. Barrel. ic. t. 205?  
*Shrubby, very much branched, leaves ovate clustered very short pubescent.*
30. *Salsola mollis*. *Soft-leaved Saltwort*.  
Desfont. atlant. 218.  
*Shrubby, branches spreading, leaves round fleshy glaucous obtuse.*
31. *Salsola oppositifolia*. *Opposite-leaved Saltwort*.  
Desfont. atlant. 219.  
*S. fruticosa*. Cavan. ic. n. 312. t. 285.  
*K. ficulum lignosum*, floribus membranaceis. Bocc.  
sic. 59. t. 31. Tournef. inst. 247. Raii hist. 212.  
*K. minus tenuifolium fruticosum ficulum*. Barrel. ic.  
t. 79.  
*K. floridum semine cochleato & floribus membra-*  
*naceis*. Mor. hist. f. 5. t. 33. f. 2.  
*K. membranaceum foliis angustis conjugatis*. Shaw,  
afr. n. 354.  
*Shrubby, leaves subulate unarmed opposite.*

## DESCRIPTIONS, &amp;c.

These plants, so well known for producing alkaline salt, commonly called Barilla, Soda or Kelp, are many of them herbaceous and annual, others have shrubby stems. The leaves are generally alternate, but in some opposite; in some round, in others flat. Flowers terminating or axillary, in some having three bractes at the base<sup>d</sup>. Jussieu is for having the genus divided. Linneus, in the first edition of his Species Plantarum, placed some of the species under *Chenopodium*. Haller has selected a few under the title of *Lerchea*.

1. Root annual, fibrous. Stems rigid, pubescent, very much branched, spreading in all directions, and forming a large round bush, almost inaccessible on account of the numerous prickly leaves, which are alternate, spreading, awl-shaped, channelled, dilated at the base, rugged, each tipped with a very sharp spine. Flowers axillary, solitary, sessile, with three bractes, resembling the leaves and thorny, at the base of each. Leaves of the calyx externally dilated into a broad reddish waved margin, internally closely approaching each other, and covering the seed like a capsule. Seed turbinate or top-shaped, with its cotyledons curiously twisted into a spiral form; by which character this genus is essentially distinguished from *Chenopodium*, and all others of the same natural order<sup>e</sup>.

Native of the sandy shores of Europe, Asia, Africa and America. It flowers with us in July.

This plant, on being burned, affords fossil alkali, as do many other plants, some in a greater proportion. This contributes more generally to the manufacture of Soda, for making glass than *Chenopodium maritimum*, but is not reckoned equal to some other species of *Salsola*. See *S. Soda* and *fativa*.

2. Gmelin and Willich esteem this to be a variety of the preceding. Scopoli says, the flowers of this are two-styled. According to Linneus, the style is trifid in *S. Kali*.] Mr. Miller says that it sends out many diffused stalks a foot and half long; that the leaves are linear, an inch long; that the calyxes are blunt, and not so closely encompassed with leaves as those of the other.

[This affords an ordinary kind of Soda, with which the French frequently mix the better kind in Languedoc. This adulteration is also practised by the Sicilians, who distinguish the plant by the term *sel-vaggia*<sup>f</sup>.

Native of the South of Europe, and of Africa, on the sea coast.]

3. The stalks of this seldom rise more than five or six inches high. The flowers are small, and of a rose-colour, soon fading.—Native of Tartary.

4. [Stems procumbent or upright, with spreading branches. Leaves long fleshy spreading awl-shaped smooth, roundish, widened at the base, ash-coloured, with two opposite longitudinal streaks, the margin of

the base membranous and diaphanous. Flowers axillary, sessile, one, two or three together<sup>g</sup>.

Native of the South of Europe. Cultivated in 1759, by Mr. Miller<sup>h</sup>, with the two preceding.]

He thus describes it: Stems near three feet high, sending out hoary branches their whole length, at bottom spreading out wide, but short towards the top. Leaves on the principal stalk, and on the lower part of the branches, long, slender, without spines; on the upper part of the stalk and branches, short and crooked. At the base of the leaves are produced the flowers, which are so small as to be hardly perceptible. In warm countries it produces the flowers in June, and the seeds ripen in August; but in this country the plants seldom flower. This is the sort which is cultivated in Languedoc for making alkaline salt.

[Mr. Townsend says that the true Barilla is made in Spain from this species; both this and the *fativa*, according to others, are cultivated there for that purpose, but principally the latter.

5. This grows abundantly on the Spanish coast which is washed by the Mediterranean sea, and affords all the best Soda consumed in Europe, and called by us Spanish or Alicant Soda, and by the Spanish merchants *Barilla de Alicante*<sup>i</sup>.

In September the Spaniards collect the crop into heaps about six feet in height. Of these they burn fifty in one hole, stirring well the broth with sticks; then, protecting it from rain, at the expiration of eight or ten days, the stone will be cold enough to be removed.

There are several other plants which they burn for pot-ash in Spain, besides *Salsola Soda* and *fativa*. As—

1. Aguaful, a species of *Mesembryanthemum*.
2. Salicor, which is *Salicornia europæa*.
3. Barilla punchosa Soda colorada. *Salsola Kali*.
4. Sofa prima. *Chenopodium maritimum*.
5. Sofa blanca. *Chenopodium album*.
6. Sofa gorda. *Salsola vermicularis*.
7. Sofa lenosa. *Salsola rofacea*.
8. Hyerba de la plata. *Mesembryanthemum crystallinum*<sup>k</sup>.

In some countries other plants are used for this purpose: as *Salicornia arabica*, *Mesembryanthemum nodiflorum*, *Plantago squarrosa*; all these, according to Alpinus, yield this alkali. It has also been procured from several of the Fuci or sea-weeds, especially *F. vesiculosus*; and is distinguished here by the name of Kelp. The preparation of this is fully described by Borlase, in his observations on the state of the Islands of Scilly.

*Batis maritima* is noticed by Jacquin on the coast about Carthage in New Spain, as having a very salt taste, and as being prepared there into Soda, which is used for the purpose of making glass. The inhabitants call it Barilla.

Various other marine plants yield Barilla or Soda by combustion, but the principal are of this genus or *Salicornia*, which both derive their names from this circumstance. *Salsola Kali*, on the authority of Rauwolf, is the sort from which the salt is usually obtained in the eastern countries.

It is to be regretted, that the different sorts of Soda which are brought to European markets, have not been sufficiently analysed to enable us to ascertain with tolerable certainty the respective value of each: indeed whilst the practice of adulterating this salt continues, any attempts of this kind are likely to prove fruitless. The best information on this subject is to be had from Jussieu, Marcorette and Cadet in *Memoires de l'Academie Francoise*, Borlase, and Sestini in *Lettere della Sicilia*.

According to chemical analysis Soda generally contains a portion of vegetable alkali and neutral salts; as common salt, and sometimes vitriolated tartar, or Glauber salt; likewise liver of sulphur; and not unfrequently some portion of iron is contained in the mass: it is therefore to be considered as more or less a compound, and its goodness is to be estimated ac-

<sup>g</sup> Linn. and Desfont.

<sup>h</sup> Hort. kew.

<sup>i</sup> Woodville.

<sup>k</sup> Towns. Spain. 3. 197 to 199.

<sup>d</sup> Jussieu.

<sup>e</sup> Smith.

<sup>f</sup> Woodville.



cordingly. The Spanish Soda of the best sort is in dark-coloured masses of a blueish tinge, very ponderous, sonorous, dry to the touch, externally abounding with small cavities, without any offensive smell, and very salt to the taste; if long exposed to the air, it undergoes a degree of spontaneous calcination. The best French Soda is also dry, sonorous, brittle, and of a deep blue colour, approaching to black. The Soda, which is mixed with small stones, gives out a fetid smell on solution, and is white, soft and deliquescent, is of the worst sort.

The method of purifying this salt for medicine, is directed in the London Pharmacopœia under the article *Natron præparatum*; and in the Edinburgh Pharm. under that of *Sal alkalinus fixus fossilis purificatus*. The pure crystals, thus formed from Alicant Barilla, are colourless, transparent, lamellated, rhomboidal, and one hundred parts are found to contain twenty of alkali, sixteen of aerial acid, and sixty-four of water; but upon keeping the crystals for a length of time, if the air be not excluded, the water evaporates, and they assume the form of a white powder. This salt preserves flesh longer than common salt, but not so long as the vegetable alkali. Natron has been thought useful in scrophulous disorders, but is seldom given in its simple state.

In combination with vitriolic acid this alkali forms Glauber salt or Natron vitriolatum; with nitrous acid, cubic nitre; with marine acid, common salt; with the sedative salt of Homberg, borax; and with cream of tartar, Rochelle salt or sel saignette.

Soda or Barilla is in common use in the manufactures of glass and soap. White Spanish soap, being made of the finer kinds of olive oil, is preferred for internal use<sup>1</sup>.

Salsola fativa was introduced here in 1783 by Abbé Pourret<sup>m</sup>.

6. This also is a native of Spain.

7. Peduncles three-flowered, the lateral ones springing at the base of the middle one, as in *Thesium* and *Turnera*. Styles three<sup>n</sup>.

Linneus at first made this a *Chenopodium*, and Pallas thinks it rather belongs to that genus.—Native of Italy, Saxony and Astrachan. Introduced in 1775, by John Earl of Bute<sup>o</sup>.

8. In habit this very much resembles the preceding, but it is quite distinct, having axillary flowers not inserted into the leaf, as in that.—Native of Spain<sup>p</sup>.

9. Stems a foot high, panicled, even, purplish, somewhat striated. Leaves flat above. Flowers axillary, sessile, in threes. Calyx-leaves very much arched, convex, closed, in the fruit hyaline. Styles three, cloven at the top<sup>q</sup>.

Linneus had originally made this also a *Chenopodium*, and Pallas remarks that it has an affinity to that genus.

*Salsola baccata alexandrina* is perhaps the same with this. It has an upright stem, a foot high, hardish, with almost upright branches; three flowers in each axil; the calyxes, when the fruit is ripe, succulent, smooth, subdiaphanous, sessile, green; and three styles.

Native of Astrachan<sup>r</sup>.—This, and all the preceding, are annual plants.

It was introduced in 1782, by P. M. A. Broussonet, M.D.<sup>s</sup>

10. Stems branched, panicled at the top, branches simple covered with little balls of flowers, which appear to be naked, but are propped by a short leaf. Leaves as in the preceding.

Native of the East Indies, near Tranquebar, on the coast. Perennial.

11. Distinct from the next species, in having a suffrutescent stem, narrower leaves shorter than the flowers. Native of Spain. Perennial<sup>t</sup>.

12. Native of Denmark and the South of France, on the sea coast. Distinguished by its pubescent leaves. It is annual.

<sup>1</sup> Woodville.

<sup>o</sup> Hort. kew.

<sup>r</sup> Linn. mant.

<sup>m</sup> Hort. kew.

<sup>p</sup> Willdenow.

<sup>s</sup> Hort. kew.

<sup>n</sup> Linn. syst.

<sup>q</sup> Linn. syst.

<sup>t</sup> Willdenow.

13. Stem two feet high, when young woolly, but towards the time of fructification becoming naked. Leaves blunt, fleshy. Flowers in threes, yellow. Calyx growing out into sharp very long chaffs, with the lateral laminae rose-coloured. It differs in its rose-coloured anthers from all the rest.—Native of Siberia about Saratshik<sup>u</sup>.

14. This is an annual plant, native of the dry salt plains of Siberia.

15. Stems very much branched. Leaves fleshy, awnless. Flowers axillary and terminating, glomerate, sessile. Calyx funnel-form, five-parted, membranous, with a flat, small, coloured border.—Native of the sea-coast of Spain and Sicily<sup>x</sup>.

16. Native of Spain, Austria, Switzerland and Siberia. Introduced in 1780, by Peter Simon Pallas, M.D.<sup>y</sup>

17. This has the habit of *Salicornia* or *Polycnemum*. Native of Siberia by the lake Altan, and in the steppes of Astrachan. Annual<sup>z</sup>.]

18. Stems shrubby, three or four feet high, sending out many side branches. Leaves fleshy, ovate, acute-pointed, coming out in clusters from the side of the branches; they are hoary, and have no stiff prickles. The flowers are produced from among the leaves, towards the ends of the branches, they are so small as scarcely to be discerned.—Native of Spain, [and Siberia. Cultivated by Mr. Miller in 1759.

19. Native of the Tartarian steppes.

20. This is a shrub the height of a man, leafless and very irregular. Branchlets covered with the rudiments of flowers. Flowers sessile with a spreading membranous border.—Native of the Cape of Good Hope.

21. Stems shrubby, ascending, white. Leaves alternate, even; the lower ones of the branches commonly in pairs and equal, or two from each point. Spike terminating. Calyxes scarious, rose-coloured, with a scarious, five-valved blunt little crown.—Native of Siberia<sup>a</sup>.

22. Stem about two feet high or more, woody, erect, round, very much branched; the branches also erect, and thickly clothed with alternate, sessile, semi-cylindrical, bluntish, fleshy, even, almost upright, rather glaucous leaves. Flowers inconspicuous, axillary, sessile, solitary, green; with three small, concave, scarious bractes<sup>b</sup>. Linneus remarks, that the germ is cylindrical, and the styles three in number.

The leaves have an herbaceous flavour, with a slight degree of salt and some acrimony. It forms an elegant evergreen shrub, flowering in July and August, not unworthy of a place in gardens<sup>c</sup>.

Native of France, Spain, Barbary and Persia, on the sea-coast.—The first person mentioned as the discoverer of this plant in England is the famous Sir Thomas Brown, M.D. of Norwich, so well known by his *Religio Medici* and other learned productions. He found it on the Norfolk coast, where it still grows, about Wells and Cley, as well as in Suffolk. Mr. Lambert found it at Weymouth<sup>d</sup>; and Dr. Pulteney plentifully on the Isthmus of Portland called Chesil Bank; a large quantity opposite Fleet House; abundantly at Windmill Point, Poole, and elsewhere on the coast of Dorsetshire. Ray collected it abundantly on the Isthmus of Portland, and mentions that Sir Thomas Brown had before that shown it him from the coast of Norfolk. Lobel says that he had gathered it plentifully on the Holms in the Bristol Channel. Mr. Woodward observed it near Southwold in Suffolk.

23. This is a small shrub, scarcely more than a foot high. Leaves nearly as in the preceding, but twice as long; the floral leaves are very short, oblong and blunt. Flowers three sessile on the axils of the leaves, on the branches of the former year, not towards the top. In other respects it has the habit of the preceding species.—Native of the East Indies.

24. This is distinct from the next species, in its round ciliate leaves, with long hairs.—Native of Siberia, in the salts by the Samara and the middle Jaik<sup>e</sup>.

<sup>u</sup> Linn. suppl.

<sup>z</sup> Willdenow.

<sup>d</sup> Idem.

<sup>x</sup> Linn. mant.

<sup>a</sup> Linn. suppl.

<sup>c</sup> Willdenow.

<sup>y</sup> Hort. kew.

<sup>b</sup> Smith.

<sup>e</sup> Idem.



25. Stem upright, hairy, ash-coloured. Leaves linear, somewhat fleshy, soft, ash-coloured. Calyxes in pairs, heaped. Seed small, within a three-toothed bag<sup>f</sup>.

Stem suffruticose, flowering from bottom to top. Branches slender, paniced. Leaves alternate, villose, awnless. Flowers small, one, two or three together, axillary, sessile. Calyx tomentose, when the fruit is ripe spreading into a star, each of the five parts terminated by a rigid awn, which is frequently hooked at the end<sup>g</sup>.

Native of Egypt, and Barbary near Cassa. Introduced in 1773, by John Earl of Bute. Annual: flowering in July and August<sup>h</sup>.

26. Stem two feet long, diffused, rough. Leaves blunt, quite entire, thick, smooth, opposite. Flowers axillary, glomerate, subsessile. Calycine segments emarginate, cowed at the top. Stigmas two, sessile, oblong, erect. Capsule two-celled, with one rough black seed in each cell.—Native of the island of Mozambique in Africa<sup>i</sup>.

27. This is a shrub, a foot in height, very much and closely branched. Branches upright, flexuose, smooth, yellowish: spines stout, axillary, solitary, an inch long, divaricate, simple or branched, floriferous. Leaves alternate, stiffish, glaucous, smooth, with an edge membranous on both sides at the base, pressed close to the spines underneath, in the adult plant few. Flowers sessile, solitary or glomerate, some from the spines themselves, others from their axil: leaflets ternate, awl-shaped, with a membranous edge, surrounding each flower, the lower one a little larger than the two others.—Native of the higher mountains of Libanus<sup>k</sup>.

28. Stems upright, very much branched: branches paniced, spiny; spines like needles. Bark in the younger plants white, in the older brown. Leaves alternate, smooth.—Native of Barbary near Tlemsen, in fallow fields.

29. Branches numerous, pubescent. Leaves alternate, villose, blunt; branch-leaves very much clustered, of the size and shape of *Sedum Acre*. Flowers axillary, sessile, solitary, numerous. Calyx permanent, in the ripe fruit membranaceous.—Near Cassa in Barbary, in sands; also in Sicily.

30. Upright, very much branched. Leaves very soft smooth and juicy, very like those of *Sedum album*, but a little shorter and thinner.—With the preceding.

31. Very much branched. Branches opposite, upright, knotty, smooth. Leaves smooth, fleshy, awnless, depressed above. Flowers axillary, solitary, two or three together, sessile. Bractes three, awl-shaped, small; the lower larger. Calyx small: segments blunt, upright. Membranes five, rose-coloured, wide, like fans, rounded at the top, unequal, converging into a spreading bell, emerging below the tip of each segment of the calyx as the fruit ripens. Anthers four-cornered. Styles two.

This is a very handsome species, and quite distinct from its congeners.—Native of Tunis in Africa<sup>l</sup>; also of Spain and Sicily.

#### PROPAGATION AND CULTURE.

All the annual sorts may be propagated by seed.

In those countries where the preparation of Soda forms a considerable branch of commerce, the seeds are regularly sown in a proper situation near the sea; where they usually shoot above ground in the course of a fortnight<sup>m</sup>. In Spain they plough the land four or five times, dung it well, and then, having turned the earth twice more, they make it smooth with boards instead of harrows, and sow the seed in January and February, waiting always for wet weather. When the plant is about the bigness of a shilling, they clear off all the weeds<sup>n</sup>. About the time that the seeds become ripe, the plants are pulled up by the roots, and exposed in a suitable place to dry, and there the seeds are collected: this being done, the plants are tied up in bundles, and burned in an oven constructed for that

purpose; the ashes, whilst hot, being continually stirred with long poles. The saline matter, on becoming cold, forms a hard solid mass, which is afterwards broken in pieces of a convenient size for exportation<sup>o</sup>.

The shrubby sorts may be propagated by layers or cuttings; but *Salsola fruticosa*, it seems, can scarcely, if at all, be increased by the latter mode<sup>p</sup>.

SALSOLA. See *Chenopodium*.

SALTWORT. See *Glaux*, *Salicornia*, *Salsola*.

SALVADORA. (So named by Garcin from *Salvadore*, an apothecary at Barcelona.)

Lin. gen. n. 163. Reich. n. 175. Schreb. n. 220.

Garcin in *Philos. Trans.*

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Atriplices*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, four-cleft; lobes revolute.

COR. one-petalled: tube short: border four-cleft; segments oblong, revolute.

STAM. Filaments four, the length of the calyx, reflex. Anthers round.

PIST. Germ roundish. Style single, short, (or none.) Stigma simple, blunt, umbilicate.

PER. Berry globular, one-celled.

SEED single, spherical, covered with a callous Aril.

#### ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. four-cleft. Berry one-seeded.

Seed covered with an aril.

#### SPECIES.

1. *Salvadora persica*.

Lin. spec. 178. Syst. 166. Reich. 1. 347. Willd. 1.

695. amoen. 3. 21. Vahl, symb. 1. 12. t. 4.

Roxb. corom. 1. 26. t. 26.

*Salvadora*. Garc. in *phil. trans.* 1749. n. 491.

*Rivina paniculata*. Lin. syst. ed. 10. 899. ed. 14. 165.

*Cissus arborea*. Forsk. descr. 32. n. 8.

*Embelia Grossularia*. Retz. obs. 4. 24.

*E. indica*. Gmel. syst. 280.

Leaves oval or oblong, flowers paniced.

2. *Salvadora capitulata*.

Lour. cochinch. 87. ed. Willd. 110.

Leaves ovate acuminate, heads axillary.

3. *Salvadora biflora*.

Lour. cochinch. 88. ed. Willd. 110.

Leaves lanceolate-ovate, flowers in pairs.

#### DESCRIPTIONS, &c.

1. Trunk generally crooked, eight or ten feet high to the branches, and one foot in diameter: bark very scabrous and deeply cracked. Branches exceedingly numerous, spreading, with their extremities perfectly pendulous, like the weeping Willow. Leaves opposite, petioled, oval or oblong, entire, very smooth and shining on both sides, without veins, from one to two inches long, and about an inch broad. Stipules none. Panicle terminating, and from the exterior axils, compound. Flowers minute, very numerous, greenish yellow. Bractes minute. Calyx inferior, four-toothed, permanent. Corolla one-petalled; tube short; border four-cleft: segments oblong, revolute. Filaments inserted below the divisions of the corolla, and rather shorter than them. Anthers oval. Germ globular. Style none. Stigma scabrous. Berry very minute, much smaller than a grain of black Pepper, smooth, red and juicy. Seed brownish green.

This is a middle-sized tree, a native of most parts of the Circars, though by no means common: it seems to grow equally well in every soil; and flowers and bears ripe fruit all the year round.

The berries have a strong aromatic smell, and taste much like garden cresses.

The bark of the root is remarkably acrid; bruised and applied to the skin it soon raises blisters, for which purpose the natives often use it: as a stimulant it promises to be a medicine possessed of very considerable powers<sup>q</sup>. Koenig sent it from Tranquebar. Native also of the Persian gulph.

2. This also is a middle-sized tree, very much branched. Leaves alternate, very rough, unequally ferrate, subpetioled. Flowers from the axils in heads containing eight of them or thereabouts, on a long

<sup>f</sup> Linn. mant.

<sup>g</sup> Desfontaines.

<sup>h</sup> Hort. kew.

<sup>i</sup> Loureiro.

<sup>k</sup> Billardiere.

<sup>l</sup> Desfontaines.

<sup>m</sup> Woodville.

<sup>n</sup> Townsend.

<sup>o</sup> Woodville.

<sup>p</sup> Eng<sup>l</sup>. bot.

<sup>q</sup> Roxburgh.

common



common peduncle, and very short partial ones. Calyx four or five-parted, inferior, permanent. Corolla none. Filaments awl-shaped, reflex, double the length of the calyx. Stigma bifid, in some double. Berry yellow, roundish, small, twin at the top.

3. Ten feet high, with many twisted spreading branches. Leaves subserrate, rough, alternate. Flowers axillary, on long peduncles. Calyx four-parted. Corolla none. Style bifid, with simple stigmas. Berry yellow, two-lobed, one-seeded, esculent. Seed roundish, not arilled.

Both species are natives of Cochinchina, in woods and hedges; and are not easily distinguished unless when they are in flower.

SALVIA. (From *salvere*; on account of its healing qualities.)

Lin. gen. n. 39. Reich. n. 42. Schreb. n. 50. Tournef. t. 83. Juss. III. Gært. t. 66. Horminum. Tournef. t. 82. Sclarea. Tournef. t. 82.

Class. 2. 1. Diandria Monogynia.

Nat order of *Verticillatae*. *Labiatae*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, striated, gradually widening and compressed at the top: mouth erect, two-lipped; lower lip two-toothed.

COR. one-petalled, unequal: tube widening at the top, compressed; border ringent, upper lip concave, compressed, curved inwards, emarginate, lower lip wide, trifid, middle segment larger, roundish, emarginate.

STAM. Filaments two, very short; two threads are fastened transversely to these almost in the middle, on the lower extremity of which is a gland, on the upper an Anther.

PIST. Germ four-cleft. Style filiform, very long, in the same situation with the stamens. Stigma bifid.

PER. none. Calyx very slightly converging, having the seeds in the bottom of it.

SEEDS four, roundish.

OBS. The singular forking of the filaments constitutes the essential character.

Rudiments of two stamens, but barren ones, in the opening of the corolla. Gland in most species callous, but in a few a sort of rudiment of an anther with little or no pollen occurs. (The gland is one cell of the anther, commonly sterile; connected with the other cell fertile, having an antheraceous membrane lengthened out into a thread.)

Salvia Tournef. has the upper lip sickle-shaped or vaulted; the lower flat or bent back on the sides.

Horminum Tournef. has the upper lip ascending, short; the lower with the middle segment concave.

Sclarea Tournef. has the upper lip erect, sickle-shaped; the lower lip with the middle segment concave.

#### ESSENTIAL CHARACTER.

Cor. unequal. Filam. fastened transversely to a pedicel.

#### SPECIES.

[1. Salvia ægyptiaca. Egyptian Sage.

Lin. spec. 33. syst. 68. Reich. 1. 61. Willd. 1. 127. hort. cliff. 13. Gouan illustr. 2. Jacqu. hort. 2. 49. t. 108. Etling. salv. 22. Vahl, symb. 1. 7. Desfont. atlant. 19.

Melissa perennis. Forsk. descr. 108. n. 30.

Horminum ægyptium minimum ramosissimum. Lipp. Boerb. lugdb. 1. 66.

Leaves lanceolate toothletted, flowers peduncled.

2. Salvia dentata. Tooth-leaved Sage.

Ait. kew. 1. 37. Lin. spec. ed. Willd. 1. 128.

Leaves linear-oblong tooth-pinnatifid, whorls two-flowered, calycine segments blunt.

3. Salvia cretica. Cretan Sage.

Lin. spec. 33. Reich. 1. 61. Willd. 1. 128. Schreb. nov. act. acad. nat. cur. 3. 479. Etling. salv. n. 3. Willd. arb. 352. Pluk. phyt. t. 57. f. 1.

S. cretica angustifolia. Clus. hist. 1. 343.

• Loureiro.

S. tenuifolia. Riv. mon. t. 128.

Leaves linear-lanceolate, flowers two-styled, calyxes two-leaved.

4. Salvia lyrata. Lyre-leaved Sage.

Lin. spec. 33. syst. 69. Reich. 1. 61. Willd. 1. 128. mant. 318. Etling. salv. n. 25. Gron. virg. 8.

β. H. virginicum. Lin. spec. 832. Mor. hist. 3. 395. f. 11. t. 13. f. 27.

Melissa atrorubens bugulæ folio. Dill. elth. 219. t. 175. f. 216.

Sideritis bugulæ folio mariana, floribus purpureis longo tubo donatis. Pluk. mant. 171.

Root-leaves lyrate toothed, helmet of the corolla very short.

5. Salvia leucantha.

Lin. spec. ed. Willd. 1. 129. Cavan. ic. rar. 1. 16. n. 22. t. 24.

Leaves linear-lanceolate crenulate wrinkled, flowers whorl-spiked, calyxes tomentose.

6. Salvia habliziana.

Lin. spec. ed. Willd. 1. 129.

S. taurica. Habliz. taur. 207. n. 33.

Leaves linear quite entire pubescent sessile, flowers whorl-spiked, bractes ovate acuminate.]

7. Salvia officinalis. Garden Sage.

Lin. spec. 34. Reich. 1. 62. Willd. 1. 129. hort. cliff. 12. ups. 10. mat. med. 39. Woodv. med. bot. 110. t. 38. Etling. salv. n. 1. Hoffm. germ. 1. Allion. pedem. n. 51. Krock. filef. n. 46. Villars, dauph. 2. 402. Desfont. atlant. 20. Blackw. t. 10. Berg. phyt. 2. 89. Plenck, ic. 19.

α. S. major. Common or great Garden Sage.

Bauh. pin. 237. Matth. 709. Dod. pempt. 290. 1. Tabern. ic. 370. Fuch. hist. 248. Lob. ic. 554. Ger. 623. 1. emac. 764. 1.—vulgaris. Park. theat. 49. f. 1.

S. latifolia. Trag. 52. Camer. epit. 475. Bauh. hist. 3. 304. Raii hist. 509. Rivin. mon. t. 71.

β. Salvia minor aurita & non aurita. Bauh. pin. 237. Blackw. t. 71. Gmel. fib. 3. 226.

Leaves lanceolate-ovate crenulate, whorls few-flowered, calyxes mucronate.

8. Salvia grandiflora. Broad-leaved garden Sage.

Lin. spec. ed. Willd. 1. 130. Etling. salv. n. 2.

S. tomentosa. Mill. dict. n. 2.

S. flore magno. Riv. mon. t. 127.

β. S. latifolia serrata. Bauh. pin. 237.

S. serrata crispa. Bauh. hist. 3. 305. Mor. hist. 3. 399. f. 11. t. 15. f. 7. Raii hist. 510. 5.

S. crispa. Riv. mon. t. 126.

S. maxima f. latifolia. Park. theat. 49. 2.

Leaves cordate-oblong crenate, whorls many-flowered, calyxes acute.

9. Salvia triloba. Three-lobed Sage or Sage of Virtue.

Lin. suppl. 88. spec. ed. Willd. 1. 130. Ait. kew. 1. 38.

S. auriculata. Mill. dict. n. 3.

S. minor. Ger. 623. 2. emac. 764. 2. Raii hist. 510. 7.

S. baccifera. Etling. salv. n. 4. Bauh. pin. 237. Riv. mon. t. 125. Tournef. inst. 181.

S. quinquefolia. Riv. mon. t. 131.

S. cretica baccifera. Camer. epit. 476.

S. gallifera cretica. Bauh. hist. 3. 306.

S. cretica pomifera. Clus. hist. 343. Ger. emac. 765. f. 8. Raii hist. 511. 10. Mor. hist. f. 11. t. 15. f. 4.

Pluk. phyt. t. 57. f. 2.

S. pomifera & minor pinnata. Park. theat. 50. f. 1. 4. Tomentose, leaves petioled very much wrinkled three-lobed, the middle lobe produced oblong, the lateral ones ovate blunt.

10. Salvia pomifera. Apple-bearing Sage.

Lin. spec. 34. Reich. 1. 62. Willd. 1. 130. arb. 353.

S. fragifera. Etling. salv. n. 5.

S. cretica non pomifera & pomifera Clusii. Mor. hist. 3. 399. n. 4.

S. cret. frutescens pomif. foliis longioribus incanis & crispis. Tournef. cor. 10. itin. 1. 92. t. 92.

S. crispa. Riv. mon. t. 125.

Leaves cordate elliptic blunt tomentose crenulate-waved at the edge, whorls in clusters, calyxes trifid blunt.

[11. Salvia



- [11. *Salvia urticifolia*. *Nettle-leaved Sage*.  
*Lin. spec.* 34. *fyft.* 69. *Reich.* 1. 62. *Willd.* 1. 131.  
*Etling. salv. n.* 23. *Gron. virg.* 8.  
*Horminum virginianum erectum urticæ foliis flore minore.* *Mor. hist.* 3. 395. *f.* 11. *t.* 13. *f.* 31.  
*Leaves ovate-oblong doubly-ferrate, calyxes three-toothed, upper segment three-toothed.*
12. *Salvia occidentalis*. *West-Indian Sage*.  
*Lin. spec. ed. Willd.* 1. 131. *Swartz, prodr.* 14. *descr.* 43. *Brown. jam.* 117. 1.  
*Leaves ovate ferrate, spikes loose, bractes cordate subtriflorous.*
13. *Salvia tiliaefolia*. *Lime-leaved Sage*.  
*Lin. spec. ed. Willd.* 1. 131. *Vahl symb.* 3. 7.  
*S. polytachya.* *Cavan. ic.* 1. 17. *n.* 25. *t.* 27?  
*Leaves cordate wrinkled equally-crenate ferrate acute, calyxes smoothish awned.*
14. *Salvia ferotina*. *Late-flowering Sage*.  
*Lin. fyft.* 69. *Reich.* 1. 62. *Willd.* 1. 131. *mant.* 25. *Jacqu. collect.* 1. 140. *icon. rar.* 1. *t.* 3.  
*Etling. salv. n.* 12. *Ard. spec.* 1. 10. *t.* 1.  
*Leaves cordate ferrate soft, flowers raceme-spiked, corollas scarcely exceeding the calyx.*
15. *Salvia tenella*.  
*Lin. spec. ed. Willd.* 1. 132. *Swartz, prodr.* 14. *ic.* *t.* 2. *descr.* 45.  
*Leaves cordate, stem filiform creeping, spikes ascending.]*
16. *Salvia viridis*. *Green-topped Sage*.  
*Lin. spec.* 34. *fyft.* 69. *Reich.* 1. 63. *Willd.* 1. 132. *hort. upf.* 11. *Etling. salv. n.* 17. *Jacqu. misc.* 2. 366. *icon. rar.* 1. *t.* 4. *Desfont. atlant.* 20. *t.* 1. *Kniph. orig.* 8. *n.* 80. *Allion. pedem.* *n.* 53.  
*Horminum coma viridi.* *Tournef. inst.* 178.  
*H. fativum; var. 3.* *Mill. dict.*  
*Leaves oblong crenate, helmet of the corolla semiorbicular, fruiting calyxes reflex.*
17. *Salvia Horminum*. *Red-topped Sage*.  
*Lin. spec.* 34. *Reich.* 1. 63. *Willd.* 1. 132. *vir. cliff.* 4. *hort. cliff.* 11. *mat. med.* 40. *Etling. salv. n.* 16. *Plenck, ic.* *t.* 20. *Allion. pedem. n.* 52.  
*Horminum fativum.* *Baub. pin.* 238. *Mill. dict.* *n.* 5. *Raii hist.* 542.—*genuinum fativum Dioscorides.* *Park. theat.* 55. *n.* 2.  
*H. verum Matthioli.* *Gefn. fasc.* 17. *t.* 11. *f.* 21.  
*H. sylvestre foliis purpureis.* *Ger.* 628. 2. *emac.* 771. 2.  
*H. coma purpureo-violacea.* *Tournef. inst.* 178.  
*H. creticum.* *Alp. exot.* 113. *Barr. obs.* 226. *ic.* 1233.  
*Horminum.* *Dod. pempt.* 293. *Lob. ic.* 555. *Tabern. hist.* 764.  
*Sclarea minor coma violacea.* *Buxb. cent.* 4. 24. *t.* 39. *f.* 2.  
*Purple-topped Sage or Clary.*
- β. *Horminum coma rubra.* *Baub. hist.* 3. 309. *Tournef. inst.* 178. *Riv. mon. t.* 59. *f.* 2. *Raii hist.* 542. 2.  
*Red-topped Sage.*  
*Leaves obtuse crenate, upper bractes barren larger coloured.*
- [18. *Salvia virgata*. *Long-branched Sage*.  
*Lin. spec. ed. Willd.* 1. 133. *Ait. kew.* 1. 39. *Jacqu. hort.* 1. 14. *t.* 37. *Etling. salv. n.* 43.  
*Horminum creticum.* *Riv. mon. t.* 63.  
*Sclarea orientalis verbasci, folio, flore partim albo partim flavescente.* *Tournef. cor.* 10.  
*Leaves oblong cordate wrinkled crenate, hairs of the stem and calyx glandular at the tip.]*
19. *Salvia sylvestris*. *Spotted-stalked Bohemian Sage*.  
*Lin. spec.* 34. *fyft.* 69. *Reich.* 1. 63. *Willd.* 1. 133. *Ait. kew.* 1. 39. *Etling. salv. n.* 37. *Scop. carn. n.* 32. *Crantz. austr.* 241. *Jacqu. austr.* 3. 7. *t.* 212. *Roth. germ.* 1. 11. 2. 29. *Hoffm. germ.* 9. *Krock. filef. n.* 43. *Allion. pedem. n.* 54.  
*Sclarea sylvestris.* *Mill. dict.* *n.* 7.  
*Horminum sylvestre salvifolium majus maculatum.* *Baub. pin.* 239.  
*H. sylvestre 5 altera species.* *Clus. hist.* 2. 31.  
*Leaves cordate wrinkled biserrate, bractes coloured shorter than the flower acuminate, hairs of the stem and calyx simple.*

20. *Salvia nemorosa*. *Spear-leaved Sage*.  
*Lin. spec.* 35. *Reich.* 1. 64. *Willd.* 1. 134. *Roth. germ.* 1. 11. 2. 30. *Hoffm. germ.* 9. *Zinn. goett.* 297. *Gmel. fib.* 3. 226.  
*Sclarea nemorosa.* *Mill. dict.* *n.* 6.  
*S. folio salviæ, minor f. glabra.* *Tournef. inst.* 180.  
*Horminum sylvestre salvifolium minus.* *Baub. pin.* 239.  
*Leaves cordate lanceolate ferrate flat, bractes coloured, lower lip of the corolla reflex.*
21. *Salvia syriaca*. *Syrian Sage*.  
*Lin. spec.* 36. *fyft.* 69. *Reich.* 1. 64. *Willd.* 1. 134. *Etling. salv. n.* 31. *Retz. obs.* 3. 7. *n.* 2.  
*Sclarea syriaca.* *Mill. dict.* *n.* 5.—*flore cæruleo.* *Tournef. inst.* 180.  
*Horminum syriacum.* *Baub. pin.* 238. *prodr.* 114. *ic.* *Leaves cordate toothed, the lower repand, bractes cordate short acute, calyxes tomentose.*
- [22. *Salvia viscosa*. *Clammy Sage*.  
*Lin. fyft.* 69. *Willd.* 1. 134. *Jacqu. misc.* 2. 328. *ic. rar.* 1. *t.* 5. *Ait. kew.* 1. 40.  
*Leaves oblong blunt erose-crenate viscid, flowers in whorls, bractes cordate acute.]*
23. *Salvia hæmatodes*. *Bloody Sage*.  
*Lin. spec.* 35. *fyft.* 69. *Reich.* 1. 64. *Willd.* 1. 135. *Etling. salv. n.* 34. *Scop. carn. n.* 36.  
*Horminum sanguineum asphodeli radice.* *Triumph. obs.* 69. *t.* 69.  
*H. sylvestre majus hæmatodes glabrum, flore cæruleo, italicum.* *Barr. rar.* 234. *t.* 185.  
*H. sylv. maculatum tuberosum.* *Mor. hist.* 3. 394. *f.* 11. *t.* 14. *f.* 15.  
*Sclarea asphodeli radice.* *Tournef. inst.* 179.  
*S. tuberosa.* *Mill. dict.* *n.* 12.  
*Leaves cordate-ovate wrinkled tomentose, calyxes hispid, root tuberos.*
24. *Salvia pratensis*. *Meadow Sage or Clary*.  
*Lin. spec.* 35. *Reich.* 1. 65. *Willd.* 1. 135. *fl. succ. n.* 32. *hort. cliff.* 12. *upf.* 10. *Etling. salv. n.* 40. *Huds. angl.* 10. *Wither. arr. ed.* 3. 21. *Smith. brit.* 30. *engl. bot. t.* 153. *Sibth. oxon. n.* 20. *Abbot, bedf.* 6. *Hall. belv. n.* 253. *Roth. germ.* 1. 12. 2. 30. *Hoffm. germ.* 9. *Pollich pal. n.* 28. *Crantz. austr.* 243. *Pallas it.* 1. 73. *Villars dauph.* 2. 403. *Krock. filef. n.* 42. *Allion. pedem. n.* 55. *Blackw. t.* 258. *Berg. phyt.* 2. *t.* 95. *Plenck, ic.* *t.* 22.  
*Sclarea pratensis.* *Mill. dict.* *n.* 4.—*foliis ferratis flore cæruleo.* *Tournef. inst.* 180. *Dill. in Raii syn.* 237.  
*Horminum pratense.* *Riv. mon. t.* 36.—*foliis serratis.* *Baub. pin.* 238. *Raii hist.* 544. 8.  
*H. sylvestre.* *Fuchs. hist.* 569. *Camer. epit.* 629. *Ger. emac.* 769. 3.—*vulgare.* *Park. theat.* 55. *n.* 5.  
*Orvala sylvestris species quarta.* *Dod. pempt.* 293.  
*Gallitrichum sylvestre.* *Mor. hist.* 3. 393. *f.* 11. *t.* 13. *f.* 10.  
 β. *Sclarea major, foliis in profundas lacinias incis.* *Tournef. inst.* 179.  
*Horminum sylvestre foliis profundius incis.* *Baub. pin.* 239.  
 γ. *Salvia agrestis.* *Lin. amoen.* 3. 399. *Villars dauph.* 2. 402.  
*Horminum pratense niveum foliis incanis.* *Baub. pin.* 238.  
*Leaves cordate-oblong crenate, the upper ones embracing, whorls almost naked, corollas having a glutinous helmet.*
- [25. *Salvia bicolor*. *Two-coloured Sage*.  
*Lin. spec. ed. Willd.* 1. 136. *Desfont. in Fourcroy journ.* 3. 1792. *n.* 20. *atlant.* 22. *t.* 2. *Lamarck, illustr. n.* 300.  
*Leaves ovate erose-toothed, flowers nodding, the middle segment of the lower lip of the corolla concave.]*
26. *Salvia indica*. *Indian Sage or Clary*.  
*Lin. spec.* 37. *fyft.* 69. *Reich.* 1. 65. *Willd.* 1. 136. *mant.* 318. *Jacqu. hort.* 1. 33. *t.* 78. *Etling. salv. n.* 39. *Curt. mag.* 395.  
*Sclarea indica.* *Mill. dict.* *n.* 9.—*floribus variegatis.* *Tournef. inst.* 179.  
*Horminum hirsutum flore violaceo punctis aureis notato.* *Mor. hist.* 3. *f.* 11. *t.* 13. *f.* 16.



- Leaves cordate sublobed at the sides, the upper ones sessile, whorls almost naked very remote.
27. *Salvia dominica*. *Dominica Sage*.  
*Lin. spec.* 35. *Reich.* 1. 66. *Willd.* 1. 137. *Swartz*,  
*obs.* 18. t. 1. f. 1. *Mill. dict.* n. 9.  
 Leaves cordate obtuse crenate subtomentose, corollas narrower than the calyx.
28. *Salvia verbenaca*. *Vervain Sage* or *Clary*.  
*Lin. spec.* 35. *syft.* 70. *Reich.* 1. 66. *Willd.* 1. 137.  
*vir. cliff.* 17. *hort. cliff.* 12. *Etling. salv. n.* 19.  
*Huds. angl.* 10. *Wither. arr. ed.* 3. 21. *Smith*,  
*brit.* 31. *engl. bot. t.* 154. *Curt. lond.* 6. t. 1.  
*Relb. cant. n.* 20. *Sibth. oxon. n.* 21. *Abbot*,  
*bedf.* 7. *Hoffm. germ.* 10. *Roth. germ.* 1. 12. 2.  
 32. *Sauv. monsp.* 278. *Ger. prov.* 258. n. 4.  
*Villars dauph.* 2. 404. *Allion. pedem. n.* 56.  
*Desfont. atlant.* 21. *Gron. virg.* 8. *Berg. phyt.*  
 2. 99. *Blackw.* 258.  
*Horminum verbenaceum*. *Mill. dict.* n. 1.  
*H. sylvestre lavandulae flore*. *Baub. pin.* 239. *Raii*  
*hist.* 545. *syn.* 237. *Park. theat.* 57. 8. *Mor. hist.*  
*f.* 11. t. 14. f. 33.  
*H. sylvestre*. *Ger. emac.* 771. 1.  
*H. sylv. minus, inciso folio, flore azureo*. *Barr. ic.*  
 208.  
*H. verbenacae laciniis angustifolium*. *Triumph. obs.* 66.  
 t. 66.  
*H. filv. quarti quinta species*. *Clus. hist.* 2. 31. f. 1.  
 Leaves serrate sinuate smoothish, corollas narrower than  
 the calyx.
- [29. *Salvia scabra*. *Rugged Sage*.  
*Lin. syft.* 72. *Willd.* 1. 137. *suppl.* 89.  
 Rugged, leaves lyrate toothed wrinkled, stem panicle-  
 branched.
30. *Salvia runcinata*. *Runcinate-leaved Sage*.  
*Lin. syft.* 72. *Willd.* 1. 138. *suppl.* 89.  
 Rugged, leaves runcinate-pinnatifid toothed, flowers spiked  
 whorled.]
31. *Salvia clandestina*. *Cut-leaved Sage*.  
*Lin. spec.* 36. *syft.* 70. *Reich.* 1. 66. *Willd.* 1. 138.  
*Etling. salv. n.* 20. *Zinn. goett.* 198. *Desfont.*  
*atlant.* 23.  
*Horminum lyratum*. *Mill. dict.* n. 2.  
*H. sylvestre, inciso folio, caesio flore, italicum*. *Barr.*  
*rar.* 24. t. 220.  
 Leaves serrate pinnatifid very much wrinkled, spike obtuse,  
 corollas narrower than the calyx.
- [32. *Salvia austriaca*. *Austrian Sage*.  
*Lin. syft.* 69. *Willd.* 1. 138. *Ait. kew.* 1. 41.  
*Etling. salv. n.* 41. *Crantz, austr.* 4. 238. *Jacqu.*  
*austr.* 2. 8. t. 112.  
 Leaves ovate and cordate erose-sinuate, root-leaves pe-  
 tioled, stem almost leafless, stamens double the length of  
 the corolla.
33. *Salvia pyrenaica*. *Pyrenean Sage*.  
*Lin. spec.* 36. *Reich.* 1. 67. *Willd.* 1. 138. *Etling.*  
*salv. n.* 42.  
*Horminum pyrenaicum glutinosum anguriae folio*.  
*Herm. par.* 187. t. 187.  
*Sclarea pyrenaica glutinosa, foliis sinuatis*. *Tournef.*  
*inst.* 179.  
 Leaves obtuse erose, stamens double the length of the corolla.
34. *Salvia difermas*. *Long-spiked Sage*.  
*Lin. spec.* 36. *syft.* 70. *Reich.* 1. 67. *Willd.* 1. 139.  
*mant.* 318. *Etling. salv. n.* 32. *Arduin. spec.* 1. 9.  
 t. 1. *Allion. hort.* 49. n. 4. *Retz. obs.* 3. 7. n. 4.  
*Horminum sylvestre majus flore albo, integris foliis*.  
*Barr. ic.* 187.  
 Leaves cordate-oblong erose, stamens equal to the corolla.
35. *Salvia rugosa*. *Wrinkled-leaved Sage*.  
*Lin. spec. ed. Willd.* 1. 139. *Ait. kew.* 1. 42.  
 Leaves cordate oblong-lanceolate erose-crenate wrinkled  
 somewhat hairy, stamens shorter than the corolla.
36. *Salvia nubia*. *Nubian Sage*.  
*Lin. syft.* 70. *Willd.* 1. 139. *Murr. comm. gott.*  
 1778. p. 90. t. 3. *Ait. kew.* 1. 42.  
 Leaves oblong subcordate unequilateral wrinkled crenate  
 sometimes eared at the base.
37. *Salvia nilotica*. *Nile Sage*.  
*Lin. syft.* 70. *Willd.* 1. 140. *Murr. comm. gott.*  
 1778. p. 88. t. 2. *Jacqu. hort.* 3. t. 92. *Retz.*  
*obs.* 3. 7. n. 3.

- Leaves sinuate angular crenate-toothed, teeth of the ca-  
 lyxes spiny, angles and margin of the aperture ciliate.]
38. *Salvia mexicana*. *Mexican Sage*.  
*Lin. spec.* 37. *Reich.* 1. 67. *Willd.* 1. 140. *hort.*  
*cliff.* 13. *Etling. salv. n.* 35. *Cavan. ic.* 1. 16.  
 n. 24. t. 26.  
*Sclarea mexicana*. *Mill. dict.* n. 14.—altissima, facie  
*heliotropii*. *Dill. elth.* 339. t. 254. f. 330.  
 Leaves ovate, acuminate at both ends, serrate.
- [39. *Salvia amethystina*. *Amethystine Sage*.  
*Smith ic. ined.* 2. 27. t. 27. *Willd. spec.* 1. 140.  
 Leaves cordate acute serrate woolly beneath, whorls naked,  
 calyxes trifid, corollas pubescent.
40. *Salvia fulgens*. *Fulgid Sage*.  
*Lin. spec. ed. Willd.* 1. 140. *Cavan. ic.* 1. 15. n. 21.  
 t. 23.  
 Leaves cordate acute crenate wrinkled tomentose beneath,  
 whorls naked, calyxes trifid, helmet of the corollas  
 villose.
41. *Salvia formosa*. *Shining-leaved Sage*.  
*Lin. spec. ed. Willd.* 1. 140. *L'Herit. stirp.* 1. 41.  
 t. 21. *Ait. kew.* 1. 43. *Curt. magaz.* 376.  
*S. Leonuroides*. *Gloxin obs. bot.* 15. t. 2.  
 Leaves subcordate, helmet of the corollas bearded, calyxes  
 three-lobed, stem frutescent.
42. *Salvia tubiflora*. *Long-tubed Sage*.  
*Smith ic. ined.* 2. 26. t. 26. *Willd. spec.* 1. 141.  
 Leaves cordate crenate somewhat hairy, calyxes trifid,  
 corollas very long tubular, stamens standing out.
43. *Salvia longiflora*. *Long-flowered Sage*.  
*Lin. spec. ed. Willd.* 1. 141.  
*S. tubifera*. *Cavan. ic.* 1. 16. n. 23. t. 25.  
 Leaves ovate acute serrate pubescent, calyxes trifid, co-  
 rollas very long tubular pubescent, stamens the length of  
 the corolla.
44. *Salvia coccinea*. *Scarlet-flowered Sage*.  
*Lin. syft.* 71. *Willd.* 1. 141. *suppl.* 88. *Murr.*  
*comm. gott.* 1778. p. 86. t. 1. *Etling. salv. n.* 11.  
*Ait. kew.* 1. 43.  
 Leaves cordate acute tomentose serrate, corollas narrower  
 than the calyx and twice as long.
45. *Salvia pseudococcinea*.  
*Lin. spec. ed. Willd.* 1. 141. *Jacqu. collect.* 2. 302.  
*ic. rar.* 2. t. 209.  
 Leaves ovate acute serrate unequal at the base, stem hairy,  
 corollas double the length of the calyx.
46. *Salvia hispanica*. *Spanish Sage*.  
*Lin. spec.* 37. *Reich.* 1. 67. *Willd.* 1. 141. *Gartn.*  
*fruct.* 1. 316. *Etling. salv. n.* 18. *Scop. carn.*  
 n. 35. *Allion. pedem. n.* 58. *Kniph. orig. t.* 2.  
 n. 78. *Sabb. hort. rom.* 3. t. 22. *Ard. spec.* 10.  
 t. 2.  
*Sclarea hispanica*. *Tabern. hist.* 764. *ic.* 374.  
 Leaves ovate, petioles mucronate each way, spikes imbricate,  
 calyxes trifid.
47. *Salvia abyssinica*. *Abyssinian Sage*.  
*Lin. spec. ed. Willd.* 1. 142. *Jacqu. collect.* 1. 132.  
*ic. rar.* 1. t. 6. *Ait. kew.* 1. 43.  
 Lower leaves lyrate, upper cordate, flowers in whorls,  
 calyxes mucronate ciliate.]
48. *Salvia verticillata*. *Whorl-flowered Sage*.  
*Lin. spec.* 37. *syft.* 70. *Reich.* 1. 68. *Willd.* 1. 142.  
*hort. cliff.* 495. *ups.* 11. *Etling. salv. n.* 247.  
*Hoffm. germ.* 10. *Roth. germ.* 1. 12. 2. 32. *Scop.*  
*carn. n.* 34. *Crantz. austr.* 241. *Kniph. orig.* 6.  
 t. 79. *Hall. belv. n.* 251. *Berg. phyt.* 2. 91.  
*Horminum verticillatum*. *Mill. dict.* n. 3.  
*H. sylvestre latifolium verticillatum*. *Baub. pin.* 338.  
*H. sylvestre tertium*. *Clus. hist.* 2. 29.  
*H. spurium*. *Riv. mon. t.* 60.  
 β. *Horminum sylvestre hirsutum, lampanae folio, flore*  
*caesio*. *Barrel. ic.* 199.  
*H. folio rapi*. *Buxb. cent.* 5. *app.* 43. f. 23.  
*H. napifolium*. *Mill. dict.* n. 4.  
 Leaves cordate crenate-toothed, whorls almost naked, style  
 of the corolla incumbent on the lower lip.
- [49. *Salvia napifolia*. *Rape-leaved Sage*.  
*Lin. spec. ed. Willd.* 1. 143. *Etling. salv. n.* 13.  
*Jacqu. hort.* 2. 71. t. 152. *Ait. kew.* 1. 44.  
 Leaves cordate crenate-toothed, lower ones hastate and  
 lyrate, whorls almost naked, upper lip shorter.]
50. *Salvia*



50. *Salvia glutinosa*. Yellow Sage or Clary.  
*Lin. spec.* 37. *fyst.* 70. *Reich.* 1. 68. *Willd.* 1. 143. *mant.* 319. *hort. cliff.* 13. *upf.* 11. *Etling. salv. n.* 38. *Hoffm. germ.* 10. *Roth. germ.* 1. 12. 2. 33. *Hall. herb. n.* 252. *Scop. carn. n.* 33. *Crantz. austr.* 239. *Jacqu. vind.* 5. *Sauv. monsp.* 146. *Villars dauph.* 2. 404. *Krock. files. n.* 44. *Allion. pedem. n.* 59. *Berg. phyt.* 2. 97.  
*Sclarea glutinosa*. *Mill. dict. n.* 11.  
*Horminum flore luteo*. *Riv. mon. t.* 57. *Mor. hist.* 3. 394. *f.* 11. *t.* 13. *f.* 18.  
*H. luteum glutinosum*. *Baub. pin.* 238. *Raii hist.* 547. 24.  
*H. sylvestre secundum*. *Clus. hist.* 2. 29. *Lob. ic.* 557.  
*H. luteum f. Colus Jovis*. *Park. theat.* 58. 12.  
*Colus Jovis Lobelii*. *Dalech. hist.* 966. *Ger.* 627. 3. *emac.* 769. 4.  
*Orvala tertia*. *Dod. pempt.* 292. *f.* 3, 4.  
*Galeopsis lutea viscida, & odorata nemorensis*. *Baub. hist.* 3. 314.  
*G. lutea*. *Dalech. hist.* 1248. *Park. theat.* 608. *n.* 3. *Leaves cordate-fagittate serrate acute.*  
[51. *Salvia Barrelieri*.  
*Lin. spec. ed. Willd.* 1. 143. *Etling. salv. n.* 46.  
*H. sylvestre majus, hastato folio, flore caesio hispido*. *Barr. rar.* 236. *t.* 186.  
*H. majus hastato f. lapathi unctuosi foliis*. *Mor. hist.* 3. 393.  
*Sclarea folio triangulari dentato*. *Tournef. inst.* 180. *Leaves unequally toothed acuminate cordate angular-hastate at the base, whorls almost naked.*  
52. *Salvia canariensis*. Canary Sage.  
*Lin. spec.* 38. *fyst.* 71. *Reich.* 1. 68. *Willd.* 1. 144. *mant.* 319. *hort. cliff.* 13. *upf.* 10. *Etling. salv. n.* 36. *Kniph. orig.* 6. *t.* 77. *Pluk. phyt.* *t.* 301. *f.* 2.  
*Horminum folio hastato*. *Riv. mon. t.* 61.  
*H. canar. tomentosum, hastato folio*. *Mor. hist.* 3. 94. *f.* 11. *t.* 13. *f.* 17.  
*Sclarea tomentosa*. *Mill. dict. n.* 13.  
*S. folio triangulari, caule tomentoso*. *Tournef. inst.* 180.  
*Leaves hastate-triangular oblong crenate obtuse.*  
[53. *Salvia aurita*. Eared Sage.  
*Lin. fyst.* 72. *Willd.* 1. 144. *suppl.* 88.  
*Villose, leaves ovate toothed eared, flowers whorl-spiked.*  
54. *Salvia africana*. Blue-flowered African Sage.  
*Lin. spec.* 38. *Reich.* 1. 69. *Willd.* 1. 144. *hort. cliff.* 13. *Etling. salv. n.* 7. *Comm. hort.* 2. 181. *t.* 91.  
*Leaves roundish serrate, truncate and toothed at the base.*  
55. *Salvia aurea*. Gold-flowered African Sage.  
*Lin. spec.* 38. *fyst.* 71. *Reich.* 1. 69. *Willd.* 1. 145. *hort. cliff.* 13. *Etling. salv. n.* 9. *Comm. hort.* 2. 183. *t.* 92. *Curt. magaz.* 182.  
*Leaves roundish quite entire, truncate and toothed at the base.*  
56. *Salvia colorata*. Coloured-calyx African Sage.  
*Lin. fyst.* 71. *Reich.* 1. 69. *Willd.* 1. 145.  
*S. integerrima*. *Mill. dict. n.* 12. *fig.* 150. *t.* 225. *f.* 2.  
*Horminum africanum frutescens, cisti feminæ foliis subrotundis*. *Mor. hist.* 3. *f.* 11. *t.* 16. *f.* ult.  
*Leaves elliptic almost quite entire tomentose, border of the calyx membranaceous coloured.*  
57. *Salvia paniculata*. Panicked African Sage.  
*Lin. fyst.* 71. *Reich.* 1. 69. *Willd.* 1. 145. *mant.* 25. & 511. *Etling. salv. n.* 10.  
*S. chamæleagna*. *Berg. cap.* 3.  
*S. minor æthiopica, foliis chamæleagni asperis*. *Breyn. cent.* 169. *t.* 5. *Mor. hist.* 3. *f.* 11. *t.* 16. *f.* 1. *Mill. fig.* 150. *t.* 225. *f.* 1.  
*Leaves obovate-wedge-form toothletted naked, stem frutescent.*  
[58. *Salvia acetabulosa*.  
*Lin. fyst.* 71. *Reich.* 1. 70. *Willd.* 1. 145. *mant.* 25. *Etling. salv. n.* 6. *Gron. orient.* 10.  
*S. syriaca, cisti feminæ foliis, acetabulis Moluccæ*. *Mor. hist.* 3. 399.  
*S. orientalis frutescens, foliis circinatis, acetabulis Moluccæ*. *Tournef. cor.* 10.

- Leaves obovate toothed, calyxes bell-shaped, spreading hairy, stem shrubby.*  
59. *Salvia spinosa*. Thorny-calyxed Sage.  
*Lin. fyst.* 71. *Reich.* 1. 70. *Willd.* 1. 146. *mant.* 511. *Etling. salv. n.* 29. *Jacqu. collect.* 1. 139. *ic. rar.* 1. *t.* 7.  
*S. ægyptiaca*. *Lin. mant.* 26.  
*Horminum syriacum*. *Baub. pin.* 238. *prodr.* 114. *Mor. hist.* 3. 392. *f.* 11. *t.* 16. *f.* 2.  
*Leaves oblong repand, calyxes spiny, bractes cordate mucronate concave.*  
60. *Salvia tingitana*. Tangier Sage.  
*Lin. spec. ed. Willd.* 1. 147. *Etling. salv. n.* 30.  
*Horminum tingitanum*. *Riv. mon. t.* 62.  
*Sclarea tingitana foetidißima hirsuta, flore albo*. *Tournef. inst.* 179.  
*Leaves cordate erose-toothed, calyxes spiny, bractes quite entire cordate mucronate concave ciliate.*  
61. *Salvia Sclarea*. Common Clary.  
*Lin. spec.* 38. *Reich.* 1. 71. *Willd.* 1. 147. *hort. cliff.* 12. *upf.* 10. *mat. med.* 10. *Etling. salv. n.* 27. *Hoffm. germ.* 10. *Roth. germ.* 2. 33. *Guet. stamp.* 263. *Villars dauph.* 2. 405. *Allion. pedem. n.* 60. *Ludw. est. t.* 171. *Berg. phyt.* 2. 93. *Plenck, ic.* 21.  
*Sclarea Tabern. ic.* 373. *Matth.* 889. *Tournef. inst.* 179. *Garid.* 433.  
*S. vulgaris*. *Lob. ic.* 556. *Blackw. t.* 122. *Mill. dict. n.* 1.  
*Horminum Sclarea dictum*. *Baub. pin.* 238. *Raii hist.* 543. 3. *Mor. hist. f.* 11. *t.* 16. *f.* 1. *ord.* 3.  
*H. sylvestre* 1. *Clus. hist.* 2. 28. *f.* 2.  
*H. fativum vulgare f. Sclarea*. *Park. theat.* 55. 1.  
*Gallitricum*. *Ger.* 626. — *f. Horminum*. *Ger. emac.* 768. 1.  
*G. fativum*. *Baub. hist.* 3. 309.  
*Orvala*. *Dod. pempt.* 292.  
*Leaves wrinkled cordate oblong villose serrate, floral bractes longer than the calyx concave acuminate.*  
[62. *Salvia involucrata*.  
*Lin. spec. ed. Willd.* 1. 147. *Cavan. ic.* 2. 114. *t.* 105.  
*Leaves ovate-lanceolate serrate, flowers in terminating spikes, bractes very large coloured.*  
63. *Salvia ceratophylla*. Horn-leaved Sage.  
*Lin. spec.* 39. *Reich.* 1. 71. *Willd.* 1. 148. *hort. cliff.* 13. *upf.* 10. *Etling. salv. n.* 44. *Kniph. orig.* 6. *t.* 78. *Pluk. phyt. t.* 194. *f.* 5. *Herm. par.* 186. *Mor. hist.* 3. 393. *f.* 11. *t.* 13. *f.* 6. (*Horminum*.)  
*Sclarea ceratophylla*. *Mill. dict. n.* 8.  
*Leaves wrinkled pinnatifid woolly, upper whorls barren.*  
64. *Salvia Æthiopis*. Woolly Sage or Clary.  
*Lin. spec.* 39. *fyst.* 71. *Reich.* 1. 71. *Willd.* 1. 148. *hort. cliff.* 13. *Etling. salv. n.* 28. *Gouan monsp.* 469. *illustr.* 2. *Jacqu. austr.* 3. 7. *t.* 211. *Crantz, austr.* 238. *Ger. prov.* 259. *Villars, dauph.* 2. 405. *Allion. pedem. n.* 61. *Sabb. hort. rom.* 3. *t.* 23. *Desfont. atlant.* 24.  
*Sclarea Æthiopis*. *Mill. dict. n.* 2.  
*S. vulgaris lanuginosa amplissimo folio*. *Tournef. inst.* 179. *Garid.* 432.  
*Æthiopis*. *Dalech. hist.* 1306. *Dod. pempt.* 148. *f.* 2. *Matth.* 1152. *Lobel. adv.* 242. *Ger.* 634. *emac.* 779. *Raii hist.* 543.  
*Æ. multis*. *Baub. hist.* 3. 315.  
*Æ. foliis sinuosis*. *Baub. pin.* 241.  
*Æ. phlomitidis*. *Best. cyst. ast.* 8. *p.* 3. *f.* 1.  
*Sclarea æthiopica, f. Æthiopis laciniatis & non laciniatis foliis*. *Park. theat.* 57. 13. *t.* 58. *f.* 13.  
β. *Æthiopis laciniatis foliis*. *Barr. rar.* 24. *t.* 188.  
*Æ. fol. in profundas lacinias divisas*. *Baub. pin.* 241. *prodr.* 115.  
*Sclarea lacin. foliis*. *Tournef. inst.* 179. *Garid.* 432.  
γ. *Marum ægyptiacum*. *Vest. alp.* 212. *ic.*  
*Horminum syriacum album salviæ folio lanuginoso*. *Mor. hist.* 3. 392. *f.* 11. *t.* 16. *f.* 3. *ord.* 3.  
*Leaves oblong erose woolly, whorls woolly, bractes recurved somewhat spiny.*  
[65. *Salvia phlomoides*.  
*Lin. spec. ed. Willd.* 1. 148. *Vahl, symb.* 1. 7. *Introd.*



- Introd. in oryet. arrag. 158. t. 4. Roemer script.  
pl. hisp. lusit. 10. t. 1. f. 1.  
[Leaves lanceolate almost entire, stem woolly and viscid.]
66. *Salvia argentea*. Silvery-leaved Sage or Clary.  
Lin. spec. 38. Reich. 1. 72. Willd. 1. 149. Etling.  
salv. n. 33.  
*Sclarea argentea*. Mill. dict. n. 15.  
*S. ficula folio argenteo subrotundo*. Boerb. lugdb. 1.  
163.  
*Æthiopis tota argentea cretica lanuginosa*. Cup.  
cathol.  
Leaves oblong tooth-angular woolly, upper whorls barren,  
bractes concave.
- [67. *Salvia vulnerariæfolia*. Kidney Vetch-leaved Sage.  
Lin. spec. ed. Willd. 1. 149.  
*S. orientalis foliis alatis non crenatis odore Mari*.  
Tournef. cor. 11.  
Leaves pinnate quite entire, terminating leaflet very  
large.]
68. *Salvia pinnata*. Wing-leaved Sage.  
Lin. spec. 39. syst. 71. Reich. 1. 72. hort. cliff. 13.  
Etling. salv. n. 14. Boerb. lugdb. 1. 167. ic.  
Leaves pinnate, pinnae erose.
- [69. *Salvia incarnata*. Flesh-coloured Sage.  
Lin. spec. ed. Willd. 1. 150. Etling. salv. n. 15.  
Mor. hist. f. 11. t. 13. f. 19. Pluk. phyt. t. 194.  
f. 6. (Horminum.)  
Leaves pinnate serrate, stems procumbent hirsute.
70. *Salvia rosæfolia*. Rose-leaved Sage.  
Smith ic. ined. 1. 5. t. 5. Lin. spec. ed. Willd. 1.  
150.  
*S. orientalis, foliis alatis minoribus & crenatis, odore  
mari*. Tournef. cor. 11.  
*S. foliis ebuli*. Buxb. cent. 2. 41. t. 46?  
Leaves pinnate hoary, leaflets serrate, calyxes ringent.
71. *Salvia japonica*. Japan Sage.  
Lin. syst. 72. Willd. 1. 150. Thunb. jap. 22. t. 5.  
Kämpf. amoen. 5. 887.  
Leaves bipinnate smooth.
72. *Salvia ceratophylloides*. Branchy Sage.  
Lin. syst. 72. Reich. 1. 72. Willd. 1. 151. mant.  
26. Etling. salv. n. 45. Arduin. spec. 2. 12.  
t. 2.  
Leaves pinnatifid wrinkled villose, stem panicled very  
much branched.
73. *Salvia Forskælei*.  
Lin. syst. 72. Reich. 1. 72. Willd. 1. 151. mant.  
26. Etling. salv. n. 26.  
*S. bifida*. Forsk. descr. 202.  
Leaves lyrate-eared, stem almost leafless, helmet of the  
corolla semibifid.
74. *Salvia nutans*. Nodding Sage.  
Lin. spec. 39. syst. 72. Reich. 1. 73. Willd. 1.  
151. Etling. salv. n. 47. Nov. act. petrop. 1. 378.  
t. 14. Hall. comm. gott. 1. 210. t. 11. Kniph.  
cent. 7. t. 79.  
Leaves cordate indistinctly five-lobed erose, stem roundish,  
racemes nodding.
75. *Salvia hastata*. Halbert-leaved Sage.  
Lin. spec. ed. Willd. 1. 151. Etling. salv. n. 48.  
Leaves hastate-lanceolate crenate, stem almost naked, ra-  
cemes drooping.
76. *Salvia betonicæfolia*. Betony-leaved Sage.  
Lin. spec. ed. Willd. 1. 152. Etling. salv. n. 49.  
Leaves lanceolate crenate, stem almost naked, racemes  
drooping.
77. *Salvia algeriensis*. Algerine Sage.  
Desfont. atlant. 23. t. 3.  
*Sclarea africana præcox annua*. Vaill. herb.  
Lower leaves ovate crenate decurrent into the petiole, ca-  
lyxes tooth-spiny nodding, bractes reflex.
78. *Salvia foetida*. Fetid Sage.  
Desfont. atlant. 24. Lamarck, illustr. n. 295.  
*Sclarea tingitana foetidissima hirsuta flore albo*. Tournef.  
inst. 179. Vaill. herb.  
*Marum ægyptiacum*. Alp. ægypt. 212? exot. 252?  
v. n. 64. 7.  
Shrubby, leaves cordate-ovate very much wrinkled villose,  
flowers whorl-spiked, fruiting calyxes compressed.]
79. *Salvia patula*. Spreading Sage.  
Desfont. atlant. 25.

*Sclarea lusitanica*. Mill. dict. n. 3.—glutinesa amplif-  
fimo folio. Tournef. inst. 179. Vaill. herb.  
Root-leaves cordate woolly sinuate erose, stem and calyxes  
villose glutinose, bractes concave mucronate, upper flowers  
fading.

## DESCRIPTIONS, &amp;c.

[This large genus consists of herbs or undershrubs. The flowers are from one to three together from a bract or a leaf, frequently in spikes. The filaments are stipitate in the middle in the *Salvia* of Tournefort; but beyond the middle in the *Sclarea* of the same author. The upper lip of the corolla is compressed and sickle-shaped in both these: but in *Horminum* of Tournefort it is concave and shaped like the bowl of a spoon. The style in *S. cretica* is double, which is unusual in the natural order of Labiatae, but its seeds are abortive. Mr. Miller has followed Tournefort in dividing the genus, and has treated of it under the three articles of *Horminum*, *Salvia* and *Sclarea*.

Our English name *Sage* is from the French *Sauge*. In German it is *Salbey*, which is evidently from the Latin. Clary is plainly from *Sclarea*, which is from σκληρος, hard; the stalks being hard and not succulent. *Horminum* is said to be ἀπο τοῦ ὀρμᾶν, quod ad venerem stimulet, according to Dioscorides.

1. This is an annual plant, a foot high, stiff and brachiate. Leaves naked, rugged, very much wrinkled underneath. Spikes as it were spiny. Flowers in threes, pedicelled, very minute. Corollas white, with the upper lip very short, emarginate, not compressed; the lower trifid, with the middle segment violet-coloured and dotted. Stamens small with blueish anthers.

Gouan affirms that he has most commonly found four stamens in the flowers.

Vahl says that the wild plant is a low rigid little shrub, scarcely a span in height, ash-coloured and reversely hairy; with the leaves turned back at the edge and hairy.

Desfontaines describes it as of an ash colour, upright, and very much branched: the branches slender, with short reverse hairs. The leaves wrinkled, waved, running down into the petiole. The whorls distinct; the lower having six, the upper two flowers, all pedicelled, and the upper ones abortive. Bractes very small, ovate, acute, shorter than the pedicel. Calyx villose, striated: with the upper lip shorter, two-toothed, and the mouth ciliate. Corolla white, small, dotted; with the upper lip very short.

Native of Egypt and the Canary islands. Cultivated in the sands about Cassa in Barbary. Introduced in 1770, by Mons. Richard. It flowers in June and July.

2. Native of the Cape of Good Hope, where it was found by Masson, and introduced in 1774. It flowers in December and January. It is shrubby.

3. Calyxes two-leaved. Styles two, with simple stigmas. In the opinion of Willdenow, it seems to be only a variety of *S. officinalis*.—Native of the island of Candia. Cultivated in 1760 by Mr. James Gordon. It flowers from June to August, and is shrubby.

4. Root-leaves oblong, sinuate and sometimes jagged, resembling those of the common Bugle, but larger, above dark green with dark-purple spots about the veins, beneath dusky purple; which colour the stems frequently have also. The whole is hirsute and hairy; the hairs on the upper part springing from dots or small tubercles. The stem is a long span or a foot high, single or several, with one or two joints, at each of which is a pair of leaves, not branched; at the upper part are several whorls of flowers, six in each placed in a ring, with two leaves beneath; these in the upper whorls are small, entire, like those of Myrtle; in the lower whorl longer, with here and there a cut on the edge. Calyxes biggish, streaked with five lines, two-parted, the upper segment wider and trifid, the lower narrower and bifid. Corollas pale blue; the upper lip bifid with widish wings ending in a short cusp, the lower also bifid, sometimes notched about the

\* Jusieu.

\* Linn. syst.

\* Hort. kew.

\* Idem.

\* Schreber.

\* Hort. kow.



edges. Seeds biggish, bluntly three-cornered, with the outer part protuberant, roundish; the inner where they touch each other pared off and angular; when ripe they are blackish<sup>a</sup>.

Linneus made two species of this in his *Species Plantarum*, under the names of *Salvia lyrata* and *Horminum virginicum*; but in his *Mantissa* he referred the latter to the former, it being the same plant, bearing clandestine flowers in Europe.

Native of Virginia and Carolina. Cultivated in 1728, by James Sherard, M.D.<sup>b</sup> The seeds, from Virginia, were given to him by Charles Du Bois, Esq. treasurer to the East India Company<sup>c</sup>.

5. Stems branched, upright, five feet high. Leaves narrow, long, beneath tomentose, whitish, above dark green; petioles short, subconnate, with very small glands at the base resembling brown dots. Flowers in very long interrupted spikes, composed of many-flowered whorls, covered with a lanuginous violet-coloured nap. Calyx also violet-coloured, with the upper lip entire and acute, the lower shortly bifid. Corolla white, twice as large as the calyx; upper lip arched, plaited, entire, villose; lower trifid, with the segments rounded, nearly equal, and under them a short excrecence.

Native of Mexico. It flowers in the royal garden at Madrid in november and december<sup>d</sup>.

6. This is a handsome plant. Stem indistinctly quadrangular, pubescent. Leaves very narrow, smooth above, pubescent beneath. The whorls have each two bractes which are ovate, acuminate, and longer than the calyx; which is as in *S. officinalis*, only larger and green. Corolla as in that, but larger. There are commonly leafy branches from the upper axils of the leaves.—Native of Tauris<sup>e</sup>.

7. The common garden or officinal Sage is a branching shrub, about two feet in height. The younger branches are tomentose and whitish. The leaves are wrinkled, cinereous white or tinged with dusky purple, on very short petioles, sometimes eared at the base. Flowers terminating, in long spikes composed of six-flowered whorls, approximating yet distinct. Bractes ovate, acute, deciduous. Calyx striated, five-toothed; the teeth acute, the three upper ones nearly equal and smaller. Corolla blue: upper lip blunt, emarginate; lower three-lobed, the side lobes bent back, the middle lobe larger and two-lobed<sup>f</sup>.

Native of the South of Europe, and Barbary. Cultivated in 1597 by Gerarde<sup>g</sup>: and doubtless we had it much earlier in our gardens.]

Mr. Miller enumerates the following varieties:—

1. The common green Sage. 2. The Wormwood Sage. *Salvia absinthites*. *Ger. emac.* 764. *n.* 7. *Raii hist.* 511. Johnson speaks of this as a rarity and a tender plant. He first saw it with Mr. Cannon. *S. minor altera*. *Baub. pin.* flore rubente. *Park. theat.* 50. *n.* 7. 3. Green Sage with a variegated leaf. *S. variegata vulgaris*. *Ger. emac.* 764. 6. *Raii hist.* 510. 4. Red Sage: *S. nigra*. *Baub. pin.* *Raii hist.* 509. 2. 5. Red Sage with a variegated leaf. [*Salvia variegata*. *Park. parad.* 446.—*elegans*. *Ger. emac.* 764. 5. Painted or Party-coloured Sage: with red leaves striped with white, or white red and green mixed. It was first found, says Johnson, in a country garden by Mr. John Tradescant, and by him imparted to other lovers of plants.] There is also Spanish Sage. *S. hispanica*. *Mill. dict. n.* 4.—*lavendulae folio*. *Tournef. inst.* 181. The leaves linear-lanceolate, very narrow and quite entire, in clusters on the side of the stalks; they are very hoary, and the branches are covered with a hoary down: the leaves on the upper part of the stalk are narrower than those of Rosemary. The flowers grow in closer spikes, and are of a light blue colour.

The variety with red or blackish leaves is the most common in the English gardens; and the Wormwood Sage is in greater plenty here than the common green-leaved Sage.

[Sage has a strong, fragrant smell, and a warm bitterish aromatic taste. In ancient times it was much

celebrated as a remedy of great efficacy, but at present few practitioners consider it as of much importance; and although frequently employed as a sudorific, it seems to have no advantage over many other plants; and by some it has been successfully used even for the purpose of restraining inordinate sweating. Van Swieten found it to be remarkably efficacious in stopping night sweats, infused in wine or spirit; but Quarin remarks, that a strong infusion in water has been experienced to be equally successful. Van Swieten also found it useful in restraining the improper continuance of a flow of milk from the breasts of women after they had weaned their children. As possessing a share of aromatic and astringent power, it may prove a serviceable tonic in a debility of the stomach and nervous system. The Chinese value it highly for this purpose, and prefer it to their own tea. The power of this plant, in resisting the putrefaction of animal substances, has also been adduced in proof of its medicinal efficacy. From the experiments of Etlinger, it has a considerable share of antiseptic power<sup>h</sup>.

Sage appears in the catalogue of the *Materia Medica* of the London College, but is not directed to be used in any of the preparations. It still keeps its ground in fomentations among the common people, and in the kitchen for sauce to luscious and strong meats.]

8. This is generally called Balsamic Sage by the gardeners. The stalks do not grow so upright as those of the common Sage; they are very hairy, and divide into several branches. Leaves broad, woolly, on long petioles, serrate, and rough on the upper surface: the leaves on the flower-stalks are oblong-ovate, on shorter petioles, and very slightly serrate. The whorls are pretty far distant, and few flowers in each; they are of a pale blue, and about the same size with those of the common sort. It flowers in june, and in good seasons the seeds ripen in autumn. This Sage is preferred to all the others for making tea.

9. The leaves of this, which is the common Sage of Virtue, are narrower than those of the common sort; they are hoary, and some of them are indented on their edges towards the base, which indentures have the appearance of ears. The spikes of flowers are longer than those of the two preceding sorts, and the whorls are generally naked. The flowers are smaller, and of a deeper blue than those of the common Sage.

[Native of the South of Europe, (Crete and Syria.) Cultivated in 1597, by Gerarde<sup>i</sup>.

It has the habit of *S. officinalis*, and is all over hoary with a nap. It is singular in having earlets at the base of the leaves<sup>k</sup>.—This however is not constant; sometimes there is only one earlet, and sometimes none. The leaves under the whorls are of a different shape from the others. The flowers are for the most part three together. Calyx five-cleft; with three segments placed by the upper lip of the corolla, and two by the lower lip. Helmet or upper lip of the corolla arched and bifid: beard or lower lip four-cleft.]

10. Stem shrubby, four or five feet high, dividing into several branches. Flowers of a pale blue colour. The branches have often punctures made in them by insects, producing protuberances as big as Apples, in the same manner as galls upon the Oak, and the rough balls on the Briar. [The common Sage has the same excrescencies in the island of Candia or Crete, and they carry them to market there under the name of Sage Apples.

Tournefort thus describes this species, which seems to have been confounded with the preceding. It is a very tufted shrub, two or three feet high. Trunk twisted, hard, brittle, two inches thick, russet, covered with a gray chopped bark, and divided into several branches the size of the little finger, subdivided into others, the shoots from which are square, opposite, whitish, cottony. Leaves two inches and a half long or more, an inch or fifteen lines wide, rough like shagreen, whitish, curled, elegantly veined, stiff and hard, dotted beneath, on a petiole seven or eight lines in length, cottony and grooved. Spike of flowers a foot

<sup>a</sup> Dillenius. <sup>b</sup> Hort. kew. <sup>c</sup> Dillenius. <sup>d</sup> Cavanilles.  
<sup>e</sup> Willdenow. <sup>f</sup> Desfontaines. <sup>g</sup> Hort. kew.

<sup>h</sup> Woodville.

<sup>i</sup> Hort. kew.

<sup>k</sup> Linn. suppl.



long, composed of close whorls. Each flower is an inch or fifteen lines in length. Calyx half an inch long, pale green tinged with purple, cut irregularly into five points. Upper lip of the corolla hollowed like the bowl of a spoon, villose, of a deeper or paler blue, eight or ten lines in length: lower lip a little longer, trifold; the two lateral segments bordering the opening between the two lips, the middle one rounded, emarginate, pale blue, curled and marbled, striped with white about the middle. Seeds oval, blackish, a line in length. The odour partakes of that of common Sage and Lavender.

Found by Tournefort in Candia. Cultivated in 1699, by the Hon. Charles Howard\*.

11. Stem high, upright, smooth. Leaves like those of Nettle, or rather of Scrophularia, having a wide base, but going off gradually at the top into a sharp point. Petiole an inch long. Flowers in whorls, six together, small<sup>1</sup>. Upper lip short. Pistil longer than the upper lip<sup>m</sup>.—Native of Virginia and Florida.

12. Root fibrous annual. Stem ascending, branched, a foot high, diffused, knotty, even. Leaves shortly acuminate, hispid above, smooth beneath. Petioles four-cornered, red, pubescent. Bractes opposite, alternate, awned; within them two or three small blue flowers. Calyx angular-friated, covered with glandular hairs. Style the length of the upper lip. Seeds two, one of which only ripens; and that is ovate, compressed and black. It differs from the other species in its loose spikes and remote flowers.

Native of the West Indies<sup>n</sup>. In Jamaica this little plant is found creeping under every hedge and bush in the lower lands: it runs frequently to the length of two or three feet, but always roots at the lower joints. It has a faint smell of Balm when first pulled<sup>o</sup>.

13. Stem herbaceous, upright, stiff, somewhat villose, with the angles blunt. Leaves netted-veined, wrinkled especially beneath, two inches or more in length, scarcely pubescent, bluntly ferrate; ferratures equal. Petiole the same length with the leaf. Pedicels in whorls, about eight. Bractes awl-shaped, deciduous. Calyx bell-shaped, with eight raised hairy lines, bifid: segments ovate, acuminate; lower bifid, upper undivided. Corolla a little longer than the calyx, blue.—It differs from *S. serotina* in having the stem less hairy; the leaves not softly villose, but wider, acute, with equal ferratures; and the lines on the calyx hairy only, not glutinous<sup>p</sup>.

Sent to Vahl by Bellardi, but from what country unknown. The plant figured and described by Cavanilles, under the name of *S. polystachya*, appears to Willdenow scarcely to differ from this, although the leaves be ovate, the spikes shorter and the flowers larger. If that should prove to be the case, it is a native of Mexico. Cavanilles saw it flowering in november and december in the royal garden at Madrid.

He describes his *polystachya* as a fathom high, with the angles of the stem acute; the branches tender and somewhat villose. Leaves longer than the petioles, ovate-acute, ferrate, soft, glaucous beneath: the base of the petioles externally biglandular. Flowers in many dense terminating spikes; the whorls composing them approximating and many-flowered. Calyx short, villose, friated. Corolla small, blue: upper lip short, arched, entire; lower trifold, with the middle segment larger and emarginate.

He remarks, that this, together with the four other species which he describes, (*fulgens*, *leucantha*, *tubifera* and *mexicana*) have the upper lip almost entire; and the calyx in all two-lipped; the upper lip entire, one-toothed; which Jussieu makes three-toothed.

14. Root biennial. Stem suffruticose, a foot and half high, brachiate, scarcely tomentose; with the lower branches caulescent. Leaves waved and very finely ferrate, scarcely tomentose, but very soft and paler underneath. Spike scarcely peduncled, whorled. Calyx cylindrical, narrow, friated, with a trifold mouth; the lower segment wider. Corolla minute, the size of

Ziziphora, scarcely larger than the mouth of the calyx. Odour of Nepeta, unpleasant, strong. Calyxes peduncled, with bractes so small as to be hardly visible.—Supposed to be a native of the island of Chios<sup>q</sup>.

15. This is an herbaceous annual plant, with long, capillary, creeping roots. Stem decumbent, four or five inches long, the lower part creeping, subdivided, ascending, friated, pubescent. Leaves small, petioled, remote, tooth-ferrate, nerved, pubescent. Spikes terminating, upright, composed of approximating, three or four-flowered whorls. Flowers pedicelled, small, blue. Bractes ovate, very small, two, three or four under the peduncles. Calyx gibbous underneath, three-toothed: upper segment shorter retuse, very minutely three-toothed; the two anterior ones a little longer, blunt; all hirsute with glandular hairs; glands pellucid, azure. Lower lip of the corolla white in the middle, blue at the edge; the opening with blue lines. Seeds two naked, erect, ovate, compressed, black. It is easily known by its habit and smallness: and flowers all the year.

Native of Jamaica, in the gravelly and grassy parts of the highest mountains.

16. This is an annual plant, and has altogether the appearance of *S. Horminum*. Stem upright or decumbent at the base, branched, hirsute with longish villose hairs. Leaves cordate and ovate, blunt, wrinkled, pubescent, equally and slightly crenate; the lower ones on long hirsute petioles. Whorls six-flowered; the lower ones distinct and often remote; the upper ones confluent. Bractes large, cordate, acute, hirsute; the lower ones crenate, longer than the calyx; there are commonly four interior ones besides, which are linear-subulate and ciliate. It has the flowers of *S. Horminum*, on short pedicels. Calyx villose, elongated, deeply friated, four-toothed, the teeth acute and short: when the fructification is complete, it nods. The upper lip is emarginate. Corolla small, rose-coloured, one third part longer than the calyx: upper lip semiorbicular, bluntish; lower three-lobed, the middle lobe concave, emarginate, of a paler colour. Style shorter than the corolla. Seeds four, brown, somewhat compressed.—Give it a coloured coma, and it will be *S. Horminum*. Perhaps it may be no more than a variety.—The species here described is certainly the same with that of Tournefort's corollary. In *S. viridis* of Linneus and Jacquin the upper lip of the corolla is blue, whereas in the African it is rose-coloured: in other respects they are alike<sup>r</sup>.

Jacquin describes it as about a foot high, branched little or not at all. Calyx nearly cylindrical green, hirsute with clammy capitate hairs. Upper lip of the corolla oblong, a little hirsute on the outside, violet-coloured, converging: lower lip blue, blunt, the lateral segments oblong, the middle one concave and roundish. Stigma violet-coloured. Seeds ovate, compressed a little, black. The plant has a strong smell.

Native of Italy, and Africa on the hills about Tunis. Introduced in 1776, by Mons. Thouin<sup>s</sup>.]

17. Stems erect, about a foot and half high. Leaves shaped like those of the common red Sage, gradually diminishing in size to the top. The stems have whorls of small flowers, and are terminated by clusters of small leaves, (or barren bractes, called the *coma* by Linneus) and forming two varieties; one with purple, and another with red tops. For the sake of this coma they are preserved in gardens for ornament. They flower in june and july, and their seeds ripen in the autumn.

[Native of the South of Europe. Cultivated in 1597 by Gerarde<sup>t</sup>.

18. Radical leaves oblong, obtuse, cordate at the base, footstalked, contracted and wrinkled, with very numerous veins, undulated or sinuated at the margins, of a dark green and smooth above, except on the midrib and veins: they are about six or nine inches long, and two or three broad: the cauline leaves are footstalked, but those on the upper part are sessile, and are crenated, wrinkled, and but slightly hairy. Stems hirsute, obtusely quadrangular, upright, about

\* Morison.

<sup>1</sup> Idem.<sup>m</sup> Linn. fyft.<sup>n</sup> Swartz,<sup>o</sup> Browne.<sup>p</sup> Vahl.<sup>q</sup> Linn. mant.<sup>r</sup> Desfontaines.<sup>s</sup> Hort. kew.<sup>t</sup> Idem.



four feet tall, and have several long branches growing at acute angles from their sides, and terminated by the long flowering spikes. Bractes entire, cordate, and acute, from each of which proceed three flowers on short footstalks. Calyx rough and bilabiate: corollas white or pale rose-colour, or sometimes blueish<sup>a</sup>.

Native of the Pyrenean mountains. Cultivated in 1758, by Mr. Miller. It flowers from July to November<sup>x</sup>.]

19. This has an abiding root, from which come out many cordate-lanceolate leaves, about four inches long, and an inch and half broad, of a bright green colour, with many white spots dispersed on their surface. The stalks are thick, and rise near three feet high, having sessile leaves in pairs below, and above long loose spikes of flowers in small whorls, with coloured bractes. [These bractes are ovate and three-flowered. The upper lip is compressed, and has sessile glands scattered over it below the tip. The leaves are oblong and subcordate at the base, villose beneath. Opening of the corolla closed with scales, which terminate one tip of the filament. Fulcre shorter than these scales. Stamen below the contact of the fulcre toothed<sup>y</sup>.

Native of Austria, Bohemia, Silesia, the hills about Turin, &c.—Cultivated in 1759, by Mr. Miller. It flowers from June to October<sup>z</sup>.

Etlinger unites this with the next; but they are very distinct<sup>a</sup>.]

20. This also has an abiding root, sending out many smooth leaves, about the size and shape of broad-leaved Sage. Stalks slender, a foot and half high, with smaller leaves towards the bottom, and spikes composed of small whorls of blue flowers in the upper part.

[Root-leaves cordate; stem-leaves ovate-lanceolate, equally serrate, naked above, subtomentose beneath. Spikes before the flowers open exactly square, with coloured bractes shorter than the flower. The corollas have impalpable dots scattered over them: the middle lobe of the lower lip is closely bent back beneath the calyx<sup>b</sup>.

Reichard remarks, that Crantz unites this with the preceding species.

Native of Austria and Tartary. Cultivated in 1728, by Mr. Miller. It flowers from June to October<sup>c</sup>.]

21. This also is an abiding plant, with the roots running deep in the ground. Lower leaves about four inches long, and an inch and half broad in the middle. Stalks slender, stiff, a foot and half high, with smaller leaves of the same shape in pairs. Flowers in small whorls, disposed in loose spikes at the top of the stalks; they are small and blue.

[It has the stature of *S. pratensis*. Angles of the stem blunt. Leaves very much wrinkled, somewhat downy underneath, bluntly crenate. Panicle brachiate, rod-like. Bractes shorter than the calyx; which is five-cleft; the segments equal and acuminate. Corollas white. Style double the length of the upper lip<sup>d</sup>.

Stem hairy. Root-leaves elliptic: stem-leaves ovate; the lower ones petioled, the upper sessile. Bractes sessile, less wrinkled than the leaves, toothed, acuminate, about the length of the calyxes. Flowers six in a whorl, white, like those of *S. pratensis*, but larger. Calyx five-toothed, awned, compressed. Filaments white, the length of the upper lip. Style longer, purple. It lasts two or three years, and has a sweet smell<sup>e</sup>.

Native of Syria: found in Palestine by Hasselquist. Cultivated in 1759, by Mr. Miller. It flowers in July<sup>f</sup>.

22. Root perennial. Lower part of the stem woody. Rest of the stem herbaceous, upright, a foot and half high, little branched. The whole plant has a strong sweet smell, and has clammy hairs tipped with capitate glands. Leaves cordate at the base, petioled, indistinctly crenulate, sharpish, veined, wrinkled. Whorls distant, six-flowered; the flowers on

short peduncles, supported by a roundish-cordate acuminate shorter bracte. Each lip of the calyx acuminate and two-toothed; the lower more deeply cut. Corolla purple; the lower lip paler, with the lateral segments oblong; the upper villose-viscid on the outside<sup>g</sup>.

Native of Italy. Introduced in 1773, by John Earl of Bute. It flowers in May and June<sup>h</sup>.]

23. This has large swelling roots, like those of Peony. Root-leaves five or six inches long, and almost four broad at their base, where they are eared; they are on pretty long footstalks. Between these arise strong stalks about four feet high, having on the upper part loose spikes of whorled flowers of a purple colour.

[Stem upright, viscid. Leaves repand, smooth above, with ferruginous spots; the uppermost small and sessile. Upper lip of the calyx concave above, keeled, blunt, emarginate; lower bifid. Corolla blue, like that of *S. sylvestris*: the upper lip sickle-shaped; the lower trifid; the middle segment very wide, emarginate, bagged, reflex. Style longer than the upper lip. Anthers coadunate, black, with a yellow pollen<sup>i</sup>.

The whole plant is hispid. Petiole shorter than the diameter of the leaf. From twenty to twenty-four flowers in a whorl, with dry bractes. Peduncles unequal. Calyx five-cleft, sublabiate. Opening of the corolla closed by two plates: upper lip ovate, contracted behind, villose; lower trifid, with the lateral segments subovate, the middle one concave and obtuse; tube ferruginous, gibbous below. Filaments ferruginous: anthers blue. Style long, ferruginous<sup>k</sup>.

Native of Italy and Istria. Cultivated by Mr. Miller in 1759.

24. Root perennial. Leaves oblong, nearly smooth, irregularly crenate, wrinkled and veiny; the root-leaves and lower stem-leaves on longish footstalks, and sometimes sinuate; the uppermost sessile, embracing the stem, sharply pointed. Long whorled spikes of large blue flowers, six in a whorl, terminate the stem and branches, with a pair of very small heart-shaped acuminate bractes to each whorl, whence Linneus characterizes it *verticillis subundis*, the bractes being so much less conspicuous than in most other species. The flower-stalks and calyx, as well as the apex of the corolla, are hairy and viscid<sup>l</sup>.

Dr. Withering remarks that the floral leaves are about the length of the calyx, which is spread open; that the corolla, of a blueish purple, is four times as large as the calyx, with the helmet hooked like the handle of a walking-stick; and that its gumminess, not being constant, ought not to make a part of the specific character.

Native of many parts of Europe, in dry pastures and by hedge sides. It is one of the most specious, as well as one of the more rare plants of British growth. The indefatigable Ray never found it wild in England. It seems to have been first noticed by Bobart, as having been found by Watts near Cobham in Essex; but that should have been Kent, where Lord Darnley has a seat, and where Mr. Jacob Rayer has since gathered it. Mr. Swayne found it at Wick-cliffs in Gloucestershire: Dr. Sibthorp, between Middleton Stoney and Audley in Oxfordshire: Mr. Marsh, near Ford-End Farm, Bedford. In the counties of Sussex and Surry Dr. Stokes says it is common. It flowers in July.

β. Bauhin notices a variety, with the leaves more deeply cut, the lower ones quite jagged. He says the flowers are paler, and sometimes of a sort of ash colour. In Clusius's figure, (2. 30. f. 2.) to which he refers, the leaves are not at all jagged.

γ. Whether the *S. agrestis* of Lin. amoen. be the same with that of Villars I know not. The latter gives it as a species doubtingly; and describes it as a foot high; the calyx and corolla both very clammy, occasioned by a great number of golden glands, visible with a glass. The upper lip of the corolla is almost straight; the pistil is longer than that by half; the lower lip is trifid, the middle segment rounded, a little concave and emarginate, the two lateral ones are shorter,

narrower,

<sup>a</sup> Jacquin. <sup>x</sup> Hort. kew. <sup>y</sup> Scopoli. <sup>z</sup> Hort. kew.  
<sup>a</sup> Willdenow. <sup>b</sup> Linn. spec. <sup>c</sup> Hort. kew.  
<sup>d</sup> Linn. spec. <sup>e</sup> Retz. <sup>f</sup> Hort. kew.

<sup>g</sup> Jacquin. <sup>h</sup> Hort. kew. <sup>i</sup> Linn. syst.  
<sup>k</sup> Scopoli. <sup>l</sup> Engl. bot.



narrower, and rolled back. Corolla blue, seldom red. In *S. pratensis* the leaves are more elongated, and the upper lip of the corolla is sickle-shaped; but in low warm situations it approaches to the *agrestis*.

25. This is a handsome plant. Leaves cordate-oblong, wrinkled, somewhat villose; the lower ones blunt, petioled, running down the petiole, unequally sinuate-toothed, frequently erose-laciniate, the segments acute, unequal; the upper stem-leaves connate, sessile, acute. Stem pubescent, with blunt angles. Flowering branches rod-like, erect, pubescent, eighteen inches high, and even more. Whorls commonly six-flowered, approximating. Bractes ovate-lanceolate, acuminate, bent down, pubescent, longer than the pedicels. Flowers nodding both before and after flowering. Calyx striated, glandular-hairy, five-toothed or two-lipped; the upper lip three-toothed, the lower two; the middle upper tooth very short. Corolla the same size as in *S. pratensis*, (according to Willdenow, of the same colour, but double the size and more elegant:) upper lip sickle-shaped, violet-blue, villose, often dotted with white; the lower lip white: the lateral lobes more produced, and acuminate; the middle lobe very large, bagged, sometimes emarginate. Filaments bowed, on very short pedicels. Style very long, standing out. Stigmas acute. Seeds brown, even, roundish. According to Willdenow, the upper lip of the corolla is compressed and emarginate; the middle segment of the lower lip snow-white, two-lobed, concave, ascending.

Native of Barbary, in the corn fields about Tlemfen; flowering early in the spring. Willdenow marks it as perennial. Desfontaines as biennial. According to the latter, in gardens the lower leaves are not erose but crenate-sinuate<sup>m</sup>.]

26. Lower leaves heart-shaped, acutely crenate, of a thick consistence, seven or eight inches long, and four broad at the base, where they are eared. Stem four feet high, having two or three pairs of smaller leaves on the lower part at the joints. The upper part, for the length of two feet, has whorls of flowers, at two or three inches distance from each other, without any leaves under them. Calyx hairy and blunt. Helmet of the corolla arched, erect and blue, terminating in a blue point; the two side segments of the under lip are of a violet colour; the middle segment, which is indented at the point, is white, and curiously spotted with violet on the inside; the two side lobes turn yellow before the flower drops.

[Stem herbaceous, blunt at the corners, white with hairs, as are also the petioles. Leaves oblong, wrinkled, almost naked, hairy beneath. Floral leaves cordate, sessile, entire, acute, small. Calyx compressed a little: upper lip three-toothed, the middle tooth somewhat smaller; the lower lip two-parted, hairy, clammy. Corolla large, blue: the upper lip sickle-shaped, compressed, emarginate; the lower trifid, the middle segment large, bagged, two-lobed; with a whitish base; the lobes have violet spots, with a white border, which turns yellow; the lateral segments are horizontal, lanceolate, stretched out, and folded back; so that the lower lip in some degree resembles a bee<sup>n</sup>.

Native of India. Cultivated in 1731, by Mr. Miller<sup>o</sup>: and yet even now, says Mr. Curtis, this magnificent plant is rarely seen in our gardens. This perhaps may be owing to its being considered as a hardy plant, and yet requiring some care to be taken of it in severe winters. It flowers from may to july.

27. Stem, towards the root, suffruticose, erect, subdivided, striated, pubescent; branches spreading, both they and the stem square. Leaves acuminate, bluntly angular at the base, crenate-toothed, wrinkled, hispid above, subhirsute beneath. Petioles quadrangular, pubescent. Flowers terminating, in whorls, peduncled, blue. Whorls six-flowered, remote; bractes minute, linear, under the whorls. Calyx tubular, a little gibbous, striated, compressed, hairy; mouth two-lipped, lower lip two-toothed, upper entire, erect. Hairs terminated by very minute blue glands. Upper lip of

the corolla short, emarginate; lower longer, trifid, the middle segment emarginate, whitish in the middle at the bottom of the tube. Style longer than the upper lip. Seeds oblong, naked, black and shining.

Common in the West Indies, in fields and coppices. A specimen in the Linnean herbarium creates a suspicion that this is scarcely distinct from *S. serotina*<sup>p</sup>.]

According to Miller, it is an annual plant, three or four feet high, with leaves of a bright green colour, on long slender footstalks. The flowers in close spikes at the ends of the branches of a fine blue colour; appearing in july.

[It is marked by Willdenow as perennial. Swartz does not inform us whether it is so, or annual.

28. Root perennial, brown, the thickness of the middle finger, striking deep into the earth, and furnished with numerous fibres. Stems nearly upright, two feet high, set with horizontal somewhat viscid hairs, purplish especially at the joints. Root-leaves on long petioles, varying in form, oblong, rounded at the end, sometimes a little pointed, not unfrequently heart-shaped at the base, but more commonly the leaf runs down on each side the footstalk, and to a greater length on one side than on the other, very slightly hirsute, on the margin irregularly waved and serrate or toothed, paler beneath, veiny and marked with small glandular concave dots: stem-leaves somewhat remote, the lowermost on short footstalks, the uppermost sessile. Flowers in whorls, almost naked, containing about six flowers. Bractes cordate, acuminate, turned down, shorter than the flowers. Calyx purplish, slightly viscid: upper lip obovate, mostly terminated by a short point, marked with three ribs, those on the side much shorter than the middle one; lower lip almost ribbed, cloven nearly half way down; segments ovate-lanceolate, pointed, curved up. Corolla violet-coloured, a little longer than the calyx. Anthers oblong, black. Seeds black<sup>q</sup>.

This and *pratensis* are the only species of *Salvia* which are indigenous of Britain. It is smaller than that, but more aromatic, and of a deeper green. The stem is decumbent at the base. Bractes much larger in proportion to the flower; which is much smaller, and of a dark blueish purple<sup>r</sup>. The bractes are longer than the calyx, which is much wider than the tube of the corolla, but its segments do not spread open<sup>s</sup>.

Native of all the four continents. Not uncommon in England, especially on chalky and gravelly soils. Mr. Curtis has often remarked it in church-yards. The famous Clusius, being in England in 1579, observed it about Greenwich, flowering and bearing seed in september. It flowers, indeed during the whole summer from june, and even in october.

The herb and flowers prove very aromatic when rubbed. The seeds are smooth, and produce a great quantity of soft tasteless mucilage when moistened, whence they become serviceable for removing extraneous matter from the eyes. If put under the eyelid for a few moments, the tears dissolve their mucilage, which envelops any sand or dust that may be in the way, and brings it out safely<sup>t</sup>. Hence some old writers have called it *Oculus Christi*; and others of our own country have ridiculously enough derived our English name *Clary* from the same circumstance.

29. Native of the Cape of Good Hope; where it was found by Thunberg and Masson. The latter introduced it in 1774. It is shrubby, and flowers here most part of the summer<sup>u</sup>.

30. This also was found at the Cape by Thunberg<sup>x</sup>.

31. This has the herb of *S. verbenaca*, with the leaves of *S. ceratophylla*, and is a dwarf. Stems blunt, villose, ascending, a span high: with two branches commonly at top. Leaves oblong pinnate-sinuate, crenate, blunt, petioled, two or three pairs on the stem. Spike truncate, with the whorls remote. Bractes cordate, three-flowered. Calyxes with glutinous hairs, and the upper lip plaited. Corolla violet-coloured,

<sup>m</sup> Desfontaines and Willdenow.

<sup>n</sup> Hort. kew.

<sup>o</sup> Linn. mant.

<sup>p</sup> Swartz.

<sup>q</sup> Curtis.

<sup>r</sup> Smith.

<sup>s</sup> Withering.

<sup>t</sup> Engl. bot.

<sup>u</sup> Hort. kew. and Linn. suppl.

<sup>x</sup> Linn. suppl.



scarcely twice as long as the calyx, with the middle lobe of the lower lip white<sup>7</sup>.

Leaves tomentose underneath, bent back at the edge; the pinnules sublinear, distinct, unequal, blunt, unequally toothed. Stem upright, branched at bottom, hirsute. Whorls approximating, six-flowered. Flowers subsessile. Bractes ovate, shorter than the calyx; which is short and hirsute, with the upper lip compressed rounded emarginate, the lower two-toothed, the teeth acuminate. Corolla blue, nearly three times as long as the calyx. Barrelier's figure has the leaves less deeply pinnatifid, and the pinnules wider<sup>2</sup>.]

The lower leaves are upwards of four inches long, and not more than an inch broad, regularly sinuate on both sides. The stalks rise about the same height with *S. Verbenaca*, but all the leaves upon them are sinuate; the flowers also are smaller.

[Native of Italy, and of Barbary near Cassa, if it be the plant of Desfontaines, whose description differs in so many circumstances from that of Linneus.—Cultivated in 1768, by Mr. Miller. It flowers from may to july, and is biennial<sup>2</sup>.

32. This species rises with a single stem about a foot high, tetragonal, and about the thickness of a quill: radical leaves ovate, varying occasionally in their form, being more or less broad, and either sharp-pointed or obtuse, crenated, and almost pinnatifid; wrinkled, of a deep green, and very smooth; but pale and villose beneath. Cauline leaves similar, but much smaller, and very few in number: they are also sessile. Flowers white or very pale yellow, and of moderate size<sup>6</sup>.

Native of Austria, Hungary and Moldavia.—Introduced in 1776, by Joseph Nicholas Jacquin, M.D. It flowers in june and july<sup>6</sup>.

33. Native of the Pyrenees.

34. The whole plant is pubescent with villose hairs glutinous at the tip. Leaves wrinkled, pubescent. Bractes cordate, villose, sharpish, generally shorter than the calyx. Upper lip of the calyx three-toothed, equal; lower bifid, acute. Upper lip of the corolla erect; lower concave, with the lateral segments stretched out. Anthers standing out: Style white<sup>4</sup>.

Retzius asserts, that with him the leaves are ovate, and not cordate: but that when the plant is kept constantly in the hot-house, they approach nearer to a cordate form, and the plant is luxuriant with very long loose branches. The racemes are quite simple, with far-distant whorls, and the whole plant has a pleasant but powerful smell. When kept in a pot in a green-house, and set out in summer, it is much smaller, upright, hard, has less smell, the leaves are narrow, and the flowers are in a brachiate panicle, with the whorls less remote.

Native of Syria. Introduced in 1773, by Chevalier Murray. It flowers in july.

35. This approaches very near to the preceding, and indeed scarcely differs from it, except in its short stamens reaching up only to the throat or aperture of the corolla, which is white.

Native of the Cape of Good Hope, where it was found by Masson, and introduced in 1775. It flowers in july and august<sup>6</sup>.—It is marked as shrubby, whereas the *S. difermis* is marked only as perennial.

36. Stem a foot and half high, and a thumb's thickness at bottom, but gradually tapering in its ascent, quadrangular, and hollowed on the sides, slightly villose with horizontal hairs: branches opposite, and crosswise; leaves ovate-lanced, cordate, much wrinkled, and unequally double-crenate: the radical leaves are footstalked, the cauline sessile: spike terminal on the stem and branches, decomposed, and viscous: spikelets ovate, consisting of six-flowered approximating whorls, on a common quadrangular footstalk: calyx striated, hairy, and blue-green above: flowers about the size of those of *S. sylvestris*, and of a pale blue colour, and marked within by three deep blue lines<sup>6</sup>.

Native of Africa. Introduced in 1784, by Mont. Thouin. It flowers in june and july<sup>2</sup>.

37. Height about two feet: upright, obtusely quadrangular; channelled on the sides, branched<sup>2</sup>: lower branches very short, the others longer, all spreading: leaves firm, wrinkled, hairy, crenate-toothed, subundulated, very spreading, the lowest longer than the rest, sinuated and sublyrated towards the base; the middle ones ovate, sinuate-angular, obtuse, and standing on short footstalks; the uppermost cordate, sessile, pointed, and recurved: spikes terminal, verticillated, and either simple or compound: whorls remote, horizontal, with three flowers on each side: bractes ovate, sharp-pointed, hairy, and of a brownish-green: calyx ciliated on the edges: flowers small, blue, with a narrow tube, and short helmet: stamens shorter than the helmet.

Supposed to be a native of Egypt<sup>1</sup>.]

38. Stem shrubby, eight or ten feet high, sending out slender four-cornered branches of a purplish colour. Leaves thin, pale green, and hairy on their under side, on long slender footstalks. Flowers in close thick spikes at the end of the branches. Corolla of a fine blue colour.

[Stems thick, a fathom high, four-grooved, with the corners rounded, subpubescent, whitish. Leaves ovate-acute, ferrulate, soft, three inches long, whitish beneath: petioles shorter than the leaves, biglandular on the outside at the base; the glands callous. Flowers in long, dense, interrupted spikes, composed of many-flowered whorls. Calyx striated, smooth; upper lip entire, lower bifid, with the points subulate. Corolla deep blue, much longer than the calyx<sup>1</sup>.

Native of Mexico. Cultivated in 1724, by James Sherard, M.D.<sup>6</sup> But it did not flower in the Eltham garden till november 1729. Cavanilles says, that it flowers in the Madrid garden in december; and Mr. Miller, that it makes a pretty variety in the greenhouse by flowering in the winter season. In the Kew catalogue it is marked as flowering from may to july.

39. Stem suffruticose, bluntly four-cornered, rough-haired. Leaves cordate-oblong, closely ferrate, wrinkled, green and rough-haired above, very closely woolly and white beneath. Petioles angular, rough-haired, scarcely the length of the leaves. Raceme terminating, almost upright. Whorls rather remote, composed of about six flowers, without any bractes. Peduncles scarcely so long as the calyx, spreading, round, rough-haired, one-flowered. It is singular in this species, that one or two flowers in each whorl expand at the same time, and not those of the lowest whorl first, and then the next successively. Calyx bell-shaped, angular, rough-haired, coloured at the tip, rugged within; upper lip entire, acute, with the point curved in; the lower bifid. Corolla twice as long as the calyx, of a very lively violet colour: upper lip arched, blunt, entire, densely bearded on the outside, naked only at the margin; lower three-lobed, pubescent on the outside; palate wrinkled, smooth, pale. Stamens shorter than the corolla. Style standing out, curved in, violet, rough-haired. Segments of the stigma spreading, acute, smooth. Seeds obovate, smooth.

There is no smell or aromatic taste in the dry plant, but the leaves are almost as bitter as the roots of *Gentian*.—Native of New Granada<sup>1</sup>.

40. Stems three feet high, somewhat rugged, reclining at bottom and then upright; branches spreading a little and then turning up, opposite. Leaves almost equal, on channelled petioles. Flowers in terminating spikes, composed of six-flowered whorls. Stipules short, acute, soon falling. Calyx bell-shaped, smooth striated; upper lip entire, ovate-mucronate; lower bifid at the tip. Corolla an inch and half long, of a deep and very fulgid scarlet colour, paler within: upper lip elongated, entire; lateral segments of the lower lip shorter, revolute, the middle one wide plaited with an orbicular three-notched disk. Filaments shorter

<sup>7</sup> Linn. spec. and syst.

<sup>2</sup> Desfontaines.

<sup>3</sup> Hort. kew.

<sup>6</sup> Jacquin.

<sup>5</sup> Hort. kew.

<sup>4</sup> Linn. mant.

<sup>6</sup> Hort. kew.

<sup>1</sup> Murray.

<sup>2</sup> Hort. kew.

<sup>3</sup> Hort. kew.

<sup>4</sup> Murray.

<sup>1</sup> Smith.

<sup>1</sup> Cavanilles.



by half than the corolla, white; anthers ovate, whitish. Germs ovate, set in a square receptacle, to which adheres in front a longer acute membrane, covering the two forward germs. Style wider at top, compressed, bearded. Stigmas revolute, flesh-coloured, standing out. Seeds obovate.

Native of Mexico, flowering in the royal Madrid garden from October to February<sup>m</sup>.

41. Stem suffruticose, the height of a man, upright, brachiate, somewhat knotty, loosely chapped, ash-coloured. Branches and branchlets opposite, spreading, four-cornered, naked at the base, rufous: shoots four-grooved, green at the top, clammy. Leaves spreading, acute (in the garden bluntish,) crenate-ferrate, somewhat wrinkled, veined, with the midrib and veins prominent only beneath, subcoriaceous, greenish but paler on the back. Petiole scarcely half as long as the leaf, round on one side, grooved on the other. Flowers very many, from the axils of the shoots, in a sort of whorl, in the garden commonly five together, the two lower of which are later: they are on short, spreading one-flowered peduncles, jointed at the top. Bractes some, two of them larger, one from each side, like stipules, leafy, linear, acute, reflex. Calyx nerved, striated at the base: upper lip erect, acuminate, flat; lower of the same shape, but two-parted. Corolla scarlet, an inch and half long, scarcely papillose to the view: tube angular, tubercled and ventricose at bottom, longer than the calyx: upper lip straight, elongated, scarcely emarginate, densely bearded, concealing the stamens and style by its converging sides; lower lip hanging down at a right angle, roundish, blunt, trifid, villose, the lateral segments blunt, the outmost wide, short, emarginate or repand. Filaments short, curved in: rudiments of a third and fourth filament are inserted into the tube above. Anthers linear, compressed, peltate, one-celled, scarlet. Germs indistinctly girt with a fleshy receptacle. Style compressed, bearded at the tip and scarlet. Stigma naked, standing out beyond the helmet, scarlet; the segments subulate, very long, reflex, the upper one longer and acute, the lower bluntish. Calyx scarcely increased, but shrivelling in feeding time. Seeds oblong, compressed, erect, approximating, brown.

Native of Peru, where it was found in the province of Huanuco, near the head of the river of Amazons by Dombey, who sent the seeds to the Paris garden<sup>n</sup>. It was introduced at Kew in 1783, by Monf. Thouin; and flowers most part of the summer<sup>o</sup>.

According to Cavanilles, this may be distinguished from the *fulgens* by having the stem hard and shrubby; the leaves smooth, shining, and somewhat coriaceous; the flowers shorter and less fulgid. Dombey, who first found it, with Pavon and Ruiz, named it *Salvia pyrifolia*; and the younger Linneus, who saw it when he was at Paris, gave it the name of *S. leonuroides*, which Gloxin has adopted.

The latter author remarks a singularity in the inflorescence of this species, that the flowers are not in a terminating raceme, spike, or panicle, as in the others, but in separate whorls from the axils of the leaves, without any proper bractes. The size, villosity and colour of the corolla are striking circumstances, the straightness of the upper lip, and the peculiar appearance of the lower lip. The upper lip of the calyx being entire, is common to this but with few of the species, as *mexicana* and *hispanica*; the former of which, on this very account, was separated by Heister from the *Salvias*, and made a new genus, under the name of *Fungia*. *S. formosa* is allied to this in having the tube of the corolla twice as long as the calyx, the upper lip straight, somewhat sickle-shaped, and villose, the style longer than the corolla and hirsute; but then the *mexicana* has six-flowered whorls forming a raceme, and ovate leaves, acuminate at both ends, ferrate except at the base<sup>p</sup>.

42. Stem suffruticose, striated, villose at top. Leaves smoothish above, paler beneath and hairy along the nerves and edges. Petioles shorter than the leaves,

hairy. Spike terminating, whorled, erect. Two flowers commonly in each whorl. Bractes opposite, ovate, mucronate, nerved, hairy, deciduous. Peduncles filiform, shorter than the calyx, densely woolly, one-flowered, all directed the same way. Calyx scarcely ventricose, nerved, woolly on the outside, rugged within; the three segments nearly equal, acute. Corolla three times as long as the calyx, curved in, scarlet, hairy on the outside; border bifid, the segments nearly equal, scarcely ringent. Stamens standing out very far beyond the corolla, smooth. Anthers incumbent. Style the length of the stamens, smooth. The two segments of the stigma are acute, recurved, smooth. The dried leaves are scarcely aromatic, and not very bitter. *Salvia coccinea*, *formosa*, *tubiflora* and *amethystina* are all allied to *tubiflora*, but yet very distinct species.—This is a native of Lima in South America. Dombey and Thouin<sup>q</sup>.

43. This resembles the preceding, but the leaves are ovate and soft, the corollas narrower and pubescent, the lower lip reflex, and the stamens shorter. The corolla is scarlet in both.—Native of Mexico<sup>r</sup>.

44. Leaves exquisitely cordate, petioled. Calyxes funnel-form, slender, scarcely rough-haired. Corollas very beautiful scarlet<sup>s</sup>.

Native of East Florida; where it was found by Mr. John Bartram, and cultivated here in 1774. It flowers most part of the year<sup>t</sup>.

45. This resembles the preceding, but the leaves are ovate, smoothish, unequal at the base; the stem is hairy, the corollas longer, widening at the throat.—Native of South America<sup>u</sup>.

46. Root annual. Stem a foot and half high, blunt at the corners, four-grooved, clothed at top with reflex white hairs. Leaves acute, wrinkled, ferrate, acute at the base. Spike square, with ovate bractes, the length of the calyxes and ciliate. Calyxes under each scale often five, three-toothed at the mouth, acute, the upper tooth single. Corolla blue, with the border the length of the calyx; the helmet shorter and subvillose; the lower lip trifid, blunt, quite entire, with two pale spots at the base<sup>v</sup>.

Native of Spain and Italy. Cultivated in 1739 by Mr. Miller. It flowers in June and July<sup>w</sup>.

Gærtner remarks, that the seeds of various species of *Salvia* are mucilaginous, besides those of *Verbenaca*; as *disermas*, *argentea*, *ceratophylla*, *Æthiopis*, *urticifolia*, *canariensis*, &c. but that in *hispanica*, *nutans*, *glutinosa*, and some others they are not so. He describes the seeds of this species as elliptic, compressed like a lens, smooth and shining, ash-coloured marbled with brown.

Miller has a *S. hispanica*, but it cannot be this: neither is it to be found among his *Horminum*s or *Sclareas*.

47. This rises with several somewhat shrubby stems about a foot and half high, upright, tetragonal and hairy, branching from the bosoms of all the leaves: leaves opposite, the lower ones lyrated, obtuse, and footstalked; the upper cordate, sessile, and more acute: all rugose, villose, and crenated. Whorls six-flowered, at first approximated, and afterwards becoming more remote in consequence of the elongation of the branches: bractes cordate, pointed, sessile, and purple: calyx hairy, purplish brown: corolla deep violet-purple: smell of the whole plant unpleasant<sup>x</sup>.

Native of Africa. Introduced in 1775, by James Bruce, Esq. It flowers in June and July<sup>y</sup>.]

48. This sends out from the root a great number of heart-shaped leaves, ferrate, deeply veined, upon pretty long foot-stalks which are hairy. From among these arise the stalks, two feet and a half high, having at each joint two leaves which are also heart-shaped, and half embrace the stalk. At the two or three upper joints a long flowering-stalk comes out on each side: these, as well as the principal stalk, have whorls of small blue flowers, not much unlike those of the *S. verbenaca*, but larger. The spikes are more than a

<sup>m</sup> Cavanilles.

<sup>n</sup> L'Heritier.

<sup>o</sup> Hort. kew.

<sup>p</sup> Gloxin, p. 18, 19.

<sup>q</sup> Smith.

<sup>r</sup> Willdenow.

<sup>s</sup> Linn. suppl.

<sup>t</sup> Hort. kew.

<sup>u</sup> Willdenow.

<sup>v</sup> Linn. spec.

<sup>w</sup> Hort. kew.

<sup>x</sup> Jacquin.

<sup>y</sup> Hort. kew.



foot long, and towards the top the whorls are nearer together.—Native of Germany and Austria.

β. This has some resemblance to that just now described, but the lower leaves are cut at the base to the midrib, into one or two pairs of ears or lobes, which are small, and often at a distance from each other; the leaves are not serrate, but bluntly indented. The stalks of this are more slender, and do not grow so tall, nor are the spikes of flowers so long.

Native of the South of France and Italy. [Cultivated in 1683, by Mr. James Sutherland. It flowers from June to November<sup>b</sup>.

49. This species bears so near a resemblance to *S. verticillata* as to be with some difficulty distinguished, except when in flower; the corolla differing considerably from that of the *verticillata*; being of a deep purple, with the upper lip cordate-emarginate, obtuse, and spreading: the lateral divisions of the lower lip subovate, spreading, and of the same length with the upper, but the middle one longer, and very obtuse.

Supposed to be a native of the warmer parts of the globe<sup>c</sup>.—Introduced in 1776, by Joseph Nicholas de Jacquin, M.D.<sup>d</sup>]

50. This has an abiding root, composed of strong woody fibres. Leaves four inches long, and three broad at the base, of a pale yellowish green colour, upon foot-stalks three or four inches long. Stems strong, near four feet high, having smaller leaves below, and the upper part closely set with whorls of large yellow flowers. The whole plant is very clammy, and has a strong scent somewhat like common garden Clary. The flowers are used in Holland to give a flavour to the Rhenish wines.

[Calyx three-lobed. Corolla sickle-shaped, yellow dotted with brown: the middle lobe of the lower lip crenate<sup>e</sup>.

Native of Germany, Austria, Switzerland, Italy and the South of France.—Cultivated by Gerard in 1596. It flowers from June to November<sup>f</sup>.

51. Native of Spain.—Leaves large, hairy. Stems upright, three feet high. Flowers large, blue, in distant whorls. Seeds round, brownish<sup>g</sup>.]

52. Stem shrubby, five or six feet high, dividing into many branches covered with a flocky down. Leaves three inches and a half long, and an inch and half broad at the base, where are two acute angular ears; petioles long and woolly. The top of the stalk branches out into many foot-stalks, forming a sort of panicle. The flowers are of a light blue colour, and are ranged in whorled spikes, having two small leaves under each whorl.

[Calyx five-cleft, hispid: the upper segment larger, blunt, trifid; the lower two-parted<sup>h</sup>.

Native of the Canary Islands. Cultivated in 1697, by the Dutchess of Beaufort. It flowers from June to September<sup>i</sup>.

53. Native of the Cape of Good Hope: observed there by Thunberg.]

54. This rises with a shrubby stalk four or five feet high, dividing into branches. Leaves ovate, of a gray colour. The flowers come out in whorls towards the end of the branches; they are of a fine blue colour, larger than those of the common Sage, appear in succession most of the summer months, and those which come early are often followed by seeds ripening in autumn.

Native of the Cape of Good Hope. [Cultivated in 1739, by Mr. Miller<sup>k</sup>.]

55. This rises with a shrubby stalk seven or eight feet high, covered with a light-coloured bark, sending out branches the whole length which grow almost horizontally. Leaves of a gray colour. Flowers in thick short spikes at the end of the branches; they are very large, and of a dark gold colour.

[Calyx bell-shaped, three-lobed, villose at the base<sup>l</sup>. The leaves are nearly round, and have a pleasing silvery hue, a few of them only, and those chiefly at the extremities of the young shoots are of the form de-

scribed in Linneus's specific character. The colour of the leaves, the colour and unusual magnitude of the corolla, are the most striking features of the species.

It is called *aurea* from the colour of the corolla; *ferruginea* would have been more expressive, for though when it first opens it is yellow, yet it quickly and constantly becomes of the colour of rusty iron<sup>m</sup>.

Native of the Cape of Good Hope. Cultivated in 1731, by Mr. Miller. It flowers from May to November<sup>n</sup>.]

56. This has great resemblance to *africana*, but the branches are stronger, and grow more erect; the leaves are longer and not so broad, and their edges are not serrate; the flowers grow in long loose spikes at the end of the branches, they are larger and of a paler blue; their calyxes are broader, spread wider, and are of a pale blue colour.

[Stems six feet high, rooting at bottom. Leaves petioled, an inch long: the lower serrate, but seldom eared; the upper ones quite entire. Calyxes bell-shaped, with the segments rounded, finally becoming scarious, wide, blood-red.

Native of the Cape of Good Hope, on the sandy coast<sup>o</sup>. Introduced by Mr. Miller from Holland before 1759.

57. Stem frutescent, erect, round, purplish, rugged. Leaves small, wedge-form, sharply toothed, veined, even, subpetioled. Panicle brachiate, decompounded. Calyxes trifid, scarcely hairy, with the two lower segments acute, the upper one three-toothed. Helmet of the corolla scarcely longer than the lip. Style longer than the corolla<sup>p</sup>.—Native of the Cape of Good Hope.

Though Mr. Miller in his figures refers to the *africana* of Linneus, yet it is plain that he intended the *paniculata*, which he does not appear to have distinguished from that, notwithstanding he cultivated them both. This in 1758. It flowers from June to September<sup>q</sup>.

58. This is a little shrub, with brachiate, narrow, even branches. Leaves petioled, toothed towards the base, tomentose underneath. Racemes at the divisions of the stem, elongated, remotely whorled. Flowers on each side three, pedicelled. Bractes ovate, quite entire, acuminate, smooth, commonly smaller than the calyx; which is spreading-bell-shaped, like that of *Moluccella* or *Marrubium Pseudodictamnus*, with a five-lobed border: the two upper lobes wider, hairy on the outside. Corolla whitish, larger than the calyx: the upper lip bifid, patulous, (not sickle-shaped or elongated;) the lower trifid, with the middle segment larger. Stamens the length of the corolla; but the style twice as long.—Native of the Levant.

59. Stem a foot high, obscurely quadrangular, hirsute, brachiate. Leaves petioled, subcordate or ovate, wrinkled, bluntish, more hairy beneath; the upper ones sessile, acuminate, serrate-crenate. Bractes nerved, smooth above, quite entire, awned. Whorls three-flowered on each side, sessile. Calyx tubular, grooved, awned, almost equal, with three upper teeth closer together, and two lower. Corolla white: helmet erect, subfalcate, emarginate, the length only of the lower lip; which is trifid, with the middle segment concave, two-lobed, and the lateral ones bent down. Stamens white, longer than the helmet. Anthers yellow. Style purple. Calyx of the fruit dry, compressed, striated, the length of the bractes, with awl-shaped teeth, pungent as in *Hyoscyamus*, within the bractes at the whorls. Involucrets two-leaved, short, acute.—Native of Egypt; where it was found by Forskahl<sup>r</sup>.

60. Very nearly allied to the preceding, but sufficiently distinct, by its frutescent stem, cordate erose-toothed wrinkled leaves, and ciliate bractes; it is besides a very stinking plant.—Native of northern Africa<sup>s</sup>.]

61. Common Clary has the lower leaves large, in good ground seven or eight inches long, and four

<sup>b</sup> Hort. kew.

<sup>c</sup> Linn. mant.

<sup>d</sup> Linn. mant.

<sup>e</sup> Jacquin.

<sup>f</sup> Hort. kew.

<sup>g</sup> Hort. kew.

<sup>h</sup> Linn. syst.

<sup>i</sup> Hort. kew.

<sup>j</sup> Morison.

<sup>k</sup> Idem.

<sup>l</sup> Curtis.

<sup>m</sup> Linn. mant.

<sup>n</sup> Hort. kew.

<sup>o</sup> Hort. kew.

<sup>p</sup> Willdenow.

<sup>q</sup> Linn. syst. Curtis.

<sup>r</sup> Linn. mant.



broad at the base, ending in blunt points. Stems large and clammy, about two feet high, with leaves of the same shape, but smaller, and sending out small opposite side branches. Flowers in loose terminating spikes, composed of whorls, of a pale blue colour. It is a biennial plant native of Syria [and Italy, Dauphiné, &c.—It was cultivated here in 1562, as appears from Turner's herbal, and flowers from July to September<sup>1</sup>.

The whole plant has a very strong scent. It was formerly used in medicine, but is now neglected. A wine is made from the herb in flower boiled with sugar, which has a flavour not unlike Frontinac.

62. This plant is very beautiful from the number and size of the flowers, the spike of which is terminated by bractes complicated into a pale rose-coloured strobile. It differs from the rest in the size of the bractes, in its long compressed tube, and its dense terminating great-flowered spike.—Native of Mexico<sup>2</sup>.]

63. This is a biennial plant. Leaves very thick and woolly, eight or nine inches long, narrow, cut into obtuse segments nearly opposite on their sides almost to the midrib, somewhat like a stag's horn in shape, and spreading flat on the ground. Stem more than a foot high, thick and very woolly, sending out branches by pairs, and having long narrow leaves in pairs at each joint, which are ferrate. Flowers in loose whorled spikes, at the top of the stalks barren. Corolla white.

[Bobart describes it as ochroleucous or pale yellow, or brimstone-coloured. Seeds large, rounder than in most of the other species.

Native of Persia, where it was gathered by Rauwolf. It was sent by Huntingdon from Aleppo, and was cultivated several years (before 1699) in the Oxford botanic garden. It flowers in July and August<sup>3</sup>. Its being sent from Aleppo, probably gave occasion to Mr. Miller to set it down as a native of Syria.]

64. Leaves of a thick substance and very woolly, especially on their under side, the upper side rugged and wrinkled, with several longitudinal veins diverging from the midrib. Stems about two feet high, sending out many branches in pairs. Flowers in whorled terminating spikes: under each whorl two hollow green leaves shorter than the calyx. Under lip of the corolla white, upper pale blue.

[Stem upright, firm, clothed with white wool, single at bottom, but divided above into numerous panicle branches. Root-leaves procumbent, ovate, petioled, sinuate, crenate, very much wrinkled, woolly, white, blunt: upper stem-leaves sessile, toothed, acute: the uppermost sometimes bent back. Bractes concave, nerved, converging, roundish, mucronate, shorter than the calyx, woolly or subvillose. Whorls four or six-flowered. Flowers on short pedicels. Calyx whilst young woolly, striated, five-toothed, the teeth ending in a little prickle; but when the fruit is ripe, closed and compressed. Corolla white, pubescent: upper lip narrow, sickle-shaped; lower three-lobed, the side lobes very small, the middle one excavated, emarginate; or as Linneus describes it cohering in front and forming a bag. Anthers yellow. Seeds brown, even, compressed a little on one side, and subtriquetrous on the other<sup>4</sup>.

It is a biennial plant, native of France, Austria, Illyria, Italy, Greece and Africa. It was cultivated in 1570, according to Lobel, and flowers in May and June<sup>5</sup>.]

There are two varieties of this, one with very broad embracing leaves, slightly indented on the sides; the other with longer leaves deeply jagged.

[7. Has the leaves nearly of the shape of Betony, but more deeply sinuate towards the base, soft and lanuginose. Stems branched, a cubit high. Flowers few in a whorl, white. It came from Aleppo<sup>6</sup>. See n. 78.

65. This differs from the preceding, in having the stem almost always quite simple, in its clamminess, in its narrow bractes, with the leaves not bent back at the tip, and its unarmed calyxes. It is distinguished from

*S. argentea*, by having narrower leaves, not at all erose or tooth-angular, the stem not panicle, and by the colour of the flowers.—Native of Spain, in the mountains about Sigüenza<sup>7</sup>.]

66. Leaves of a thick consistence, having several irregular indentures on their borders. Stem near a foot and half high, sending out two or four branches near the bottom, which grow erect. Whorls of flowers large, towards the top barren. Corollas white.

[It is a middle species between *Sclarea* and *Æthiopsis*. Leaves erose, in the barren herb very tomentose. Panicle less brachiate, pubescent, clammy, with the ends of the branches barren, as it were spiny. Bractes concave, awnless. Corolla white, with the helmet purplish and pubescent, and the lip yellowish. Style longer than the corolla<sup>8</sup>.

Native of the island of Candia. Biennial. Cultivated in 1768, by Mr. Miller<sup>9</sup>;] who says that it is a native of Sicily, as well as of the Archipelago; that in dry soils it will live several years; that it flowers in June, and that the seeds ripen in the beginning of August.

[67. Stem pubescent at top and roundish. Lower leaves quinate-pinnate, the upper ones ternate. Lateral leaflets petioled lanceolate blunt veined quite entire pubescent on both sides: terminating leaflet twice as large as the others oblong blunt veined pubescent on both sides. Flowers whorl-spiked terminating naked. Bractes ovate acuminate quite entire.—Native of the Levant. Shrubby<sup>10</sup>.]

68. This is an annual or biennial plant, with trailing stalks. The lower leaves are composed of two or three small pairs of leaflets, terminated by one large leaflet; those higher up are trifoliate, with the terminating leaflet four times the size of the side ones. Flowers in whorls, large, both corolla and calyx of a deep blue colour.

Stem hairy. Calyx ovate, hirsute, inflated; the mouth compressed without teeth. Corolla not sickle-shaped small purple<sup>11</sup>.

Native of the Levant. Cultivated 1739, in the Chelsea garden. It flowers in July<sup>12</sup>.

69. Lower leaves pinnate, upper ternate, with the end leaflet larger, equally serrate, on long petioles, the upper ones often simple. Flowers in whorls, large, flesh-coloured. Seeds round, black<sup>13</sup>. It resembles the following species, but is distinct in the form of the leaves, the structure of the flowers, and the long lanceolate bractes<sup>14</sup>.—Native of the Levant.

70. Stem suffruticose low round hoary with a few white hairs scattered over it. Common petiole channelled. Leaflets five petioled obovate serrate towards the tip, nerved, the end leaflet a little larger. Flowers in whorls forming a terminating spike; the lower whorls supported by two bracte-shaped entire leaves. There is besides a single proper bracte to each flower, ovate acute entire hoary shorter than the calyx. Calyx striated two-lipped ringent, with the upper lip three-toothed, the lower deeply divided, with the teeth spiny. Corolla purple, twice as long as the calyx; the throat ventricose, the upper lip arched emarginate villose on the outside, the lower widened and waved.

Native of Armenia, where it was gathered by Tournefort<sup>15</sup>.

71. This differs from *S. pinnata*, to which it is allied, in having the lower leaves bipinnate, the plant naked and smooth below, the flowers panicle-whorled. Native of Japan. Annual<sup>16</sup>.

72. This is an intermediate species between *S. clandestina* and *ceratophylla*. Native of Sicily, and Egypt, where it was found by Forskahl. Biennial<sup>17</sup>. Introduced in 1771, by Mons. Richard. It flowers from June to September<sup>18</sup>.

73. Stem of the second year flowering, erect, a foot and half high, leafless, with whorls beyond the middle. Branches two, opposite, below the lowest whorl. Root-leaves ovate, lyrate, with a smaller lobe at the

<sup>1</sup> Hort. kew. <sup>2</sup> Cavanilles. <sup>3</sup> Mor. hist. and hort. kew. <sup>4</sup> Willdenow.  
<sup>5</sup> Desfontaines. <sup>6</sup> Hort. kew. <sup>7</sup> Mor. hist.

<sup>8</sup> Vahl. <sup>9</sup> Linn. spec. <sup>10</sup> Hort. kew. <sup>11</sup> Willdenow.  
<sup>12</sup> Linn. syst. <sup>13</sup> Hort. kew. <sup>14</sup> Etlinger.  
<sup>15</sup> Willdenow. <sup>16</sup> Smith. <sup>17</sup> Thunberg. <sup>18</sup> Linn. mant.  
<sup>19</sup> Hort. kew.



base on both sides, repand-crenate, blunt, villose, green. Bractes shorter than the calyx, cordate, acute, quite entire. Whorls on each side with three or five flowers, on short peduncles. Calyxes with clammy hairs scattered over them. Corolla blue, three times as large as the calyx: helmet sickle-shaped, semibifid with the lobes incumbent: lip three-lobed, with the middle one two-lobed, larger, crenate, netted at the base with blue dots. Style twice as long as the corolla. It has the appearance of the next species.—Native of the Levant; where it was found by Forskahl.

74. Native of Russia. Introduced in 1780, by Peter Simon Pallas, M.D. It flowers from June to September<sup>p</sup>.

75, 76. Both supposed to be natives of the empire of Russia.

77. Stem upright, hirsute, with blunt angles. Branches long, rod-like, upright. Leaves smooth; the lower ovate-oblong, blunt; middle and upper few, sessile, lanceolate, acute, often quite entire. Two, four or six flowers in a whorl, distinct, pedicelled, before and after they open nodding. Bractes ovate, acute, reflex. Calyx hirsute, striated, five-toothed; teeth bristly-spinose at the tip, the three upper ones shorter. Corolla blue, the size of *S. pratensis*: the upper lip villose, sickle-shaped, compressed; the lower three-lobed; the middle lobe larger, concave. It differs from *S. bicolor* in having ovate-oblong crenate leaves, not erose or sinuate-crenate. It is an annual plant, native of Algiers near Maiane.

78. This is a branched upright shrub. Branches villose, with blunt angles. Leaves petioled, crenate-toothletted, with the teeth sometimes sharp, sometimes blunt; the lower ones ending bluntly, the upper branch-leaves acutely. Whorls four or six-flowered. Flowers subsessile. Bractes cordate, concave, mucronate, hirsute. Calyx two-lipped, villose, with whitish dots frequently scattered over it, after flowering compressed on both sides and closed: the three upper teeth almost equal; the lower somewhat spiny. Corolla like that of *S. pratensis*, but white and only half the size: upper lip villose and bowing; lower three-lobed, the middle lobe excavated, emarginate. Stamens two barren, very small; two fertile, often standing out. Seeds roundish. The whole plant has a very strong smell.—Native of the kingdom of Tunis.

79. Allied to *S. Æthiopis*. Differs in the stem, branches, clammy calyxes villose not woolly, in the corolla being almost double the size; the upper flowers abortive. The leaves are almost tomentose, lying in a ring on the ground. But the leaves are sometimes almost smooth. The root is biennial<sup>q</sup>.

This is probably the third *Sclarea* of Miller, which he says] has some resemblance of the second, (*S. Æthiopis*) but the leaves are larger, very woolly, and glutinous; they are oblong-ovate, deeply and sharply indented, and end with very acute points. The stalks are woolly, about two feet and a half high, sending out side branches by pairs; these terminate in loose spikes of whorled flowers, which are white, and the whorls are smaller than those of the other sorts.

Native of Portugal and Syria, also of Barbary. It was cultivated by Mr. Miller in 1743.

Mr. Miller has another species of *Sclarea* from Tournefort's corollary, which he names after that celebrated author. *S. orientalis* (n. 10). He describes it as having a perennial root, from which spring out many spear-shaped leaves about four inches long, and one inch and a half broad in the middle, of a dark green colour, ferrate and ending in acute points. The stalks rise three feet high, sending out many branches by pairs their whole length; having leaves on them, which towards the top are sessile. The flowers grow in whorled spikes at the top, having no leaves under them; they are small, of a bright blue colour, and at the top of the spike are very deep blue flowers which are barren. These appear in July, and the seeds ripen in September.

Native of the Levant, where it was discovered by

Tournefort, who sent the seeds to the royal garden at Paris, and compares the leaves to those of Betony; only that they are very sharp, and notices the purple coma. This also was cultivated by Mr. Miller in 1743.

He has likewise two species of *Salvia* not noticed by Linneus, both found about Smyrna by William Sheard, when he was consul there: *S. fruticosa*, n. 5. and *S. orientalis*, n. 8.

#### PROPAGATION AND CULTURE.

All the sorts of Sage may be propagated by seeds if they can be procured; but as some of them do not perfect their seeds in England, and most of the sorts, but especially the common kinds for use, are easily propagated by slips, it is not worth while to raise them from seeds. The slips of the hardy sorts should be planted the beginning of April on a shady border, where, if they are now and then refreshed with water, if the season should prove dry, they will soon take root. When the slips have made good roots, they may be taken up with balls of earth, and transplanted where they are to remain, which should always be upon a dry soil, and where they may have the benefit of the sun: for if they are planted on a moist soil, or in a shady situation, they are very subject to be destroyed in winter; nor will these plants endure the cold so well, when planted upon a rich soil, as those which have a barren, dry, rocky soil, which is the case of most of the verticillate plants; for these will often grow upon walls, where, although they are more exposed to the cold than those plants in the ground, they are always found to remain in severe winters when the others are destroyed. The side shoots and tops of these plants may be gathered in the summer, and dried, if designed for tea, otherwise they are best taken green from the plants for most other uses.

The roots of the common sorts of Sage will last several years, if they are in a warm dry soil; but where they are often cropped for use, the plants will become ragged, so there should be a succession of young ones raised every other year.

Several of the sorts are somewhat tender, and will not live through the winter in the open air in England, therefore these must be planted into pots filled with fresh, light, sandy earth, and in winter they must be removed under a hot-bed frame, that they may have a great share of fresh air whenever the season is mild; for if they are too much drawn, they seldom flower well, and make but an indifferent appearance. In summer they must be exposed amongst other exotic plants in some well-sheltered situation, for they are pretty hardy, and only require to be sheltered from the frost. These plants must be often refreshed with water in warm weather, otherwise they will shrivel and decay; and they should be new-potted at least twice every summer, because their roots will greatly increase, which, if confined in the pots too long, will turn mouldy and decay.

Others, as the 1st, 27th, 68th, &c. are annual plants, only propagated by seeds; these may be sown upon a bed of light earth in the places where they are to remain. The seeds of the 68th sort should be sown in autumn, and then the plants will come up the following spring; but, if they are kept out of the ground till spring, the plants will not come up till the next year. Those of the 27th sort may be sown the beginning of April upon a warm border, where the plants will appear in May, and require no other care but to thin them where they grow too close, and keep them clean from weeds; and if they should grow tall, they must be supported, otherwise the strong winds will break them down; but the 68th sort spreads its branches upon the ground, so will require no support, therefore this only requires to have room, and to be kept clean from weeds.

Others again, as the 2d, 29th, 35th, 54th, 55th, 56th and 57th, being natives of a warmer country, require protection in winter; they are easily propagated by cuttings in the spring and summer months. If these are planted early in the spring, it will be the better way to plant them in pots, which should be plunged into

<sup>p</sup> Linn. mant.

<sup>q</sup> Hort. kew.

<sup>r</sup> Desfontaines.



into a very moderate hot-bed; and, if they are shaded from the sun in the heat of the day, and gently refreshed with water as they may require it, they will have put out good roots in about two months, when they should be inured gradually to the open air, into which they should be removed soon after. The cuttings, which are raised early in the season, will become strong plants before winter, and will be in a better condition to resist the cold than those which are weak.

If the cuttings are planted in summer, they will require no artificial heat, so that if these are planted on a bed of fresh loamy earth, and covered close down with a bell or hand-glass, and shaded from the sun in the heat of the day, giving them now and then a little water, they will take root freely; and when they begin to shoot, they should have free air admitted to them by raising the glass on one side, and so gradually exposed to the open air. When the plants are well rooted, they should be each transplanted into a separate small pot filled with fresh light earth, and placed in a shady situation till they have taken new root; then they may be removed to a sheltered situation, where they may remain till the approach of frost, when they must be carried into shelter, and in winter treated in the same manner as other hardy green-house plants, which only require protection from frost, observing not to over-water them during the cold weather, but in summer, when they are in the open air, they will require it often.

16, 17. Sow the seeds in the spring, where they are designed to remain; keep them clean from weeds, and thin them where they are too close.

26. This, though a native of India, is hardy enough, to live in the open air in England; and the root will abide several years in a dry soil.

[It requires however a little care to be taken of it in severe winters. It flowers in great perfection in a large garden pot, but it will succeed as well or better in the open border.

This magnificent species may be increased by seeds, but these being in general sparingly produced in England, it may be also increased by parting the roots in the autumn or spring<sup>1</sup>.]

28. 31. These propagate themselves in plenty, if the seeds are permitted to scatter, and only require to be kept clean from weeds.

38 and 52. These rarely or never producing seeds in England, are propagated by cuttings, which may be planted any time in summer; if these are planted in a bed of soft loamy earth, and covered close with a bell or hand-glass, observing to shade them from the sun, and refresh them with water as they may require it, they will take root very freely, then they must be inured to the open air; after they have put out good roots, they should be carefully taken up, and each planted in a separate small pot filled with light fresh earth, placing them in the shade till they have taken new root; then they may be placed among other hardy green-house plants in a sheltered situation till october, when they should be removed into shelter before hard frost comes on; but as they only require protection from hard frost, they should have as much free air as possible in mild weather.

Mexican Sage must have a dry situation in winter, for the young shoots are very apt to grow mouldy in a damp air.

[41. This charming species of Sage is now very generally cultivated near London, as a green-house plant. It is easily propagated by cuttings. In the winter it requires to be placed in a warm dry green-house, and to be sparingly watered, being tender and apt to go off<sup>2</sup>.]

48. Sow the seeds in the spring on an open spot of ground; keep the plants clean from weeds, and let them not be nearer than two feet, for they grow very large, and will last several years.

50. This may not only be propagated by seeds, but by parting the roots in autumn, and will continue several years.

<sup>1</sup> Curtis.

<sup>2</sup> Idem.

61. Common Clary is propagated by seeds, which should be sown in the spring, and when the plants are fit to remove, they should be either transplanted into beds, or if a large quantity is required, they may be planted in an open spot of ground in rows two feet asunder, and one foot distance in the rows. After the plants have taken root, they will require no farther care but to keep them clean from weeds. The winter and spring following the leaves, which are the only part used, will be in perfection, and in the summer they will run up to flower, and after they have ripened their seeds decay, so that there should be annually young plants raised for use. It will thrive upon almost any soil that is not very wet, for in moist ground the plants frequently rot in winter.

The other species of *Salvia*, commonly known under the name of *Sclarea* or *Clary*, may be propagated and treated in the same way; as *sylvestris*, n. 19. *nemorosa*, n. 20. *fyriaca*, n. 21. *hæmatodes*, n. 23. *pratensis*, n. 24. *glutinosa*, n. 50. *ceratophylla*, n. 63. *Æthiopis*, n. 64. *patula*, n. 79. *Glutinosa* and some others may be increased by parting the roots. Most of them do best in a warm dry soil; where some will endure several years.

66. Sow the seeds in the beginning of april in a dry or rubbishy soil, where the plants will live through the winter in the open air, and the second year will produce flowers and seeds.

[*SALVIA*. See *Phlomis*.

*SALVIFOLIA*. See *Celtis*.

*SALVINIA*. (So named by Micheli, in honour of Antonio Maria Salvini, a nobleman of Florence.)

*Lin. gen. Schreb. n. 1617. Mich. gen. 58. Guettard in act. gall. 1762. p. 549. t. 29. Juss. 16.*

*Class. 24. 1. Cryptogamia Miscellaneæ.*

#### GENERIC CHARACTER.

\* *Male Flowers* four to nine, among whorled roots, heaped into a little ball.

*CAL.* subglobular, pubescent, one-celled, consisting of a double membrane, the inner thinner, ten or twelve ribs between them; gaping?

*COR.* none, unless it be the inner membrane of the calyx.

*STAM.* An upright pillar, placed on the base of the calyx, the whole length of it, and putting out from the top from two to three hundred capillary filaments. *Antbers* globular, one-celled.

\* *Female*, in the middle of the ball, solitary.

*CAL.* and *COR.* as in the Males.

*PIST.* *Germ*s about fifteen, obliquely ovate, blunt, rugged with dots, each on distinct pedicels, fastened to the bottom of the calyx. *Style* none. *Stigma* a dot on the top of the germ?

*PER.* none.

*SEEDS* as many as there are germs, and of the same form.

*OBS.* The male and female flowers may be distinguished in the dry plant before the calyxes open, by the size of the protuberant grains.

For the species, see *MARSILEA*.

#### SAMARA.

*Lin. gen. Reich. n. 156. Schreb. n. 195. Juss. 379.*

*Class. 4. 1. Tetrandria Monogynia.*

*Nat. order of Rhamni, Juss.*

#### GENERIC CHARACTER.

*CAL.* *Perianth* very small, four-parted, acute, permanent.

*COR.* *Petals* four, ovate, sessile, with a longitudinal pit at the base.

*STAM.* *Filaments* four, awl-shaped, long, opposite to the petals, immersed in the pit. *Antbers* subcordate.

*PIST.* *Germ* ovate, shorter by half than the corolla, superior, ending in a *Style* that is superior and longer. *Stigma* funnel-form.

*PER.* *Drupe* roundish.

*SEED* solitary.

#### ESSENTIAL CHARACTER.

*Cal.* four-parted. *Cor.* four-petalled. *Stam.* immersed in the base of the petal. *Drupe* one-seeded.



1. *Samara læta*.  
*Lin. mant.* 199. *syft.* 159. *Reich.* 1. 333. *Willd.* 1. 665. *Swartz, prodr.* 151.  
*Memecylon umbellatum. Lin. zeyl.* n. 469. *Burm. ind.* 87. *Burm. zeyl.* 76. t. 31.  
*Flowers clustered pedicelled, leaves ovate obtuse.*
2. *Samara coriacea*.  
*Lin. spec. ed. Willd.* 1. 665. *Swartz, prodr.* 32. *descr.* 261.  
*Flowers sessile conglomerate, leaves lanceolate-ovate acute subcoriaceous.*
3. *Samara pentandra*.  
*Lin. spec. ed. Willd.* 1. 665. *Ait. kew.* 1. 160.  
*Flowers pentandrous, leaves elliptic.*
4. *Samara floribunda*.  
*Lin. spec. ed. Willd.* 1. 665.  
*S. pentandra. Swartz, descr.* 262.  
*Rapanea guianensis. Aubl. guian.* 1. 121. t. 46. *Swartz obs.* 51.  
*Flowers pentandrous, leaves obovate.*

## DESCRIPTIONS, &amp;c.

1. Branches purplish, even. Leaves alternate, petioled, lanceolate-elliptic, quite entire, even on both sides. Corymbs lateral, axillary, scarcely longer than the petioles. Flowers copious, yellow.—It differs from *Cornus* not only in having a superior germ, but the filaments opposite to, not alternate with the petals. The leaves also are alternate, whereas in *Cornus* they are opposite. It is a shrub, and native of the East Indies<sup>1</sup>.

2. This is a tree, with a trunk from twenty to thirty feet in height, and upright branches. Branchlets alternate, sometimes four-cornered, even. Leaves alternate, scattered, quite entire, somewhat rigid, nerved and veined, very smooth, membranaceous, dark-green; on short petioles. Flowers lateral and axillary, small, whitish. Balls of flowers scattered, approximating. Calyx four-leaved, or four-parted to the base: leaflets ovate, acute, keeled, scarcely half a line in length, a little connate at bottom. Petals four, slightly connected at the base, oblong, sharpish, spreading, three times as long as the calyx. Filaments very short, inserted into the base of the petals. Anthers oblong, spreading, pressed close to the segments of the corolla, biggish. Germ superior, globular. Style very short. Stigma large, ovate. Berry? globular, the size of a pepper-corn, one-celled. Some trees of this species have male flowers only. *S. læta* has smaller thinner leaves and blunt; flowers clustered, not conglomerate, but subumbelled, on pedicels a line and half in length; and the corollas more coloured.

Native of Jamaica, in the southern parts, in woods on the mountains<sup>2</sup>.

3. Native of the Cape of Good Hope. Introduced about 1770. It flowers from november to february<sup>3</sup>. Distinct from the two preceding, and agreeing with the next species in having five stamens to the flowers.

4. This is a shrub, with the trunk five feet high, branched at top. Leaves alternate, petioled, thick, smooth, quite entire. Flowers in bundles, subsessile, scattered over the bark of the branches and branchlets. Corolla white. The unripe germ exhibits five or six seeds, but one only ripens. Berry violet-coloured. It flowers and fruits in december.

Native of Cayenne and Guiana on the margins of meadows or savannas<sup>4</sup>.

SAMBAC. See *Jasminum*.]

SAMBUCUS (of *Pliny*. Derivation uncertain. Axln of the Greeks.)

*Lin. gen.* n. 372. *Reich.* n. 402. *Schreb.* n. 505. *Tournef.* t. 376. *Vaill. act. gall.* 1722. *Juss.* 214. *Gartn.* t. 27.

Class. 5. 3. Pentandria Trigynia.

Nat. order of *Dumosa*. *Caprifolia*, *Juss.*

## GENERIC CHARACTER.

CAL. Perianth one-leaved, superior, five-parted, very small, permanent.

<sup>1</sup> *Lin. mant.* and *syft.*

<sup>2</sup> *Swartz.*

<sup>3</sup> *Hort. kew.*

<sup>4</sup> *Aublet.*

COR. one-petalled, rotate-concave, five-cleft, blunt: segments reflex.

STAM. Filaments five, awl-shaped, the length of the corolla. Anthers roundish,

PIST. Germ inferior, ovate, blunt. Style none, but instead of it a ventricose gland. Stigmas three, blunt.

PER. Berry roundish one-celled:

SEEDS three, convex on one side, angular on the other.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-cleft. Berry three-seeded.

## SPECIES.

1. *Sambucus Ebulus*. Dwarf Elder.  
*Lin. spec.* 385. *Reich.* 1. 736. *Willd.* 1. 373. *fl. suec.* n. 265. *vir. cliff.* 25. *hort. cliff.* 110. *mat. med.* 88. *Woodv. med. bot. suppl.* 128. t. 260. *Huds. angl.* 130. *Wither. arr. ed.* 3. 316. *Smith, brit.* 336. *engl. bot.* t. 475. *Curt. lond.* 3. 18. *Lightf. scot.* 171. *Relb. cant.* n. 247. *Sibth. oxon.* n. 320. *Abbot, bedf.* 70. *Hall. belv.* n. 671. *Scop. carn.* n. 371. *Pollich pal.* n. 312. *Hoffm. germ.* 109. *Roth. germ.* 1. 137. 2. 365. *Krock. filef.* n. 477. *Villars, dauph.* 2. 544. *Allion. pedem.* n. 473. *Du Roi barbecc.* 2. 415. *Blackw. t.* 488. *Mill. fig. t.* 226. *Plenck, ic.* 230.  
*S. humilis. f. Ebulus. Baub. pin.* 456. *Raii hist.* 1611. *syn.* 461.  
*Ebulus. Fuchs. hist.* 65. *Camer. epit.* 979. *Matth.* 1270.  
*E. f. Sambucus humilis. Ger.* 1238. *emac.* 1426. *Park. theat.* 208. 7. t. 209. f. 7.  
*E. f. S. herbacea. Baub. hist.* 1. 549. 2.  
*β. Sambucus humilis. Mill. dict.* n. 5.  
*S. hum. f. Ebulus folio laciniato. Baub. pin.* 456.  
*Cymes three-parted, stipules leafy, stem herbaceous.*
2. *Sambucus canadensis*. Canadian Elder.  
*Lin. spec.* 385. *Reich.* 1. 737. *Willd.* 1. 1494. *arb.* 356. *Du Roi barbecc.* 2. 414. *Wangenb. amer.* 115. *Thunb. jap.* 126.  
*Cymes five-parted, leaves subbipinnate, stem frutescent.*
3. *Sambucus nigra*. Common Elder.  
*Lin. spec.* 385. *syft.* 295. *Reich.* 1. 737. *Willd.* 1. 1495. *mat. med.* 89. *Woodv. med. bot.* 219. t. 78. *fl. suec.* n. 265. *hort. cliff.* 109. *Gartn. fruct.* 1. 137. *Huds. angl.* 130. *Wither. arr. ed.* 3. 316. *Smith, brit.* 336. *engl. bot.* t. 476. *Lightf. scot.* 171. *Relb. cant.* n. 248. *Sibth. oxon.* n. 321. *Fl. dan.* t. 545. *Hall. belv.* n. 670. *Hoffm. germ.* 109. *Roth. germ.* 1. 137. 2. 366. *Pollich pal.* n. 313. *Scop. carn.* n. 372. *Krock. filef.* n. 478. *Villars, dauph.* 2. 544. *Allion. pedem.* n. 472. *Du Roi barbecc.* 2. 410. *Blackw. t.* 151. *Knorr. del.* 1. t. H. *Plenck, ic.* 229. *Regnault bot.* (Le Bureau.)
- α. *Sambucus pulla*. *Ait. kew.* 1. 374.  
*Black-berried Elder.*  
*Sambucus. Dod. pempt.* 845. 1. *Camer. epit.* 975. *Matth.* 1268. *Fuchs. hist.* 64. *Trag.* 997. *Tabern. ic.* 1028. *Lob. ic.* 2. 161. *Ger.* 1234. *emac.* 1422. *Raii syn.* 461.  
*S. vulgaris. Baub. hist.* 1. 544. *Park. theat.* 208. 1. *Raii hist.* 1609.  
*S. fructu in umbella nigro. Baub. pin.* 456. *Tournef. inst.* 606. *Dubam. arb.* 2. 253. t. 65.
- β. *S. viridis*. *Ait. kew.* 1. 374.  
*Green-berried Elder.*  
*S. fructu in umbella viridi. Baub. pin.* 456.
- γ. *S. alba*. White-berried Elder.  
*S. fructu albo. Ger.* 1234. *emac.* 1422. *Park. theat.* 208. *Raii hist.* 1610.  
*S. acinis albis. Baub. hist.* 1. 546. *Raii syn.* 461. 2.
- δ. *S. laciniata*. *Mill. dict.* n. 2. *Lin. syft.* 296. *Du Roi barbecc.* 2. 413. *Baub. hist.* 1. 549. *Raii hist.* 1610. *Retz. obs.* 3. 30. n. 47. & 6. 27. n. 32.  
*S. laciniatis foliis. Ger.* 1234. 2. *emac.* 1422.  
*S. lacin. folio. Baub. pin.* 456. *Park. theat.* 208. *Raii syn.* 461.  
*Parsley-leaved Elder:*  
*Cymes five-parted, leaflets ovate serrate, stem arboreous.*
- [4. *Sambucus japonica*. Japanese Elder.  
*Lin. syft.* 295. *Willd.* 1. 1496. *Thunb. jap.* 125.  
*Cymes three-parted; stipules none, stem shrubby.]*
5. *Sambucus*



5. *Sambucus racemosa*. *Red-berried Elder*.  
*Lin. spec.* 386. *Reich.* 1. 738. *Willd.* 1496. *arb.*  
 337. *Jacqu. collect.* 1. 36. *icon. rar.* 1. t. 59.  
*Hoffm. germ.* 109. *Roth. germ.* 1. 137. 2. 367.  
*Pollich pal. n.* 314. *Scop. carn. n.* 373. *Hall.*  
*helv. n.* 672. *Krock. filif. n.* 479. *Villars dauph.*  
 2. 545. *Allion. pedem. n.* 474. *Gmel. fib.* 3. 147.  
*Du Roi barbecc.* 2. 417.  
*S. racemosa rubra.* *Baub. pin.* 456. *Park. theat.* 208. 4.  
*Raii hist.* 1610. *Tournef. inst.* 606. *Dubam. arb.*  
 2. t. 66.  
*S. rac. acinis rubris.* *Baub. hist.* 1. 549.  
*S. rac. vel cervina.* *Ger.* 1234. f. 3. *emac.* 1422. 4.  
*S. cervina.* *Tabern.* 1029.  
*S. montana.* *Camer. epit.* 976.  
*S. mont. racemosa.* *Lob. ic.* 163.  
*Racemes compound ovate, stem arboreous.*

## DESCRIPTIONS, &amp;c.

1. [Root creeping. Stems herbaceous, three feet high, upright, roundish, grooved, leafy, somewhat enlarged at the joints, purplish, branched above; the branches opposite and upright. Leaves opposite, unequally pinnate, dark green, smoothish: leaflets four to six pairs, ovate-lanceolate, veined, acute, ferrate, unequal and generally glandular at the base, smooth above, downy with a slight roughness underneath, and whiter; the lowermost often lobed. Stipules large, leafy, ferrate, sometimes accompanying a pair of leaflets as well as the whole leaf. Cyme terminating, in three principal branches, and those dividing into many others, hairy and many-flowered. All the flowers pedicelled. Calyx small, purple. Corolla of a dull blood red. Filaments thick, upright, white, with red anthers, having the lobes so distant, that Dr. Withering considers them as distinct, and the flower therefore as having ten anthers. Berries globular, purplish black, with three, sometimes four seeds<sup>2</sup>.

The dwarf Elder, formerly called Wall-wort or rather Wale-wort, and Danewort, from a notion of its having sprung from the blood of the Danes; differs from the common Elder in being herbaceous, in having a creeping root, and narrower leaflets more numerous, and sometimes lobed<sup>3</sup>.

Mr. Woodward remarks, that the stems are very brittle: and Dr. Withering, that the calyx has sometimes six segments, and that the divisions of the corolla are pointed, white above and purple beneath.

Mr. Curtis speaks of the stem as six feet in height; I have never seen it near so high. Mr. Miller gives it from three to five feet, in proportion to the goodness of the ground: he distinguishes this from the common Elder, by the number and shape of the leaflets: that seldom has more than five, broader and much shorter than in this, and pretty deeply ferrate; whereas the dwarf Elder has nine, eleven or even thirteen leaflets, long, narrow, and very slightly indented. The flowers are smaller in this, and spotted with red. The berries also are smaller.

[Native of many parts of Europe, in waste ground, balks of corn fields, by hedges and way sides, flowering in July. In the midland counties of England it is not uncommon; in Cambridgeshire rather frequent. About London not so, Mr. Curtis having found it only about Lambeth-marsh, and in a lane leading to Upton, Essex, by the garden wall of the late Dr. Fothergill. Dr. Milne however says, that he found it abundantly at Ratley or Ratcliffe, six miles from Barnet, at Ewell in Surry, between East and West Tilbury, a little beyond Ospringe and in Uxbridge church-yard. Also near Farnham, St. Edmund's Bury, Harwich, and St. Clement's church-yard, Ipswich. Blackstone observed it on Uxbridge moor. Warner, in the lane between Sewardstone, commonly called Susan and Waltham-Abbey. Dr. Smith, at Honingham in Norfolk. Dr. Sibthorp, in the parks behind Wadham College, and near Eynsham. Dr. Withering, at the foot of Tamworth Castle-hill. Mr. Pitt, at Tutbury Castle. Mr. Atkinson, near Dalton, Lancashire. Gerarde remarked it at Kilburn Abbey on the road to Edgware, near

Dartford in Kent, at old Brentford town's end next London, and many other places. The berries ripen late in the autumn; but, like the fruit of many other creeping plants, seldom perfect their seeds.

The whole plant has a faint disagreeable smell, resembling that of common Elder, but stronger and more unpleasant. It has the same properties with common Elder, but in some respects more violent. A dram and half of the root is a strong purge. A rob of the berries, though actively cathartic, may be used with tolerable safety as far as an ounce in a dose; but it has the inconveniences of Senna, and is in no respect to be preferred to that drug. No cattle will eat this plant. Moles will not come where the leaves of this or the common Elder are laid. They also drive away mice from granaries, and the Silesians strew them where their pigs lie, under a persuasion that they prevent some of the diseases to which swine are liable<sup>4</sup>.]

3. Mr. Miller makes the cut-leaved dwarf Elder a distinct species. He says that the roots do not creep so much; that the stems do not rise so high; that the leaves have seldom more than seven leaflets, and towards the top only five, longer and narrower than in the common dwarf Elder, deeply cut on their edges, and ending with winged acute points.

2. This rises to the height of twenty feet in North America, but in England it is seldom much more than half that height. The leaves have generally seven or nine leaflets, which are longer and narrower than those of the common Elder: the berries are smaller, of the same black colour, but not so full of juice; nor have the leaves so strong a scent.

[It is a middle species between *Ebulus* and *nigra*, having the habit of the latter, but pinnate leaves, with the lower leaflets ternate, and all more of an ovate form. It is shrubby, but commonly perishes above ground in winter. The cymes are of the same structure as in *nigra*; and the stipules are filiform and truncate, as in that, not expanded into leaflets, as in *Ebulus*. The berries are reddish, and said to be eatable<sup>5</sup>.

In the Mantissa Linneus remarks, that it is perhaps a variety, with the leaves simply pinnate; the berries globular and red, the size of Coriander seed.

The stem, says Willdenow, in our gardens, is perennial; the leaves bipinnate, seldom simply pinnate; the flowers as in *S. nigra*, but smaller and smelling strong; the berries small, dark red and sweet.

Native of North America. Cultivated in 1768, by Mr. Miller. It flowers from June to August<sup>6</sup>.

3. The common Elder grows to a bushy tree, twelve or sixteen feet in height, much branched, and covered with a smooth gray bark when young, which becomes rough on the trunk and older branches. Wood hard, tough, yellow, polishing almost as well as the box-tree; the younger branches containing a very large proportion of medullary matter or pith. Leaves opposite, unequally pinnate: leaflets commonly five, smooth, nearly equal at the base, with very small or no stipules. Cymes terminating, dividing into five principal branches, and many small ones. Flowers cream-coloured, with a sweet but faint smell, especially when dried. Stamens divaricating; anthers yellow, sagittate, single. Berries globular, blackish purple, mawkishly sweet<sup>7</sup>: the juice watery and red. There are three little threads in the axis of the berry, inserted into the apex of the seeds; which are oblong, narrowing upwards, cartilaginous, shagrinéd with very small wrinkles, flattened a little, slightly convex on one side and somewhat angular on the other<sup>8</sup>.

Native of Britain and many other parts of Europe; also of Africa, Japan, &c. With us it is abundant in damp hedges and woods; flowering in May and June.

The whole plant has a narcotic smell, and it is not prudent to sleep under its shade. The wood is commonly made into skewers for butchers, tops for angling rods, and needles for weaving nets; it is not bad to

<sup>2</sup> Smith and Curtis.<sup>3</sup> Curtis.<sup>4</sup> Withering, Smith, Woodville.<sup>5</sup> Hort. kew.<sup>6</sup> Smith.<sup>7</sup> Linn. spec.<sup>8</sup> Gartner.



turn in the lathe. The pith being exceedingly light, is cut into balls, used in electrical experiments.

This tree is as it were a whole magazine of physic to rustic practitioners, nor is it quite neglected by more regular ones. An ointment is made of the green inner bark, which is also a strong purgative: in smaller doses it is diuretic, and has done eminent service in obstinate glandular obstructions and in dropsies. Sydenham, who recommends it as an effectual hydragogue, directs three handfuls of it to be boiled in a quart of milk and water, till only a pint remains, of which one half is to be taken night and morning, and repeated several days. Boerhaave gave its expressed juice in doses from a dram to half an ounce. It usually operates both upwards and downwards. If sheep that have the rot can get at the bark and young shoots, they will soon cure themselves. It is an ingredient in the black dye.—The leaves are also purgative, but more nauseous than the bark. They are an ingredient in several cooling ointments. If turneps, cabbages, fruit-trees or corn be whipped with the green leaves and branches of Elder, or if a gate stuck with the branches be drawn over the crops, it is said that insects will not attack them. An infusion of the leaves is useful for curious gardeners to sprinkle over the buds of such flowers as they wish to preserve from minute caterpillars, for few insects can bear the Elder. It has however its *Phalena* and *Aphis*; the latter of which, according to Evelyn, is exceedingly troublesome, and gathers a fiery redness where it attacks. Not only insects abhor the Elder, but the leaves laid into the subterraneous paths of the Mole are said to drive it away. The flowers are reported to be fatal to turkies, and the berries to poultry in general.—A decoction of the flowers, taken internally, is said to promote expectoration in pleurifies: fresh gathered they are gently laxative and aperient; when dry, they are said to promote chiefly the cuticular excretion, and to be particularly serviceable in erysipetulous and eruptive disorders: externally they are used in fomentations, to ease pain and abate inflammation; in the London Pharmacopœia they are directed in form of an ointment. Many persons use them to give a flavour to vinegar.—The berries are boiled into a rob, which is really useful in sore throats and catarrhs, and acts as a gentle laxative in febrile disorders. The officinal preparation of these berries is the *succus baccae sambuci spissatus* of the London Pharmacopœia. The juice of the berries is employed to give a red colour to raisin or sugar wines<sup>g</sup>; and some country housewives make a wine with this juice chiefly or only, which they esteem very wholesome, but many people think it nauseous.

Linneus says, that sheep eat the Elder, but that horses, cows and goats refuse it; others report that cows are fond of it<sup>h</sup>.] Mr. Miller remarks, that the leaves and stalks are so nauseous, that few animals will browse upon it: and that he has often seen the trees growing in parks, where there has been a variety of animals, which were untouched, when almost all the other trees within reach were cropped by the cattle.

β, γ. The varieties of the common Elder, are those with white or green berries, and variegated leaves. The latter is undoubtedly a variety; and those with white and green berries are the same: but it may be doubted whether this is not a distinct species, the leaflets being much smaller, and very slightly serrate, whereas those of the common sort are deeply serrate; they are also smoother, and of a lighter green.

δ. Parsley-leaved Elder is a distinct species, in the opinion of Mr. Miller: the leaflets being narrower, and cut into several segments, which are again deeply indented on their edges regularly, in form of winged leaves. The stalks are much smaller, and the shoots are short; the leaves have not so strong an odour, and the berries are a little smaller.

[Retzius, in his third fasciculus, believed this to be a distinct species, but in his sixth he abandoned this opinion, having found that the seeds uniformly produce only the common Elder.

<sup>g</sup> Woodville, Withering, Engl. bot.

<sup>h</sup> Withering.

3. Stem shrubby, with the branches empty, smooth, opposite, round, patulous. Leaves opposite, unequally pinnate: leaflets in three, five or seven pairs, ovate, acute, often acuminate, serrate with the margin cartilaginous and white, smooth, an inch or a little more in length. Common petiole round, smooth: partial petioles half an inch long. Flowers terminating, panicle-cymed. Cyme superdecapound, trichotomous, naked without bractes, smooth, spreading. Corollas white. Filaments shorter than the corolla. Germ superior. Style filiform, shorter than the stamens. Stigma capitate, white.—Native of Japan<sup>i</sup>.]

5. This sends up many shrubby stalks from the root, rising ten or twelve feet high, and dividing into many branches, which are covered with a brown bark. Leaves opposite; the lower generally composed of two pairs of leaflets, terminated by an odd one, shorter and broader than those of the common Elder, and deeply serrate; the upper have frequently but three leaflets; they are of a pale green colour and pretty smooth. Flowers of an herbaceous white colour, appearing in april, and sometimes succeeded by berries, which are red when ripe.

[Native of Germany, Switzerland, Italy and Siberia. Cultivated in 1596, by Gerarde<sup>k</sup>.

The leaves are eaten by the red deer, and the berries by partridges, moor-game, and other birds of that order<sup>l</sup>.]

#### PROPAGATION AND CULTURE.

1. Dwarf Elder propagates itself fast enough wherever it is once planted, by its creeping roots, inasmuch that it is very difficult to keep it within bounds.

2. Canadian Elder will put out roots from cuttings almost as easily as the common sort; but being liable to injury from severe frosts, it should be planted in a sheltered situation.

5. The common, and the red-berried Elder may be easily propagated from cuttings, or by sowing their seeds; but the former being the most expeditious method, is generally practised. The season for planting their cuttings is any time from september to march, in the doing of which, there needs no more care than to thrust the cuttings about six or eight inches into the ground, and they will take root fast enough, and may afterwards be transplanted where they are to remain, which may be upon almost any soil or situation; they are extremely hardy, and if their seeds are permitted to fall upon the ground, they will produce plenty of plants the succeeding summer.

These trees are often planted for making fences, because of their quick growth; but as their bottoms become naked in a few years, they are not so proper for that purpose; neither would I recommend them to be planted near habitations, because at the season when they are in flower, they emit such a strong scent, as will occasion violent pains in the heads of those who abide long near them; besides the crude parts which are continually perspired through their leaves, are accounted unwholesome, though the leaves, bark, and other parts, are greatly esteemed for many uses in medicine.

The common Elder will grow in any soil or situation. It is frequently seen in old walls, close to ditches and in very wet places, and even on hollow trees, for wherever the berries are scattered by birds, the seeds will come up.

[SAMBUCUS. See *Eriobalis*.

—— aquatica. See *Viburnum Opulus*.

SAMOLOIDES. See *Scoparia*.]

SAMOLUS (of Pliny. A diminutive from Samos, in which island this plant was observed by Valerandus.)

Lin. gen. n. 222. Reich. n. 238. Schreb. n. 294.

Tournef. t. 50. Juss. 97. Gertn. t. 30.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Preciæ*. *Lyfsmachia*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, superior, blunt at the base: segments erect, permanent.

<sup>i</sup> Thunberg.

<sup>k</sup> Hort. kew.

<sup>l</sup> Krocke.



COR. one-petalled, salver-shaped: *tube* very short, the length of the calyx, patulous: *border* flat, five-parted, blunt: *scalelets* very short, at the base of the sinus of the border, converging.

STAM. *Filaments* five, short, fenced by the scalelets of the corolla. *Anthers* converging, covered.

PIST. *Germ* inferior. *Style* filiform, length of the stamens. *Stigma* capitate.

PER. *Capsule* ovate, girt by the calyx, one-celled, half-five-valved.

SEEDS very numerous ovate (angular, G.) small. *Receptacle* globular, large.

OBS. *The situation of the germ obscures the insertion of the corolla, which is placed at that point where the calyx opens from the germ. Hence it may be doubted whether this corolla is not perigynous and more nearly allied to the Portulacæ, although it be one-petalled. Jussieu.*

#### ESSENTIAL CHARACTER.

COR. salver-shaped. STAM. fenced by the scalelets of the corolla. CAPS. one-celled, inferior.

#### SPECIES.

1. *Samolus Valerandi*. Brookweed or Water Pimpernel.

*Lin. spec.* 243. *fyst.* 212. *Reich.* 1. 472. *Willd.* 1. 927. *hort. cliff.* 51. *ups.* 42. *fl. suec.* n. 192. *Gartn. fruct.* 1. 146. *Huds. angl.* 94. *Wither. arr. ed.* 3. 246. *Smith, brit.* 259. *Curt. lond.* 4. t. 20. *Relb. cant.* n. 177. *Sibth. oxon.* n. 247. *Fl. dan.* t. 198. *Hall. belv.* n. 707. *Pollich pal.* n. 216. *Neck. gallob.* 117. *Ger. prov.* 455. *Villars dauph.* 2. 463. *Desfont. atlant.* 183. *Gron. virg.* 23. *Kniph. cent.* 4. n. 71. *Sabb. hort.* 2. t. 47. *Berg. phyt.* 1. 39. *Weber spicil.* p. 7. *Baub. hist.* 3. 792. 1. *Tournef. inst.* 143. *Raii syn.* 283.

*Anagallis aquatica*, rotundo folio non crenato. *Baub. pin.* 252.

*A. aquat. rotundifolia*. *Ger. emac.* 620. 3. *Raii hist.* 1101.

*A. aquat.* 3. *Lob. obs.* 249. 1. *ic.* 467.

*A. folio subrotundo non crenato*. *Park. theat.* 1237. 5.

*Alfine aquatica perennis foliis Beccabungæ*. *Mor. hist.* 2. 323. f. 3. t. 24. f. 28.

β. *Samolus africanus*.

*S. afr. folio rotundiore*. *Walsh. hort.* 162. t. 23.

#### DESCRIPTION, &c.

[Root perennial, consisting of long white fibres, commonly simple. The whole herb is smooth. Stem from a span to a foot in height, upright, round, leafy, commonly branched a little at top. Leaves alternate, subsessile except the root-leaves, obovate, obtuse, perfectly entire, shining, having few veins and those distant. Racemes terminating, erect, many-flowered: pedicels commonly in pairs, one-flowered, erect, jointed; with one lanceolate bracte at the joint. Flowers small, snow-white: calyx bell-shaped, scarcely half-five-cleft: tube of the corolla cylindrical; border spreading, the segments blunt, equal, the scales lanceolate. Stamens shorter than the tube, included. Style very short<sup>m</sup>. Capsule small, subglobular, covered at bottom by the calyx, which is fastened to it, opening at top half way into five parts. Seeds small, angular, very minutely dotted, of a ferruginous-brown colour, inserted into a biggish, central, globular, spongy, free, pedicelled receptacle, full of little cavities<sup>n</sup>.

This is properly of the genus of *Montia*, and therefore allied to the *Portulacæ* of Jussieu, as that celebrated author suspected. *Sheffieldia repens* of Forster is another species, according to the report of Mr. Dryander<sup>o</sup>.

It is an inhabitant, as Mr. Curtis remarks, of every quarter of the globe, in marshes, wet meadows, and great ditches. It is not very common in England, but by no means so rare as to make it necessary to enumerate its places of growth. July is the month of its flowering.

Mr. Miller considers it as annual. Linneus marks it as biennial; others as perennial.

<sup>m</sup> Smith, Curtis.

<sup>n</sup> Gartner.

<sup>o</sup> Smith.

β. The African plant differs in having the stem firmer and more branched; but it scarcely possesses sufficient marks to render it a distinct species<sup>p</sup>.]

#### PROPAGATION AND CULTURE.

If the seeds be sown soon after they are ripe on a moist spot of ground, they will come up readily and require only to be kept clean from weeds.

[SAMPACCA. See *Liriodendron* and *Michelia*.

SAMPIRE. See *Crithmum*.

——, Golden. See *Inula*.

——, Marsh. See *Salicornia*.

SAMPSUCUS. See *Thymus*.

SAMSTRAVADI. See *Eugenia*.]

SAMYDA. (*Σαμυδα* of Theophrastus. Derivation unknown.)

*Lin. gen.* n. 543. *Reich.* n. 600. *Schreb.* n. 755.

*Jacqu. amer.* 132. *Juss.* 439.

*Class.* 10. 1. Decandria Monogynia.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, coloured within: *tube* bell-shaped, ten-freaked: *border* five-cleft; *segments* ovate, flat, spreading very much, blunt, two of them augmented with a point.

COR. none.—*Nectary* one-leafed, conical, truncate, ten-freaked, almost the length of the calyx, and inserted into its border at the base; *mouth* bluntly ten-toothed or eight-toothed.

STAM. *Filaments* none. *Anthers* ten or eight, oblong, erect, small, placed on the teeth of the nectary.

PIST. *Germ* ovate. *Style* awl-shaped, erect, length of the nectary. *Stigma* capitate, obtuse.

PER. *Capsule* roundish, four-grooved, coriaceous, thick, one-celled, four-valved.

SEEDS very many, subovate, obtuse, marked with a little pore at the base, fastened to the valves, wrapped in a pulpy pellicle.

#### ESSENTIAL CHARACTER.

CAL. five-parted, coloured. COR. none. NECT. bell-shaped, stamiferous. CAPS. berried within, four-valved, one-celled. SEEDS nestling.

#### SPECIES.

[1. *Samyda nitida*.

*Lin. spec.* 557. *Reich.* 1. 302. *Willd.* 1. 624.

*Brown. jam.* 217. t. 23. f. 3.

*Flowers* eight-stamened, *leaves* cordate smooth.

2. *Samyda macrophylla*.

*Lin. spec. ed. Willd.* 2. 625.

*Flowers* eight-stamened, *leaves* ovate acute smooth, *axils* of the veins villose beneath, *corymb* terminating.

3. *Samyda multiflora*.

*Lin. spec. ed. Willd.* 2. 625. *Cavan. ic.* 1. 48. t. 67.

*Flowers* eight-stamened, *leaves* oblong toothed attenuated to both ends, *tomentose* beneath, *peduncles* one-flowered aggregate axillary.

4. *Samyda villosa*.

*Lin. spec. ed. Willd.* 2. 625. *Swartz prodr.* 68. *descr.* 2. 758.

*Flowers* ten-stamened, *leaves* oblong subserrate oblique at the base, *filky*, *villose* beneath, *peduncles* solitary axillary.

5. *Samyda glabrata*.

*Lin. spec. ed. Willd.* 2. 625. *Swartz prodr.* 68. *descr.* 2. 760.

*Flowers* ten-stamened, *leaves* ovate-lanceolate quite entire shining, *peduncles* axillary one-flowered.

6. *Samyda spinescens*.

*Lin. spec. ed. Willd.* 2. 626. *Swartz prodr.* 68. *descr.* 2. 762.

*Flowers* ten-stamened terminating, *leaves* lanceolate-ovate obtuse crenate smooth, *branches* patulous spinescent.

7. *Samyda pubescens*.

*Lin. spec.* 557. *Reich.* 1. 302. *Willd.* 2. 626.

*Flowers* twelve-stamened, *leaves* ovate tomentose beneath.]

8. *Samyda ferrulata*.

*Lin. spec.* 558. *fyst.* 409. *Reich.* 2. 303. *Willd.* 2. 626. *Jacqu. amer.* 132. *collect.* 2. 328. t. 17. f. 1. *piet.* 66.

*Guidonia ulmi folio flore roseo niveo*. *Plum. gen.* 4. *ic.* 146. f. 2.

*Flowers* twelve-stamened, *leaves* ovate-oblong serrulate.

<sup>p</sup> Linn.



# S A M

[9. *Samyda polyandra*.

*Lin. spec. ed. Willd. 2. 626.*

*Melistaureum distichum. Forst. gen. n. 72. prodr. n. 570.*

*Flowers many-stamened.*

## DESCRIPTIONS, &c.

1. Browne calls this shrubby *Samyda* with waxen rudiments, or the larger Clovenberry Bush. It is frequent, with his two other species, in Jamaica, growing commonly in the low lands. It shoots sometimes to the height of seven or eight feet. The leaves are shining and very slightly crenate; rudiments or segments of the nectary soft, red; flowers in slender axillary racemes.

2. Branches smooth, round, scarred with the fallen leaves, yellowish. Leaves large, commonly half a foot or more, indistinctly crenulate at the edge, smooth on both sides, except that at the axils of the veins and along the midrib they are villose. Flowers small, in a peduncled subterminating corymb. Calyx bell-shaped, with the border five-cleft and revolute. Nectary bell-shaped bearing eight very minute awl-shaped filaments. Anthers brown. Germ ovate. Style awl-shaped. Stigma hairy.—Native of the East Indies<sup>1</sup>.

3. The stem seems to be shrubby. Branches woody, round. Leaves alternate, ovate, subserrate, one-nerved with the nerve branched, tomentose beneath. Stipules none, except they were fallen off, or confounded with the axillary scalelets. Flowers small, each on its own short peduncle, all springing from a scaly axillary globule, at first closed, afterwards open. Calyx very deeply divided into four whitish ovate segments. Instead of filaments a whitish pitcher-shaped body, surrounding the germ (as in *Swietenia* and *Portefia*) supports at its top eight ovate sessile anthers. Germ ovate, gradually narrowing towards the top; stigma globular. Described from a dry specimen.—Native of the West Indies<sup>2</sup>.

4. Shrub a fathom high. Leaves alternate, spreading, rounded and oblique at the base, having a short point at the end, nerved and veined, the nerves beneath ferruginous. Petioles round, short, villose. Peduncles axillary, solitary, rising, very short, one-flowered. Flowers biggish, white. Certainly different from *pubescens*.

Native of Jamaica, in the mountains; flowering in spring.

5. A small tree, with a trunk ten or twelve feet high, smooth, unarmed. Leaves alternate, spreading horizontally, nerved and veined, smooth on both sides, shining above; bright green, with pores so small as to be scarcely visible. Petioles shortish. Peduncles in general shorter than the petioles and thicker, axillary, solitary, one-flowered. Flowers biggish, white. Two small acute stipules at the base of the peduncles. Not to be confounded with *S. nitida*, which has cordate leaves, and other differences. Nor does *Casearia nitida* of Jacquin agree with this; for it has its nectaries alternate with the stamens, and therefore differs from all the species of *Samyda*.

6. A small tree. Leaves petioled, scattered, alternate, commonly terminating. Stipules intermixed with the petioles, lanceolate, blunt, small; membranaceous. Flowers subsessile among the leaves at the ends of the branchlets, biggish, pale. Quite distinct from the other species, and intermediate between the *Samydas* and *Casearias*, on account of the calyx being five-leaved, which in them is one-leaved.

Native of Hispaniola, where it flowers in december and january<sup>3</sup>.

7. This is an obscure plant, native of America.

8. Shrub three or four feet high, with round somewhat villose branchlets. Leaves alternate, bifarious, on very short petioles, lanceolate, acute, somewhat villose on both sides and at the edges. Peduncles axillary, solitary, one-flowered, very short. Bractes to these two, subulate, small, brown. Flowers without smell. Calyx thick, externally villose, dirty yellowish green, white within. Anthers brownish. Germ

<sup>1</sup> Willdenow.

<sup>2</sup> Cavanilles.

<sup>3</sup> Swartz.

# S A N

villose. Stigma green. Nectary and Style white. Fruit reddish yellow. Seeds pale.—Native of America<sup>1</sup>.

9. Native of New Caledonia<sup>2</sup>.]

## PROPAGATION AND CULTURE.

These plants are propagated by seeds procured from the countries where they naturally grow. Sow them upon a hot-bed in the spring; and when the plants come up set them in small pots filled with good kitchen garden earth, plunge them into a hot-bed of tanner's bark, and treat them in the same way as other tender plants from the same countries. Keep them in the bark-bed till they have acquired strength, and then they may be exposed in summer, but in winter they require a good green-house.

[*SAMYDA*. See *Casearia*.

*SANAMUNDA*. See *Daphne*, *Lachnea*, *Passerina*, and *Phylla*.

*SANASANCTA*. See *Nicotiana*.

*SANDAL-WOOD*. See *Santalum*.

*SAND-BOX TREE*. See *Hura*.

*SANDERS*, White and Yellow. See *Santalum*.

*SANDORICUM*.

*Lin. gen. ed. Schreb. n. 1751. p. 802. Cavan.*

*diff. 7. 359. t. 202, 203. Lamarck, encycl. 3. 69.*

*Juss. 265.*

Class. 10. 1. Decandria Monogynia.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, five-toothed, short.

COR. *Petals* five, lanceolate, spreading.

*Nectary*; tube cylindrical, length of the petals, with a ten-toothed mouth.

STAM. *Filaments* none. *Anthers* ten, oblong, within the mouth of the nectary.

PIST. *Germ* globular, superior. *Style* filiform, length of the nectary. *Stigma* thickish, grooved, ten-rayed; the rays recurved.

PER. *Berry* (Drupe) roundish, depressed, five-lobed, succulent; one-celled.

SEEDS five, large, convex on one side, angular on the other.

## ESSENTIAL CHARACTER.

Cal. five-toothed. Pet. five. Nect. cylindrical, truncate, bearing the anthers at its mouth. Drupe filled with five nuts.

## SPECIES.

1. *Sandoricum indicum*.

*Lin. spec. ed. Willd. 2. 556. Cavan. diff. 7. 357.*

*t. 202, 203. Lamarck, encycl. 3. 66.*

*Sandoricum. Rumph. amb. 1. 167. t. 64?*

*Hantol. Raii suppl. app. 54. 9. Camelli ic. 136.*

## DESCRIPTION, &c.

This is a tree with an ash-coloured bark, and the wood red in the middle. Leaves alternate, on long petioles, ternate. Leaflets petioled, roundish-ovate, acuminate, veined, quite entire, smooth above, ferruginous-tomentose beneath. Petioles tomentose. Panicle narrow, axillary, longer than the petiole, naked. It is very nearly allied to *Trichilia nervosa*, but seems to differ, in not having the leaves veinless on the upper surface, and in the panicle being naked, not having a lanceolate leaflet to each branch as the *Trichilia* has.

Native of the Philippine and Molucca islands\*. The fruit is acid. It is called *Hantol* in the Philippine islands<sup>3</sup>.

*SANDWORT*. See *Arenaria*.]

*SANGUINARIA*. (From its bloody-coloured juice.)

*Lin. gen. n. 645. Reich. n. 701. Schreb. n. 878.*

*Dill. elth. 252. Juss. 236.*

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Rhoeadeæ*. *Papaveraceæ*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* two-leaved, ovate, concave, shorter than the corolla, caducous.

COR. *Petals* eight, oblong, blunt, spreading very much: alternately interior and narrower.

STAM. *Filaments* very many, simple, shorter than the corolla. *Anthers* simple.

\* Jacqu. collect.

\* Forster.

\* Willdenow.

\* Jussieu.

PIST.



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Pist. Germ oblong, compressed. Style none. Stigma thickish, two-grooved with a streak, height of the stamens, permanent.

PER. Capsule oblong, ventricose, sharp at both ends, two-valved.

SEEDS very many, round, acuminate.

## ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. eight-petalled. Siliqua ovate, one-celled.

## SPECIES.

1. *Sanguinaria canadensis*. *Canadian Sanguinaria*, Bloodwort, or Puccoon.

Lin. spec. 723. fyst. 489. Reich. 2. 568. Willd. 2. 1140. hort. cliff. 202. Gron. virg. 57. Giseck ic. fasc. 1. n. 13. Curt. magaz. 162.

S. minor flore simplici. Dill. elth. 335. t. 252. f. 327.

Chelidonium majus canadense acaulon. Corn. canad. 212. Mor. hist. 2. 257. f. 3. t. 11. f. 1. Raii hist. 1887. Park. theat. 617. 3.

Ranunculus virginienensis albus. Park. theat. 327. t. 326. f. 8. Raii suppl. 314. 3.

β. *Sanguinaria major*, flore simplici. Dill. elth. 335. t. 252. f. 325.

γ. S. major, flore pleno. Dill. elth. f. 326.

## DESCRIPTION, &c.

[Root tuberos, thick, fleshy, not unlike that of Tormentilla, placed transversely, with several slender fibres descending from it; of a reddish saffron colour, and yielding a juice of the same hue, which gave occasion to Morinus, and after him Dillenius and others, to give it the name of Sanguinaria; this juice is bitter and acrid, and it flows also from the leaves and foot-stalks when cut. In the spring the root puts forth slender round smooth stems, palish green or brownish tinged with purple, each terminated by a little conical head, which expands into a white flower of eight petals, at first concave, then flat, and finally rolled back so as to be convex, marked with slender streaks. Filaments white with saffron-coloured anthers. Germ glaucous. Capsule yellowish when ripening, but of a purplish glaucous colour when quite dry. Seeds shining, yellowish and polished like those of Millet. When the flowers are about expanding, a single leaf comes out upon each flower-stalk, at first small, compressed, and protecting the flower with its foot-stalk; but afterwards becoming larger, and unfolding into lobes, like those of the Fig, which are thickish, smooth, internally of a deep glaucous green, externally of a whitish glaucous colour, with frequent veins, most conspicuous on the outside; on petioles which are flat and slightly grooved on the inside, and convex on the outside. Three or four flower-stems arise from each root, and are surrounded at the base by oblong, membranaceous, tender, striated scales. The root, leaves and flowers have no smell.]

Linneus remarks, that the radical leaf very tenderly embraces and cherishes the infant flower, after the manner of Osmunda Lunaria. There is only a single cowed leaf, and a one-flowered scape, from each bivalve bud of the root. The anthers in Linneus's specimen had scarcely any pollen in the anthers; he therefore suspects that the plant may be dioecous, but there does not seem to be any ground for that suspicion. It has a fulvous milk, like Celandine<sup>2</sup>. With this juice the Indians are said to paint themselves.

Though the Sanguinaria cannot be considered as a showy plant, yet it has few equals in point of delicacy and singularity: there is something in it to admire from the time that its leaves emerge from the ground and embosom the infant blossom, to their full expansion and the ripening of the seed-vessels.

The woods of Canada and other parts of North America produce this plant in abundance. With us it flowers in the beginning of april: its blossoms are fugacious, and fully expand only in fine warm weather.

It appears from Morison, that it was cultivated in this country in 1680, by Mr. William Walker, in his suburban garden, in St. James's street, not far from St. James's palace.

<sup>1</sup> Dillenius.

<sup>2</sup> Lin. fyst.

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Dillenius has figured three varieties; a large one, a small one, and a third in which the petals are multiplied, but which can scarcely be called double<sup>2</sup>.]

## PROPAGATION AND CULTURE.

This plant is hardy enough to live in the open air in England, but it should be planted in a loose soil and a sheltered situation, not too much exposed to the sun. It is propagated by the roots, which may be taken up and parted every other year; the best time for doing of this is in september, that the roots may have time to send out fibres before the hard frost sets in. The flowers of this plant appear in april, and when they decay, the green leaves come out, which will continue till midsummer; then they decay, and the roots remain unactive till the following autumn; so that unless the roots are marked, it will be pretty difficult to find them after their leaves decay, for being of a dirty brown colour on the outside, they are not easily distinguished from the earth.

This plant is very proper to mix with the Dog's-tooth Violet, Spring Cyclamen, Persian Iris, Bulbocodium, Sisyrinchium, and some other low growing bulbous and tuberous-rooted flowers, which require the same culture, where these will add to the variety when they are in beauty; for when the roots are strong and grow in a good soil, they will produce a great number of flowers upon each root; the roots may be planted about four or five inches asunder every way.

A soil having a mixture of bog earth or rotten leaves in it, suits this plant best.

SANGUISORBA. (From its supposed medical qualities, in stopping hæmorrhages: quod sanguineos fluxus sistat & sorbeat.)

Lin. gen. n. 126. Reich. n. 152. Schreb. n. 190. Juss. 336.

Class. 4. 1. Tetrandria Monogynia.

Nat. order. Miscellaneæ, Lin. Rosacea, Juss.

## GENERIC CHARACTER.

CAL. Perianth two-leaved: leaflets opposite, very short, caducous.

COR. one-petalled, wheel-shaped: tube subglobular: border four-cleft, flat; segments subovate.

STAM. Filaments four, almost the length of the corolla. Anthers simple.

PIST. Germ roundish, within the tube of the corolla. Style filiform, length of the corolla, permanent. Stigma simple.

PER. Capsule globular, one-celled, cut transversely.

SEEDS very many, roundish, very small.

## ESSENTIAL CHARACTER.

Cal. two-leaved, inferior. Cor. superior. Germ between the calyx and corolla.

## SPECIES.

1. *Sanguisorba officinalis*. Great Burnet.

Lin. spec. 169. fyst. 158. Reich. 1. 327. Willd. 1. 653. hort. cliff. 39. fl. suec. n. 137. mat. med. 52. Hudf. angl. 65. Wither. arr. ed. 3. 199. Smith, brit. 186. Relb. cant. n. 119. Sibth. oxon. n. 178. Abbot, bedf. 31. Fl. dan. t. 97. Hall. helv. n. 705. Roth. germ. 1. 62. 2. 176. Hoffm. germ. 54. Pollich pal. n. 164. Scop. carn. n. 166. Krock. files. n. 243. Allion. pedem. n. 291. Gmel. sib. 3. 141. Ludw. est. t. 94. Kniph. cent. 4. n. 72. Sabb. hort. 2. t. 70. Fl. rust. t. 142. Plenck, ic. 63.

S. major. Fuchs, hist. 788.

S. major flore ipadiceo. Baub. hist. 3. 120. Raii syn. 203. 2. Petiv. brit. t. 4. 11.

Pimpinella major vulgaris. Park. theat. 582. 3.

P. sylvestris. Ger. 889. 2. emac. 1045. 2. Raii hist. 402. 2.

P. sanguisorba major. Baub. pin. 160. Matth. 1033. Mor. hist. 3. f. 8. t. 18. f. 7.

P. sylv. f. sanguisorba major. Dod. pempt. 105. 2.

β. *Sanguisorba fabauda*. Mill. dict. n. 2.

S. auriculata. Allion. pedem. n. 292.

Pimpinella major rigida præalta auriculata fabauda.

Bocc. mus. 2. 19. t. 7.

<sup>2</sup> Curtis.



γ. *S. hispanica*. *Mill. dist. n. 3.*

*Pimpinella major hispanica altera, conglomerato flore. Tournef. inst. 157.*

*Spikes ovate.*

[2. *Sanguisorba media*. *Short-spiked Burnet.*

*Lin. spec. 169. fyst. 158. Reich. 1. 328. Willd. 1. 654. Zinn. gott. 239.*

*Pimpinella minor de Canada. Zanon. hist. t. 138.*

*P. canadensis major, spica brevior rubra, foliis lævibus. Mor. hist. 3. 264. f. 8. t. 18. f. 8.*

*Spikes cylindrical.]*

3. *Sanguisorba canadensis. Canadian Burnet.*

*Lin. spec. 169. fyst. 158. Reich. 1. 328. Willd. 1. 654. hort. cliff. 39. Gmel. fib. 3. 143.*

*S. canad. flore albo spicato. Rupp. gen. 63.*

*Pimpinella maxima foliis longioribus, &c. Amm. ruth. 37. n. 27.*

*P. sanguisorba canadensis major, spica longiore alba. Mor. hist. 3. 264. f. 8. t. 18. f. 12.*

*P. sanguisorba hortenensis maxima. Ger. emac. 1046. 3.*

*P. maxima canad. longius spicata. Corn. canad. 175. t. 174. Barr. rar. 18. f. 739. Raii hist. 402. 4.*

*P. max. americana. Park. theat. 583. 4.*

*Spikes very long.*

#### DESCRIPTIONS, &c.

1. [This is a hardy plant, from eighteen inches to two feet and a half in height. Stem upright, almost naked, branching towards the top. Leaves unequally pinnate, consisting of four, five or six pairs of leaflets, which are ovate-oblong, cordate, acutely crenate, smooth, near two inches long, and an inch broad at the base. Spikes thick, blunt, of a dark blood-red, the upper flowers expanding first, and being commonly without stamens, or only an imperfect one. Segments of the corolla mulberry-coloured, hairy on the outside at the base; tube white, fleshy, inclosing the germ; a glandular ring closely embracing, but not adhering to the style: the segments, when old, adhere so slightly at the base, that the corolla might almost be considered as four-petalled. Besides the smooth coat formed by the permanent base or tube of the corolla, there is an ovate seed-vessel, including one seed<sup>b</sup>.

It differs from the next species, in having ovate, not cylindrical spikes; and smooth calyxes, not ciliate at the edge<sup>c</sup>.

Native of many parts of Europe, Linneus says in drier meadows, with us in moist meadows, particularly in a chalky or limestone soil, principally in the northern parts of the island. Mr. Woodward informs us, that he has not found it farther to the south-east than Ripton in Huntingdonshire. It is common in lime-stone pastures in the north, and not uncommon in marly soils about Stafford. In Cambridgeshire, at King's-hedges, Whitwell, Ditton, Shelford, Long Stanton, Cottenham. In Bedfordshire, at Bromham, Fenlake and Cow meadows. In Oxfordshire, at Iffley, Cowley and Binsey. Scotland, in low moist meadows near Dumfries, &c. but not common.

Old Gerarde says: "my selfe have founde it growing upon the side of a cawsey which crosseth the one halfe of a fiede, whereof the one part is earable grounde, and the other part medowe, lying betweene Paddington and Lysson greene, neere unto London, upon the high way." Parkinson also points it out as growing not only there; but by Pancras church. It is not noticed in Curtis's *Flora Londinensis*, or by Dr. Milne, in his indigenous botany. It is found about Grantham in Lincolnshire: Beston and Lenton in Nottinghamshire; and Parkinson says it is common in Huntingdon and Northampton shires. It flowers in June and July.

This plant is too hard and sticky for cattle; nor has it any of the Cucumber smell, which is found in the *Poterium* or lesser Burnet. It is certainly a defect in the Linnean system that two plants so similar in habit, should be so distant from each other.]

β. The Italian Burnet rises with stiff upright stalks more than three feet high, branching out towards the top; each branch terminated by a cylindrical spike of brown flowers, smaller than those of the common sort.

<sup>b</sup> Withering and Smith.

<sup>c</sup> Willdenow.

Leaves on very strong foot-stalks, much longer than in that: they have seven or eight pairs of stiff leaflets, oblong-heart-shaped, deeply serrate, of a lucid green on the upper side, but pale on the under, on pretty long pedicels; at the base of which come out two small roundish leaves or ears, which are deeply indented.

γ. The leaves of the Spanish Burnet are smaller, having but four pairs of leaflets, bluntly serrate, pale green above and hoary beneath, on very short foot-stalks. The stalks rise about two feet high, and branch pretty much towards the top: the branches are terminated by round heads or spikes of reddish flowers.

[Mr. Miller considers these as specifically distinct from our great Burnet.

2. The spikes of flowers are cylindrical and longer; the stamens also are longer than in *S. officinalis*<sup>d</sup>.

According to Morison, the leaves are larger, longer and more serrate.

Native of Canada. Introduced in 1785, by Mr. John Bell. It flowers from July to September<sup>e</sup>.]

3. This has leaves like those of the common sort, but a little stiffer, composed of four or five pairs of leaflets; those on the lower part of the midrib stand alternate, but the two upper pairs are opposite; they are of a light green colour, and deeply serrate. The stalks rise three feet high, dividing towards the top into small branches, which stand erect, and are terminated by long spikes of flowers of an herbaceous white colour, each upon a short foot-stalk.

There is another with long spikes of red flowers, of a higher growth, with thicker spikes, and broader leaflets whiter underneath.

[Morison remarks, that this red-spiked American Burnet has the spikes three or four inches long; whereas in the herbaceous-spiked they are only two or three. He says that the lower flowers open first, and that they are of a yellowish green colour.

Native of North America and Siberia.—It appears from Parkinson that it was cultivated here in 1640. It flowers from June to September<sup>f</sup>.]

#### PROPAGATION AND CULTURE.

The Burnets are very hardy perennial plants, and will thrive in almost any soil or situation. They may be propagated either by seeds or parting of the roots; if they are propagated by seeds, they should be sown in the autumn, for when they are sown in the spring, they seldom grow the same year: when the plants come up, they must be kept clean from weeds till they are strong enough to transplant, when they may be planted in a shady border, at about six inches distance each way, observing to water them till they have taken new root, after which they will require no other care but to keep them clean from weeds till autumn, when they may be transplanted to the place where they are to remain; the following summer they will produce flowers and seeds, but their roots will abide many years.

If the roots are parted, it should be done in autumn, that they may get good root before the dry weather comes on in the spring.

SANGUISORBA. See *Poterium*.

SANICLE. See *Sanicula*.

—— American. See *Heuchera*.

—— Yorkshire. See *Pinguicula*.

SANICULA. (*Dimin. a sanando vulnera. From its supposed quality of healing wounds.*)

*Lin. gen. n. 326. Reich. n. 356. Schreb. n. 458.*

*Tournef. t. 173. Juss. 225. Gartn. t. 20.*

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatae* or *Umbelliferae*.

#### GENERIC CHARACTER.

CAL. *Umbel universal* with very few rays (often four:) *partial* with very many, clustered, subcapitate.

*Involucre universal* halved, placed outwardly: *partial* surrounding, shorter than the floscules.

*Perianth* scarcely observable.

<sup>d</sup> Linn. spec.

<sup>e</sup> Hort. kew.

<sup>f</sup> Idem.



COR. *universal* uniform: *Flores* of the disk abortive.  
 Proper of five compressed inflexed petals, closing the flower.  
 STAM. *Filaments* five, simple, twice as long as the corollas, erect. *Anthers* roundish.  
 PIST. *Germ* hispid, inferior. *Styles* two, awl-shaped, reflexed. *Stigmas* acute.  
 PER. none. *Fruit* ovate acute, rugged, bipartite.  
 SEEDS two, convex and muricate on one side, flat on the other.

## ESSENTIAL CHARACTER.

*Umbels* clustered, subcapitate. *Fruit* rugged. *Flowers* of the disk abortive.

## SPECIES.

1. *Sanicula europæa*. Common or European Sanicle.  
*Lin. spec.* 339. *ffst.* 272. *Reich.* 1. 652. *Willd.* 1. 1366. *fl. suec.* n. 235. *mat. med.* 76. *Huds. angl.* 110. *Witth. arr. ed.* 3. 284. *Smith, brit.* 291. *engl. bot. t.* 98. *Relb. cant. n.* 208. *Sibth. oxon.* n. 281. *Lighf. scot.* 154. *Fl. dan. t.* 293. *Hoffm. germ.* 90. *Pollich pal. n.* 265. *Hall. helv.* n. 737. *Krock. fles. n.* 397. *Villars dauph.* 2. 656. *Allion. pedem. n.* 1282. *Blackw. t.* 63. *Plenck, ic.* 174.  
*S. officinarum.* *Neck. gallob.* 137. *Tournef. inst.* 326. *Baub. pin.* 319. *Mor. hist. f. 5. t.* 34. *ord. 3. f.* 1.  
*Caucalis Sanicula.* *Crantz, austr.* 228. *Roth. germ.* 1. 121. 2. 310.  
*Astrantia Diapensia.* *Scop. carn. n.* 304.  
*Sanicula.* *Dod. pempt.* 140. 1. *Riv. pent. t.* 31.  
*S. f. Diapensia.* *Ger. 801. emac.* 948. *Raii hist.* 475. *syn.* 221.  
*S. mas.* *Dalech. hist.* 1268. *Fuchs. hist.* 671.—  
*f. Diapensia.* *Baub. hist.*  
*S. vulgaris f. Diapensia.* *Park. theat.* 532. 1.  
*Diapensia.* *Brunf. herb.* 1. 80. *Camer. epit.* 763.—  
*f. Sanicula.* *Matth.* 1019.  
*Sideritis tertia Dioscoridia.* *Column. phyt.* 59. t. 16.  
*Root-leaves simple, florets all sessile.*
- [2. *Sanicula canadensis.* Canadian Sanicle.  
*Lin. spec.* 339. *Reich.* 1. 653. *Willd.* 1. 1366.  
*Gron. virg.* 146. *Thunb. jap.* 116. *prod. cap.* 49.  
*S. canad. amplissimo laciniato folio.* *Tournef. inst.* 326.  
*Root-leaves compound, leaflets ovate.*
3. *Sanicula marilandica.* Maryland Sanicle.  
*Lin. spec.* 339. *Reich.* 1. 653. *Willd.* 1. 1367.  
*hort. ups.* 57. *Gron. virg.* 31. *Jacqu. collect.* 2. 293. *icon. rar.* 2. 348. *Raii suppl.* 260. *Gærtn. fruct.* 1. 79.  
*Male flowers peduncled, hermaphrodites sessile.*

## DESCRIPTIONS, &amp;c.

1. Root perennial, with long branched fleshy fibres. Stem from twelve to eighteen inches high, upright, round, grooved, almost naked, little branched, smooth. Leaves petioled, smooth, deeply seven-lobed or five-lobed, deep green above, paler green and shining underneath; the lobes wedge-shaped, trifid, cut and serrate, with bristles at the end of the serratures. Universal umbel unequal, with the rays often branched. Universal involucre two-leaved, leafy, pinnatifid: partial many-leaved; the leaflets lanceolate, acute, entire. Flowers sessile, heaped, white or reddish: the petals all nearly equal, entire. The central ones are male, having no style, but in its place a concave glandular nectary, similar to what crowns the germ in the fertile florets. The female florets have elongated, acute calycine teeth, but no petals, according to Scopoli; Mr. Wood however informs us that they are only deciduous.<sup>2</sup>

Native of Europe, in woods and thickets, flowering in May.

This plant was much celebrated formerly as a vulnerary. It discovers to the taste, says Lewis, some bitterishness and roughness, followed by an impression of acrimony which affects chiefly the throat: in the fresh leaves the taste is very weak, in the dry leaves considerable: in the extract made from them by water or spirit, moderately strong.—Sanicle has long been entirely discarded as a medicine; and in Dr. Smith's

<sup>2</sup> Smith and Withering.

opinion seems to partake of that virulent acrimony which is found in most umbelliferous plants growing in a moist fat soil.

2. This is so similar in structure to the preceding, that there is scarcely any difference except that it is frequently ten times as large in all its parts.

Native of Virginia<sup>b</sup>. Found also at the Cape of Good Hope and in Japan by Thunberg. Nothing therefore can be more unfortunate than the trivial name adopted by Linneus from Tournefort. Names indeed taken from their native place are generally of the worst sort.

3. Root perennial. The whole plant smooth. Stem annual, erect, about two feet high, the thickness of a quill, with alternate branches, trichotomous at top. Root-leaves on long petioles, ternate, acutely serrate, acute; leaflets rhomboid, subsessile, the middle one three-lobed at top, the side ones two-parted into sub-trilobate lobes like the middle one. Lower stem-leaves alternate, like the root-leaves, but sharper and smaller. Upper stem-leaves and branch-leaves at the divisions opposite, almost sessile, ternate, serrate, acute, but scarcely lobed. Umbels peduncled, simple, few-flowered. Male flowers on short pedicels. Females sessile. Leaves of the involucre few ovate and acute, sometimes lobed. Leaflets of the perianth lanceolate, acute, concave, erect, green, the length of the corolla. Petals whitish, acute, bent in, erect. Germ hispid. Fruit roundish-compressed, echinate, brown, small<sup>1</sup>. A sort of two-celled capsule, not bipartite or separating from the seed. One of the seeds is commonly abortive<sup>k</sup>.

Native of Virginia and Maryland. Introduced in 1765 by Mr. John Cree. It flowers in June and July<sup>l</sup>. It is not in the Linnean herbarium, and Mr. Dryander suspects it not to differ from the preceding.

## PROPAGATION AND CULTURE.

Part the roots, any time from September to March; but the best time is in autumn. In a moist soil, and a shady situation they will thrive exceedingly.

[SANICULA. See *Heuchera* and *Saxifraga*.

*Sanicula alpina.* See *Aretia*, *Androsace*, *Primula*, and *Verbascum*.

— *indica.* See *Mitella*.

— *montana.* See *Cortusa*, *Pinguicula*, and *Saxifraga*.

## SANTALUM.

*Lin. gen. n.* 480. *Reich. n.* 169. *Schreb. n.* 215. *Juss.* 321.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Onagra*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth*: margin superior, four-toothed.

COR. *Petals* four, placed on the segments of the calyx, straighter.

*Glands* four, smaller than the petals, alternate with them.

STAM. *Filaments* four, growing on the tube of the calyx. *Anthers* simple.

PIST. *Germ* inferior. *Style* length of the stamens. *Stigma* simple.

PER. *Berry*.

SEED one.

## ESSENTIAL CHARACTER.

*Cal.* four-toothed. *Cor.* four-petalled; with the petals growing on the calyx, besides four glands. *Berry* inferior, one-seeded.

## SPECIES.

*Santalum album.* White and yellow Sandal-wood.

*Lin. fyst.* 164. *Reich.* 1. 344. *Willd.* 1. 691.

*Baub. pin.* 392. *Rumph. amb.* 2. 42. t. 11.

*Burm. ind.* 87. *Raii hist.* 1804. *Ger.* 1389. 1.

*emac.* 1586. *Park. theat.* 1605. *Plenck, ic.* 101.

*S. verum.* *Lin. mat. med.* 102. *Breyn. ic.* 94. t. 5. f. 1.

*Vahl symb.* 2. 32.

*Sirium myrsifolium.* *Lin. mant.* 200. *Roxb. corom.* 1. p. 2. t. 2.

## DESCRIPTION, &amp;c.

This tree has the appearance of a Myrtle, with stiff brachiate branches, every where jointed<sup>m</sup>. In habit

<sup>b</sup> Linn.

<sup>1</sup> Jacquin.

<sup>k</sup> Gærtner.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. mant.



leaves and inflorescence resembling the Privet<sup>m</sup>. Leaves opposite, on short petioles, spreading, lanceolate, entire, waved, smooth, shining, about two inches long, and three quarters of an inch broad. Stipules none. Flowers small, red, in a terminating, compound, small, erect, thyrs-like raceme. Calyx superior, bell-shaped, four-cleft: divisions ovate, expanding, coloured. Corolla none, except the nectary be such. Nectary four-leaved, obcordate, notched, inserted into the mouth of the calyx. Filaments short, hairy, inserted into the calyx alternately with the leaflets of the nectary. Stigma four-lobed. Berry globular, size of a large pea, smooth, juicy, black when ripe.

This valuable tree is a native of many parts of India. In the Circar mountains, where it is wild, it is but of a small size, and the wood of little value. On the Malabar coast it is much larger, and the wood of the best sort.

This wood is the white and yellow Sanders or Sandal wood, *Santalum album* and *flavum* of the *Materia Medica*; both being the produce of the same tree, and not, as Garcias says, of different trees. Most trees in India, when large and old, become coloured towards the centre; that part is always much more hard and durable than the exterior uncoloured part. So it is with the Sandal tree: the centre, when the tree becomes large, acquires a yellow colour, great fragrance and hardness; while the exterior part of the same tree, that covers the coloured part, is less firm, white and without fragrance. It is only the yellow part that is of use; and the larger the tree the more valuable is the wood, it having then acquired a greater degree of fragrance, for which alone it is held in such universal estimation.

Birds eat the berries greedily, by which means it is propagated extensively<sup>n</sup>.]

**SANTOLINA.** (*Dimin. q. Santolina. Hely Herb; so named on account of its supposed medical qualities.*)

*Lin. gen. n. 942. Reich. n. 1022. Schreb. n. 1278. Tournef. t. 260. Vaill. det. gall. 1719. Juss. 185. Gertn. 165.*

*Class. 19. 1. Syngenesia Polygamia Æqualis.*

*Nat. order of Compositæ Discoides. Corymbifera, Juss.*

#### GENERIC CHARACTER.

**CAL.** Common hemispherical, imbricate: scales ovate-oblong, acute, pressed close.

**COR.** Compound uniform, longer than the calyx. Corollets hermaphrodite, equal, numerous.

*Proper one-petalled, funnel-form: border five-cleft, revolute.*

**STAM.** Filaments five, capillary, very short. Anther cylindrical, tubulous.

**PIST.** Germ four-cornered, oblong. Style filiform, length of the stamens. Stigmas two, oblong, depressed, truncate.

**PER.** none. Calyx unchanged.

**SEEDS** solitary, oblong, four-cornered. Down none.

**REC.** chaffy, flattish: Chaffs concave.

**OBS.** *S. alpina* differs in having no female florets.

#### ESSENTIAL CHARACTER.

*Cal. imbricate, hemispherical. Down none. Recept. chaffy.*

#### SPECIES.

1. *Santolina Chamæcyparissus.* Common Lavender-Cotton. *Lin. spec. 1179. Reich. 3. 729. hort. cliff. 397. ups. 252. mat. med. 182. Gertn. fruct. 2. 391. Hall. herb. n. 123. Allion. pedem. n. 603. Ludw. est. t. 198. Blackw. t. 346. Kniph. cent. 6. n. 80. Regnault bot.*

*Santolina. Dod. pempt. 269. 1.*

*Chamæcyparissus. Ger. 952. emac. 1109. Baub. hist.*

*Abrotanum femina. Best. exst. est. 14. 1. 7. f. 3. Matth. 692.—vulgare. Clus. hist. 1. 341. Park. theat. 951.—foliis teretibus. Baub. pin. 136. Mor. hist. 3. 11. n. 12. f. 6. t. 3. f. 12.*

*Polium Theophrasti & Dioscoridis. Col. ecphr. 54*

β. *Santolina villosa.* Hoary Lavender-Cotton.

*Mill. dict. n. 2. Ait. kew. 3. 165. β.*

<sup>m</sup> Willdenow.

<sup>a</sup> Roxburgh.

*S. flore majore, foliis villosis & incanis. Tournef. inst. 460.*

*Abrotanum fœmina flore majore, fol. vill. & inc.*

*Baub. pin. 137. 2. Raii hist. 359. 3.*

*A. fœm. 3. Clus. hist. 1. 341. f. 342.*

*A. fœm. narbonense magno flore. Park. theat. 96. f. 3.*

*Abinthium marinum, Abrotoni fœminæ facie. Ger.*

*944. 5. emac. 1102. 4.*

γ. *Santolina decumbens.* Creeping hoary Lavender-Cotton.

*Mill. dict. n. 3.*

*S. 5. Dod. pempt. 269.*

*S. repens & canescens. Tournef. inst. 460.*

*Abrotanum fœmina repens canescens. Baub. pin.*

*137. 6. Raii hist. 360. 7.*

δ. *Santolina virens.* Dark-green Lavender-Cotton.

*Mill. dict. n. 4. Ait. kew. 3. 165.*

*S. foliis obscure virentibus, flore aureo. Tournef. inst. 461.*

*S. altera. Dod. pempt. 269. 2.*

*Abrotanum fœmina viridis. Baub. pin. 137. 8.*

*Raii hist. 360. 6.*

*A. fœm. vir. minor. Park. theat. 96. 7.*

*A. fœm. 6. Clus. hist. 1. 342.*

*Peduncles one-flowered, leaves toothed four ways.*

2. *Santolina rosmarinifolia.* Rosemary-leaved Lavender-Cotton.

*Lin. spec. 1180. Reich. 3. 729. hort. cliff. 397.*

*Willich obs. n. 125. D'Affo arag. n. 805.*

α. *S. foliis rosmarini major. Tournef. inst. 491.*

*Abrotanum fœmina foliis rosmarini majus. Baub.*

*pin. 137. 9. Park. theat. 96. 5. Raii hist.*

*359. 4.*

*A fœm. 4. Clus. hist. 1. 342.*

*A. fœm. fol. longis viridibus. Mor. hist. 3. f. 6.*

*t. 3. f. 22.*

β. *Santolina minor. Mill. dict. n. 6.*

*S. fol. rosmarini minor. Tournef. inst. 461.*

*A. fœm. fol. rosm. minus. Baub. pin. 137. 10.*

*Park. theat. 96. 6. Raii hist. 359. 5.*

*A. fœm. 5. Clus. hist. 1. 342.*

*Peduncles one-flowered, leaves linear tubercled at the edge.*

[3. *Santolina fragrantissima.* Sweet-smelling Lavender-Cotton.

*Vahl symb. 1. 70. Forsk. descr. 147. n. 71.*

*Flowers corymbed, leaves ovate crenulate.*

4. *Santolina alpina.* Alpine Lavender-Cotton.

*Lin. spec. 1180. syst. 741.*

*S. erecta. Lin. syst. ed. Reich. 3. 730.*

*Santolinoides alpina saxatilis, foliis glaucis & veluti argenteis, floribus luteis. Mich. gen. 31. t. 27.*

*Pyrethrum alterum minus, cespitosa radice, anthemidis flore, italicum. Barr. rar. 1105. t. 522.*

*Peduncles one-flowered, leaves bipinnate, stems simple.]*

5. *Santolina anthemoides.* Chamomile-leaved Lavender-Cotton.

*Lin. spec. 1180. Reich. 3. 730. Pallas it. 1. 438.*

*S. chamæmelifolia. Mill. dict. n. 7.*

*S. perennis, chamæmeli folio, caule ramoso. Vaill. in act. par. 372.*

*S. incana chamæmeli odore suaviore. Boerb. lugdb. 123.*

*Peduncles one-flowered, leaves bipinnate, stem very much branched, and villose.*

6. *Santolina maritima.* Sea Lavender-Cotton.

*Lin. spec. Mss. 1182. Smith, brit. 860. Hudf.*

*angl. 356. Wither. arr. ed. 3. 707.*

*Athanasia maritima. Lin. spec. 1182. Dict. nostr. n. 7.*

*Gnaphalium. Camer. epit. 605. Matth. 860.—legitimum. Gertn. 2. 391. Clus. hist. 1. 329. f. 3.—marinum. Lob. ic. 1. 480. 1. Dod. pempt. 65.*

*Peduncles corymbed, leaves oblong blunt crenate densely woolly.*

#### DESCRIPTIONS, &c.

1. Common Lavender-Cotton has a shrubby stalk, dividing into many woody branches; with slender hoary leaves, indented four ways, and having a rank strong odour when handled. The branches divide towards the top into several slender stalks, the lower parts of which have a few small leaves of the same shape as the others, but naked above, and terminated by



by a single flower, composed of sulphur-coloured filicular florets, without any ray. [Receptacle convex, covered on all sides with oblong blunt keeled chaffs, pubescent on the outside at top. Seeds oblong, acuminate downwards, blunt above, angular, indistinctly striated, pale, bald, terminated by a blunt little point<sup>o</sup>.]

This plant will rise near three feet high, in a dry soil and sheltered situation. The flowers appear in July. [It was cultivated in 1596, by Gerarde<sup>p</sup>; who says it was then very common in the English gardens.

Native of the South of Europe; as Spain and Italy. Haller is doubtful whether it be a native of Switzerland.

Lavender-Cotton is acrid, bitter and aromatic, and has much the same qualities as Southernwood. It is reputed resolvent, corroborant and diaphoretic. The leaves or flowers in powder may be given in the dose of a dram as a vermifuge, or twice that quantity in infusion<sup>q</sup>. As a medicine it is diffused among us.]

β. Hoary Lavender-Cotton branches out like the common sort, but seldom grows so tall. The branches are divided into a great number of stalks, which are short, hoary, and below set very closely with shorter, thicker and whiter leaves. The flowers are much larger, and the brims of the florets are more reflexed; they are also of a deeper sulphur colour. It grows naturally in Spain.

γ. This is of still lower stature, seldom rising more than fifteen or sixteen inches high. The branches spread horizontally near the ground, and have shorter leaves than either of the former; they are hoary, and finely indented; the stalks are short, and are each terminated by a single flower of a bright yellow colour, and larger than those of the common sort.

δ. The dark-green Lavender-Cotton rises higher than these; the branches are more loosely disposed, and more diffused; they are more slender, smooth, and have very narrow long leaves of a deep green colour, indented only two ways; the stalks are slender, naked towards the top, and terminated by single flowers of a gold colour. [Mr. Miller considers these varieties as distinct species.

2. Rosemary-leaved Lavender-Cotton is herbaceous, scarcely suffruticose. Leaves at the edge on both sides crenulate with tubercles in two rows, but on the flowering-stalk linear, toothletted on each side at the top. Peduncles long, terminating, one-flowered<sup>r</sup>.

According to Willich, the scales of the calyx are narrow and acute, the uppermost bent back outwards at the tip. The seeds are crowned with a simple down almost as long as the corolla. Receptacle honeycombed, naked.]

Stalks shrubby, about three feet high, sending out long slender branches, with single linear leaves about an inch and half long, pale green and entire. The stalks are terminated by large, single, globular flowers of a pale sulphur colour.

[D'Affo describes it as a suffruticose plant, a foot in height, with rod-like one-flowered stems naked at top. Leaves linear, acute, fleshy, with a double row of toothlets on each side. Flowers twice as large as in the common sort. Chaffs concave.—How comes Willich to assert that the receptacle is naked?

Native of Spain. Cultivated in 1683, by Mr. James Sutherland. It flowers from July to September<sup>s</sup>.]

β. The branches of this are shorter, thicker, and closer set with leaves; which come out in clusters, are shorter, and blunt. The flower-stalks are sparsely disposed, and have leaves to their top. The flowers are small and yellow.

[3. Stem hoary, with alternate branches. Leaves alternate, sessile, approximating; the younger ones imbricate, crenulate, blunt, thick, villose. Corymbs terminating, compound. Scales of the calyx oblong, blunt, keeled, villose. Chaffs of the receptacle oblong, membranaceous at the edge<sup>t</sup>.

4. The flowers are without any female florets<sup>u</sup>. It

<sup>o</sup> Gærtner.  
<sup>r</sup> Linn. spec.

<sup>p</sup> Hort. kew.  
<sup>q</sup> Hort. kew.

<sup>u</sup> Linn. syst.

<sup>s</sup> Allioni.  
<sup>t</sup> Vahl.

is herbaceous, and has the leaves cut into very fine segments, as in *Anthemis* and *Chamæmelum*.

Native of Tuscany, among ruins of rocks, flowering in June<sup>x</sup>.

5. This plant is a palm in height. Stem villose, leafy. Leaves like those of Chamomile pubescent. Peduncles terminating, longer than the leaves, when fruiting stiffish.—Native of Spain, Italy<sup>y</sup>, and Siberia.]

Miller describes his *chamæmelifolia* as having shrubby stalks which rise near three feet high, and divide into many hoary branches, with broader leaves, having the indentures looser but double; they also are hoary, and when bruised have an odour like Chamomile; they are placed pretty far asunder, but quite to the top of the stalks; which are divided at the end into two or three footstalks, each sustaining one pretty large sulphur-coloured flower.

6. [For the description of this species see *Athanasia maritima*.—Linneus, in the first edition of his *Species Plantarum*, made it a *Filago*; in the second an *Athanasia*; but in his observations on this edition, as we are informed by Dr. Smith, he corrected it to *Santolina*. Gærtner, following Tournefort and many old authors, insists that it is a *Gnaphalium*, and that it differs not only from *Athanasia* and *Filago*, but from all the *Discoidea*, in the very unusual form of the corollas, which are compressed and dilated below, ending at the base in two nectariferous processes like spurs embracing the side of the germ. He describes the receptacle as convex or ovate-globular, small, and covered with oblong concave chaffs, externally tomentose at the top; the seeds as small, oblong, acuminate downwards, compressed and bald.

He also remarks that Browne (*hist. jam.* 315.) very rightly referred *Calea oppositifolia* and *Amellus* to the genus *Santolina*; there being no vestige of a pappus in them, and the whole structure of the flower being very like that of *Santolina*.]

#### PROPAGATION AND CULTURE.

These are hardy plants, which will thrive in the open air, provided they are planted in a poor dry soil, for in such ground the plants being stunted, will be better able to resist the cold; and they will have a better appearance than those which are in rich ground, whose branches being long and diffused, by hard rains or strong winds are displaced, and sometimes broken down; whereas, in poor land, they will grow compact, and the plants will continue much longer.

These plants may be cultivated so as to become ornaments to a garden, particularly in small bosquets of evergreen shrubs, where, if they are artfully intermixed with other plants of the same growth, and placed in the front line, they will make an agreeable variety, especially if care be taken to trim them twice in a summer to keep them within bounds, otherwise their branches are apt to fraggle, and in wet weather to be borne down and displaced, which renders them unsightly; but, when they are kept in order, their hoary and different-coloured leaves will have a pretty effect in such plantations.

They may be propagated by planting slips or cuttings during the spring; they should be put into a border of light fresh earth, and watered and shaded in dry weather until they have taken root, after which they will require no farther care, but to keep them clear from weeds till autumn, when they should be carefully taken up, and transplanted where they are designed to remain; but if the ground is not ready by that time to receive them, it will be proper to let them remain in the border until spring; for if they are transplanted late in autumn, they are liable to be destroyed by cold in winter.

SANTOLINA. See *Athanasia*, [*Calea*, *Cotula*, *Filago*,] *Tanacetum*.

[SANTOLINOIDES. See *Anacyclus* and *Santolina*.

SANTONICA. See *Artemisia*.]

SAPINDUS: (*q.* Sapo Indus; the rind of the fruit serving for soap. Tournef.)

<sup>x</sup> Micheli.

<sup>y</sup> Linn. spec.



Lin. gen. n. 499. Reich. n. 541. Schreb. n. 681.  
 Tournef. t. 440. Juss. 247. Gartn. t. 70.  
 Class. 8. 3. Octandria Trigynia.  
 Nat. order of Tribilatae. Sapindi, Juss.

## GENERIC CHARACTER.

CAL. Perianth four-leaved, spreading: leaflets subovate, almost equal, flat, spreading, coloured, deciduous; two of them exterior.

COR. Petals four, ovate, clawed; two of them more approximating.

Nectary of four oblong concave erect leaflets, inserted into the base of the petals. Glands four roundish, inserted also into the base of the petals.

STAM. Filaments eight, length of the flower. Anthers cordate, erect.

PIST. Germ triangular. Styles three short. Stigmas simple obtuse.

PER. Capsules three, fleshy, globular, connate, inflated.

SEED. Nut globular (two-celled, G.)

OBS. The three capsules seldom all come to maturity: Houstoun remarks that two are commonly abortive. It seems allied to Paullinia and Cardiospermum.

## ESSENTIAL CHARACTER.

Cal. four-leaved. Pet. four. Capsule fleshy, connate, ventricose.

## SPECIES.

1. *Sapindus Saponaria*. Common Soap-berry Tree.  
 Lin. spec. 526. Reich. 2. 220. hort. cliff. 152. mat. med. 105. Brown. jam. 206. Ait. kew. 2. 35. Lour. cochinch. 238. ed. Willd. 293. Forst. prodr. n. 178. Sloane jam. 2. 131. (Prunifera racemosa, &c.) Comm. hort. 1. 183. t. 94. (Nux americana.) Plenck, ic. 305.  
 S. foliis costae alatae innascentibus. Tournef. inst. 659. Saponaria. Rumph. amb. 2. 134. Burm. ind. 91. Nuculae Saponariae non edules. Baub. pin. 511. Saponariae sphaerulae arboris filicifoliae. Baub. hist. 1. 312.  
 Quity Pis. & Marcgr. Raii hist. 1548.  
 Unarmed, leaves pinnate, leaflets lanceolate, rachis winged.
- [2. *Sapindus longifolius*. Long-leaved Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 469. Vahl symb. 3. 53.  
 Leave pinnate, leaflets lanceolate smooth, one terminating, rachis simple.
3. *Sapindus spinosus*. Thorny Soap-berry Tree.  
 Lin. spec. 526. Reich. 2. 221. Brown. jam. 207. t. 20. f. 2.  
 Leaves abruptly pinnate, stem very thorny.
4. *Sapindus laurifolius*. Bay-leaved Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 469. Vahl symb. 3. 54.  
 S. trifolius. Lin. spec. 526. syst. 380. Reich. 2. 221. Saponaria arbor zeylanica trifolia, semine lupini. Herm. mus. 69. prodr. 373. Burm. zeyl. 209. Conghas. Herm. zeyl. 69. Lin. zeyl. n. 603. Poenrisii. Rheed. mal. 4. 43. t. 19.  
 Leaves pinnate, leaflets ovate-oblong attenuated smooth, rachis simple, petals tomentose at the edge.
5. *Sapindus emarginatus*. Notch-leaved Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 469. Vahl symb. 3. 54.  
 Leaves pinnate, leaflets oblong emarginate villose beneath, rachis simple, petals tomentose at the edge.
6. *Sapindus rubiginosus*. Rusty Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 469. Roxb. corom. 1. 44. t. 62.  
 Leaves pinnate, leaflets oblong lanceolate acute villose beneath, rachis simple, petals smooth.
7. *Sapindus tetraphyllus*. Four-leaved Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 469. Vahl symb. 3. 54.  
 Leaves pinnate, leaflets lanceolate-oblong smooth, rachis simple, racemes almost simple, petals smooth.]
8. *Sapindus rigidus*. Ash-leaved Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 470. Ait. kew. 2. 36. Vahl symb. 3. 55. Gartn. fruct. 1. 341. Pluk. phyt. t. 217. f. 7. (Nuciprunifera arbor, &c.)  
 Leaves pinnate, leaflets ovate-oblong, rachis simple, corollas and fruits smooth.
- [9. *Sapindus arborescens*. Arboresecent Soap-berry Tree.  
 Lin. spec. ed. Willd. 2. 470. Aubl. guian. 1. 357. t. 139.

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Leaves pinnate, leaflets ovate acuminate smooth, panicle axillary simple.

10. *Sapindus frutescens*. Frutescent Soap-berry Tree.

Lin. spec. ed. Willd. 2. 470. Aubl. guian. 1. 355. t. 138.

Leaves pinnate, leaflets alternate lanceolate acuminate smooth, panicle axillary simple.

11. *Sapindus edulis*. Esculent Soap-berry Tree, or Chinese Lee-chee.

Ait. kew. 2. 36. Vahl symb. 3. 55.

Dimocarpus Litchi. Lin. spec. ed. Willd. 2. 346.

Lour. cochinch. 233. ed. Willd. 287.

La-tji. Osb. it. 192. 204. ed. angl. 1. 308.

Litchi. Berg. om lackerbeter, 171.

Li-tchi. Du Halde chin. 2. 144. t. 154.

L. chinensis. Sonnerat it. 2. 180. t. 129.

Litsea chinensis. Lamarck encycl. 3. 550.

Lechea. Richard hist. du Tonquin. 1. 60.

Lischia f. Lischion Indiae orientalis. Zanon. hist. 147. t. 108.

Li-ci. Boym. fin. t. D.

Euphoria. Juss. gen. 247.

Scytalia chinensis. Gartn. fruct. 1. 197. t. 42. f. 3. Schreb. gen. n. 671.

Unarmed, leaves pinnate, leaflets lanceolate-oblong, rachis simple, fruits muricate (or, berries cordate scaly.)

12. *Sapindus Mukorossi*. Japan Soap-berry Tree.

Thunb. jap. 356. Gartn. fruct. 1. 342.

Leaves alternate unequally pinnate; leaflets subsessile ovate or lanceolate entire smooth.

13. *Sapindus abruptus*. Abrupt-leaved Soap-berry Tree.

Lour. cochinch. 238. ed. Willd. 293.

Unarmed, leaves abruptly pinnate, leaflets lanceolate quite entire smooth.]

## DESCRIPTIONS, &amp;c.

1. The first sort grows naturally in the islands of the West Indies, where it rises with a woody stalk from twenty to thirty feet high, sending out many branches towards the top, which are garnished with winged leaves, composed of three, four, or five pair of spear-shaped leaflets, which are from three to four inches long, and an inch and a quarter broad in the middle, drawing to a point at both ends. The midrib has a membranaceous or leafy border running on each side from one pair of leaflets to the other, which is broadest in the middle between the leaflets; they are of a pale green colour, and are pretty stiff; the flowers are produced in loose spikes at the end of the branches; they are small and white, so make no great appearance. These are succeeded by oval berries as large as middling Cherries, sometimes single, at others two, three, or four are joined together; these have a saponaceous skin or cover which incloses a very smooth roundish nut of the same form, and of a shining black when ripe. These nuts were formerly brought to England for buttons to waistcoats, some were tipped with silver, and others with different metals; they were very durable, as they did not wear, and seldom broke. The skin or pulp which surrounds the nuts, is used in America to wash linen, but it is very apt to burn and destroy it, if often used, being of a very acrid nature.

[The seed-vessels, says Dr. Patrick Browne are very deterfise and acrid; they lather freely in water, and will cleanse more linen than sixty times their weight of soap; but they are observed to corrode or burn the linen in time: and the water in which the tops or leaves have been steeped or boiled, have the same quality in some degree. The seeds are round and hard, have a fine polish, and are frequently made into buttons and beads among the Spaniards. The whole plant, especially the seed-vessel, being pounded and steeped in ponds, rivulets or creeks, is observed to intoxicate and kill the fish.

Loureiro celebrates the berries slightly bruised and steeped in water, as a very excellent soap, and remarks that it is only required to use them with prudence, all abstersgents being in some degree corrosive.

He describes this as a large tree, whereas Browne says it seldom rises above ten or fifteen feet in height in the savannas of Jamaica, where it is very common. According to Loureiro, it is both wild and cultivated



in CochinChina: and our circumnavigators found it in Easter island in the South Seas. It was cultivated here in 1697 by the Dutchess of Beaufort<sup>z</sup>.

2. Unarmed. Leaflets five pairs; the lowest opposite smaller lanceolate-oblong; the outer alternate, four or five inches long broad-lanceolate: all quite entire, smooth, veined, shining above, paler beneath, sharpish. Petioles roundish, equal; the partial ones short. Raceme decomposed. Flowers clustered, on very short pedicels. Calyx tomentose-hoary, four-leaved: leaflets ovate acute. Petals length of the calyx.—Supposed to be a native of the East Indies<sup>a</sup>.

3. This species is very remarkable for the prickliness of its trunk, which seldom exceeds seven or eight feet in height, and two or three inches in diameter. The fruit is much smaller than that of the first, and though the embryos are always trilocular as in that, no more than one of the cells and seeds ever grows to perfection: the capsules however are marked with longitudinal futures, that run down between the two abortive embryos, which have been formed by the laceration of the style in the growth of one of the cells; for there is no more than one style in any of the flowers.

Native of Jamaica, in the borough of St. James's. Called there the Licca Tree<sup>b</sup>.

4. Branches round, striated, smooth. Leaves alternate, abruptly pinnate, three-paired: leaflets subopposite, shortly petioled, five inches long, the inner ones smaller, ovate-oblong or elliptic lanceolate, attenuated, quite entire, sharpish, smooth on both sides, veined, the inner shorter at the base. General petiole roundish: the partial ones wrinkled. Raceme superdecompound. Peduncles and pedicels subpubescent. Bractes ovate, minute. Calyx five-leaved: leaflets ovate. Corolla five-petalled: petals oblong, villose, white-tomentose at the edge. Stamens eight, villose. Germ and fruit as in the next species.—Native of Malabar.

5. Unarmed. Branches round, almost as thick as the little finger, smooth, gray. Leaves alternate, abruptly pinnate, two-paired or three-paired: leaflets on very short petioles, opposite, the middle ones alternate, two or three inches long, the inner ones smaller, scarcely unequal at the base acute, very blunt at the tip, emarginate, rigid, veined. General petiole roundish: partial ones short, wrinkled. Raceme terminating, superdecompound, large. Peduncles and pedicels spreading, pubescent. Bractes small, ovate, at the base of the pedicels. Calyx five-leaved, pubescent: leaflets ovate, concave. Petals five, a little longer than the calyx, oblong villose on the outside, smooth within, white-tomentose at the edge. Filaments eight, villose, length of the corolla. Germ tomentose. Style single. Capsules three, subturbinate, coadunate; each subglobular, one or two frequently abortive, covered with dense yellowish hairs: the cells within hirsute at the partitions. Seeds black. Aril none. Allied to the preceding species, but having narrower shorter leaves, very blunt, emarginate, and villose beneath.

Native of the East Indies; where it was observed by Koenig<sup>c</sup>.

6. Trunk perfectly erect, of considerable length and thickness. Branches numerous, ascending. Leaves alternate, abruptly pinnate, about a foot long. Leaflets opposite, four to six pair, entire, above smooth, below downy, about three inches long, and half an inch broad. Petiole round, downy, ending in a downy bristle. Panicle terminating, large, erect, composed of simple racemes. Calyx five-leaved. Petals four, placed on the upper side. Style single, ascending, shorter than the stamens. Capsules three, (when all come to perfection, which is rare,) singly oblong, one-celled<sup>d</sup>.

It differs from the preceding, in the leaflets being five-paired, longer, acute, not three-paired, emarginate: panicle composed of few racemes and divaricate, not superdecompound and contracted: petals smooth. Native of the East Indies<sup>e</sup>.

<sup>z</sup> Hort. kew.

<sup>a</sup> Vahl.

<sup>b</sup> Browne.

<sup>c</sup> Vahl.

<sup>d</sup> Roxburgh.

<sup>e</sup> Willdenow.

It is a large timber tree, growing in the mountainous parts of the Circars; and flowering about the beginning of the hot season. Known by the name of Ithy-rashy among the Telingas. The wood is very useful for a variety of purposes, being large, straight, strong and durable: towards the centre it is of a chocolate colour<sup>f</sup>.

7. Unarmed. Branches round, smooth, gray. Leaves alternate, abruptly pinnate, two-paired: the two inner leaflets alternate, the outmost opposite, three inches long, bluntish, veined, very smooth, pale green, quite entire, equal at the base. General petioles roundish: partial short, wrinkled. Racemes several from the same point, having only a branch or two at the base, a finger's length, upright. Peduncles of permanent pedicels after the flowers fall toothed, becoming hoary, angular-striated. Pedicels very short. Bractes minute, ovate. Calycine leaflets five, ovate-roundish, shining like silk on the outside. Petals five, longer than the calyx, oblong, smooth. Filaments eight, villose.

Native of the East Indies; where it was found by Koenig.

8. Unarmed. Branches round, gray, smooth. Leaves alternate, abruptly pinnate, three-paired: inner leaflets alternate, smaller; outer opposite, three inches long, ovate-oblong sometimes ovate-lanceolate, attenuated, on one side narrower, quite entire, veined, smooth. Petiole equal, roundish, pubescent: partial ones short. Raceme terminating, superdecompound, a foot long: branches and branchlets spreading. Pedicels short. Bractes minute. Flowers small. Calyxes scarcely villose. Petals roundish, concave, smooth. Germ ovate, smooth<sup>g</sup>.

Gærtner calls the fruit berried Drupes, fleshy, from two to four, spherical, coadunate without any intermediate receptacle, having a short upright dagger-point at top, of a red colour. Pulp thin, becoming towards the middle a white spongy tomentose substance, closely embracing the shell or nut; which is of a trigonal-globular form, and a bony substance, black, composed of horny horizontal fibres, two-celled, valveless; cells a little unequal, placed one behind the other. Seed in each cell one, obovate, angular, pale, adhering to the top.]

Miller describes it as having a strong woody stalk which rises about twenty feet high, sending out many short strong branches, covered with a smooth gray bark. Leaves composed of two pairs of spear-shaped leaflets, very stiff and smooth; the inner pair small, seldom more than an inch and half long; the two outer near three inches long, and almost an inch broad in the middle, drawing to points at both ends; they are oblique to the foot-stalk, of a pale green, and sit close to the midrib. The ends of the branches are divided into two or three foot-stalks, each sustaining a loose spike of flowers. Berries roundish, generally two, three or four joined together.

[Native of the West Indies. Cultivated in 1759 by Mr. Miller<sup>h</sup>: who says that it was discovered by Dr. Houstoun at La Vera Cruz in New Spain; if so, he must have cultivated it much earlier.

9. A tree, of about seven or eight feet in height, and branching at the top: diameter eight or nine inches: bark rough and gray; wood whitish: branches knotty, and subdivided; spreading on all sides: leaves alternate, winged: leaflets ovate, ending in a long point; smooth and of a bright green: midrib strong, concave above, and convex beneath: the number of leaflets on each side is three: from the bosoms of the leaves proceed clusters of flowers, which are very small, and which could not be accurately described on account of their unadvanced state.—Native of Guiana, where it was observed by Aublet.

10. A tree of about eight feet in height with a straight stem of about two inches in diameter, and leafy at the top: bark rough and ash-coloured: wood brittle and whitish: leaves alternate, pinnated, large: leaflets ovate-oblong, sharp, entire; standing somewhat alternately on a tough midrib which is concave

<sup>f</sup> Roxburgh.

<sup>g</sup> Vahl.

<sup>h</sup> Hort. kew.



above and convex beneath: the number of leaflets on each side the midrib is commonly seven; they are of a bright, shining green, and are placed on short foot-stalks: the fruit is borne from the bosoms of the leaves, and is a dry, coriaceous capsule, of a beautiful red colour.

This species grows at Cayenne, where it was observed by Aublet, who did not see it in its flowering state<sup>1</sup>.

11. Unarmed. Branches round, smooth, with a dotted bark. Leaves abruptly pinnate, three-paired: leaflets petioled, almost opposite, nearly resembling those of *Laurus Cassia*, three inches long, the innermost smaller, sharp at both ends, acuminate, very smooth and even, obscurely veined, glaucous beneath. Petioles flattish above, purplish, smooth. Racemes terminating, decomposed; peduncles and pedicels slightly tomentose<sup>2</sup>.

Loureiro separates it from this genus, under the name of *Dimocarpus*, on account of its twin or double fruit; and he is followed by Willdenow. Loureiro describes the Li-chi as a middle-sized tree, with spreading branches. Leaves unequally pinnate, with about four pairs of leaflets, which are lanceolate, smooth, almost quite entire, glaucous beneath. Flowers pale, terminating, in oblong loose racemes. Berry heart-shaped, with a scaly, thin, hardish rind, brown-red on one side, green on the other, and a white, sweet, subacid, very pleasant pulp: Seed brown, shining, regular, subovate, large. Calyx five-cleft, inferior, spreading, hairy; the segments rounded. Corolla wheel-shaped: petals five, oblong, hairy, almost equal to the calyx. Nectary one-leaved, whereas in *Sapindus* it is four-leaved. Filaments shorter than the corolla, placed on the receptacle. Anthers two-celled, roundish. Germ two-lobed, very hairy. Style thick, bifid, equal to the stamens. Stigmas oblong, reflexed. Berries two, one-celled, roundish, pulpy.

Gærtner has it under the name of *Scytalia*, and Schreber has followed him. According to Gærtner, the calyx is very short, one-leaved; toothless, or very indistinctly five-toothed. Corolla five-petalled. Stamens from six to eight, with the filaments villose at the base, and the anthers two-lobed. Style simple, with a two-parted stigma. The fruit a juiceless berry, superior, ovate-globular, of the substance and colour of parchment, rugged on the outside all over with scutiform angular tubercles having a little point in their centre, smooth within, inflated, one-celled, brittle. Seed elliptic-globular, obliquely truncate at the base, where it is bare, of a pale red or chestnut colour, very smooth and shining, fastened widely to the bottom of the berry, where it has a gentle rising. The aril is ovate-globular, nearly the size of the cavity of the berry, very smooth, dark-coloured, fleshy, thick, fastened to the seed only about the base, in other parts loose both from that and the pericarp: pulp soft, the consistence of a damson plum.

Native of China, Tunquin and CochinChina. Introduced in 1786, by Warren Hastings, Esq.<sup>1</sup> Loureiro says that it is cultivated in great abundance in the southern provinces of China, and the northern provinces of CochinChina; being equally abhorrent both of cold and heat in the extremes.

The fruit of the Li-tchi is the size of a Date. Its stone, which is long and hard, is covered with a soft juicy pulp, that has an exquisite taste. This pulp is inclosed in a tough thin brownish warty skin. This delicious fruit is said to be dangerous when eaten to excess, occasioning an eruption over the whole body. The Chinese suffer it to dry till it becomes black and shrivelled like Prunes. Thus it is preserved all the year, and they use it in tea, to which it communicates an acidity, which they prefer to the sweetness of sugar. To enjoy this fruit in its full perfection of flavour and smell, it must be eaten in the provinces Fo-ki-en, Quan-tong and Quan-si, where it grows. As it will not bear the climate of Pekin, the fruit is carried there for the Emperor's use, inclosed in tin vessels, filled with spirits mixed with honey, &c. and thus pre-

serves an appearance of freshness, but loses much of its flavour<sup>2</sup>. The trees themselves are also transported by water from Quan-tong to Pekin for the Emperor; at a considerable labour and expense to his subjects; and being embarked when they begin to flower, the fruit is commonly ripe by the time of their arrival at Pekin<sup>3</sup>.

Loureiro has three other species of *Dimocarpus*, which Willdenow supposes may be varieties of this.—The first of these is the *Longan*, *Lang-an*, *Long-yen* or *Laong-uban*, signifying Dragon's-eye; which is also cultivated in China and CochinChina, and bears a fruit that is in much esteem, and if not so agreeable to the taste as the Li-tchi, is however said to be more wholesome. It is globular, has a yellowish smooth skin; and its pulp is white, tart and juicy<sup>4</sup>.

His third species is the *Rampostan* of Bontius, (Jav. l. 6. c. 23. f. 109.) Which bears also an esculent fruit. His fourth, does not bear a fruit that is eatable, but the wood is heavy, hard; of a reddish brown colour, and very excellent.

12. The branches, petioles and leaves of this tree are smooth. Leaves six-paired or thereabouts, a foot long: leaflets when young spreading, a finger's length<sup>5</sup>. Berries three, two of which are abortive, ovate, acuminate at both ends, three-sided; the third very large, globular, with a prominent suture in the circumference, attenuated in front, fleshy, thin, covered on the inside with a smooth papery membrane: stone ovate, truncate as it were in front, and having a vertical umbilical cleft, unequally two-celled<sup>6</sup>. Thunberg informs us that the fruit was reported by the Japanese physicians to be bitter and juicy.

13. This is a large tree, with spreading unarmed branches. Leaflets lanceolate, smooth. Flowers pale, in large subterminating racemes. Calyx and corolla equal, bell-shaped, four-leaved and four-petalled. Style one, three-grooved: stigmas three. Berries three, connate, subglobular, one-seeded, rufous.—Native of China about Canton. Not having a thorny stem, or lacinate leaves, it must either be a distinct species, or those characters are not constant<sup>7</sup>.]

Mr. Miller has a species, which he names *Sapindus pinnatus*, and characterizes as having pinnate leaves, with ovate-oblong leaflets, the upper ones alternate. He describes it as rising with a straight jointed stem to the height of twenty feet, sending out some lateral branches at the top, covered with a pale smooth bark. The leaves are composed of eight or ten pairs of leaflets, each near four inches long, and an inch and half broad at their base, of a light green colour, on very short foot-stalks; those on the lower part of the midrib are opposite, but on the upper they are alternate, and end abruptly.—Native of India.

#### PROPAGATION AND CULTURE.

These plants are propagated by seeds (which must be obtained from the countries where they naturally grow, for they have not produced fruit in Europe;) the seeds must be put into small pots filled with rich fresh earth, and plunged into a hot-bed of tanner's bark. The pots must be frequently watered, otherwise the berries, whose outer cover is very hard, will not vegetate. In five or six weeks the plants will appear, when the glasses of the hot-bed should be raised every day in warm weather to admit fresh air to the plants. In a month or six weeks after the plants appear they will be fit to transplant, when they must be shaken out of the pots, and carefully parted, so as not to injure their roots, and each planted into a separate small pot filled with light rich earth, and then plunged into the hot-bed again, observing to shade them from the sun every day until they have taken new root; after which time they must have free air admitted to them every day when the weather is warm, and will require to be frequently watered.

After the plants are well rooted, they will make great progress, so as to fill these pots with their roots in a few weeks time, therefore they should be shifted into

<sup>1</sup> Aublet.

<sup>2</sup> Vahl.

<sup>3</sup> Hort. kew.

<sup>4</sup> Grofier.

<sup>5</sup> Gærtner.

<sup>6</sup> Grofier.

<sup>7</sup> Loureiro.

<sup>8</sup> Thunberg.



larger pots, and as the plants advance, they should be inured to bear the open air by degrees; for if they are forced too much in summer, they seldom live through the winter. I have frequently raised these plants from seeds to the height of two feet in one summer, and the leaves of these plants have been a foot and a half in length, so that they made a fine appearance; but these plants did not survive the winter, whereas those which were exposed to the open air in July, and thereby stunted in their growth, continued their leaves fresh all the winter. These were placed in a stove upon shelves, where the warmth was very moderate, with which these plants will thrive better than in a greater heat.

The last sort is much more hardy: this may be placed in a good green-house in the autumn, where it will live through the winter, and in summer should be exposed to the open air in a sheltered situation, where it will thrive very well.

[SAPINDUS CHINENSIS. See *Koelreuteria*.

SAPIUM. See *Hippomane*.]

SAPONARIA. (From Sapo, Soap. The leaves lathering with water, like soap.)

Lin. gen. n. 564. Reich. n. 613. Schreb. n. 769. Gertn. t. 130. Juss. 302.

Class. 10. 2. Decandria Digynia.

Nat. order of *Caryophyllei*. *Caryophylleæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, naked, tubular, five-toothed, permanent.

COR. Petals five. Claws narrow, angular, length of the calyx: border flat, with the plates wider outwards, blunt.

STAM. Filaments ten, awl-shaped, length of the tube of the corolla, alternately inserted into the claws of the petals, five later. Anthers oblong, blunt, incumbent.

PIST. Germ subcylindrical. Styles two, straight, parallel, length of the stamens. Stigmas acute.

PER. Capsule length of the calyx, covered, one-celled, oblong.

SEEDS numerous, small. Receptacle free.

OBS. The figure of the calyx differs in the different species.

#### ESSENTIAL CHARACTER.

Cal. one-leafed, naked. Pet. five, clawed. Caps. oblong, one-celled.

#### SPECIES.

1. *Saponaria officinalis*. Common Soapwort.

Lin. spec. 584. Juss. 416. Reich. 2. 328. Willd. 2. 667. hort. cliff. 165. upf. 106. mat. med. 117. Woodv. med. bot. suppl. t. 251. Hudf. angl. 183. Wither. arr. ed. 3. 408. Smith, brit. 459. Curt. lond. 2. t. 29. Relb. cant. n. 316. Sibth. oxon. n. 404. Fl. dan. t. 545. Hall. helv. n. 908. Hoffm. germ. 147. Roth. germ. 1. 185. 2. 473. Pollich pal. n. 407. Krock. fles. n. 645. Villars dauph. 3. 603. Allion. pedem. n. 1557. Gron. virg. 160. Ludw. est. t. 170. Knorr. del. 1. t. S. 17. Berg. phyt. t. 23. 24. Plenck, ic. t. 346.

*Saponaria*. Dod. pempt. 179. Ger. 360. emac. 444. Raii hist. 999.

*S. major lævis*. Baub. pin. 206.

*S. vulgaris*. Cam. epit. 152. Baub. hist. 3. 346. Park. theat. 641. 1. Blackw. t. 113.—simplex. Mor. hist. f. 5. t. 22. f. 52.

*Lychnis officinalis*. Scop. carn. n. 510.

*L. sylvestris* quæ *Saponaria vulgo*. Tournef. inst. 336.

*L. Saponaria dicta*. Raii syn. 339.

*Boottia vulgaris*. Neck. gallob. 193.

β. *Saponaria flore pleno*. Corn. canad. 209. Raii syn. 339. 6. Ait. kew. 2. 86. Double-flowered Soapwort.

γ. *Saponaria hybrida*. Mill. dict. n. 2.

*S. concava anglica*. Baub. pin. 206. prodr. 103. Mor. hist. t. 53.

*S. angl. convoluto folio*. Park. theat. 641. Raii hist. 999.

*Lychnis Saponaria dicta*, folio convoluto. Raii syn. 339.

*Gentiana concava*. Ger. 353. emac. 435.

*G. folio convoluto*. Baub. hist. 3. 521.

*Hollow-leaved Soapwort*.

*Calyxes cylindrical, leaves elliptic-lanceolate*.

1. *Saponaria Vaccaria*. Perfoliate Soapwort.

Lin. spec. 585. Reich. 2. 329. Willd. 2. 668. hort. cliff. 166. upf. 107. Gertn. fruct. 2. 234. Hall. helv. n. 907. Hoffm. germ. 147. Roth. germ. 1. 186. 2. 473. Pollich pal. n. 408. Krock. fles. n. 646. Villars dauph. 3. 604. Allion. pedem. n. 1558.

*S. fegetalis*. Neck. gallob. 194.

*Lychnis Vaccaria*. Scop. carn. n. 511.

*L. fegetum rubra foliis perfoliatæ*. Baub. pin. 204. Raii hist. 999.

*L. seg. Vaccaria rubra dicta*. Park. theat. 633. f. 12.

*Vaccaria*. Dod. pempt. 104. Baub. hist. 3. 357. Ger. 395. emac. 492.

*Myagrum Vaccaria quorundam*. Tabern. ic. 866.

β. *S. amplissima*. Mill. dict. n. 4.

*Calyxes pyramidal five-cornered, leaves ovate acuminate sessile*.

3. *Saponaria cretica*. Cretan Soapwort.

Lin. spec. 584. Reich. 2. 329. Willd. 2. 668.

*Saxifraga altera*. Alp. exot. 292. t. 291.

*Calyxes five-cornered striated, stem erect subdichotomous, leaves awl-shaped*.

4. *Saponaria porrigens*. Hairy Soapwort.

Lin. syst. 417. Reich. 2. 330. Willd. 2. 668. mant. 239. Jacqu. hort. 2. 49. t. 109.

*Silene porrigens*. Lin. syst. 3. 230. Gouan illustr. 29. *Calyxes cylindrical pubescent, branches very much divaricate, fruits pendulous*.

5. *Saponaria illyrica*. Illyrian Soapwort.

Lin. syst. 417. Reich. 2. 330. Willd. 2. 669. mant. 70. Ard. spec. 2. 24. t. 9.

*Calyxes subcylindrical, stem erect viscid purplish, branches alternate, corollas dotted*.

6. *Saponaria Ocymoides*. Basil-leaved Soapwort.

Lin. spec. 585. syst. 417. Reich. 2. 330. Willd. 2. 669. Hall. helv. n. 909. Jacqu. austr. 5. 39. t. app. 23. Cavan. ic. 2. 29. t. 134. Desfont. atlant. 343. Villars dauph. 3. 604. Allion. pedem. n. 1559. Curt. magaz. 154.

*S. minor quibusdam*. Baub. hist. 3. 344.

*Lychnis vel Ocimoides repens montanum*. Baub. pin. 206. Tournef. inst. 337. Mor. hist. f. 5. t. 21. f. 38.

*L. montana repens*. Ger. emac. 473. 5.

*Ocymoides repens*. Park. theat. 639. Raii hist. 995. —*polygonifolia*. Lob. ic. 341. Dalech. hist. 1429.

*Calyxes cylindrical villose, stems dichotomous procumbent*.]

7. *Saponaria orientalis*. Small annual Soapwort.

Lin. spec. 585. Reich. 2. 331. Willd. 2. 670. hort. upf. 106. n. 2.

*Lychnis orientalis*. Scop. carn. n. 512.—*annuo supina, antirrhini folio, flore minimo purpurascens*. Tournef. cor. 25. Dill. elth. 205. t. 167. f. 204.

*Calyxes cylindrical villose, stem dichotomous erect, patulous*.

8. *Saponaria lutea*.

Lin. spec. 585. syst. 417. Reich. 2. 331. Willd. 2. 670. Smith, spicil. t. 5. Hall. helv. n. 904. Allion. pedem. n. 1560. t. 23. f. 1. Roemer europ. 29. ic.

*Calyxes round, both they and the stem rough-haired, petals obovate quite entire, flowers corymbed, leaves linear-lanceolate channelled*.

9. *Saponaria bellidifolia*.

Lin. spec. ed. Willd. 670. Smith, spicil. 5.

*Lychnis lutea montana Globulariæ folio & facie*. Barr. ic. 498.

*L. rubra Globulariæ capite & facie montana*. Bocc. mus. 2. 75. t. 62. f. 1.

*Globularia lutea montana*. Col. ecphr. 1. 152. t. 153.

*Bellis montana, globofo luteo flore*. Baub. pin. 262.

*Calyxes round rough-haired, stem smooth, petals linear crenate, leaves spatulate*.



## DESCRIPTIONS, &amp;c.

1. Root perennial, striking deep and spreading wide, and creeping by runners. Stems a foot and half in height, upright, round, rigid, jointed, smooth, often reddish, paniced at top. Leaves opposite, connate, quite entire, three-nerved, smooth. Panicle hemispherical, many-flowered, bracteolate. Corolla flesh-coloured or rose-coloured, varying to white, smelling sweet. Petals entire, crowned at the throat. Seeds blackish, with a granulated surface<sup>1</sup>.

Native of Europe, but not in the very northern parts. In England not uncommon, in pastures and hedges: flowering from July to September.

It has both the Latin and English name, from its quality of forming, like soap, a lather with water, and taking out spots of grease, &c. from cloth, in the same manner; whence it has also been called the *Fuller's herb*<sup>1</sup>.

The whole plant is bitter. A decoction of it applied externally cures the itch. The Germans use it instead of Sarsaparilla, in venereal complaints. M. Andry of Paris cured violent gonorrhœas, by giving half an ounce of the inspissated juice daily. By the use of the extract, and a decoction of the leaves and roots, M. Jurine cured old venereal complaints, such as ulcers, pains and emaciations, which resisted the use of mercury<sup>2</sup>.

According to Dr. Woodville, a fancied resemblance of the roots to those of Sarsaparilla, seems to have led physicians to think them similar in their effects.—Boerhaave, as Haller informs us, entertained an high opinion of its efficacy in jaundice and other visceral obstructions.]

β. A variety with double flowers is preserved in gardens, but has the same fault with the single one, of spreading very much at the root. [This was observed growing wild, by Mr. Lawson, at Carnforth in Lancashire; and by Dr. James Sherard, in the road from Sittingbourn to Rochester. I have gathered it frequently on Streatham common in Surry. But in all these places it has probably escaped from gardens.]

γ. The roots of this do not spread like those of the common sort; the stalks are shorter, thicker, and do not grow so erect; they rise a foot or more in height; the joints are very near and swelling: the leaves are produced singly on the lower part of the stalks, but towards the top they are often placed by pairs; they are about three inches long and two broad, having several longitudinal veins or plaits, and are hollowed like a ladle. The flowers are disposed loosely on the top of the stalk, have large cylindrical calyxes, only one petal, and scarcely any visible stamens; they are of a purple colour, and appear in July.

[I found this strange kind of Gentian, says Gerarde, in a small grove of wood called the Spinnie, near unto a small village in Northamptonshire called Lichbarrow. It was no longer there in Ray and Morton's time, but it has been preserved in gardens. Mr. Miller, who in 1759 says that he had then cultivated it forty years, considers it as a distinct species. Ray regards it as a *lufus naturæ*, or a degeneration of the common Saponaria. Linneus, as a mule plant, like *Antirrhinum Peloria*; from a Saponaria passing into a monopetalous Gentian. Mr. Curtis inclines to Ray's opinion.]

2. This is an annual plant, rising with an upright stalk near a foot and a half high, branching out upwards into several divisions; these always are by pairs opposite, as are also the leaves, which are about an inch and a half long, and half an inch broad at their base, ending in acute points; they sit close to the stalks, are smooth, and of a gray colour. The flowers are produced at the end of the branches, each standing upon a long naked foot-stalk; their calyxes are large, swelling and pyramidal, having five acute angles; the petals are but small; they have long necks or tails, which are narrow; their upper part is obtuse, and of a reddish purple colour. These appear in June and July, and the seeds ripen in autumn.

<sup>1</sup> Smith, Curtis.<sup>2</sup> Curtis.<sup>3</sup> Withering.

[Capsule covered with the smooth calyx which is five-cornered at the base, ovate-conical, one-celled at top, three or four-celled at bottom, formed of a double lamina; the outer papery or cartilaginous, smooth, opening at top with four teeth; the inner spongy-membranaceous, white, very thin, bursting irregularly at top, but forming incomplete partitions below; these partitions are very narrow, and obvious only at the base of the capsule. Receptacle columnar, free above, slender, rough-haired with umbilical cords, a little longer than half the capsule. Seeds about twenty, subglobular, having raised indistinct dots very thickly scattered over them, dark-coloured.—In the preceding species, the capsule is one-celled, or by means of a very narrow partition visible only at the base of the capsule divided into two incomplete cells. The form of the capsule also is more oblong in this and fusiform-ovate<sup>4</sup>.

Native of Germany, Switzerland, France and Italy. Cultivated by Gerarde in 1596<sup>5</sup>.]

β. Mr. Miller has a species, which probably is a variety of the *Vaccaria*. He describes it thus:—It is an annual plant, with a strong smooth stalk about two feet high. Leaves ovate-lanceolate, three inches long, and an inch and half broad near their base, half embracing the stem; the upper part of which divides into many branches, which are again subdivided into long naked peduncles, each sustaining a single flower. Calyx large, pyramidal; swelling, having five acute angles. Petals obtuse, red.

Native of Spain. It flowers in June and July; and the seeds ripen in autumn.

3. Stem brachiate or dichotomous, round, villosifid, narrow, a foot high. Leaves linear-subulate, even. Peduncles axillary, solitary, one-flowered, stiff. Flower erect. Calyx five-cornered with three streaks at the corners, one-leafed, oblong, acute, membranaceous between the teeth. Petals small, entire.—Native of Candia or Crete, in dry places<sup>6</sup>.

4. Stem two feet high, erect, jointed, stiffish, below smooth, above pubescent and viscid. Leaves lanceolate; the lower ones smooth, the upper ones under the ramifications pubescent and viscid. Peduncles axillary, solitary, one-flowered, capillary, loose, spreading, smooth, the length of the leaves, hanging down when in fruit. Calyx oblong, tubular. Petals without any crown, slightly flesh-coloured, emarginate with short segments. Stamens white, shorter than the tube. Germ ovate. Styles distant. Stigmas simple<sup>7</sup>.

Native of the Levant. Annual.—Introduced in 1777, by Abbé Nolin. It flowers in July and August<sup>8</sup>.

5. This is an upright plant, a span high, viscid and pubescent. Leaves linear-lanceolate, smooth. Calyxes half-five-cleft, membranaceous at the edge. Petals entire, white with three purple dots. Anthers violet. Observed in Illyria by Arduini<sup>9</sup>.

6. This is an elegant plant, with a perennial root, and many prostrate or procumbent stems, which are dichotomous, knotted and pubescent. Leaves opposite, quite entire, pubescent: the lower ones ovate, blunt, petioled; the upper ones lanceolate. Flowers numerous, in terminating corymbs. Peduncles villose, filiform. Calyx tubular, with five small erect blunt teeth. Petals rose-coloured, spreading horizontally, oblong-elliptic, gradually wider from the base upwards, quite entire but sometimes slightly emarginate, with a claw the length of the calyx, having two little appendages at the top. Capsule ovate-oblong, covered by the calyx, half-four-valved, one-celled, containing many brown kidney-form seeds. Receptacle columnar, free<sup>10</sup>.

Native of Italy, Austria, Switzerland, France and Barbary, on mountains, covering the rocks with beautiful large tufts of flowers. Ray observed it by the Arve and Rhone near Geneva, and between Massa and Lucca in Italy.—It was introduced here in 1768, by Professor de Saussure, and flowers from May to July<sup>11</sup>.

<sup>4</sup> Gærtner.<sup>5</sup> Hort. kew.<sup>6</sup> Linn. spec.<sup>7</sup> Linn. mant.<sup>8</sup> Hort. kew.<sup>9</sup> Linn. mant.<sup>10</sup> Desfontaines.<sup>11</sup> Hort. kew.



I saw it in flower during the month of april (1779) about Chatelaine near Geneva.

7. Like the preceding, but with linear-lanceolate leaves; whereas in that they are lanceolate-ovate. Calyxes of the fruit ovate, with raised dots bearing hairs scattered over them. Petals acutely emarginate, without any crown.]

It is a low annual plant, seldom rising more than four inches high; dividing into spreading branches by pairs from the bottom. Leaves very small. Flowers single from the axils. Calyxes hairy, cylindrical; out of which the petals do but just peep. The whole plant is very clammy.

Native of the Levant, whence Tournefort sent the seeds. [Found since also in Gorizia, according to Scopoli.—Cultivated in 1732, by James Sherard, M. D.<sup>f</sup>

8. Root woody, crooked, branched, forming tufts. Stems several, weak, nearly upright, a finger's length, with three or four joints, leafy, round, downy. Leaves obtuse, entire; those next the root clustered, fading but permanent, smooth; those on the stem opposite, sessile, almost united at their base, slightly hairy. Corymbs terminating, dense, many-flowered. Flower-stalks simple or trifid, short. Bractes like the leaves, but smaller, in pairs at the base of the flower-stalks, hairy. Calyx cylindrical, hairy, purple in the upper part. Petals scarcely marked with a crown, violet at the base; the border obovate, entire, yellow. Five of the stamens as long as the border, and five shorter: filaments dark purple tipped with yellow; anthers yellow. Germ in the bottom of the calyx, oval, small, green, marked with tubercles at the top. Styles as long as the longer stamens, white, permanent. Capsule oval, smooth, four-valved and one-celled. Seeds kidney-shaped, yellowish brown, minutely dotted.

Allioni first described this plant, justly observing that it was distinct from *Globularia lutea montana* of Columna, whose figure of that plant is excellent: nevertheless Linneus and Haller united them under one species. Dr. Smith observed in Vaillant's herbarium such important differences between them, that he had no doubt of their being perfectly distinct.

*S. lutea* is native of the mountains of Switzerland and Savoy. Dr. Smith found it in the fissures of rocks on mount Cenis, in august 1787; where it was pointed out to him by Dr. Bellardi of Turin.

9. The radical leaves are spatulate, ending in a point very like those of a *Globularia*. Stems thrice as tall as those of *S. lutea*, and smooth. Stamens yellow, not purple. Petals, according to Columna's figure, linear, notched at the top. This very rare plant was gathered by Columna on the summits of some mountains in Italy.<sup>g</sup>]

#### PROPAGATION AND CULTURE.

These plants are easily propagated by seeds, sown where they are to remain, kept clean from weeds, and thinned where they are too close. If the seeds are sown in autumn, or are permitted to scatter, the plants will come up of themselves.

The double variety will increase fast enough by its creeping roots, and will thrive in any situation.

The hollow-leaved Soapwort is easily propagated by parting the roots in autumn, and loves a moist shady situation.

[This affords little seed, but may be increased by slips or cuttings. It is a hardy perennial, loves a pure air and dry situation, grows best among stones, or out of a wall, and is one of the best plants for ornamenting rock-work.<sup>h</sup>

SAPONARIA. See *Arenaria*, *Gypsophila*, *Sapindus*, *Silene*.

SAROTA. See *Achras*.

SAPPAN. See *Casalpinia*.

SARACA.

*Lin. gen. Reich. n. 919. Schreb. n. 1153. Juss. 422.*

Class. 17. 2. Diadelphia Hexandria.

Nat. order of *Lomentaceae*.

#### GENERIC CHARACTER.

CAL. none.

<sup>f</sup> Hort. kew.

<sup>g</sup> Smith, spicil.

<sup>h</sup> Curtiz.

COR. one-petalled, funnel-form: border five-parted: segments ovate, spreading, the upper one more remote: throat with an elevated rim.

STAM. Filaments six, setaceous, declined, placed on the throat: three on each side, connate at the base. Anthers furnished with a keel.

PIST. Germ pedicelled, oblong, compressed, length of the stamens. Style awl-shaped, declined, length of the germ. Stigma blunt.

PER. Legume?

#### ESSENTIAL CHARACTER.

Cal. none. Cor. funnel-form, four-cleft. Filaments, three on each side the throat. Legume pedicelled.

#### SPECIES.

1. *Saraca indica*.

*Lin. syst. 636. Reich. 3. 376. mant. 98. Burm. ind. 85. t. 25. f. 2.*

#### DESCRIPTION, &c.

This is a tree, with alternate, abruptly pinnate leaves: leaflets three or four-paired, oblong, petioled. Flowers in panicles, composed of alternate racemes or spikes; with subimbricate ovate-lanceolate bractes, opposite by two and two. It is a lomentaceous plant; native of the East Indies<sup>i</sup>.

SARCOCOLLA. See *Penaea*.

SARCOMPHALUS. See *Rhamnus*.

SARGASSO or SARGAZO. See *Fucus*.

SARIBUS. See *Corypha*.

SARISSUS. See *Hydrophyllax*.

SAROTHTHA. (*Σαρωθρα*, a broom.)

*Lin. gen. n. 383. Reich. n. 414. Schreb. n. 521. Gertn. t. 114. Juss. 303.*

Class. 5. 3. Pentandria Trigynia.

Nat. order of *Rotaceae*. *Caryophylleae*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, erect, permanent: segments linear, acute.

COR. Petals five (commonly,) lanceolate-linear, obtuse, patulous, a little longer than the calyx, deciduous.

STAM. Filaments five, filiform, length of the corolla. Anthers roundish.

PIST. Germ ovate. Styles three, filiform, length of the germ. Stigmas simple.

PER. Capsule oblong, acute, one-celled, three-valved, coloured.

SEEDS numerous, kidney-form; very small, fastened to the futures of the capsule.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Caps. one-celled, three-valved, coloured.

#### SPECIES.

1. *Sarothra gentianoides*.

*Lin. spec. 391. Reich. 1. 749. Willd. 1. 1515. amoen. 3. 11. Gertn. fruct. 2. 161. Kalm. itin. 2. 253. ed. angl. 1. 126. Gron. virg. 29. (Gentiana) Pluk. mant. t. 342. f. 2. (Centaurium.)*

#### DESCRIPTION, &c.

This is an annual plant, and looks extremely like the Whortle-berry bushes (of America) when they first begin to look green, and whilst the points of the leaves are yet red<sup>k</sup>. Stem and branches very much branched (subtrichotomous); leaves very small, narrow and awl-shaped<sup>l</sup>, (or linear.) Flowers axillary, solitary, sessile. Capsule small, membranaceous, ferruginous-red, subcylindrical, but very much attenuated and acuminate at the top, tubercled all over with the impressions of the seeds. Seeds subcylindrical, very finely striated both lengthwise and across, pale sulphur-coloured, hanging from the inner margins of the valves, by setaceous umbilical cords<sup>m</sup>.

Native of Virginia, Pennsylvania and Philadelphia, growing abundantly in the fields, and under the bushes, in a dry sandy ground, near the capital of the latter province.

It is reckoned a good traumatic<sup>n</sup>. Introduced here by Mr. John Bartram in 1768. It flowers in July<sup>o</sup>.]

<sup>i</sup> Linn. mant.  
<sup>m</sup> Gertner.

<sup>k</sup> Kalm.  
<sup>n</sup> Kalm.

<sup>l</sup> Gronovius.  
<sup>o</sup> Hort. kew.



**SARRACENIA.** (So named by Tournefort, in honour of Dr. Sarrazin, regius professor of anatomy and botany, who sent this plant to him from Canada.)

Lin. gen. n. 652. Reich. n. 708. Schreb. n. 885.  
Tournef. t. 476. Juss. 435.

Class. 13. 1. Polyandria Monogynia.

Nat. order of Succulentæ.

GENERIC CHARACTER.

CAL. Perianth double: lower three-leaved; leaflets ovate, very small, deciduous: upper five-leaved; leaflets sub-ovate, very large, coloured, deciduous.

COR. Petals five, ovate; bent in, covering the stamens: claws ovate-oblong straight.

STAM. Filaments numerous, small. Anthers simple.

PIST. Germ roundish. Style cylindrical, very short. Stigma clypeate, peltate, five-cornered, covering the stamens, permanent.

PER. Capsule roundish, five-celled.

SEEDS numerous, roundish, acuminate, small.

ESSENTIAL CHARACTER.

Cal. double, three-leaved and five-leaved. Cor. five-petalled. Caps. five-celled, with the style having a clypeate stigma.

SPECIES.

1. *Sarracenia flava.* Yellow Side-saddle flower.

Lin. spec. 729. Juss. 491. Reich. 2. 577. Willd.

2. 1150. hort. cliff. 497. Gron. virg. 164.

Walt. carol. 153.

*Sarracena foliis longioribus & angustioribus.* Catesb. car. 2. t. 69.

*Coilophyllum virginianum*, longiore folio erecto, flore luteo. Mor. hist. 3. 533.

*Bucanephyllum elatius*, &c. Pluk. alm. 72. amaltb. 46. t. 152. f. 3. (mala) t. 376. f. 5. (bona.)

*Thuris limpidi folium.* Baub. hist. 1. 307. Dalech. hist. 1754. Lob. adv. 430.

Leaves erect tubular, valves with a contracted neck, top flat erect.

[2. *Sarracenia minor.* Small Side-saddle flower.

Lin. spec. ed. Willd. 2. 1150. Walt. carol. 153.

Leaves smaller tubular erect, valve concave nodding.

3. *Sarracenia rubra.* Red Side-saddle flower.

Lin. spec. ed. Willd. 2. 1150. Walt. carol. 152.

Leaves erect tubular, valve flat erect.]

4. *Sarracenia purpurea.* Purple Side-saddle flower.

Lin. spec. 728. Juss. 491. Reich. 2. 577. Willd. 2.

1150. hort. cliff. 427. Gron. virg. 164. Walt.

carol. 152. Mill. fig. 161. t. 241.

*Sarracena Canadensis*, foliis cavis & auritis. Tournef. inst. 657.

*S. foliis brevioribus latioribus.* Catesb. car. 2. t. 70.

*Coilophyllum virginianum*, brevior folio, flore purpureascente. Mor. hist. 3. 533.

*Bucanephyllum americanum*, &c. Pluk. alm. 71. amaltb. 46. t. 376. f. 6.

*Limonium peregrinum*, foliis forma floris Aristolochiæ. Baub. pin. 192.

*Limonio congener.* Clus. hist. 2. 82. Ger. emac. 412. 4. Park. theat. 1235. 7. Raii hist. 1344.

Leaves cowl'd bellying patulous bowed.

DESCRIPTIONS, &c.

1. Leaves near three feet high, small at the bottom, but widening gradually to the top: they are hollow, and arched over at the mouth like a friar's cowl. The flowers grow on naked pedicels, rising from the root to the height of three feet, and are of a green colour.

Native of Carolina, Virginia, &c. upon bogs, and in shallow standing waters, [Cultivated in 1752, by Mr. Miller. It flowers in June and July<sup>p</sup>.

2, 3. Both natives of Carolina, in bogs and wet places<sup>q</sup>.]

4. The fourth sort grows naturally upon bogs in most parts of North America; this has a strong fibrous root, which strikes deep into the soft earth, from which arise five, six, or seven leaves, in proportion to the strength of the plant; these are about five or six inches long, hollow like a pitcher, narrow at their base, but swell out large at the top; their outer sides are rounded, but on their inner side they are a little compressed,

and have a broad leafy border running longitudinally the whole length of the tube; and to the rounded part of the leaf there is on the top a large appendage or ear standing erect, of a brownish colour; this surrounds the outside of the leaves about two thirds of the top, it is eared at both ends, and waved round the border. From the centre of the root, between the leaves, arises a strong, round, naked footstalk, about a foot high, sustaining one nodding flower at the top: the leaflets of the upper calyx are obtuse, and bent over the corolla, so as to cover the inside of it; they are of a purple colour on the outside, but green within only having purple edges: the petals are of a purple colour, and hollowed like a spoon. Germ large, channelled: stigma green, with the five corners stretched out beyond the brim, each cut into two points and purplish. Anthers target-shaped, furrowed; of a pale sulphur colour. Capsule large, covered by the permanent stigma.

The hollow parts of the leaves have always water standing in them, and the top or ear is supposed in hot dry weather to shrink, and fall over the mouth of the tube, and serve as a lid to prevent the exhalation of the water. In great droughts birds and other animals repair to these plants. In spring the leaves are of a dark green colour, but gradually change purplish; and towards autumn become dark brown.

The English, who first settled in North America, gave this plant the name of Side-saddle flower, from the resemblance of the stigma to a woman's pillion<sup>r</sup>.

[In the thirteenth edition of the *Systema Vegetabilium* the leaves of this singular plant are described as sessile and cowl'd, with the tube bellying and widening gradually; the throat contracted a little with the margin in front dilated; the border kidney-shaped, spreading, emarginate; the belly in front with a membranaceous, semielliptic, two-nerved keel. Such is the metamorphosis of the leaf of *Nymphæa* into that of *Sarracenia*, in order that, by receiving and retaining rain water, it may grow out of the water; a wonderful provision of Nature!]

Introduced before 1640, by Mr. John Tradescant, junior<sup>s</sup>, who, as Parkinson informs us, found it in Virginia, brought it home, and cultivated it.]

PROPAGATION AND CULTURE.

These plants are esteemed for the singular structure of their leaves and flowers, which have little resemblance of any yet discovered; but there is some difficulty in getting them to thrive in England, when they are obtained from abroad; for as they grow naturally on bogs, or in shallow standing waters, so unless they are constantly kept in wet, they will not thrive; and although the winters are very sharp in the countries where the fourth sort naturally grows, yet being covered with water and the remains of decayed plants, the plants are defended from frost.

The best method to obtain these plants is, to procure them from the places of their natural growth, and to have them taken up with large balls of earth to their roots, and planted in tubs of earth; they must be constantly watered during their passage, otherwise they will decay before they arrive; for there is little probability of raising these plants from seeds, so as to produce flowers in many years, if the seeds do grow; so that young plants should be taken up to bring over, which are more likely to stand here, than those which have flowered two or three times. When the plants are brought over, they should be planted into pretty large pots, which should be filled with soft spongy earth, mixed with rotten wood, moss, and turf, which is very like the natural soil in which they grow. These pots should be put into tubs or large pans which will hold water, with which they must be constantly supplied, and placed in a shady situation in summer; but in the winter they must be covered with moss, or sheltered under a frame, otherwise they will not live in this country; for as the plants must be kept in pots, so if these are exposed to the frost, it will soon penetrate through them, and greatly injure,



if not destroy the plants; but when they are placed under a common frame, where they may have the open air at all times in mild weather, and be sheltered from hard frost, the plants will thrive and flower very well.

[SARSAPARILLA. See *Smilax*.

SASANQUA. See *Camellia*.]

SASSAFRAS. See *Laurus*.

SATTIN, WHITE. See *Lunaria*.

SATUREIA. (From *Satyrus*, according to *Linneus*; but *Vossius* says, quia saturet. A saturo satureia, as from impeto impeteius.)

*Lin. gen. n.* 707. *Reich. n.* 765. *Schreb. n.* 961. *Juss.* 112.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatae*. *Labiatae*, *Juss.*

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, striated, erect, permanent: *mouth* five-toothed, almost equal, erect.

COR. one-petalled, ringent: *tube* cylindrical, shorter than the calyx: *throat* simple: *upper lip* erect, blunt, acutely emarginate, length of the lower lip: *lower lip* three-parted, spreading; *segments* blunt, equal, the middle one a little larger.

STAM. *Filaments* four, setaceous, distant, scarcely the length of the upper lip; the two lower a little shorter. *Anthers* converging.

PIST. *Germ* four-cleft. *Style* setaceous, length of the corolla. *Stigmas* two, setaceous.

PER. none. *Calyx* converging, containing the seeds in the bottom.

SEEDS four, roundish.

#### ESSENTIAL CHARACTER.

Cor. with segments nearly equal. Stam. distant.

#### SPECIES.

1. *Satureia juliana*. *Linear-leaved Savory*.

*Lin. spec.* 793. *Reich.* 3. 26. *Allion. pedem. n.* 84.

*S. spicata*. *Bauh. pin.* 218.

*S. fol. tenuibus* f. *tenuifolia*, *S. Juliani quorundam*. *Bauh. hist.* 3. 273.

*S. Sancti Juliani*. *Ger.* 461. f. 3. *emac.* 576. f. 3. *Raii hist.* 518.

*S. spicata Sancti Juliani*. *Park. theat.* 5. f. 3.

*S. perennis*, *verticillis spicatis* & *densius dispositis*. *Mor. hist.* 3. 412. f. 11. t. 17. f. 4.

*Thymbra Sancti Juliani*, f. *Satureia verior*. *Lob. ic.* 245.

*Whorls fastigate, leaves linear-lanceolate*.

[2. *Satureia Thymbra*. *Whorled Savory*.

*Lin. spec.* 794. *Reich.* 3. 26. *Blackw. t.* 318. *Sabb. hort.* 3. t. 71. *Allion. pedem. n.* 85.

*S. cretica*. *Bauh. pin.* 218. *Ger. emac.* 576. f. 4. *Raii hist.* 519. *Mor. hist.* f. 11. t. 17. f. 6. *ord.* 3.

*Thymus frutescens*, *verticillis fere nudis globosis, foliis ovato-lanceolatis*. *Lin. hort. cliff.* 306.

*Thymum creticum pone verticillatum*. *Barr. rar.* 279. t. 898.

*Thymbra legitima*. *Clus. hist.* 1. 358.

T. f. *Satureia cretica legitima*. *Park. theat.* 5. f. 4.

*Flowers whorled hispid, leaves oblong acute*.]

3. *Satureia græca*. *Greek Savory*.

*Lin. spec.* 794. *fist.* 528. *Reich.* 3. 26. *Allion. pedem. n.* 86.

*S. annua orientalis tenuior, ad singulos nodos florifera*. *Mor. hist.* 3. 411. f. 11. t. 17. f. 2.

*Clinopodium creticum*. *Alp. exot.* 265. t. 264.

*C. minus exoticum, thymi folio majore, inodorum*. *Pluk. alm.* 110. t. 84. f. 8.

*Peduncles subtriflorous lateral, involucrets shorter than the calyx*.

4. *Satureia montana*. *Winter Savory*.

*Lin. spec.* 794. *fist.* 528. *Reich.* 3. 27. *vir. cliff.* 57. *hort. upf.* 161. *Scop. carn. n.* 738. t. 30.

*Villars dauph.* 2. 364. *Allion. pedem. n.* 87. *Zinn. goett.* 313. *Willich, obs.* 109. *Sabb. hort.* 3. t. 64. *Bauh. pin.* 218.

*S. durior*. *Bauh. hist.* 3. 272. *Raii hist.* 518. *Mor. hist.* f. 11. t. 17. f. 3. *ord.* 2.

*S. hortensis*. *Ger.* 461. 1. *emac.* 575. 1. *Lob. obs.* 232.

*S. vulgaris*. *Park. theat.* 4. n. 1.

*S. perennis*. *Riv. mon.* 41.

*Satureia*. *Lob. adv.* 182.

*Melissa foliis linearibus integerrimis*. *Lin. hort. cliff.* 308.

*Calamintha frutescens Satureiæ folio facie & odore*. *Tournef. inst.* 194.

*Saxifraga secunda*. *Camer. epit.* 717.

*Peduncles lateral solitary, flowers in bundles fastigate, leaves mucronate linear-lanceolate*.

5. *Satureia hortensis*. *Summer Savory*.

*Lin. spec.* 795. *Reich.* 3. 27. *vir. cliff.* 87. *hort. upf.* 161. *mat. med.* 145. *Sauv. monsp.* 142.

*Ger. prov.* 257. *Villars dauph.* 2. 364. *Krock. filef. n.* 905. *Allion. pedem. n.* 88. *Ludw. est.* t. 199. *Kniph. cent.* 3. n. 80. *Sabb. hort.* 3.

t. 70. *Regn. bot. Blackw. t.* 419. *Bauh. pin.* 218. *Park. theat.* 5. f. 2. *Raii hist.* 518. *Lob. adv.* 182.

*S. æstiva hortensis*. *Ger.* 461. f. 2. *emac.* 575. 2. *Mor. hist.* f. 11. t. 17. f. 1. *ord.* 2.

*S. fativa*. *Bauh. hist.* 3. 272.

*S. altera*. *Camer. epit.* 487.

*Thymus erectus annuus, foliis lanceolato-linearibus*. *Lin. hort. cliff.* 306.

*Peduncles two-flowered*.

6. *Satureia capitata*. *Ciliated Savory*.

*Lin. spec.* 795. *Reich.* 3. 27. *mat. med.* 145. *Gron. orient.* 71.

*Thymus capitatus qui Dioscoridis*. *Bauh. pin.* 219. *Raii hist.* 519.

*Thymum legitimum*. *Clus. hist.* 1. 357.—*capitatum*. *Park. theat.* 7. f. 1.

*T. creticum*. *Ger.* 459. 3. *emac.* 574. 3.—*incanum capitatum*. *Barr. ic.* 897.

*Flowers in spikes, leaves keeled dotted ciliate*.

[7. *Satureia spinosa*. *Thorny Savory*.

*Lin. spec.* 795. *Reich.* 3. 28. *amoen.* 4. 317.

*S. cretica frutescens spinosa*. *Tournef. cor.* 13.

*S. cret. spinosa*. *Pona ital.* 21.

*Branches thorny, leaves hispid*.

8. *Satureia viminea*. *Twiggy Savory*.

*Lin. spec.* 795. *Reich.* 3. 28. *amoen.* 5. 399. *Swartz, obs.* 226. *Brown. jam.* 258. (*Sideritis*).

*Peduncles axillary three-flowered, involucrets linear, leaves lanceolate-ovate quite entire*.]

#### DESCRIPTIONS, &c.

1. This has very slender woody stalks, which grow erect, about nine inches high, sending out two or three slender side branches towards the bottom. Leaves opposite, stiff. Flowers in whorls for more than half the length of the stalk, seeming as if they were bundled together. Corolla small and white. The whole plant has a pleasant aromatic smell.

[Native of Italy. Cultivated in 1739, by Mr. Miller. It flowers from may to september.]

2. This rises about two feet high with a woody stem, and divides into many branches, so as to form a small bush. Leaves somewhat like those of common Savory, having a strong aromatic scent when bruised.

[Whorls in this species four or five, whereas in the preceding there are nineteen or twenty.]

Native of the island of Candia. Cultivated in 1739, by Mr. Miller\*; who has omitted it in the later editions of his Dictionary.

3. In appearance this agrees with *S. montana* or *Winter Savory*; from which however it differs in having the leaves less mucronate, but especially in the corymbs of flowers, which are not single on each side but double; the bractes also (or involucre) are very small in this, but in that they are the length of the corymb. The lower leaves are ovate, like those of Thyme, purplish beneath, the rest are rather linear; on the upper surface of the leaves appear a sort of sparkling atoms, shining from a few short scattered hairs. Corollas purplish on the outside, on the inside whitish-purple, with three purple spots at the base, the middle one larger than the others. After the first year the corymbs become solitary.—Native of the Archipelago, and the county of Nice.]

\* Hort. kew.

u Linn. spec.

\* Hort. kew.

v Linn. spec.



Mr. Miller says it has slender woody stalks which rise near a foot and half high, with small, ovate, stiff, acute-pointed leaves, having reflexed borders. Flowers in roundish whorls upon foot-stalks, by pairs from the axils, small and white, appearing in July.

Cultivated by Mr. Miller in 1759.

4. This is well known under the name of Winter Savory; and is a perennial plant, with a shrubby low branching stalk; the branches rise about a foot high, are woody, and have two very narrow stiff leaves, about an inch long, opposite at each joint: from the base of these come out a few small leaves in clusters. Flowers axillary upon short foot-stalks, shaped like those of the Summer Savory, but larger and paler. They appear in June, and the seeds ripen in autumn.

[The lower leaves are flattish, those under the flowers keeled. Lower peduncles three-flowered; the upper ones five or seven-flowered. The outer flowers have keeled bractes the length of the tube of the calyx. Throat of the calyx not contracted, hairy within. Corolla twice as large as the calyx and more. Filaments curved in under the upper lip, and of the same length with that lip. It has the same smell with *S. hortensis*, but weaker<sup>2</sup>.

Native of the South of France and Italy. Cultivated here in 1562, as appears from Turner's herbal<sup>3</sup>. That is as far back as we have any printed registers; for there can be no doubt but that this and Summer Savory, with other pot-herbs, were much cultivated in far earlier times, before the spices from the East Indies were known and in common use.]

5. Summer Savory is an annual plant, with slender erect stalks about a foot high, sending out branches at each joint by pairs. Leaves opposite, about an inch long, and one eighth of an inch broad in the middle, stiff, a little hairy, and having an aromatic odour if rubbed. Flowers towards the upper part of the branches, axillary; each peduncle sustaining two flowers. Corolla pale flesh-colour.

[Native of the South of France and Italy. Cultivated here in 1562. Flowers from June to August<sup>4</sup>.] Seeds ripen in autumn.

6. This has a low shrubby stalk, which sends out branches on every side, about six inches long and hoary. Leaves stiff, narrow, acute-pointed. Flowers in short roundish spikes at the end of the branches, small and white. The whole plant is hoary and very aromatic. It never produces seeds in England.

[Native of the Levant. Cultivated in 1640, as appears from Parkinson. It flowers from June to October<sup>5</sup>.

7. This is a shrubby species, native of Candia or Crete; distinguished by its thorny branches, and shaggy leaves.

8. This is a shrub from two to twelve feet in height, with an upright stem, very much branched and loose. Branches four-sided, strict, subdivided, long; with the branchlets four-cornered, striated, loose, directed one way, ferruginous-pubescent. Leaves opposite, approximating, small, oblong, wedge-shaped, sometimes ovate, convex, sometimes flat, nerved, somewhat rugged, hoary beneath. Petioles short. Leaflets in the axils of the larger leaves. Flowers subsessile at the ends of the branchlets, by threes, the length of the leaves, white. Under the flowers a few linear leaflets, called by Linneus the involucre. Calyx five-cleft, ten-streaked, five-cornered, hispid, hoary: segments almost equal; the two upper ones approximating, acute, linear, erect. Tube of the corolla scarcely longer than the calyx: upper lip or two upper segments shorter, erect, approximating, less divided, ovate; lower lip or three lower divisions nearly equal, the two lateral ones ovate, the middle one roundish, concave, bent in. Filaments inserted into the middle of the tube, which is villose, two of them shorter than the tube: anthers distant, roundish, black. Germ ovate: style longer than the tube, awl-shaped: stigma simple, acute, bent in.

Native of the cooler mountains of Jamaica; flowering there in autumn.

<sup>2</sup> Willich.    <sup>3</sup> Hort. kew.    <sup>4</sup> Ibid.    <sup>5</sup> Ibid.

There are two varieties: one a shrub, smaller and more rigid, with smaller oblong leaves: the other a little tree, twelve or fifteen feet high, with the branches loose and rounder leaves.

The whole plant is very sweet-scented, even when dry<sup>6</sup>.

Introduced in 1783, by Matthew Wallen, Esq.<sup>7</sup>

#### PROPAGATION AND CULTURE.

4. Winter Savory may be propagated by seeds in the same way as Summer Savory, or by slips, which, if planted in the spring, will take root very freely. It is very hardy, and will continue several years, especially on a poor dry soil, or on a wall: but when the plants are old, the shoots are short, and not so well furnished with leaves; it will be proper therefore to raise a supply of young plants every other year.

5. Summer Savory is only cultivated by seeds, sown at the beginning of April, upon a bed of light earth, where they are to remain, or for transplanting: if the plants are to stand unremoved, the seeds should be sown thinly. Keep them clean from weeds, and treat them in the same way as Marjoram.

1, 2, &c. The other sorts are too tender to live through the winter in the open air in England. They are generally propagated by slips or cuttings, which take root very readily during any of the summer months. If they are planted in a shady border, or are shaded from the sun with mats, they will be fit to be transplanted in two months, when they should be taken up carefully, and each put into a small pot filled with fresh undunged earth, and placed in the shade till they have taken new root: then place them in a sheltered situation, where they may remain till the end of October, when they should be placed under a common hot-bed frame, where they may be exposed to the open air at all times when the weather is mild; but they must be protected from hard frost.

As these plants seldom live above three or four years, there should be a supply of young ones raised to preserve the species. In winter they should not have much wet, for they are very subject to grow mouldy, especially if the air be excluded from them: or if the branches be drawn up weak, they become mouldy and soon decay.

[SATUREIA. See *Cunila*, *Thymbra*, *Thymus*.]

SATYRIUM. (*Saturion* of Dioscorides. *Satyrion* of Pliny. So named from the supposed libidinous property of the root.)

Lin. gen. n. 1010. Reich. n. 1095. Schreb. n. 1368.

Juss. 65.

Class. 20. 2. Gynandria Diandria.

Nat. order of Orchideæ.

#### GENERIC CHARACTER.

CAL. Spathes wandering. Spadix simple.

Perianth none.

COR. Petals five, ovate-oblong: three exterior; two interior converging upwards into a helmet.

Nectary one-leaved, annexed to the receptacle by its lower side between the division of the petals: upper lip erect, very short; lower flat, pendulous, prominent behind at the base in a serotiform bag.

STAM. Filaments two, very slender and very short, placed on the pistil. Anthers obovate, covered by the two-celled fold of the upper lip of the nectary.

PIST. Germ oblong, twisted, inferior. Style fastened to the upper lip of the nectary, very short. Stigma compressed, obtuse.

PER. Capsule oblong, one-celled, three-keeled, three-valved, opening in three parts under the keels, cohering at the top and bottom.

SEEDS numerous, very small, irregular like saw-dust.

#### ESSENTIAL CHARACTER.

Nectary serotiform or twin-inflated behind the flower.

#### SPECIES.

1. *Satyrion hircinum*. Lizard Satyrion.

Lin. spec. 1337. Juss. 811. Reich. 4. 17. mant. 487.

Aët. upf. 1740. t. 18. Hudf. angl. 386. Wither.

arr. ed. 3. 29. Engl. bot. t. 34. Pollich pal.

<sup>6</sup> Swartz.

<sup>7</sup> Hort. kew.



- n. 851. *Jacqu. austr.* 4. 35. t. 367. *Villars dauph.* 2. 41.  
*Orchis hircina.* *Scop. carn. n.* 1113. *Allion. pedem.* n. 1824. *Hall. helv. n.* 1368. t. 25.  
*O. barbata foetida.* *Baub. hist.* 2. 756. *Raii hist.* 1212. *syn.* 376. *Vaill. par. t.* 30. f. 6. *Segu. ver.* t. 15. f. 1. *Riv. hex. t.* 18.  
*O. barb. odore hirci, brevior latioreque folio.* *Baub. pin.* 20. *Mor. hist.* 3. 491. f. 12. t. 12. f. 9.—  
 item, longiore angustioreque folio. *Baub. pin.*  
*Tragorchis maximus, & T. mas.* *Ger.* 160. f. 1, 2. *emac.* 210. 1, 2.  
*T. maxima & T. vulgaris.* *Park. theat.* 1348. f. 1, 2.  
*T. Testiculus hirci.* *Dod. pempt.* 237. 1.  
*Testiculus hircinus.* *Lob. obs.* 90. 1. ic. 1. 177. 1. *Tabern. ic.* 671. *Dalech. hist.* 1553.  
*Bulbs undivided, leaves lanceolate, lip of the nectary trifid, middle segment linear oblique præmorse.*  
 [2. *Satyrium tabulare.*  
*Lin. syst.* 811. *suppl.* 402.  
*Bulbs round, stem leafy, lip trifid, middle segment emarginate.*  
 3. *Satyrium triste.*  
*Lin. syst.* 811. *suppl.* 402.  
*Bulbs undivided, helmet one-spurred, lip entire.*  
 4. *Satyrium giganteum.*  
*Lin. syst.* 811. *suppl.* 402.  
*Bulbs round, stem naked, lip sagittate.*  
 5. *Satyrium aculeatum.*  
*Lin. syst.* 811. *suppl.* 402.  
*Bulbs round, stem leafy, lip entire unarmed prickly.]*  
 6. *Satyrium viride.* *Frog Satyrion.*  
*Lin. spec.* 1337. *syst.* 811. *Reich.* 4. 18. *mant.* 488.  
*Aët. upf.* 1740. p. 18. *fl. lapp. n.* 313. *succ. n.* 804.  
*Huds. angl.* 386. *Wither. arr. ed.* 3. 30. *Engl. bot. t.* 94. *Lightf. scot.* 519. *Relb. cant. n.* 651.  
*Sibth. oxon. n.* 32. *Abbot, bedf.* 193. n. 635.  
*Fl. dan. t.* 77. *Pollich pal. n.* 852. *Villars dauph.* 2. 41. *Gmel. fib.* 1. 21.  
*Orchis virens.* *Scop. carn. n.* 1122.  
*O. viridis.* *Allion. pedem. n.* 1846. *Hall. helv. n.* 1269. t. 26. *Segu. ver.* 2. t. 16. f. 18.  
*O. palmata flore viridi.* *Baub. pin.* 86. *prodr.* 30.  
*O. palm. flore luteo-viridi.* *Raii hist.* 1224.  
*O. palm. minor fl. luteo-viridi.* *Raii syn.* 381.  
*O. palm. batrachites vel myodes.* *Park. theat.* 1358. f. 9.  
*O. palm. flore galericulato dilute viridi.* *Loef. pruss.* 192. t. 59.  
*Serapias batrachites altera.* *Ger. emac.* 224. 9.  
 β. *Orchis palmata batrachites.* *Baub. pin.* 86. *Vaill. par.* 153. t. 31. f. 6, 7, 8. *Pollich.*  
*Bulbs palmate, leaves oblong blunt, lip of the nectary linear trifid, the middle segment obsolete.*  
 7. *Satyrium nigrum.* *Black-flowered Satyrion.*  
*Lin. spec.* 1338. *syst.* 811. *Reich.* 4. 18. *mant.* 488.  
*Aët. upf.* 1740. p. 19. *fl. succ. n.* 805. *Jacqu. vind.* 293. *austr. t.* 368. *Villars dauph.* 2. 43.  
*Orchis nigra.* *Scop. carn. n.* 1123. *Allion. pedem. n.* 1845. *Hall. helv. n.* 1271. t. 27.  
*O. palmata angustifolia alpina, nigro flore.* *Baub. pin.* 86. *Scheuch. it.* 1. 45. & 4. 339. *Segu. ver.* 133. t. 15. f. 17.  
*O. palm. minor odoratissima purpurea f. nigra.* *Baub. hist. Raii hist.* 1225.  
*O. palm. angustifolia alpina.* *Park. theat.* 1361. n. 21.  
*Palma Christi minor.* *Matth.* 886. *Camer. epit.* 627. *Tabern. ic.* 681. *Dalech. hist.* 1569.  
*Bulbs palmate, leaves linear, lip of the nectary resupine undivided.*  
 8. *Satyrium albidum.* *White Satyrion.*  
*Lin. spec.* 1338. *syst.* 812. *Reich.* 4. 19. *mant.* 488.  
*Aët. upf.* 1740. p. 19. *fl. succ. n.* 806. *Huds. angl.* 387. *Wither. arr. ed.* 3. 31. *Lightf. scot.* 519. *Jacqu. vind.* 294. *Fl. dan. t.* 115. *Villars dauph.* 2. 24.  
*Orchis albida.* *Scop. carn. n.* 1124. *Allion. pedem. n.* 1838. *Hall. helv. n.* 1270. t. 26.  
*O. palmata, palmis inversis, flore albo.* *Loef. pruss.* 182.  
*O. palm. thyrsos specioso longo dense stipato ex viridi albente.* *Raii syn.* 382.  
*Pseudo-Orchis alpina, flore herbaceo.* *Mich. gen.* 30. t. 26.  
*Helleborine Broccenbergense.* *Riv. hex. t.* 3.  
*Limodorum montanum, flore albo dilute virecente.*  
*Chomel aët. par.* 1705. p. 517.  
*Bulbs in bundles, leaves lanceolate, lip of the nectary trifid acute, the middle segment blunt.*  
 [9. *Satyrium epigogium.*  
*Lin. spec.* 1338. *syst.* 812. *Reich.* 4. 19. *mant.* 488.  
*Jacqu. austr. t.* 84. *Weber spicil.* 23. *Villars dauph.* 2. 44. t. 1.  
*Epigogium.* *Gmel. fib.* 1. 12. t. 2. f. 2.  
*Epipactis caule aphylo, flore fupinato, labello ovato-lanceolato, calcar ovato turgido.* *Hall. helv. n.* 1289. *aët. bern.* 5. 309.  
*Bulbs compressed toothed, stem sheathed, lip of the nectary resupine undivided.*  
 10. *Satyrium hirtellum.*  
*Swartz prodr.* 118.  
*Bulbs filiform, stem hirsute, leaves ovate three-nerved petioled sheathing, nectary horned, lip three-lobed.*  
 11. *Satyrium plantagineum.*  
*Lin. spec.* 1338. *syst.* 812. *Reich.* 4. 20. *amoen.* 5. 408. *Jacqu. amer.* 221. *piët.* 108. *Swartz prodr.* 118. *obs.* 320.  
*Orchis elatior latifolia, &c.* *Sloan. jam.* 1. 250. t. 147. f. 2.  
*Bulbs filiform, stem very smooth, leaves ovate petioled sheathing, horn of the nectary thickened, lip two-lobed, middle acuminate.*  
 12. *Satyrium adnatum.*  
*Swartz prodr.* 118.  
*Bulbs in bundles, root-leaves oblong on very long petioles, scape sheathed, nectary horned adnate, lip bent down two-lobed emarginate.*  
 13. *Satyrium Orchioides.*  
*Swartz prodr.* 118.  
*Satyrium 7.* *Brown. jam.* 325.  
*Bulbs in bundles oblong, leaves broad-lanceolate, scape sheathed, nectary horned, lip lanceolate acuminate.*  
 14. *Satyrium spirale.*  
*Swartz prodr.* 118.  
*Bulbs in bundles oblong, leaves linear, scape sheathed, flowers spiral directed one way, lip three-lobed, middle larger crenulate.*  
 15. *Satyrium elatum.*  
*Swartz prodr.* 119. *Brown. jam.* 324. 2.  
*Helleborine foliis liliaceis, radice Asphodeli, minor.*  
*Plum. spec.* 9. ic. 190.  
*Bulbs in bundles thick tomentose, root-leaves ovate petioled, stem almost naked, nectary subtrilobate.*  
 16. *Satyrium repens.* *Creeping Satyrion.*  
*Lin. spec.* 1339. *syst.* 812. *Reich.* 4. 20. *mant.* 488.  
*fl. lapp. n.* 314. *succ. n.* 807. *Aët. upf.* 1740. p. 20. *Huds. angl.* 387. *Wither. arr. ed.* 3. 31. *Engl. bot. t.* 289. *Lightf. scot.* 520. t. 22. *Gunn. norv. n.* 321. t. 6. f. 1. *Fl. dan. t.* 812. *Jacqu. austr.* 4. t. 369.  
*Epipactis foliis petiolatis ovato-lanceolatis, floribus tetrapetalis hirsutis.* *Hall. helv. n.* 1295. t. 22. *aët. helv.* 4. 114.  
*E. fol. ovatis radicalibus.* *Gmel. fib.* 1. 13.  
*Orchioides.* *Trew. norimb.* 1736. p. 409. t. 6. f. 7.  
*Orchis minor, flosculis albis, f. radice repente.* *Cam. hort.* 111. t. 35. *Park. theat.* 1355. 8.  
*O. radice repente.* *Baub. hist.* 2. 770. 2.  
*Pseudo-Orchis.* *Baub. pin.* 84. *Raii hist.* 1226.  
*Pyrola angustifolia polyanthos, radice geniculata.* *Loef. pruss.* 210. t. 68.  
*Palma Christi radice repente.* *Ger.* 175. 4. *emac.* 227. 4.  
 β. *Orchis radice repente, foliis maculis nigris & albis adspersis.* *Mentz. pug. t.* 3. f. 4, 5. *Raii hist.* 1226.  
*Bulbs fibrous, leaves ovate radical, flowers directed one way.*  
 17. *Satyrium capense.*  
*Lin. spec.* 1339. *Reich.* 4. 20. *amoen.* 6. *afr.* 93.  
*Lip of the nectary wider blunt emarginate waved on both sides.*  
 18. *Satyrium hians.*  
*Lin. syst.* 812. *suppl.* 401.  
*Helmet of the corolla spurred gaping, nectary ovate, leaves linear radical.*  
 19. *Satyrium*



19. *Satyrion Orobanchoides*.*Lin. syst.* 812. *suppl.* 402.*Helmet of the corolla behind two-lobed and in a manner two-horned, leaves bifarious.*20. *Satyrion pedicellatum*.*Lin. syst.* 812. *suppl.* 402.*Scape almost naked, raceme with filiform loose pedicels.*21. *Satyrion maculatum*.*Desfont. atlant.* 319.*Flowers in close spikes, segments converging acute, lip three-lobed, lobes linear very narrow, the middle one longer.*

## DESCRIPTIONS, &amp;c.

1. Lizard *Satyrion*, or Goat Orchis, called by our old authors the Lizard flower from its spotted corolla, and great Goat's-stones, from the scent of the flower, and the large testiculated roots, is the tallest English plant of this tribe, frequently attaining the height of three feet, and producing from twenty to sixty or more flowers, remarkable for their fetid goat-like smell. The upper part of the lip is downy, and marked with elegant purple spots on a white ground; otherwise the flowers are more singular than beautiful.]

The leaves are near five inches long, and half an inch broad. The spike of flowers is six inches in length: the corolla of a dirty white, with some linear stripes and spots of a brown colour; the middle segment of the lip of the nectary is two inches long.

[Native of Germany, Switzerland, Austria, France, Italy, and England in the county of Kent, about Dartford; flowering, according to Ray, from the end of May to the middle of June; others mark July for its month of flowering. It loves a chalky soil, at least with us, and a shaded situation among shrubs and tall grass. It seems to have been first observed by Mr. Bowles, in the way from Crayford to Dartford; afterwards by Mr. Rouse, an ingenious botanist, and eminent apothecary in London, near Dartford<sup>a</sup>. It has since been occasionally met with in that neighbourhood, but the greediness of collectors has frequently endangered its total destruction, and in some seasons none can be found in flower<sup>b</sup>.

This plant varying in size and the breadth of the leaves, has given occasion to old authors to make two species of it. The flowers are sometimes quite white.

2. Found by Thunberg, at the Cape of Good Hope, on the top of the Table mountain; whence its trivial name.

3. Large and panicled. Found by Thunberg at the Cape.

4. This is a fathom in height, with large orange-coloured flowers.

5. The lip is muricate with white and purple prickles. Both these were also found by Thunberg at the Cape<sup>c</sup>.

6. Frog *Satyrion*, commonly called Frog Orchis, has a stem from five to eleven inches high and solid, with unequal sharp angles, formed from the edges of the leaves and bractes. Spike lanceolate, from one to three inches long, loose with few flowers. Bractes subulate-lanceolate, keeled, somewhat bowed in. Tube of the calyx investing the germ; border with three divisions; segments ovate, nearly equal, with sharp longitudinal wrinkles, approaching upwards, before flowering glued together, and involving all the parts of fructification, except the nectary; the side ones more convex on the outside, bowed back sideways at the points, the middlemost rather smaller, more bent inwards. These, which are clearly an extension of the skin investing the germ, inclose as a calyx the other parts of fructification, and are of a texture similar to that of the bractes. Corolla of three petals, the two upper linear-lanceolate, concave, upright, of a greenish whitish hue, as long as the calyx, inserted at the divisions at the base of the upper lip of the third petal. These are of a different texture from the calyx, are situated within it, and exactly resemble the texture of

petals. The third petal gaping, with two lips, surrounding the edge of the germ; upper lip roundish, concave, reddish brown, as short again as the two upper petals, divided within into two cells, each containing one of the stamens, composed of four valves, marked at the base with a fleshy tooth; lower lip oblong-linear, bent back, somewhat longer than the calyx, flat, of a yellowish greenish hue, the sides and end tinged with brownish purple, the edges bent in at the base, with a longitudinal ridge running along the middle, cloven into three at the end, the lateral segments linear, bluntish, the middlemost very short, projecting underneath at the base into a nectary. This is to be considered as a petal, from its similarity to that of the *Fumaria*, and the whole class of *Personatæ*, which it exactly resembles. Nectary roundish, slightly furrowed along the middle, concave, hanging down from the base of the lower lip of the corolla. In *Fumaria* and the *Personatæ*, the nectary, as here, is an expansion of the petals, containing a honey-like juice. Anthers unchanged on being moistened with water, and not containing any visible pollen<sup>d</sup>.

The roots have but few divisions. The lower leaves sheath the stem, are oval, broad, marked with parallel veins, and irregularly reticulated with cross ones, smooth but not shining; stem-leaves lanceolate, the upper ones sessile. Bractes lanceolate, resembling the upper leaves, much longer than the germ and flower<sup>e</sup>.

Native of many parts of Europe, especially in the northern countries, in meadows and pastures, chiefly in a gravelly or rocky soil with us; also in Siberia. It flowers from the end of May to the beginning of August.—King's-hedges near Chesterton, and Cherry-Hinton, Cambridgeshire; Stevington, Thurleigh, Bletsoe, Pertenhall, Luton Hoo, Bedfordshire; in the way to Glenfield from Leicester; Braybrook, and Foster's Booth in Northamptonshire; Shotover-hill, South Leigh, Cornbury, and Burford Downs, Oxfordshire; Thaxted in Essex; on Hellsell-nap near Kendal; also in Dorsetshire, Yorkshire and Scotland, not uncommon, but rarely in any quantity together.—It was first observed in England by Ray before 1660, in closes north of Chesterton near Cambridge<sup>f</sup>.

Ray has remarked that the lip of the flower varies to a dusky purple or sooty colour; hence, and from the middle segment varying in size, which is a common accident in this tribe, Mr. Hudson has described a *Satyrion fuscum*<sup>g</sup>.—Variety  $\beta$ . of Linneus, figured by Vaillant, is said to have larger flowers, and longer bractes<sup>h</sup>.

7. Stem about nine inches high. Leaves on the lower part about four inches long, but on the upper part scarcely an inch, embracing the stem at the base. Flowers in a thick short spike, of a dark purple colour, [smelling very sweet. Petals spreading. Lip undivided, ovate-lanceolate, crenulate. Spur very short<sup>i</sup>.

Native of the mountains of Lapland, Switzerland, Austria, Dauphiné and Savoy.

Said in the Kew catalogue, to be introduced in 1779, by the Rev. Samuel Goodenough, L.L.D. Mr. Miller had cultivated it in 1759, if not before; but this, like its congeners, is a fugitive plant in gardens; and Villars says of this species, that although it is very common in Dauphiné, they have not been able to cultivate it there.

8. Stem nine to fifteen inches high. Lower leaves oval, sheathing the stem; upper lanceolate, acute. Flowers very numerous, in a long (an inch and half, cylindrical,) close spike. Bractes lanceolate, very acute, longer than the germ. Petals white, oval-lanceolate, all converging; lip of the nectary short, green, divided into three acute segments, the middle one longest and more blunt. Spur blunt, about half as long as the germ<sup>j</sup>.

Stem scarcely a foot high, roundish, leafy. Leaves light green, rather glaucous beneath. Flowers small, greenish-white, almost inodorous. Petals concave, all nearly equal. Lip green, palmate, with three lobes, of which the middle one is larger, and sometimes

<sup>c</sup> Engl. bot.<sup>a</sup> Ray syn.<sup>b</sup> Engl. bot.<sup>d</sup> Linn. suppl.<sup>e</sup> Stokes in Withering.<sup>f</sup> Woodward Mss.<sup>g</sup> Pulteney, Dorset.<sup>h</sup> Engl. bot.<sup>i</sup> Pollich.<sup>j</sup> Linn. man.<sup>k</sup> Woodward Mss.



blunter than the other. Spur longer than in most of the genus, so as almost to make it an *Orchis* according to Linneus's rules; and it certainly has great affinity with several of that genus in other respects. Hence Haller seems justified in not separating these plants from the *Orchides*.

Native of Scania, Denmark, Germany, Switzerland, Anstria, Dauphiné, Piedmont, Pistoia, England, Scotland and Wales, on elevated exposed grassy hills, or dry mountainous pastures: as upon the mountains north of Helmsley, by Mr. Teesdale, in Yorkshire; at the isthmus of Tarbat, in Cantire, Argyleshire; in the isle of Arran, near Loch-Ransa, &c. in Jura, Isla, Colonsa and Skye, by Mr. Lightfoot; in the same places as *Orchis conopsea*, by Dr. Hope; Hafod in Cardiganshire, by Miss Johnes. It flowers in June and July. Cultivated by Mr. Miller in 1759.

9. Root tender, branched like coral, snow-white. Stem very tender, leafless, purplish in the upper part, covered with scales, about half a foot high, terminated by three or four white distant flowers. Nectary short, compressed, recurved. Lower lip turned upside down, oval, entire, with two lateral appendages, and two lines villose and coloured within. The other five petals linear, lanceolate, and yellowish. — Native of Austria, Dauphiné, and Siberia.

10. Native of Jamaica.

11. Roots filiform, long, tomentose. Stem a foot high, ascending, nearly erect, round, leafy, very smooth. Leaves sharp, entire, very smooth, nerved longitudinally, bright green and shining. Sheaths surrounding the stem, cowled, nerved, netted, membranaceous. Spike many-flowered, (fifty) upright. Flowers small, white. Spathes ovate, half-embracing, membranaceous, acute. It has the flower of an *Orchis*, with the habit of a *Satyrion*. The horn is not testiculate, but elongated, obovate, like a bladder and free, by Jacquin and others called the lower lip; but the lip is certainly trifid, with the middle segment acuminate.

Native of Jamaica and Martinico, in moist woods and shady places.

12. Native of Jamaica and Hispaniola.

13. Stem twelve or fourteen inches high, without leaves. Flowers flesh-coloured, oblong and succulent. Native of Jamaica and Hispaniola.

14. Native of Jamaica.

15. Native of Jamaica and Hispaniola.

16. Roots perennial, truly creeping, not bulbous, very succulent, downy, running among moss, and attaching themselves to decayed fragments and leaves of Fir, in the manner of Fungi. Leaves in tufts at the end of each runner, on broad sheathing footstalks, ovate, succulent, strongly five or seven-ribbed, and reticulated with transverse veins which are often brown, and the leaves are now and then prettily chequered with that colour. Stalks erect, six or eight inches high, round, downy upwards, clothed with a few alternate sheathing bractes, and terminated with an erect spike of numerous pale flesh-coloured fragrant flowers, leaning one way, but turning a little spirally round the stalk; each being accompanied by a lanceolate, concave, coloured, downy bracte, longer than the germ, which also is clothed with viscid downiness, as well as the three broader external petals. Haller describes the flower as having only three petals besides the nectary; but Mr. Sowerby observed two internal lanceolate petals, which, like those of *Orchis ustulata*, are very difficult to be detected in a dried specimen, being glued as it were to the upper one, which the others are not, though Haller says they are.

Native of Lapland, Norway, Denmark, Switzerland, Austria, Siberia, Scotland; in Alpine Fir forests: flowering from June to August. — Ross-shire, two miles from the head of Little Loch-Broom, by Mr. Lightfoot. Opposite to Moy-hall, on the south side of the road to Inverness. In a wood near Gordon castle, by Dr. Hope.

\* Engl. bot.    \* Woodward.    \* Villars.    \* Swartz prodr.  
\* Swartz obs.    \* Swartz prodr.    \* Browne.  
\* Swartz prodr.    \* Engl. bot.

Mentzelius mentions a variety, the leaves of which are spotted with black and white; which is not uncommon among the *Orchideæ*.

17. Root-leaves linear-lanceolate, slightly striated, strict. Scape-leaves alternate, embracing and sheathing, acuminate, shorter. Raceme loose. Bractes lanceolate, smaller. Peduncles the length of the flowers. Petals five, almost equal, lanceolate, besides the lip, which is very blunt and emarginate, with a blunt tooth in the middle on each side. Spur very short, blunt. — Native of the Cape of Good Hope.

18. Culm a foot high, with a few mucronate sheaths. All the leaves radical, linear, the length of the culm below the spike. Spike oblong, with about sixteen flowers thinly disposed. First petal cowled, gaping, very broad, finishing behind in a very short horn: second and third obovate; the two petals of the genitals under the first, small, curved in: lip ovate, acute. — Found at the Cape by Thunberg.

19. This plant rather resembles an *Orobanche* than an *Orchis*. Leaves linear, cauline. Spike longer than the stem, bifarious, densely imbricate. Helmet of the corolla one-leafed, blunt, two-lobed at the back, putting forth behind two very short bluntish horns. Lip obcordate, concave, distinct. Receptacle of the stamens oblong, under the helmet; at the top with a two-lobed lip, and two teeth at the base, which are subulate, like a nectary. — Found at the Cape by Sparrmann.

20. Culm a foot high, with a single leaf in the middle. Leaf sheathing, lanceolate-subulate. Spike oblong. Bractes chaffy, subulate. Flowers peduncled. Corolla consisting of five nearly equal petals. — Found at the Cape by Sparrmann.

21. Leaves lanceolate, spotted. Spike dense, short, blunt. Bractes ovate-oblong, acute, shorter than the germ. Flowers small: the upper segments converging, acute, pale: lip pendulous, trifid; segments linear, very narrow, with the middle one longer and wider. Native of Atlas near Belide.

#### PROPAGATION AND CULTURE.

These plants are difficult to propagate. The best way to obtain them, is to take up their roots, and transplant them into the garden, with a good ball of earth, putting them into a soil as near to that in which they naturally grow as possible, and to leave the ground undisturbed; for if their roots be injured, the plants seldom thrive afterwards. For the management of these plants, see *ORCHIS*.

[*SATYRIUM*. See *Hæmanthus*, *Ophrys*, *Orchis*, *Serapias*.

*SAVANNA FLOWER*. See *Echites*.

*SAUCE-ALONE*. See *Erysimum Alliaria*.]

*SAVIN*. See *Juniperus*.

—— Indian. See *Cæsalpinia*.

*SAVORY*. See *Satureia*.

*SAVOY CABBAGE*. See *Brassica*.

*SAURURUS*. (From *Σαυρος* a lizard, and *οὐρα* a tail. So named from its long narrow spike of flowers.)

Lin. gen. n. 464. Reich. n. 500. Schreb. n. 632.

Juss. 19.

Class. 7. 3. Heptandria Trigynia. — Tetragynia. syst.

Nat. order of *Piperitæ*. *Naiades*, Juss.

#### GENERIC CHARACTER.

*CAL.* Ament oblong, covered with floscules.

*Perianth* proper one-leafed, oblong, lateral, coloured, permanent.

*COR.* none.

*STAM.* Filaments seven, capillary, long. *Anthers* oblong, erect.

*PIST.* Germs four, ovate, acuminate. *Style* none. *Stigmas* oblong, fastened to the inner apex of the germ.

*PER.* Berries four, ovate, one-celled.

*SEED* single, ovate.

#### ESSENTIAL CHARACTER.

*Cal.* an ament with one-flowered scales. *Cor.* none.

*Germs* four. *Berries* four, one-seeded.

#### SPECIES.

1. *Saururus cernuus*. *Lizard's Tail*.

Lin. spec. 489. syst. 353. Reich. 2. 138. Willd.

\* Linn. amoen.    \* Linn. suppl.    \* Desfontaines,



2. 292. *hort. cliff.* 139. *upf.* 91. *Gron. virg.* 40.  
*Mill. illustr. Giseck. ic.* 1. n. 7. *Pluk. phyt.*  
*t.* 117. f. 3, 4. (*Serpentaria.*)

## DESCRIPTION, &amp;c.

Root fibrous, perennial. Stalks generally trailing, and seldom rising more than two feet high, having some longitudinal furrows. Leaves heart-shaped and smooth, about three inches long, and two broad at their base, ending in obtuse points, and having several longitudinal veins, which join at the foot-stalk, but diverge from the midrib towards the borders in the middle, and join again at the point; they stand upon foot-stalks about an inch long, and are alternate. Spikes axillary towards the top of the stalk, taper, and about two inches long. They appear in July, but are not followed by seeds in England. The stalk decays in autumn.

[Scales of the ament petioled, white, when going out of flower greenish, with the pedicels curved in to the rachis, and incumbent on the germ. The stamens can scarcely be numbered, unless they continue after flowering.]

Native of Virginia<sup>f</sup>. Mr. Miller says it grows naturally in most parts of North America. He cultivated it in 1759<sup>g</sup>.]

## PROPAGATION AND CULTURE.

Part the roots in autumn, soon after the stalks decay, or in the spring, before the roots begin to shoot. It loves a moist soil, and a shady situation.

[SAURURUS. See *Piper*.]

SAUVAGESIA. (So named by Linneus, in honour of Francois Boissier de Sauvages, Professor at Montpellier; author of *Methodus foliorum*, 1751.)

*Lin. gen. n.* 286. *Reich. n.* 308. *Schreb. n.* 401.

*Jacqu. amer.* 77. *Juss.* 426.

*Class.* 5. 1. Pentandria Monogynia.

*Nat. order of* Grinales.

## GENERIC CHARACTER.

CAL. Perianth five-parted: leaflets lanceolate, acute, concave, spreading, permanent.

COR. Petals five, blunt, equal, rhomb-ovate, length of the calyx.

Nectary, leaflets five, smaller, alternate with the petals, oblong, erect, surrounded by many shorter hairs.

STAM. Filaments five, awl-shaped, very short. Anthers oblong, acute, short.

PIST. Germ ovate. Style simple, length of the stamens. Stigma simple, blunt.

PER. Capsule ovate, acuminate, one-celled, three-valved at the top.

SEEDS numerous, very small, fastened to the futures in a longitudinal row.

## ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled, fringed. Nect. five-leaved, alternate with the petals. Caps. one-celled.

## SPECIES.

1. Sauvagesia erecta.

*Lin. spec.* 294. *Juss.* 244. *Reich.* 1. 572. *Willd.*

1. 1185. *Jacqu. amer.* 77. *t.* 51. f. 3. *piet.* 41.

*t.* 77. *Brown. jam.* 179. *t.* 12. f. 2. (*Iron.*)

S. Adima. *Aubl. guian.* 1. 251. *t.* 100. f. 4.

## DESCRIPTION, &amp;c.

This is an annual plant, having the habit of Hypericum or Corchorus. Stem erect. Leaves alternate, ovate-lanceolate, bluntly ferrate. Peduncles lateral, one-flowered; upright when in flower, bent down when in fruit. Flowers white. Easily distinguished by its ciliate stipules<sup>h</sup>.

Jacquin says, it scarcely ever exceeds a foot in height. Stems round, branched, herbaceous. Leaves acute, smooth, petioled. Stipules lanceolate, acuminate, with bristly ciliae round the edges. Peduncles shorter by half than the leaves. The flowers have no scent.

According to Browne, this beautiful little plant rises generally in an oblique direction, and seldom shoots

<sup>f</sup> Linn. spec.      <sup>g</sup> Hort. kew.  
<sup>h</sup> Linn. spec. and Juss.

above ten or twelve inches from the root; the stalk is delicate, smooth and round, casting a few slender branches on every side, without any certain order. Leaves small, oblong, smooth on the upper side, very lightly crenated, and disposed in an alternate but irregular order: they are on short foot-stalks, and adorned with remarkably ciliated ears or stipules on each side, at their insertions.

Native of St. Domingo, Martinico, Jamaica, Surinam, and Guiana.

SAW-WORT. See *Serratula*.]

SAXIFRAGA, (q. saxa frangat: because several of the species grow in the fissures of rocks. Some herbs have had this name, from their supposed property of dissolving the stone in the kidneys and bladder.)

*Lin. gen. n.* 559. *Reich. n.* 608. *Schreb. n.* 764.

*Tournef. t.* 129. *Juss.* 309. *Gertn. t.* 36.

*Geum. Tournef. t.* 129.

*Class.* 10. 2. Decandria Digynia.

*Nat. order of* Succulentæ. *Saxifraga*, *Juss.*

## GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, short, acute, permanent.

COR. Petals five, spreading, narrow at the base.

STAM. Filaments ten, awl-shaped. Anthers roundish.

PIST. Germ roundish-acuminate, ending in two short Styles. Stigmas blunt.

PER. Capsule subovate, two-beaked, two-celled, opening between the points.

SEEDS numerous, minute.

OBS. The Saxifragæ of Tournefort have the capsule and germ girt by the receptacle of the flower; that is, they are inferior.

*Geum* of Tournefort, has the capsule and germ placed on the receptacle of the flower, or superior.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Caps. two-beaked, one-celled, many-seeded.

## SPECIES.

\* Leaves undivided, stem almost naked.

1. Saxifraga Cotyledon. Pyramidal Saxifrage.

*Lin. spec.* 570. *Juss.* 411. *Reich.* 2. 308. *Willd.*

2. 638. *Jl. succ. n.* 366. *hort. cliff.* 168. *Gertn.*

*fruct.* 1. 178. *Hall. helv. n.* 978. *Scop. carn.*

*n.* 489. *Krock. files. n.* 634. *Villars dauph.* 3.

663. *Jacqu. collect.* 4. 291. *Kniph. cent.* 1.

*n.* 79. *Pluk. phyt. t.* 222. f. 1. (*Sanicula.*)

α. Sedum ferratum. *Bauh. hist.* 3. 689. *Raii hist.*

1045. *Mor. hist.* 3. 478. *f.* 12. *t.* 9. *f.* 19, 20.

Cotyledon media, foliis oblongis ferratis. *Bauh. pin.*

285.

C. altera Matthioli. *Park. parad.* 232. *t.* 233. *f.* 2.

Long-leaved Pyramidal Saxifrage.

β. Saxifraga paniculata. *Mill. dict. n.* 3.

S. foliis subrotundis ferratis. *Tournef. inst.* 252.

Cotyledon minor, fol. subr. ferr. *Bauh. pin.* 285.

*prodr.* 133. *Hall. helv. n.* 978. β. *Raii hist.*

1046.—item, media fol. subr. *Bauh. pin.* 285.

*Raii hist.* 1045.

C. altera minor. *Park. parad.* 232. *t.* 233. *f.* 3.—

folio subrotundo. *Park. theat.* 740. *f.* 3.

Sedum ferratum flore rubente maculato. *Park.*

*parad.* 232. *t.* 233. *f.* 5.

Round-leaved Pyramidal Saxifrage.

γ. Saxifraga sedi folio, flore albo, multiflorum. *Tournef.*

*inst.* 252. *Hall. helv. n.* 977.

S. Cotyledon. *Fl. dan. t.* 241. *Allion. pedem.*

*n.* 1517.

Sedum ferratum, flore albo, multiflorum. *Dod. pempt.*

131.

δ. Saxifraga sedi folio, pyrenaica ferrata. *Tournef. inst.*

252.

ε. Saxifraga pyramidata. *Mill. dict. n.* 4. *fig. t.* 243.

S. montana pyramidata folio longiore. *Tournef. inst.*

253.

Root-leaves aggregate tongue-shaped cartilaginous-toothed,

stem panicle leafy, calyxes glandular-hairy.

2. Saxifraga Aizoon.

*Lin. Juss.* 411. *ed. Willd.* 2. 639. *Jacqu. austr.* 5.

*t.* 438. *Allion. pedem. n.* 1516.

13 I

S. Coty-



- S. Cotyledon i. *Lin. spec.* 570. *fl. lapp.* n. 177. t. 2. f. 2.  
 S. Sedi folio angustiore ferrato. *Seguier ver.* 448. t. 9. f. 1.  
 Cotyledon pyramidale lato crenato & retuso folio polyanthos. *Bocc. mus.* 2. 109. t. 86.  
 Root-leaves aggregate tongue-shaped cartilaginous-toothed, stem simple racemed leafy, calyxes smooth.
- [3. Saxifraga mutata. Saffron-coloured Saxifrage.  
*Lin. spec.* 570. *syft.* 411. *Reich.* 2. 309. *Willd.* 2. 640. *Jacqu. collect.* 1. 284. *ic. rar.* 3. 466. *Curt. magaz.* t. 351. *Hall. belv.* n. 979. t. 16. *Seguier, ver.* 3. 199. *Villars dauph.* 3. 663. *Allion. pedem.* n. 1518. *Scheuch. it.* 2. 124. (Geum.)  
 Root-leaves aggregate tongue-shaped, at the edge cartilaginous repand, stem racemed leafy, calyxes glandular-hairy, petals linear-lanceolate.]
4. Saxifraga pensylvanica. *Pennsylvanian Saxifrage.*  
*Lin. spec.* 571. *Reich.* 2. 310. *Willd.* 2. 640. *Gron. virg.* 49. *Pluk. phyt.* t. 59. f. 1. & t. 222. f. 5. (Sanicula.)  
 S. noveboracensis. *Cold. noveb.* 105.  
 S. pensylv. floribus muscosis racemosis. *Dill. elth.* 337. t. 253. f. 328.  
 Leaves oblong-lanceolate somewhat hairy toothblotted, stem naked, peduncles alternate, corymb-capitate.
- [5. Saxifraga hieracifolia.  
*Lin. spec. ed. Willd.* 2. 641.  
 Leaves oblong-lanceolate smooth repand-toothed, stem naked, peduncles one-flowered aggregate.
6. Saxifraga androfacea.  
*Lin. spec.* 571. *syft.* 411. *Reich.* 2. 310. *Willd.* 2. 641. *Jacqu. austr.* 4. t. 389. *Hall. belv.* n. 984. *opusc.* 292. t. 2. *Villars dauph.* 3. 664. *Allion. pedem.* n. 1519. *Pluk. phyt.* t. 222. f. 2.  
 S. pyrenaica. *Scop. carn.* n. 498. t. 16.  
 Sedum alpinum tertium. *Col. ecphr.* 2. 66. t. 67. f. ult.  
 Leaves lanceolate blunt hairy, stem naked two-flowered.
7. Saxifraga cæsia.  
*Lin. spec.* 571. *syft.* 411. *Reich.* 2. 310. *Willd.* 2. 641. *mant.* 382. *Hall. belv.* n. 982. *Scop. carn.* n. 495. t. 15. *Jacqu. austr.* 4. t. 374. *Villars dauph.* 3. 665. *Allion. pedem.* n. 1522.  
 Sedi species minima. *Gesn. fasc.* 24. t. 11. f. 30.  
 Saxifraga alpina minima, foliis cæsiis deorsum incurvis. *Tournef. inst.* 253. *Seguier veron.* 449. t. 9. f. 2.  
 Sedum alpinum album, foliis compactis. *Baub. pin.* 284.  
 S. alp. minimum foliis cinereis flore candido. *Baub. hist. Raii hist.* 1040. *Scheuch. it.* 341. 141. t. 21. f. 1.  
 S. minus 9. alpinum 3. *Clus. hist.* 2. 61. *Ger. emac.* 516. f. 3.  
 S. minimum alp. muscoides. *Park. theat.* 736. n. 1. f. 1.  
 Leaves linear perforate-dotted aggregate recurved, stem many-flowered.
8. Saxifraga burseriana.  
*Lin. spec.* 572. *syft.* 411. *Reich.* 2. 311. *Willd.* 2. 642. *Jacqu. misc.* 1. 152. t. 17. f. 3. *Hall. belv.* n. 983. *act. belv.* 6. p. 10. n. 39.  
 S. alpina, foliis glaucis acutis, monanthos, caule foliofo. *Seguier veron.* 3. 201. t. 5. f. 2.  
 Sedum alpinum Saxifragæ albæ flore. *Baub. pin.* 284.  
 Leaves aggregate imbricate three-sided subulate even.
9. Saxifraga sedoides.  
*Lin. spec.* 572. *syft.* 412. *Reich.* 2. 311. *Willd.* 2. 642. *Jacqu. misc.* 2. 134. t. 21. f. 22. *Hall. belv.* n. 985.  
 S. trichodes. *Scop. carn.* n. 496. t. 15.  
 S. muscoides. *Allion. pedem.* n. 1528. t. 61. f. 2.  
 S. alpina minima, foliis lingulatis in orbem actis, flore ochroleuco. *Seguier veron.* 450. t. 9. f. 3.  
 Leaves aggregate alternate and opposite sub lanceolate, flower peduncled.
10. Saxifraga tenella.  
*Lin. spec. ed. Willd.* 2. 643. *Jacqu. collect.* 3. 144. t. 17.  
 Leaves lanceolate mucronate ciliate at the base imbricate, stem almost naked few-flowered, calyxes mucronate.
11. Saxifraga bryoides. *Bryum Saxifrage.*  
*Lin. spec.* 572. *syft.* 412. *Reich.* 2. 312. *Willd.* 2. 643. *mant.* 383. *Hall. belv.* n. 969. *Scop. carn.* n. 497. t. 15. *Jacqu. misc.* 2. 49. t. 5. f. 1. *Villars dauph.* 3. 665. *Allion. pedem.* n. 1523.  
 S. pyrenaica minima lutea musco similis. *Tournef. inst.* 253.  
 Sedum muscosum. *Baub. hist.* 3. 695. *Raii hist.* 1041. 9. *Scheuch. it.* 1. 10. & 2. 142. t. 21. f. 2.  
 S. alpinum quartum. *Col. ecphr.* 2. 66. t. 67. f. 1, 2.  
 Leaves lanceolate mucronate cartilaginous at the edge and ciliate, stem almost naked few-flowered, calyxes obtuse.
12. Saxifraga bronchialis.  
*Lin. spec.* 572. *syft.* 412. *Reich.* 2. 312. *Willd.* 2. 644. *Gmel. fib.* 4. 164. t. 65. f. 2.  
 Leaves imbricate subulate ciliate spiny, stem almost naked many-flowered.
13. Saxifraga stellaris. *Starry or hairy Saxifrage or Kidney-wort.*  
*Lin. spec.* 572. *syft.* 412. *Reich.* 2. 312. *Willd.* 2. 644. *fl. lapp.* n. 175. *Jucc.* n. 367. *Jacqu. collect.* 1. 202. t. 13. *Huds. angl.* 179. *Wither. arr.* ed. 3. 402. *Smith, brit.* 448. *engl. bot.* t. 167. *Lightf. scot.* 220. *Fl. dan.* t. 23. *Hall. belv.* n. 973. *Scop. carn.* n. 492. t. 13. *Villars dauph.* 3. 662. *Allion. pedem.* n. 1521. *Gmel. fib.* 4. 163. n. 75. *Pluk. phyt.* t. 58. f. 2. & t. 222. f. 4. (Sanicula.) *Mor. hist.* f. 12. t. 9. f. 13. (Sedum.)  
 Saniculæ alpinæ aliquatenus affinis. *Baub. hist.* 3. 708. 1. *Raii hist.* 1047.  
 Sanicula montana minor. *Clus. pann.* 441.  
 Cotyledon aquatica hirsuta. *Raii hist.* 1446.  
 Geum palustre minus, foliis oblongis crenatis. *Tournef. inst.* 252. *Raii syn.* 354.  
 Leaves serrate, stem naked branched, petals acute, capsule superior.
14. Saxifraga crassifolia. *Thick-leaved Saxifrage.*  
*Lin. spec.* 573. *syft.* 412. *Reich.* 2. 313. *Willd.* 2. 644. *dec.* 2. 27. t. 14. *Gmel. fib.* 4. 166. t. 66. *Curt. magaz.* 196. *Krock. files.* n. 635.  
 Geum faxatile rotundifolium majus flore purpureo. *Amm. ruth.* n. 90.  
 α. foliis ovalibus. *Oval thick-leaved Saxifrage.*  
 β. fol. cordatis subrotundis *Heart thick-leaved Saxifrage.*  
*Ait. kew.* 2. 79.  
 Leaves oval retuse obscurely serrate petioled, stem naked, panicle conglomerate.]
15. Saxifraga nivalis. *Snowy or clustered Alpine Saxifrage or Sengreen.*  
*Lin. spec.* 573. *syft.* 412. *Reich.* 2. 313. *Willd.* 2. 645. *fl. lapp.* n. 176. t. 2. f. 5. *Jucc.* n. 368. *Huds. angl.* 180. *Wither. arr. ed.* 3. 403. *Smith, brit.* 449. *engl. bot.* t. 440. *Lightf. scot.* 221. t. 12. *Dickf. ficc.* 1. 7. *Fl. dan.* t. 28. *Gumm. norv.* n. 545. *Gron. virg.* 160. *Vabl in act. basn.* 2. 1. 52.  
 S. foliis oblongo-rotundis dentatis, floribus compactis. *Raii syn.* 354. t. 16. f. 1.  
 Sempervivum minus dentatum. *Mart. spitz.* 43. t. F. f. A. *Pluk. phyt.* t. 222. f. 2.  
 Leaves obovate serrate, stem naked, flowers heaped, capsule half inferior.
- [16. Saxifraga Bellardi.  
*Lin. spec. ed. Willd.* 2. 645. *Allion. pedem.* n. 1536. t. 88. f. 1.  
 Stemless, leaves roundish repand, flower sessile.
17. Saxifraga daurica.  
*Lin. spec. ed. Willd.* 2. 645.  
 S. punctata. *Pallas it.* 3. app. n. 91. t. P. f. 2.  
 Leaves cuneiform-rhomboid toothed at the end smooth petioled, stem naked.
18. Saxifraga farmentosa. *China Saxifrage.*  
*Lin. spec.* 573. *syft.* 412. *Willd.* 2. 646. *suppl.* 240. *Ait. kew.* 2. 79. *Schreb. monogr. Dioneæ.* 16. t. 2, 3. *Thunb. jap.* 182. *Curt. magaz.* t. 92.  
 S. Stolonifera. *Meerb. ic.* 23. *Jacqu. misc.* 2. 327. *ic. rar.* 1. t. 80.  
 S. ligulata. *Murr. in comm. gott.* 1781. p. 26. t. 1. *Sekika. Kämpf. amoen.* 870.  
 Leaves roundish toothed hairy, runners creeping, two petals elongated.
19. Saxifraga



19. *Saxifraga punctata*.  
*Lin. spec.* 574. *Reich.* 2. 313. *Willd.* 2. 646.  
*Krock. files.* n. 636. *Mor. hist.* 3. 478. f. 12. t. 9.  
f. 17. (*Sedum*.)  
*Leaves roundish toothed on long petioles, stem naked.*
20. *Saxifraga umbrosa*. *London Pride*.  
*Lin. spec.* 574. *Reich.* 2. 314. *Willd.* 2. 647.  
*hort. ups.* 108. *Wither. arr. ed.* 3. 403. *Smith,*  
*brit.* 450. *engl. bot.* t. 663. *Hull* 92. *Retz.*  
*obs.* 2. 17. n. 49.  
*S. punctata.* *Mill. dist.* n. 7.  
*Geum folio subrotundo minori, pistillo floris rubro.*  
*Magnol hort.* 88. t. 14.—*majori.* *Dill. in Raii syn.*  
355. *Mill. fig.* t. 141. f. 2.  
*Leaves obovate subretuse cartilaginous crenate, stem naked*  
*panicled, capsule superior.*
21. *Saxifraga hirsuta*.  
*Lin. spec.* 574. *syft.* 412. *Reich.* 2. 314. *Willd.*  
2. 647.  
*Geum folio circinato acute crenato, pistillo floris rubro.*  
*Magnol hort.* 87. ic.  
*Leaves cordate-oval retuse cartilaginous-crenate, stem*  
*naked panicled.*
- [22. *Saxifraga cuneifolia*. *Wedge-leaved Saxifrage*.  
*Lin. spec.* 574. *syft.* 413. *Reich.* 2. 314. *Willd.* 2.  
647. *Hall. helv.* n. 974. *Scop. carn.* n. 490.  
t. 13. *Villars dauph.* 3. 661.  
*S. punctata.* *Gunn. norv.* n. 1076. *Aët. hafn.* 10. 445.  
t. 3. f. 10.  
*Cotyledon altera olim Matthioli.* *Baub. hist.* 3. 684.  
*C. aut Sedi species quædam.* *Gesn. fasc.* 19. t. 12.  
f. 37.  
*Leaves wedge-shaped very blunt repand, stem naked pa-*  
*nicled.*
23. *Saxifraga Geum*. *Kidney-leaved Saxifrage*.  
*Lin. spec.* 574. *syft.* 413. *Reich.* 2. 315. *Pallas*  
*it.* 2. 35. *Scop. carn.* n. 491.  
*Sanicula montana rotundifolia minor.* *Baub. pin.* 243.  
*Park. parad.* 231. t. 233. f. 1.  
*Sedum mont. rotund. minus album non guttatum.*  
*Mor. hist.* 3. 478. f. 12. t. 9. f. 12.  
*Leaves kidney-shaped toothed; stem naked panicled.*  
*\*\* Leaves undivided, stem leafy.*
24. *Saxifraga oppositifolia*. *Purple-flowered Saxifrage*.  
*Lin. spec.* 575. *syft.* 413. *Reich.* 2. 315. *Willd.*  
2. 648. *fl. lapp.* n. 179. t. 2. f. 1. *suec.* n. 369.  
*Huds. angl.* 180. *Wither. arr. ed.* 3. 404. *Smith,*  
*brit.* 450. *Engl. bot.* t. 9. *Curt. lond.* 6. t. 27.  
*Dicks. ficc.* 2. 6. *Lightf. scot.* 222. *Fl. dan.* t. 34.  
*Gunn. norv.* n. 53. *Hall. helv.* n. 980. *Allion.*  
*pedem.* n. 1529. t. 21. f. 3. *Gmel. fib.* 4. 168.  
*Vahl in Aët. hafn.* 2. 1. 51. *Jacqu. collect.* 2.  
286.  
*S. alpina ericoides flore cæruleo.* *Raii syn.* 353.  
*Petiv. brit.* t. 61. f. 9.  
*Sedum alpinum ericoides cæruleum.* *Baub. hist.* 3.  
694. *pin.* 284. *prodr.* 132. *Mor. hist.* f. 12.  
t. 10. f. 36. *Raii hist.* 1040.  
β. *Saxifraga biflora.* *Allion. pedem.* n. 1530. t. 21. f. 1.  
*Hall. helv.* n. 981. *Villars dauph.* 3. 668.  
γ. *S. purpurea.* *Allion. pedem.* n. 1531. t. 12. f. 2.  
*S. retusa.* *Gouan illustr.* 28. t. 18. f. 1. *Villars*  
*dauph.* 3. 669.  
*S. alpina ericoides flore purpurascens.* *Tournef.*  
*inst.* 253.  
*Sedum alp. eric. purpurascens.* *Baub. pin.* 284.  
*prodr.* 132. n. 3. *Raii hist.* 1040.  
*Stem-leaves ovate opposite imbricate, the upper ones ci-*  
*liate.*
- [25. *Saxifraga aspera*. *Rough Saxifrage*.  
*Lin. spec.* 575. *syft.* 413. *Reich.* 2. 315. *Willd.* 2.  
649. *mant.* 383. *Hall. helv.* n. 970. *Jacqu.*  
*aust.* 5. 44. t. app. 31. *Ger. prov.* 423. 6.  
*Villars dauph.* 3. 667. *Allion. pedem.* n. 1524.  
*S. fedi foliis crenatis asperis.* *Tournef. inst.* 252.  
*Scheuch. it.* 2. 140. t. 20. f. 3.  
*Sedum alpinum, fol. cren. asp.* *Baub. pin.* 284.  
*prodr.* 132. *Gesn. fasc.* 22. t. 6. f. 27. *Raii hist.*  
1044.  
*S. alp. hispidum fere spinosum, flore pallido.* *Baub.*  
*hist.* 3. 695. *Raii hist.* 1042. *Mor. hist.* 3. 479.  
f. 12. t. 10. f. 25.

- S. minimum alpinum villosum alterum.* *Park. theat.*  
738.  
*Stem-leaves lanceolate alternate ciliate, stems procum-*  
*bent.*
26. *Saxifraga Hirculus*. *Yellow Marsh Saxifrage*.  
*Lin. spec.* 576. *syft.* 413. *Reich.* 2. 316. *Willd.*  
2. 649. *mant.* 383. *fl. suec.* n. 370. *Huds. angl.*  
181. *Wither. arr. ed.* 3. 404. *Smith, brit.* 451.  
*Curt. lond.* 6. t. 26. *Fl. dan.* t. 200. *Hall. helv.*  
n. 972. t. 11. *Hoffm. germ.* 144. *Roth. germ.* 1.  
184. 2. 468. *Allion. pedem.* n. 1527. *Weber*  
*spicil.* 13. *Gmel. fib.* 4. 165. t. 65. f. 3.  
*S. angustifolia autumnalis, flore luteo guttato.* *Breyn.*  
*cent.* 1. 48. *Raii hist.* 1048.  
*Geum palustre luteum bicornis, nardi celticæ similis.*  
*Mor. hist.* 3. 477. f. 12. t. 8. f. 5.  
*G. ang. aut. flore luteo guttato.* *Dill. in Raii syn.*  
355.  
*Sedum ang. aut. fl. lut. gutt.* *Mor. hist.* f. 12. t. 8.  
f. 6.  
*S. alpinum floribus luteis maculosis.* *Baub. pin.* 284.  
*Chamæcistus friscus.* *Ger. emac.* 1284.—*foliis nardi*  
*celticæ.* *Baub. pin.* 466.  
*Hirculus qui Chamæ Cisti genus.* *Clus. cur.* 5.  
*Stem-leaves lanceolate alternate unarmed, stem erect, germ*  
*ovate superior.]*
27. *Saxifraga aizoides*. *Yellow Mountain Saxifrage*.  
*Lin. spec.* 576. *syft.* 413. *Reich.* 2. 316. *Willd.*  
2. 650. *mant.* 383. *fl. lapp.* n. 178. *suec.* n. 371.  
*Willch illustr.* n. 25. *Huds. angl. ed.* t. 158.  
*Wither. arr. ed.* 3. 404. *Smith, brit.* 452. *engl.*  
*bot.* t. 39. *Gunn. norv.* n. 541. *Krock. files.*  
n. 637. *Allion. pedem.* n. 1526. *Hall. helv.* n. 971.  
*S. autumnalis.* *Huds. angl. ed.* 2. 180. *Lightf.*  
*scot.* 222. *Fl. dan.* t. 72. *Scop. carn.* n. 493.  
t. 14. *Villars dauph.* 3. 667.  
*S. alpina angusto folio, flore luteo guttato.* *Raii*  
*syn.* 353. *Petiv. brit.* t. 61. f. 10.  
*Sedum alpinum flore pallido.* *Baub. pin.* 284. *Mor.*  
*hist.* 3. 477. f. 12. t. 6. f. 3.  
*S. minus 6.* *Clus. hist.* 2. 60. 3.—*f. alpinum 1.*  
*Clus. pann.* 485. *Ger. emac.* 516. 2.  
*S. parvum montanum luteum.* *Baub. hist.* 3.  
693. 2.  
β. *Saxifraga autumnalis.* *Lin. spec.* 575. *syft.* 413.  
*Reich.* 2. 316. *Willd.* 2. 650. *Jacqu. vind.*  
*obs.* 37.  
*Stem-leaves linear alternate tooth-ciliate, stem decumbent*  
*at the base, germ depressed half inferior.*
28. *Saxifraga rotundifolia*. *Round-leaved Saxifrage*.  
*Lin. spec.* 576. *Reich.* 2. 317. *Willd.* 2. 651.  
*hort. cliff.* 167. *Hall. helv.* n. 975. *Scop. carn.*  
n. 488. *Krock. files.* n. 638. *Villars dauph.* 3.  
661. *Allion. pedem.* n. 1532. *Mill. fig.* t. 141.  
f. 1.  
*Sanicula montana rotundifolia major.* *Baub. pin.* 243.  
*Raii hist.* 1047.  
*S. alpina.* *Camer. epit.* 764. *Gesn. fasc.* 19. t. 10.  
f. 25.  
*S. alp. guttata.* *Baub. hist.* 3. 707.  
*S. guttata.* *Ger.* 644. f. 1. *emac.* 788. f. 1. *Park.*  
*theat.* 533. f. 3.  
*Geum rotundifolium majus.* *Tournef. inst.* 251.  
*Caryophyllata f. Geum alpinum recentiorum folio he-*  
*deraceo.* *Lob. adv.* 267.  
*Stem-leaves kidney-shaped toothed petioled, stem panicled,*  
*corolla inferior.*  
*\*\*\* Leaves lobed, stems erect.*
29. *Saxifraga granulata*. *White Saxifrage*.  
*Lin. spec.* 576. *syft.* 413. *Reich.* 2. 317. *Willd.*  
2. 651. *hort. cliff.* 167. *fl. suec.* n. 372. *mat. med.*  
116. *Woodv. med. bot. suppl.* t. 232. *Huds.*  
*angl.* 182. *Wither. arr. ed.* 3. 405. *Smith,*  
*brit.* 453. *engl. bot.* t. 500. *Curt. lond.* 1. t. 30.  
*Lightf. scot.* 223. *Relb. cant.* n. 314. *Sibth.*  
*oxon.* n. 401. *Abbot, bedf.* n. 313. *Dicks. hort.*  
*ficc.* 5. 5. *Hall. helv.* n. 976. *Hoffm. germ.* 145.  
*Roth. germ.* 1. 184. 2. 468. *Pollich pal.* n. 402.  
*Krock. files.* n. 639. *Fl. dan.* t. 514. *Neck.*  
*gallob.* 191. *Villars dauph.* 3. 660. *Allion.*  
*pedem.* n. 1533. *Desfont. atlant.* 341. *Blackw.*  
t. 56.



- t. 56. Ludw. est. t. 120. Kniph. cent. 1. n. 80.  
Berg. phyt. 2. 47. Mill. illustr. Regnault. bot.  
S. rotundifolia alba. Baub. pin. 309. Raii syn.  
354. Tournef. inst. 252.  
S. alba. Dod. pempt. 316. 1. Lob. obs. 335. 2.  
ic. 612. Trag. 525. Dalech. hist. 1113. Ger.  
693. 1. emac. 841. 1. Raii hist. 1048.  
S. alba vulgaris. Park. theat. 424. 1, 2.  
S. major f. alba. Fuchf. hist. 747.  
S. alba radice granulosa. Baub. hist. 3. 706.  
S. 4. Camer. 719.  
Saxifraga. Brumf. herb. 1. 185.—tertia. Matth.  
978.  
Sedum rotundif. erectum, rad. granulosa. Mor. hist.  
f. 12. t. 9. f. 23.  
β. Floribus plenis. Double White Saxifrage.  
Ait. kew. 2. 81.  
Leaves kidney-shaped lobed, stem panicled, root granu-  
lated, germ half inferior.
- [30. Saxifraga bulbifera.  
Lin. spec. 577. syst. 413. Reich. 2. 317. Willd. 2.  
651. Gunn. norv. n. 1006. Fl. dan. t. 390.  
Allion. pedem. n. 1534.  
S. bulbosa altera bulbifera montana. Col. acphr. 1.  
318. t. 317.  
S. ad folia bulbos gerens. Baub. pin. 309.  
S. alba altera bulbifera. Park. theat. 423. n. 2. t. 424.  
f. 2. Raii hist. 1049.  
Sedum bicornie rotundifolium erectum, radice granu-  
lata, et ad caulem tubercula proferens. Mor. hist.  
3. 474. f. 12. t. 9. f. 24.  
Leaves palmate-lobed, stem-leaves sessile, stem branched  
bulbiferous, germ half inferior.
31. Saxifraga cernua. Drooping bulbous Saxifrage.  
Lin. spec. 577. syst. 413. Reich. 2. 318. Willd. 2.  
652. hort. cliff. 167. fl. lapp. n. 172. t. 2. f. 4.  
succ. n. 373. Dicks. in trans. linn. soc. 2. 290.  
Wither. arr. 3. 405. Smith, brit. 453. engl. bot.  
t. 664. Hull 93. Gunn. norv. n. 528. t. 8. f. 2.  
Fl. dan. t. 22. (390 sec. Smith.)  
β. Gmel. fib. 4. 163. n. 74.  
Leaves palmate petioled, stem bulbiferous, petals retuse,  
germ superior.
32. Saxifraga rivularis. Alpine Brook Saxifrage.  
Lin. spec. 577. syst. 414. Reich. 2. 318. Willd. 2.  
652. fl. lapp. n. 174. t. 2. f. 7. succ. n. 374.  
Smith, brit. 454. Gunn. norv. n. 479. Fl. dan.  
t. 118. Gmel. fib. 4. 170.  
Leaves palmate petioled, the upper one spatulate, stem  
few-flowered, root fibrous, germ half inferior.
33. Saxifraga geranioides. Crane's-bill leaved Saxifrage.  
Lin. spec. 578. syst. 414. Reich. 2. 318. Willd. 2.  
652. mant. 383. amoen. 4. 271. Gmel. fib. 4.  
171. n. 83. Gouan illustr. 28. t. 18. f. 2.  
Root-leaves kidney-shaped five-lobed multifid, stem-leaves  
linear, stem almost naked branched.
34. Saxifraga ajugifolia. Bugle-leaved Saxifrage.  
Lin. spec. 578. Reich. 2. 319. Willd. 2. 653.  
amoen. 4. 271.  
Root-leaves palmate-five-parted, stem-leaves linear undi-  
vided, stems ascending many-flowered.
35. Saxifraga sibirica. Siberian Saxifrage.  
Lin. spec. 577. Reich. 2. 319. Willd. 2. 653.  
Leaves kidney-shaped palmate hairy, stem and peduncles  
filiform.
36. Saxifraga rupestris. Rock Saxifrage.  
Lin. spec. ed. Willd. 2. 653.  
S. petræa. Jacqu. collect. 1. 200. ic. rar. 1. t. 81.  
Hoffm. germ. 145.  
S. geranioides. Host. syn. 231.  
Stem-leaves wedge-shaped three-lobed toothed glandular-  
hairy, peduncles one-flowered very long, stem ascending  
branched at the base.
37. Saxifraga tridactylites. Rue-leaved Saxifrage.  
Lin. spec. 578. Reich. 2. 319. Willd. 2. 654.  
hort. cliff. 168. fl. lapp. n. 173. succ. n. 375.  
Huds. angl. 182. Wither. arr. ed. 3. 406. Smith,  
brit. 454. engl. bot. t. 501. Curt. lond. 2. t. 28.  
Lightf. scot. 224. Relb. cant. n. 315. Sibth. oxon.  
n. 402. Abbot, bedf. n. 314. Dicks. hort. sicc.  
8. 10. Gunn. norv. n. 544. Hall. belv. n. 986.  
Hoffm. germ. 145. Roth. germ. 1. 184. 2. 469.
- Pollich pal. n. 403. Krock. files. n. 640. Scop.  
carn. n. 550. Villars dauph. 3. 669. Allion.  
pedem. n. 1535. Neck. gallob. 191. Berg. phyt.  
21. Blackw. 212.  
S. verna annua humilior. Tournef. inst. 252. Raii  
syn. 354. Petiv. brit. t. 61. f. 8.  
Sedum tridactylites tectorum. Baub. pin. 285. Mor.  
hist. f. 12. t. 9. f. 31. Raii hist. 1043.  
Tridactylites tectorum flore albo. Baub. hist. 3. 762.  
Paronychia altera. Dod. pempt. 113.  
P. tertia. Tabern. 805.  
P. rutaceo-folio. Dalech. hist. 1214. Ger. 499. emac.  
624.—foliis incis. Park. theat. 556.  
Leaves wedge-shaped trifid or quinquefid alternate, the  
upper ones undivided, stem panicled, germ inferior.
38. Saxifraga petræa. Stone Saxifrage.  
Lin. spec. 578. syst. 414. Reich. 2. 319. Willd. 2.  
654. Willich obs. 59. Vahl in att. hafn. 2. 1.  
p. 10. Gunn. norv. n. 427. t. 9. f. 1, 2, 3. Fl.  
dan. t. 680. Retz. obs. 1. 18.  
S. tridactylites β. Lin. spec. ed. 1. 404. fl. lapp. n. 173.  
succ. n. 375.  
S. adscendens. Jacqu. collect. 1. 197. t. 11. et 12.  
f. 1, 2. Allion. pedem. n. 1537. t. 22. f. 3. spec.  
pedem. 17. t. 3. f. 1. Hall. belv. n. 987.  
S. hypnoides. Scop. carn. n. 499. t. 16.  
S. Scopoli. Villars dauph. 3. 670.  
S. pyrenaica tridactylites latifolia. Tournef. inst. 253.  
Sedum tridactylites alpinum caule folioso. Baub. pin.  
284.  
Leaves wedge-shaped, root-leaves entire and three-toothed,  
stem-leaves five-toothed, upper ones trifid, peduncles  
subtriflorous.
39. Saxifraga adscendens.  
Lin. spec. 579. syst. 414. Reich. 2. 320. Willd.  
2. 655. mant. 384. Vahl in att. hafn. 2. 1. p. 12.  
Hall. belv. n. 990.  
S. petræa. Gouan illustr. 29. t. 17. f. 3.  
S. decipiens. Ehrh. Beitr. 6. 31. Hoffm. germ. 145.  
S. alba petræa. Pon. bald. in Clus. hist. 2. 337.  
Sedum tridactylites alpinum majus album 1. Baub.  
prodr. 131. Raii hist. 1043. Mor. hist. 3. 479.  
f. 12. t. 9. f. 28.  
Sanicula aizoides alpina trifido folio major alba. Pluk.  
phyt. t. 222. f. 3.  
Leaves palmate-three-parted, segments subtrifid, stem  
branched ascending.
40. Saxifraga moschata. Musky Alpine Saxifrage.  
Lin. syst. 414. Willd. 2. 656. Wither arr. ed. 3.  
436. Smith, brit. 456. Jacqu. misc. 2. 128.  
t. 21. f. 21? Hall. belv. n. 985. opusc. it. belv.  
t. 1.  
S. exarata. Villars prosp. 47. dauph. 3. 674. t. 45.  
Allion. pedem. n. 1539. t. 88. f. 2.  
Sedulum quod Moschatella alpina lutea vocari potest.  
Gefn. fasc. 25. t. 6. f. 31.  
Tridactylites alpina. Baub. hist. 3. 754.  
Root-leaves aggregate membranaceous linear-lanceolate  
entire or trifid triple-nerved, stem almost naked sub-  
biflorous.
41. Saxifraga caespitosa. Tufted Alpine Saxifrage.  
Lin. spec. 578. syst. 414. Reich. 2. 320. Willd.  
2. 656. mant. 383. fl. succ. n. 376. Smith, brit.  
455. Gunn. norv. n. 1047. t. 7. f. 3, 4. Hall.  
belv. n. 989. Scop. carn. n. 494. t. 14. Jacqu.  
collect. 1. 290. Krock. files. n. 642. Villars  
dauph. 3. 672. Allion. pedem. n. 1541.  
Sedum tridactylites alpinum minus. Baub. pin. 284.  
prodr. 131. Raii hist. 1043.  
β. Saxifraga muscoides. Lin. spec. ed. Willd. 2. 656.  
Jacqu. misc. 2. 123. Hall. belv. n. 988. opusc.  
292. t. 1. Seguiet veron. 3. 205. et 1. 451. t. 9.  
f. 4.  
γ. Saxifraga groenlandica. Lin. spec. 578. syst. 414.  
Reich. 2. 321. Gunn. norv. n. 689. t. 7. f. 1.  
Hall. belv. n. 990. Dill. elth. 337. t. 353.  
f. 3. 9.  
δ. Sax. pedemontana. Allion. pedem. n. 1540. t. 21.  
f. 5, 6.  
S. hypnoides. Allion. pedem. n. 1538. t. 21. f. 4.  
Root-leaves aggregate fleshy linear entire or trifid nerved  
beneath, stem almost naked subbiflorous.
42. Saxifraga



42. *Saxifraga palmata*. *Palmate Saxifrage*.  
*Smith, brit. 456. engl. bot. t. 455. Fl. dan. t. 71.*  
*S. petræa. Wither. arr. ed. 3. 890.*  
*Leaves hairy palmate quinquefid or trifid, stem leafy pan-  
 iced, petals roundish.*
43. *Saxifraga tricuspidata*.  
*Lin. spec. ed. Willd. 2. 657. Retz. prodr. scand.  
 ed. 2. n. 522. Rottb. aët. hafn. 10. 446. t. 6. Fl.  
 dan. t. 976. Gunn. norv. n. 1046.*  
*Root-leaves aggregate wedge-shaped ciliate acutely three-  
 toothed, stem ascending racemose, petals lanceolate three  
 times as long as the calyx.*  
 \*\*\*\* *Leaves lobed; stems procumbent.*
44. *Saxifraga Cymbalaria*.  
*Lin. spec. 579. Reich. 2. 321. Willd. 2. 657.*  
*Buxb. cent. 2. 40. t. 45. f. 2.*  
*Geum orientale Cymbalariae folio molli & glabro, flore  
 magno albo. Tournef. cor. 18. itin. 3. 221. ic. ed.  
 lugd. 3. 348. t. 32. ed. germ.*  
*Stem-leaves cordate three-lobed and entire, stems pro-  
 cumbent.*
45. *Saxifraga hederacea*. *Ivy-leaved Saxifrage*.  
*Lin. spec. 579. Reich. 2. 321. Willd. 2. 658.*  
*S. cretica annua minima, hederaceo folio. Tourn. cor.  
 18.*  
*Stem-leaves ovate lobed, stem filiform flaccid.*
46. *Saxifraga orientalis*.  
*Lin. spec. ed. Willd. 2. 658. Jacqu. obs. 2. 9. t. 34.*  
*Geum orientale rotundifolium supinum flore aureo.  
 Tournef. cor. 18.*  
*Leaves roundish five-lobed, stem very much branched pro-  
 cumbent.*
47. *Saxifraga cuneata*.  
*Lin. spec. ed. Willd. 2. 658.*  
*S. cuneifolia. Cavan. ic. 3. 25. t. 248.*  
*Lower leaves petioled wedge-shaped five-lobed, stem-  
 leaves sessile lanceolate, stem ascending paniced.]*
48. *Saxifraga hypnoides*. *Mossy Saxifrage, or Ladies  
 Cushion.*  
*Lin. spec. 579. syst. 414. Reich. 2. 321. Willd.  
 2. 658. hort. cliff. 168. Hudf. angl. 182. Wither.  
 arr. ed. 3. 407. Smith, brit. 457. engl. bot.  
 t. 454. Lightf. scot. 224. Fl. dan. t. 348. Sauv.  
 monsp. 208. Gort. gelr. 248.*  
*S. mucosa trifido folio. Raii syn. 354.*  
*Sedum alpinum trifido folio. Baub. pin. 284. Raii  
 hist. 1043. Mor. hist. 3. 479. f. 12. t. 9. f. 26.*  
*S. alpinum 7. Clus. pann. 491.*  
*Tridactylites alpina. Baub. hist. 3. 754.*
- β. *Saxifraga procumbens, foliis linearibus integris tri-  
 fidis & quinquefidis. Roy. lugdb. 454. Sauv.  
 monsp. 208.*  
*Leaves linear entire or trifid, runners procumbent, stem  
 almost naked, petals elliptic-oblong.*
- [49. *Saxifraga globulifera*.  
*Desfont. atlant. 342. t. 96. f. 1.*  
*Stem bulbiferous; leaves nerved, the lower ones spatulate  
 quite entire, the upper ones palmate three or five-cleft,  
 in the flowering-branch remote linear.*
50. *Saxifraga spathulata*.  
*Desfont. atlant. 342. t. 96. f. 2.*  
*Leaves spatulate obtuse ciliate undivided, stem prostrate,  
 pedicels axillary one-flowered.*

## DESCRIPTIONS, &amp;c.

1. Panicle very much branched many-flowered, or branched a little with few flowers. Petals unspotted or spotted and that constantly<sup>1</sup>.

There are numerous varieties of this species; Barrelier has figured five: they all approach by their fleshy, oblong spatulate leaves, ciliated by little teeth turned towards the point, mostly whitish on the upper surface by scales in shape of little crescents, as Scopoli has remarked. The petals are white, oblong and blunt, often stained with yellow at the base<sup>k</sup>.

Scopoli observes that there are white scales (scutella) placed at the edges of the leaves, which are waxen, roundish, on very short pedicels, which are concealed

within little pores: that the younger scales have this little pore in their middle, and that there is one of these at each notch of the leaf: that the younger leaves are oval, the older ones oblong and lanceolate, with the edges bent back: the stem more or less leafy and paniced: the petals white variegated with many little red-dots: and the capsule quite two-celled, with a receptacle in each cell having more than five seeds adhering to it.—Gärtner describes the capsule as sub-globular, covered with the calyx which is loose from it; the partition membranaceous, thickened in the middle, deeply divided when mature; having no receptacle except the thickened part of the partition, to which the seeds are fastened: these are ovate-acuminate, angular, rugged with very minute pointed dots; and of a blackish colour.

This author remarks that *Saxifraga*, *Heuchera* and *Hydrangea* do not differ essentially in the parts of fructification; and that *Heuchera* might be denominated a pentandrous, *Hydrangea* an arboreous *Saxifrage*:

Varieties α and β are certainly not distinct. γ may possibly be a different species, the stem being constantly more compound, and the petals unspotted. Haller's plant (n. 977.) seems however to be different from the norwegian figured in *Flora danica*, t. 241. The petals in the former being linear and subciliate at the base; but in the latter roundish<sup>1</sup>.

Mr. Miller has made three species out of these varieties.] The roots of all are perennial and fibrous, and the leaves are gathered into circular heads, embracing each other at the base, like the common Houseleek. Those of his n. 2. (variety α) are tongue-shaped, about two inches long, and a quarter of an inch broad. Stem about a foot high, purplish, a little hairy, and sending out several horizontal branches the whole length. Flowers in small clusters at the end of the branches; white with several red spots on the inside.

In n. 3. (variety β) the leaves are not more than half an inch long, and wedge-shaped. Stem seldom more than six inches high, in the wild state, but in gardens often more than a foot, having small leaves sitting close to it the whole length. Flowers in loose panicles at the top of the stem, white spotted with red.

In n. 4. (which seems to be the same with variety γ) the leaves are two inches long, and half an inch broad and tongue-shaped. Stem a foot and half high, branching out near the ground, and forming a pyramid to the top. Petals white, wedge-shaped.

When these plants are strong, they produce very large pyramids of flowers, which make a fine appearance; and being kept in the shade, and screened from wind and rain, will continue in beauty a considerable time. They all flower in June. The two first are natives of the Alps, and the third of the Pyrenees.

[It appears from Parkinson that the Pyramidal Saxifrage was cultivated here in 1629<sup>m</sup>. This author calls it *Navelwort*, and one variety *Princes Feather*.

2. This differs from the preceding in having a racemose leafy stem, and a smooth calyx<sup>n</sup>. Linneus had made it a variety of that, and it probably is so. Native of the Alps.

3. This has the appearance of being a hybridous or male plant, allied to *S. Cotyledon*, yet distinct from it. Root-leaves ciliate-villose towards the base. Stem firmer, simple and more abundant in leaves, also more viscid. Racemes alternate; short. Flowers four times as large; with the petals lanceolate, long, saffron-coloured<sup>o</sup>.

Though in the general form of its foliage, it is as nearly related to *S. Cotyledon* as most of the varieties, yet from four of them it is perfectly distinct, having instead of the serrate cartilaginous edge, only fine soft hairs, more especially towards the base: towards the extremity there is some appearance of little teeth, but widely differing from those of the others. The whole plant is covered with viscid hairs; the stalk, about a

<sup>1</sup> Linn. syst.<sup>k</sup> Villars.<sup>1</sup> Willdenow.<sup>m</sup> Hort. kew.  
<sup>o</sup> Linn. spec.<sup>n</sup> Willdenow.



foot high; is much branched; but the great peculiarity of this plant consists in its flowers, the petals being long, narrow and pointed, of a deeper colour when they first ripen, but gradually changing from saffron to a pale yellow; the beauty of the flowers is heightened by a glandular substance in the centre of each, which when the flower expands, is of a bright purple colour<sup>p</sup>.

Notwithstanding these peculiarities, Haller says it sufficiently resembles *S. Cotyledon*; and Villars doubts whether it be really a distinct species.

Native of the mountains of Switzerland, Carniola and Italy. Mr. Curtis raised it from seed sent him by the much to be lamented Mr. Daval, of Orbe in Switzerland.]

4. Root perennial, fibrous. Leaves seven or eight inches long, and two broad towards the top, of a deep green and thick consistence, spreading near the ground. Stem a foot and half high, branching at top in form of a panicle, and sustaining very small herbaceous flowers, collected into little heads.

[The leaves on the upper surface and at the edge, are covered, as is also the stem, with short, jointed hairs<sup>q</sup>.

Native of North America. Cultivated in 1732, by James Sherard, M.D. It flowers in may and june<sup>r</sup>.

5. This resembles the preceding so much, that it seems at first sight hardly to be different, but it is really distinct in its manner of flowering. The leaves are smooth on both sides, very finely ciliate at the edge, with short jointed hairs. Stem a foot high, quite simple, round, pubescent. Peduncles four or six together alternately by intervals, and supported by a lanceolate bracte. The upper flower subsessile and more clustered.—Native of the Carpathian mountains<sup>s</sup>.

6. Leaves clustered next the ground, free, elliptic, hirsute, not thick, commonly blunt at the end, seldom three-toothed. Stem three inches high, with small leaves or ligules scattered over it, commonly few-flowered; but sometimes it has only one flower. Petals greenish white marked with lines<sup>t</sup>.

It is a very small plant, and its short, blunt, villose, entire leaves (seldom three-toothed) resemble those of *Androsace villosa*, whence Linneus's trivial name. Stems from one to three inches high, terminated by one or two unequal flowers. Petals small and whitish. Fruit large in proportion to the plant<sup>u</sup>.

*S. pyrenaica* of Scopoli which Jacquin, Reichard and Willdenow refer to this species, is referred by Villars to *S. cæspitosa*: from which Scopoli affirms it to be totally different. He describes the leaves as being never trifid, and yet they are all so in his figure.

Native of Switzerland, Austria, Dauphiné, Piedmont, Siberia.

7. Root creeping, long, branched, covered with brown scales. Tufts very close, formed of hard, oblong, acute leaves, grooved along the middle, bluntly lanceolate, bent downwards at the end, glaucous, ciliated next the petiole, irregularly dotted underneath when examined with a magnifier. Stem naked (except a few ligules) four inches high, bearing one, three or five milk-white flowers, with round petals marked with lines<sup>x</sup>.

Villars remarks, that it resembles *Diapensia helvetica* in its habit; that the leaves are whitish, entire, with some pores on the upper surface, that they are heaped one upon another, and form solid tufts; that the little stems are one or two inches high, simple, straight, villose, having two or three narrower leaves at bottom, and two or three biggish white flowers at top.

There is a variety from the high mountains of Italy, the stem of which is double the size of the other, hirsute and viscid. Calyxes large, hirsute. Leaves four times as large, spreading, nearly as in *S. Cotyledon*, distinguishable by the dots punched through them<sup>y</sup>.

<sup>p</sup> Curtis.

<sup>q</sup> Willdenow.

<sup>r</sup> Willdenow.

<sup>s</sup> Haller.

<sup>t</sup> Villars.

<sup>u</sup> Linn. mant.

<sup>x</sup> Hort. kew.

<sup>y</sup> Haller.

Native of the Alps and Pyrenees, Austria and Monte Baldo.

8. This has the appearance of a small *Sedum*. Leaves like those of Juniper, closely imbricate, acute, keeled, smooth. Stem scarcely a finger's length, rufescent-hispid or glutinous, with three or four alternate, linear leaflets. Flowers milk-white with pale lines.

Vandelli has a variety from Italy with five-flowered stems and fastigate flowers<sup>z</sup>: and to this belongs Haller's n. 983. which he says has three, four and even six flowers, whereas Linneus's *burseriana*, described by Wulfen in Jacquin's *miscellanea*, has only one flower.

Native of Carinthia.

9. Stem very much branched, filiform, depressed. Leaves aggregate, linear, even. Peduncle often one-flowered, more seldom two or three-flowered. Flower superior<sup>a</sup>.

This is described at length by Wulfen in the second volume of Jacquin's *miscellanea*. He found it in Carinthia in 1768; but Seguer observed it forty years before in the mountains near Trent, afterwards Haller in several places of Switzerland and the Valais, and Scopoli in Carniola, both of them suspecting it to be Seguer's plant, and the latter referring it to the *S. aizoides*, though Linneus had given Seguer's name to his *sedoides* without hesitation.

It varies much, according to Wulfen, in its habit, height and leaves.

10. This approaches to the next species, but the flowers are only one-fourth of the size, the calyx is mucronate, the germ inferior and glandular-hairy.—Native of the mountains of Carinthia<sup>b</sup>.

11. Leaves serrate, ciliate at the base, with the serratures often callose at the tip. Root-leaves in a ring: stem-leaves five or six, alternate, tender. Stem pubescent. Flowers one or few. Petals pale yellow with tawney or orange spots<sup>c</sup>.

Native of the Alps and Pyrenees, Austria, Carniola, Dauphiné, Piedmont. Introduced in 1775, by the Doctors Pitcairn and Fothergill<sup>d</sup>.

12. Runners oblong imbricate in clusters. Leaves flat, mucronate-spined, spiny-ciliate. Stem high, almost naked, with a few very small mucronate leaves even at the edge. Panicle small.

Native of Siberia<sup>e</sup>.

13. Roots perennial, long, fibrous, crowned with flat stellate tufts of obovate-cuneiform leaves, which are hairy above, especially about the edge, paler and smooth sometimes purple beneath, pointed and grossly serrate towards the end. From each tuft arises one naked stem, rooting a little at the base, from two to six inches high, erect, round, clothed with scattered divaricating hairs, divided at top into a sort of corymb or panicle of from three to seven or nine flowers, each on a separate pedicel, having a lanceolate entire or sometimes trifid bracte at the base. Calyx reflexed. Petals ovate, clawed, three-nerved, white with two yellow transverse spots near the base. Stamens connected at the base, all nearly equal: anthers purple. Germ quite superior, ovate, purple. Capsule membranaceous, nerved, smooth, green with a purple ring near the base. Seeds rugged with raised tubercled longitudinal lines<sup>f</sup>.

Native of the mountains of Spitzbergen, Lapland, Switzerland, Styria, Dauphiné, Piedmont, Siberia, and Britain. In our northern counties, Westmoreland, Cumberland, Lancashire, Yorkshire; in Wales, and in Scotland, abundantly, on the black turfy margins of rills, on the north sides of the mountains, towards their summits; where it flowers in june and july<sup>g</sup>. Also in Ireland, in moist places about Slieve Cavelagh, one of Mourne mountains.

14. Root superficial, black, scaly with the relics of dead leaves, the thickness of a finger or thumb, round, sending down filiform fibres from the lower surface. Stems from the axils of the leaves of the year pre-

<sup>z</sup> Linn. spec. and syst.

<sup>a</sup> Linn. syst.

<sup>b</sup> Linn. mant.

<sup>c</sup> Hort. kew.

<sup>d</sup> Smith brit. Engl. bot.

<sup>e</sup> Linn. syst.

<sup>f</sup> Hort. kew.

<sup>g</sup> Woodw. Mss.

<sup>h</sup> Willdenow.

<sup>i</sup> Linn. spec.

<sup>j</sup> Engl. bot.



ceding at the tops of the roots alternate, very short, almost upright, covered with the sheaths of the leaves, quite simple, but branched in autumn. Leaves three or four, alternate, spreading very much, obovate-oblong, crenulate, subretuse, very smooth, veined, a span long, flat, coriaceous. Petioles shorter by half than the leaves, roundish, channelled, smooth, with a wide membrane at the base, of an ovate form, embracing, and in the winter season serving for a gem. Scape or peduncle terminating, solitary, erect, a span high, the thickness of the little finger, roundish, very smooth, purplish, almost naked, many-flowered. Panicle contracted, naked, blood-red, composed of pedate racemes. Flowers inferior, drooping, pedicelled. Pedicels short, round, rugged. Calyx shorter by half than the corolla, angular, shining, with the receptacle of the flower yellow, five-cleft to the middle; segments oblong, erect, quite entire, rounded at the top, somewhat wrinkled, green. Corolla funnel-form, purple: petals incumbent, inserted into the middle of the calyx, wedge-shaped, erect, very blunt. Filaments shorter by half than the corolla, alternately less, inserted into the calyx with the petals. Anthers erect, cordate, blunt. Pistil the length of the corolla, yellowish green. Germs two, half round, ovate, smooth: styles compressed, linear: stigmas kidney-shaped, blunt.

The root is white within, and very stiptic or astringent when chewed. The stem changes every year into root; that which flowers one year losing its leaves during the winter, turning to the ground, becoming black, and putting forth fibres.

After the plant has flowered, the stem puts forth branches from the axils of the leaves, which have the panicle of flowers for the next year included in their gems. When the flowers fade they turn blue<sup>b</sup>.

Mr. Curtis remarks, justly enough, that the term *grandifolia* would have been more applicable to this species than *crassifolia*, for it is not so much distinguished for the thickness as the largeness of its leaves; which are almost equal in size to those of our broad-leaved Dock; they are red on the under, and of a fine shining green on their upper surface, and may be ranked among the more handsome kinds of foliage. The flowering stems, according to the richness and moisture of the soil in which they are planted, rise from one to two or even three feet high; at top supporting a large bunch of purple pendulous flowers, expanding in april and may, and if the season prove favourable, making a fine appearance<sup>1</sup>.

Native of Siberia, whence living plants were sent to Linneus in 1760, by David de Gorter, physician to the Empress of Russia<sup>k</sup>. It was introduced here in 1765, by Daniel Charles Solander, LL.D.<sup>1</sup>

β. There is another Saxifrage in our gardens, exceedingly like this in appearance, but differing in producing larger bunches of flowers, and in having larger, rounder and more heart-shaped leaves. In the Kew catalogue this is set down as a variety of the *crassifolia*. Mr. Curtis is inclined to consider it as a species under the name of *cordifolia*. He remarks, that the parts of fructification in *crassifolia* are apt to be preternaturally increased<sup>m</sup>.

15. Root perennial, black, sending down long fibres into the black moist ground. Leaves radical, spreading, fleshy, lengthened out at the base, dark green above, purplish beneath, especially near the edges and tips, hairy about the margin. Stem for the most part solitary, erect, three or four inches high, simple, leafless, round, clothed in the upper part with fine hairs tipped with viscid moisture, terminating in a cluster of several flowers, on short, sometimes branched flowerstalks, the lower most often accompanied by a simple entire bracte. Teeth of the calyx fleshy, purple. Petals ovate, obtuse, white spotted with pale green, frequently purplish. Pistils white or purplish<sup>n</sup>.

This species has the habit of *S. stellaris*, but the leaves are wider and more fleshy, reddish beneath; the petals are spotted with green; the pistils are pur-

plish; and especially the germ is half inferior, not superior, as in that<sup>o</sup>.

Ray's figure is better than Lightfoot's, but neither is good. A luxuriant branched specimen is represented in Flora Danica<sup>p</sup>.

Scarcely any plant is subject to more variations, in appearance as well as size. Sometimes it is exceedingly small, with heart-shaped leaves, flowers collected into a single head, and a strap-shaped leaf at the base. Sometimes it produces only a single flower on a stalk; and sometimes two of these rise from one root. At other times it bears a number of flowers at the top of the stalk, on fruitstalks, forming an umbel, and sometimes it appears twice as large, with a spike composed of smaller ones, as figured by Ray<sup>q</sup>.

Native of Britain, Spitzbergen, Lapland, Virginia, and Canada.—This is the most alpine of our British Saxifrages, and is found only on the summits of the highest mountains in Scotland and Wales; as Ben Lomond, Snowdon, &c. Flowering in august<sup>r</sup>. J. W. Griffith, Esq. of Garn, near Denbigh, has seen the same plant flower thrice in one summer<sup>s</sup>.

16. From a fibrous root proceed tufts of leaves; which are hirsute, not marked with lines; dark green, wedge-shaped, three or five-lobed, with the middle lobe larger and bluntish. From the centre of each tuft issues one flower, seldom two or three; they are sessile, and the petals are elliptic and pure white.

Native of the Piedmont alps on moist mossy rocks. Found by Bellardi<sup>t</sup>.

17. Native of the highest alps of Dauria, under the snow.

18. The stature of the plant is altogether that of *Heuchera*. Root-leaves petioled, cordate-suborbicular, hairy, crenate, with blunt lobules, oleraceous; having white veins on the upper surface, beneath liver-coloured. Petioles roundish, longer than the leaf. Stipules none. Stem herbaceous, round, a foot and half high, almost leafless, pubescent, as the whole herb is, with hairs standing out; the whole raceme compound, the partial racemes drooping at the end before they flower. Branched runners proceed in abundance from the axils of the root-leaves, terminating in rooting offsets. Three of the petals are smaller, whitish stained with red; two larger, white. Nectary yellow. Stamens white, thicker above, the length of the smaller petals. Styles the same length. Two of the stamens, when they have ejected their pollen, turn back behind the corolla<sup>u</sup>. Capsule rounded-ovate, two-beaked, one-celled, two-valved, small, fastened to the calyx only by the base<sup>v</sup>.

Its round variegated leaves, and strawberry-like runners, with the uncommon magnitude of the two lower pendant petals, joined to the very conspicuous glandular nectary, in the centre of the flower, half surrounding the germ, render this species strikingly distinct<sup>w</sup>.

Mr. Curtis remarks, that it differs so widely from the other Saxifrages, as to create a doubt in the minds of some, whether it ought not to be considered as a distinct genus. Thunberg is of opinion, that it can scarcely constitute a new genus, although the petals be unequal.

Native of China and Japan. Introduced in 1771, by Benjamin Torin, Esq. It flowers in june and july<sup>x</sup>. Jacquin says (in 1781) that he had this elegant plant many years since from Spielmann. The younger Linneus seems to have had it from our Gordon of Mile-end.

Loureiro has a species, which he names *S. chinensis*. He describes it as an herbaceous stemless plant. Leaves aggregate, cordate-roundish, fleshy, interruptedly crenate, hairy, reddish beneath, on long petioles. Scape naked, six inches high. Panicle diffused. Corolla white, wheel-shaped, five-petalled, the two outer petals double the size of the others. Capsule two-beaked, two-celled.—Notwithstanding the two cells, it agrees in all other circumstances with *Saxifraga*;

<sup>a</sup> Linn. jun. dec.  
<sup>1</sup> Hort. kew.

<sup>1</sup> Magaz.  
<sup>m</sup> Curt. magaz.

<sup>k</sup> Linn. dec.  
<sup>n</sup> Engl. bot.

<sup>o</sup> Smith brit.  
<sup>r</sup> Engl. bot.  
<sup>u</sup> Linn. suppl.

<sup>p</sup> Engl. bot.

<sup>q</sup> Withering.  
<sup>x</sup> Jacq. misc.

<sup>z</sup> Hort. kew.

<sup>1</sup> Griffith in Withering.  
<sup>t</sup> Allioni.  
<sup>v</sup> Curtis.



and although it be not farmentose, yet it approaches very nearly to Linneus's *S. farmentosa*.—Native of China, about Canton<sup>a</sup>.

The Loo-Foo Yee (Tyger-ear) which the Chinese plant in their artificial rock-work, is probably one of these. They also use the juice of the bruised leaves to ease the tooth-ach. The Chinese name of Loureiro's plant is *Ho agi tsoo*.

19. Leaves roundish, gash-toothed so as to be almost lobed, without any cartilaginous border, by no means retuse, but the teeth acute. Petioles even, three times as long as the leaves, gradually widening into the leaf. Flowers smaller than in *S. Geum*, almost inferior.

Native of Siberia<sup>b</sup>.—Mr. Miller has mistaken this for the next species.

20. Leaves all radical, aggregate in tufts, spreading, running down into the petiole, even and quite smooth, often purple beneath. Scape a span high, erect, red, hairy, many-flowered, with a few small alternate bractes. Flowers upright. Calyx finally reflexed. Petals obovate-lanceolate, white or flesh-coloured, most beautifully dotted with yellow and dark red. Germ altogether superior, rose-coloured. Capsule ventricose, tipped with purple<sup>c</sup>.

Native of Ireland and England. Found in the former on a mountain called the Mangerton, two miles from Killarney, by Dr. Molyneux; on the mountains near Sligo, by Mr. Lhwyd; on Croagh Patrick in the county of Mayo, by A. B. Lambert, Esq.: in the latter, in Thorp Arch woods, near Weatherby, Yorkshire, by Sir T. Frankland and Dr. White; and between Arncliffe and Horton in Craven, Yorkshire, by Mr. W. Bingley. It flowers in June and July.

Mr. Hudson omitted this plant in his *Flora Anglica*. It was long cultivated in England before it was known to be indigenous; and was a favourite for the elegance of the flowers, on which account it was named *None-so-pretty*; as also for its thriving in London better than most plants, whence it had the name of *London Pride*.]

21. Leaves thick, kidney-shaped, crenate, deep green above, pale green beneath, on long thick hairy foot-stalks. Corolla white marked with red spots. Stamens longer than the petals. It flowers in June.

[Linneus remarks both of this and the preceding, that they are too nearly allied to *S. Geum*. That however has the leaves by no means cordate at the base, with angular notches, and ciliate-villose petioles: the flowers are inferior. This has the leaves oval, not kidney-shaped, and the calyx reflex.—Native of the Pyrenees.

22. Leaves in spreading tufts, producing other little tufts, thick, solid, white and cartilaginous at the edge, in form nearly resembling those of *Leucanthemum*, but more obtuse, slightly and bluntly crenate, all round, red underneath and becoming more so as they advance in age. The upper surface, according to Scopoli, appears to have very minute silvery scales scattered over it, when it is examined with a microscope; the lower part is gradually lessened and converges into a flat petiole. Stem very brittle, a long span in height. Panicle thin, with the flowers on long tender branched pedicels. Calyx reflexed. Petals white, thinly marked with yellow dots<sup>d</sup>; according to Scopoli, having a yellow spot at the claw.

This species very much resembles *S. umbrosa*, the margin of the leaves however is not crenate, but very bluntly repand; the leaves also are much smaller<sup>e</sup>.

Native of Switzerland, Styria, Dauphiné. Introduced in 1768, by Professor de Saussure. It flowers here in May<sup>f</sup>.

23. Distinct from the preceding species in having the leaves erect, not forming little roses, ovate not wedge-shaped, subcordate at the base, and of the same width there as at the end, not so thick, but in drying corrugated at the margin, not red beneath; or scaly above, or running down into the petiole. Petioles

villose. Petals dotted below the middle<sup>g</sup>. Calyx reflexed<sup>h</sup>.

Native of the Alps of Europe. Cultivated here in 1629<sup>i</sup>.

24. Stems very long, trailing, either forming tufts or hanging down from the crevices of rocks, branched, leafy; the flowering branchlets erect<sup>k</sup>. The leaves, which are ovate and somewhat decurrent, grow in opposite pairs, alternately from each side of the stalk, giving it an appearance of being imbricated quadrangularly, and are all ciliate at the edges, of a glaucous green, frequently tinged with purple<sup>l</sup>; they are blunt, fleshy, concave and keeled: the floral leaves are more remote. Flowers terminating, solitary, purple, large and handsome<sup>m</sup>. Calyx purplish, ciliate at the edges. Petals obovate, very obtuse, nerved. Anthers purple. Germ half-inferior<sup>n</sup>. This beautiful plant insinuates its roots into every crevice, and with its numerous trailing branches cloaths the rocks with a rich tapestry<sup>o</sup>; during the months of April and May. In gardens it flowers in February and March. As the flowers go off they incline to blue, and it is said to vary with white flowers.

The plant is very liable to vary from situation: when it grows exposed, the whole plant assumes a more compact appearance, the stalks are shorter, the leaves more closely imbricate, the flowers more numerous; in shady and more sheltered situations, the stalks shoot to a greater length, the leaves are placed at longer intervals, assume a greener hue, and resemble somewhat those of wild Thyme; in such situations few or no flowers are produced<sup>p</sup>.

β. The leaves are more distinct and blunt: the little stem is only two inches high, and is terminated by one or two flowers of a beautiful red colour<sup>q</sup>. According to Allioni, the stem is only an inch high; the flower large of a beautiful rose colour: the leaves hirsute, ciliate, sessile, ovate, not reflexed, alternate even on the flowering branches. The whole plant is commonly very clammy.

γ. Calyx and corolla spread out. Stamens and styles equal and higher than the flower. Anthers three-cornered, greenish yellow. Leaves acuminate, reflexed, smooth, sometimes ciliate towards the base, closely imbricate on the stems, but conjugate and more apart on the flowering branches<sup>r</sup>.

Native of Spitzbergen, Lapland, Britain, Switzerland, Dauphiné, Piedmont, Siberia; on alpine rocks: flowering in April. On Ingleborough and Pennigent; on Snowdon; on Ben Lomond, and other Scottish mountains; Isles of Rum and Skye.

25. This has tufts of leaves forming dark roses close to the ground, and younger stalks, as it were gems, sessile in the axils of the ciliate leaves. From the creeping stalk rise up flowering-stalks, a long span in height, weak, trifid or quadrifid. Leaves oblong, acute, rigidly ciliate at the edges. Flowers on long, naked, one-flowered branches, three or four in the whole, on the top of the plant. Calyx green with white edges. Petals dusky white with a yellow claw. Anthers scarlet. It resembles *S. bryoides* very much<sup>s</sup>.

Native of the mountains of Switzerland, Austria, Provence, Dauphiné, and Piedmont. Cultivated in 1748 by Mr. Miller<sup>t</sup>. Omitted in the later editions of his Dictionary.

26. Stems upright, about a span high, round, simple, leafy, beset thickly with brownish crooked hairs, reddish beneath the flowers, branched at bottom; the branches short and decumbent. Leaves bluntish, quite entire, smooth on both sides, sometimes ciliate at the edge with soft hairs. Flowers one or two (sometimes three) large. Calyx reflexed, sometimes edged with hairs. Petals obovate, nerved, appendicled at the base, of a golden colour, spotted with saffron up to the middle<sup>u</sup>.

Mr. Woodward remarks, that the almost parallel nerves on the calyx and petals, clearly distinguish this

<sup>a</sup> Lonn. cochinch. 281. ed. Willd. 345.

<sup>c</sup> Smith, brit. & engl. bot.

<sup>e</sup> Linn. spec.

<sup>b</sup> Linn. spec.

<sup>d</sup> Haller and Villars.

<sup>f</sup> Hort. kew.

<sup>g</sup> Scopoli.

<sup>i</sup> Woodw. Mss.

<sup>k</sup> Woodward.

<sup>h</sup> Linn. syst.

<sup>m</sup> Smith.

<sup>l</sup> Haller.

<sup>n</sup> Smith and Woodw.

<sup>j</sup> Hort. kew.

<sup>o</sup> Smith and Woodw.

<sup>p</sup> Curtis.

<sup>q</sup> Villars.

<sup>r</sup> Hort. kew.

<sup>s</sup> Smith and Woodw. Mss.

<sup>t</sup> Miller.

<sup>u</sup> Smith and Woodw. Mss.



from the other species.—And Mr. Curtis, that it obviously differs from *autumnalis* in the superior size and in the form of the petals, by the beautiful orange spots on the lower half of them, and by the two very singular pointed projections towards the base of each. It is indeed very different from all the European Saxifrages. It derives the trivial name, from its similitude in foliage to *Valeriana celtica*, which is called *Hirculus* by some old authors<sup>\*</sup>.

Native of Lapland, Sweden, England, Germany, Switzerland, Piedmont, Siberia, in bogs: flowering in July and August. First found in England by Dr. Kingstone, on Knutsford moor in Cheshire, and showed by him to Dr. Richardson: and since by Mr. Howard, surgeon of Knutsford, Mr. Benjamin Haley, gardener to Mr. Egerton of Tatton-park, and others.

27. The roots creep very far. Root-leaves matted. Stems aggregate, decumbent at the base and branched, leafy, round, smoothish, the flowering extremities erect and paniced; the leaves on them much more scattered and larger. Leaves sessile, blunt, edged with such strong and remote ciliae, that they might almost be called dentated: these ciliae are nevertheless sometimes wanting, whence Linneus describes his *S. aizoides* as having naked, not ciliate leaves. Even his own specimen however has traces of them; and in fact the number and density of these ciliae are very variable. Mr. Woodward remarks, that the leaves have sometimes a few ciliae, but are oftener naked. From the upper part of the stem arise many peduncles, each from the axil of a leaf, of various lengths, the lower ones longest, each clothed with two small leaves, and generally bearing one flower. They often form a small corymb, are extremely beautiful when closely examined, and those that appear earliest are most deeply coloured. Calyx as long as the corolla, from upright spreading, even in the fruit. Petals tongue-shaped, nerveless, gold spotted with red. Germ depressed. Capsule ovate, half inferior<sup>†</sup>.

Haller and Jacquin, and after them Lightfoot, suppose the Linnean *S. autumnalis* not to be specifically distinct from this plant; and Linneus himself thought the hint worth noticing in his second mantissa. His own herbarium has no specimen to show what he intended by *S. autumnalis*: probably he took up the plant from other authors. Dr. Stokes's conjecture is perhaps nearest the truth, that Linneus's *S. autumnalis* is a ciliated variety of *S. Hirculus*<sup>‡</sup>.—Mr. Afzelius informed Dr. Withering, that *S. aizoides* and *autumnalis* of Linneus are the same plant: that when the leaves are fringed, it had been called by the latter, and when without fringe, by the former name<sup>§</sup>.

Willdenow remarks, that the leaves are mucronate in *autumnalis*, which they are not in *aizoides*; and that the former varies with purple flowers.

Native of Lapland, Sweden, Norway, Britain, Switzerland, Carniola, Dauphiné, Silesia, Piedmont. With us it is found in bogs and by rills, on most of the mountains in the north of England, and in Scotland; flowering in July and August.]

28. Lower leaves almost round, resembling those of Golden Saxifrage (*Chrysosplenium*), on long footstalks, deeply divided, hairy and green above, pale beneath. Stems erect, about a foot high, channelled and hairy, with kidney-shaped leaves. The stem puts out a few slender footstalks from the upper part, which together with the stem itself are terminated by small clusters of flowers, white spotted with red. According to Haller, it is a cubit in height. Leaves hirsute; the lower on very long petioles, bluntly serrate; stem-leaves few, on shorter petioles, more sharply serrate; at top dwindling into mere straps. Flowers axillary, two or three on a peduncle: the outer dots on the petals red, but the inner ones yellow.—Stem pubescent with capitate villose hairs. Panicle dichotomous, loose; with two narrow leaflets under each branch. Petals lanceolate, with short truncate claws. Seeds ovate, up to eighty in a cell<sup>¶</sup>.

Of this numerous and beautiful genus, we know of

<sup>\*</sup> Curtis.

<sup>†</sup> Smith, brit. & engl. bot. Woodw. Mfs.

<sup>‡</sup> Eng. bot.

<sup>§</sup> Botan. arr. 405.

<sup>¶</sup> Scopoli.

none, says Mr. Curtis, whose flowers, in point of prettiness, can vie with those of the present species: they are marked with numerous fine dots, like those of *umbrosa*, but in a superior style of beauty, and appear to great advantage when viewed with a magnifier.

Native of Switzerland, Austria, Silesia, Dauphiné, Piedmont. Cultivated by Gerarde, in 1597<sup>\*</sup>.

29. Root composed of several little grains or knobs, attached to one main fibre, and throwing out small fibres from their base. Stem erect, round, pubescent, leafy, somewhat viscid, branched and paniced at top, of a brown or reddish hue, with which colour the leaves and calyx-teeth are also tinged, giving the whole herb a rich glowing appearance: these parts are also clothed with the same kind of hairs, especially the calyx, which is very clammy to the touch. Leaves somewhat fleshy, lobed and cut; those next the root on long footstalks; those on the stem alternate, subsessile. Calyx erect. Petals obovate, much longer than the calyx, marked with three branched veins, white, undotted. Stamens all nearly equal. Stigmas blunt and pubescent<sup>†</sup>.

Native of Europe, in dry pastures and on banks, where the soil is gravelly. In Britain it is not very common, but where it does occur it is found in plenty: flowering in May, and seeding in June.—As a medicine it is of no efficacy.

β. It varies with double flowers, and in this state is cultivated. I presume that this is the variety, which Mr. Miller says] was found wild by Mr. Joseph Blind, gardener at Barnes, who transplanted it into his garden, and afterwards distributed it to several curious persons; since which time it has become a very common plant in most gardens near London, where it is commonly planted in pots to adorn court-yards in the spring, and is very ornamental at that season in the borders of the flower-garden.

[30. This is rather a variety of the preceding than a distinct species, according to Seguiet. The germ is inferior. This character is what principally distinguishes it from *S. cernua*. Other characters are not to be depended upon<sup>‡</sup>.

Native of Italy, in shady rocky pastures; and of Norway. The Bishop of Drontheim gathered it in 1762 and 1767 at Tromsøen in Norland, &c.; and Koenig in Island.

31. Root a small scaly bulb, throwing out branched black fibres. Stem four or five inches, or a span high, erect, round, leafy, mostly smooth, generally simple and one-flowered, sometimes branched. Leaves alternate, kidney-shaped, lobed in a palmate manner, a little succulent, smoothish; the upper ones undivided and sessile, bearing in their axils little purple scaly bulbs, which falling to the ground become new plants. Flower terminating, solitary, white, nodding: segments of the calyx elliptical, erect, clothed with glandular hairs: petals clawed, retuse and subemarginate, three-nerved, the nerves united above the base, branched and disappearing before they reach the top. Germ entirely superior.

Native of the mountains of Lapland. Mr. Dickson first detected it on the summit of Ben Lawers in Scotland. It flowers in July or August.—Figure 390 of Flora Danica seems to represent this plant: figure 22 having acute petals, and always a simple stem. This may perhaps be another species<sup>§</sup>.

32. Root fibrous. Stem for the most part solitary, two inches high, erect, simple, two-flowered, sometimes five-flowered. Leaves on long petioles, alternate, somewhat kidney-shaped, palmate, three or five-lobed, smooth, the upper ones spatulate and undivided. Flowers erect, small, white. Calyx hairy-viscid at the base. Petals acute, one-nerved. Germ ovate, half-inferior.

Native of the Lapland mountains; Finmark and Norland; Siberia; Scotland, found on Ben Nevis, by rills and in the wet fissures of rocks, by Dr. Townson, flowering in June and July<sup>¶</sup>. Linneus marks it as annual, Smith as perennial.

<sup>\*</sup> Hort. kew.

<sup>†</sup> Smith, brit. & engl. bot.

<sup>‡</sup> Gunner.

<sup>§</sup> Smith, brit. & engl. bot.

<sup>¶</sup> Smith, brit.



33. Root stoloniferous. Stem half a foot high, pubescent, viscid. Leaves five-lobed, with the lobes acutely trifid, the two side lobes so united, that they appear to be three-lobed, with the side-lobes five-toothed: the younger leaves are often cordate, five or seven-lobed, with the lobes quite entire and equal. There is seldom more than one stem-leaf, and sometimes there is none: when there is one only, it is three-lobed, either with the middle lobe quite entire and the side-lobes one-toothed, or with all the lobes two-toothed or three-toothed: the middle stem-leaf, when there are two, is petioled, and the upper one sessile. Peduncles axillary, alternate, commonly three-flowered, sometimes but seldom five-flowered. Pedicels alternate, separated by awl-shaped leaves; the lower flower has two others and opens first, then the middle one, and lastly that at the end. Calyxes pitcher-shaped, almost as in the Rose, with long acute segments. Petals white, lanceolate, bluntish, the same size as in *S. cespitosa*, *hypnoides*, and *granulata*. Filaments stiffish, the length of the calyx. Capsule very much forked, with diverging points. After flowering-time the calyxes swell very much, and their segments are so enlarged, that they emulate in a manner those of Roses.

Native of the Pyrenees, by rills and on shady rocks<sup>h</sup>: also of Siberia. Introduced in 1770, by Mons. Richard. It flowers in april and may<sup>i</sup>.

34. Root-leaves palmate and five-parted, with ovate-lanceolate lobes, and petioled. Stems ascending, filiform, with two or three linear acute undivided leaves. Flowers at the top from three to five, peduncled. Runners before they put out leaves hirsute.—Native of the mountains of Provence<sup>k</sup>.

35. Radicles capillary. Root-leaves petioled, seven-lobed: lobes ovate, with hairs thinly scattered over them: petioles hirsute. Stem ascending, half a foot high, weak, having two or three sessile palmate leaves on it. Peduncles terminating and lateral, very long, filiform, bifid, naked. Flower biggish, white, inferior.—Native of Siberia<sup>l</sup>.

36. This is an annual plant, very distinct from *S. geranioides* and *adscendens* in the form of the leaves, peduncles and petals: so it is also from *S. tridactylites* and *petraea*, although there be a sort of agreement in the form of the leaves and petals.—Native of the mountains of Carinthia<sup>m</sup>.

37. Root annual, small, entirely fibrous. The whole herb is succulent, pubescent with projecting hairs which are clammy from the globules which terminate them, and turning red after flowering. Stem erect, round, leafy, somewhat flexuose, dichotomous. Leaves palmate in three segments, or pedate in five, tapering down into a wedge-shaped base, their margin entire, their substance tumid and fleshy; the uppermost lanceolate, undivided, and sessile. Panicle erect, with small leaves at the forks. Flowers small, white; on solitary peduncles. Calyx urn-shaped, with small teeth. Petals obovate, one-nerved, scarcely exceeding the calyx. Germ quite inferior. Styles greatly divaricated.

Common in most parts of Europe, on walls, thatched roofs, and in dry barren places, flowering in april and may. When it grows in shady places, it is green, more slender, and longer lived. In very dry situations, the stem is sometimes unbranched, and all the leaves entire.

This little herb has been taken for the *Paronychia* of Dioscorides, which was used to cure whitlows; and hence its English name of Whitlow-grass; to distinguish it from *Draba verna*, which is also so called, the epithet *rue-leaved* is added to this<sup>n</sup>.

38. This is also an annual plant, very nearly allied to the preceding, and viscid as that is; but the stem is very much branched, the leaves wide palmate three-parted and cut, the corolla three times as large<sup>o</sup>. Willich says, it is perennial, that it grows in tufts, composed of palmate five-cleft leaves, not very close,

expanding more when the plant is in flower, and even reflexed, that the flowering-stem puts out numerous barren branches at bottom, the lower leaves of which resemble those in the tufts, but the others are three-toothed and widely petioled, that it is hairy and viscid, branched again at top, with a sessile leaf under each branch which is commonly trifid, but sometimes though rarely simple, that the calyx is half-five-cleft closely surrounding the germ, that the petals are milk white ovate entire marked half way with green lines, and as large as in *Sax. granulata*.

According to Retzius, the *petraea* of Gunner and the Flora Danica is quite a different plant from this of Linneus, Willich and Gouan. The *petraea* of the latter is referred by Willdenow to Linneus's *adscendens*, together with Pona's *S. alba petraea*; but surely Pona's plant is the same with Linneus's *petraea*.

Native of the mountains of Lapland, Norway, Switzerland, Savoy, Carinthia, Dauphiné.—Cultivated in 1748, by Mr. Miller<sup>p</sup>; but omitted in the later editions of his Dictionary. It flowers in april and may.

39. This is a viscid plant, leafy all over, with the flowering stems only from the top, and not as in *petraea*, to which it is very nearly allied, branched very much every way into a bundle<sup>q</sup>.

Vahl remarks, that there are always runners in this species, which he has never observed in *petraea*, that it is also much stouter, with a greater abundance of larger flowers, which are most commonly on shorter peduncles.

Native of the Alps and Pyrenees, monte Baldo, the Hartz forest, &c.

40. This has the habit of *caespitosa*, but the leaves are much more slender, almost all of them undivided, triple-nerved beyond the middle. Petals yellowish, triple-nerved. Germ inferior. The herb is sweet-smelling and viscid<sup>r</sup>.—Haller remarks that the roots have a pleasant aromatic flavour; that the leaves are particularly tender, like Chinese silk paper; the stem three inches high or a little more, hirsute, bearing two or three flowers; the petals white with a tinge of yellow.

Native of Switzerland, the Pyrenees, Carniola, &c. Its place in England, (mountains above Ambleside, Westmoreland,) rests on the authority of Dr. Withering.

41. Root in tufts. Stem two inches high, erect, not very leafy, round, hairy. Root-leaves heaped, numerous, ciliate, blunt; stem-leaves alternate, commonly undivided, but sometimes three-parted. Flowers terminating, peduncled, erect, yellowish. Calyx hemispherical, hairy-viscid, with the segments blunt and denudated. Petals obovate, quite entire; triple-nerved. Capsule almost inferior<sup>s</sup>.

In Linneus's mantissa it is said to be a smooth plant, with the upper branchlets viscid; the corolla white, drying yellow, and marked with lines.

Scopoli describes it as truly tufted, with a short stem, an inch or a little more in height, having a few one-flowered peduncles at the top, and a trifid leaf at the base of the lower peduncle. The lower leaves are semitrifid, with equal ciliate blunt segments. Segments of the calyx oval. Petals yellow, with three lines, of which the side ones being united at top and bottom inclose an oval space.

Native of Sweden, Norway, Switzerland, Austria, Carniola, Silesia, Dauphiné, Piedmont.—Found on alpine rocks above lake Idwell in Caernarvonshire, Wales, by J. W. Griffith, Esq. flowering in june.

β. Willdenow, following Jacquin, makes this a distinct species from *caespitosa*, although it resembles that very much; on account of the greater slenderness of the leaves, the filiform stem, and the smallness of the flower. It is described at length by Wulfen in Jacquin's miscellanea.—Native of the mountains of Carniola and Switzerland, also of the Pyrenees.

γ. Stems several, scarcely exceeding two inches in height, thickish, covered with many trifid leaves. Flow-

<sup>h</sup> Gouan. <sup>i</sup> Hort. kew. <sup>k</sup> Linn. amoen.

<sup>l</sup> Linn. spec.

<sup>m</sup> Willdenow.

<sup>n</sup> Smith, brit. engl. bot. Withering.

<sup>o</sup> Linn. spec.

<sup>p</sup> Hort. kew.

<sup>q</sup> Linn. mant.

<sup>r</sup> Smith, brit.

<sup>s</sup> Idem.



elling-stems short, with one or two leaves, and three or four small whitish flowers on them.—Native of Groenland; found in Mackel Cow bay, flowering in july, by Francis Soldan, a surgeon, and presented by him to Dr. James Sherard, who cultivated it in his garden at Eltham<sup>1</sup>. It is also a native of Norway.

δ. Root-leaves forming a tuft, from a narrow base widening into a triangle, and deeply cut into three linear lobes, which are three-toothed or sometimes but rarely four-toothed. The stem has one leaf on it about the middle, divided into five lobes; the flowers on the top form a sort of umbel, and there is a five-cleft or three-cleft leaf at the origin of the peduncles. Pedicels one-flowered, naked, three times as long as the flowers. Calyx deeply cut into lanceolate segments. Corolla spreading: petals white, twice as long as the calyx. Filaments with their anthers greenish-yellow, not higher than the calyx. The whole plant is viscid and hirsute. It varies with leaves not deeply trifid, but rather five-lobed, the middle lobe often bifid or trifid, and the white petals rose-coloured at the claws.—Native of the Piedmont Alps<sup>2</sup>.

42. Root-leaves numerous, in tufts, from the centre of which arises a simple erect flowering-stem, a hand high, round, hairy, surrounded at the base with several nearly upright, shortish, leafy shoots or branches. All the leaves are palmate, narrowed and lengthened out at their base, clothed with long white woolly scattered hairs; the radical ones, as well as one or two on the lower part of the stem, are in five (rarely seven) segments; the others on the stem and those on the side shoots in three: all the segments are inclined to be elliptical, not linear. Panicle erect, terminating, viscid, not very spreading, composed of five to seven or eight greenish-white flowers. Bractes trifid or undivided. Segments of the calyx ovate, pointed, hairy, viscid. Petals roundish, a little pointed, with three nerves united at their base, yellow white with a greenish tinge. Germ half-inferior. Styles club-shaped<sup>3</sup>.

Dr. Withering, who has described it under the name of *petraea*, in the additions to his Arrangement of British plants, remarks that the stem is about two inches high, that the root-leaves are mostly three-cleft, that the petals are thrice as long as the calyx, each marked with three pale green lines, that the whole plant is hairy, the hairs being long, transparent, tapering to a fine point, jointed like a *Conserva*, and secreting a glutinous liquid. In other respects his own description agrees with Dr. Smith's; but what he has set down from Linneus, belongs to the true *petraea*. None of his synonyms seem to appertain to this species.—Dr. Smith says that we cannot refer our *palmata* to any species of Haller, Allioni, Scopoli or Villars, though it comes in some points near the *exarata* of the last.

Native of Denmark and Wales. We are indebted to the indefatigable researches of J. Wynne Griffith, Esq. for this beautiful addition to our Flora. He found it on the rocks of Cwm Idwell, above Llyn Idwell, near Tŵll dŵ, in North Wales, at the end of may. It flowers from april to june<sup>4</sup>.

43. This approaches a little in the form of the leaves to *caespitosa*, but it bears a flower like that of *Hirculus*<sup>5</sup>. It is sufficiently distinguished by the three cusps or prickly points at the end of the leaves.

Native of Groenland, where it was found by Rottboell<sup>6</sup>.

44. Root-leaves greatly resembling those of *Antirrhinum Cymbalaria*, whence its trivial name, nine or ten lines wide, and seven or eight lines long, seven-lobed, shining, on petioles from an inch to two inches and a half in length. Stem a long span in height, feeble; almost procumbent on the rocks. Stem-leaves few, having the lobes or notches more pointed. The leaves next the flowers are entire and sessile. The stem and branches are villose towards the top. Petals half an inch long, three lines wide at the top, white veined with green at the base. Filaments two lines long; anthers greenish and minute. Calyx cut to the centre into narrow villose segments. Pistil pale green.

Capful brown, three lines high. Seeds blackish.—Native of the Levant, on mount Ararat<sup>7</sup>.

45. This is a small annual plant, native of the Levant. It was introduced in 1788, by the late John Sibthorp, M. D. Regius Professor of Botany at Oxford; and flowers in july<sup>8</sup>.

46. This bears some similitude to *S. Cymbalaria*, but differs from it in the shining smoothness of all the parts, in the colour, smallness and expansion of the flowers, in the greater length of the stamens, and in having the flowering branches more elongated<sup>9</sup>.—Native of the Levant.

Willdenow remarks, that it is different from *S. Cymbalaria*, though they are alike; but he doubts whether it be distinct from *S. hederacea*. I cannot help suspecting that the species of Saxifrage have been too much multiplied.

47. Corolla white. Germ inferior. Native of Spain, in the mountains near Castell-fort<sup>10</sup>.

48. Roots fibrous, long and slender, throwing out many procumbent leafy shoots, which grow matted together, forming thick tufts; from the common origin of these arises a solitary erect round stem, bearing two or three straggling linear undivided leaves, and terminating in an upright panicle of a few large white flowers. Leaves alternate, linear, acute, pale green, smooth, their edges only often hairy with soft white woolly threads: the leaves on the shoots simple and undivided; those at the bottom of the stem all deeply three-cleft, with the segments divaricate. Bractes solitary at each subdivision of the panicle, lanceolate, and clothed with short viscid hairs. Segments of the calyx lanceolate, acute. Petals elliptic-oblong, obtuse, greenish-white, with three green lines, all united for some distance above their origin, and the central one mostly branched near the top. Five of the stamens rather shorter than the other five. Styles still shorter, nearly erect. Stigmas blunt. Germ half-inferior<sup>11</sup>.

Dr. Withering remarks, that the stem, fruitstalks and calyx are thickly set with short hairs terminated by red globules, and that the rest of the plant is thinly set with fine white hairs.

*S. ajugifolia* is very like this, but has all the leaves three-cleft or five-cleft; as well as more numerous, though much smaller and yellower flowers, with blunt petals not having the midrib branched at the top<sup>12</sup>.

Native of Britain, Denmark, Switzerland, Austria, and France. Tufts of it often clothe rocks, where the inequalities are filled with black turfy earth, on the mountains of Wales, Scotland and the north of England, as on Snowdon, Ben Lomond, and Arthur's Seat near Edinburgh, Westmoreland, Yorkshire, Malham, Settle, &c. Derbyshire in Dovedale and Middleton-dale. Also on Cheddar rocks in Somersetshire: flowering in may, and often again sparingly in july and august.

49. This has the appearance of the preceding, and is scarcely distinct from it. Stems in tufts, branched, prostrate at the base; from the top of these arise flowering-branches, which are erect and simple. Stem leaves in clusters, smooth or scarcely pubescent. In the axils are ovate or roundish villose bulbs. The leaves on the flowering-branches are few and entire. Flowers in corymbs; the primary one sessile or subsessile, the lateral ones pedicelled. Calyx pubescent, with ovate blunt segments. Petals obovate, twice as long as the calyx. Stamens shorter than the corolla. Capsule ovate.—On the top of mount Atlas.

50. Stems in tufts, branched, slender, prostrate. Leaves alternate, clustered, small, spatulate or sometimes linear, running down along the petiole. Pedicels filiform, short. Segments of the calyx ovate, ciliate. Corolla white, twice as long as the calyx. Petals obovate.—On the summit of mount Atlas near Belide. They both flower very early in the spring<sup>13</sup>.]

#### PROPAGATION AND CULTURE.

1. Pyramidal Saxifrage is easily propagated by offsets, which are put out from the side of the old plants

<sup>1</sup> Dillenius. <sup>2</sup> Allioni. <sup>3</sup> Smith, brit. & Engl. bot. <sup>4</sup> Withering & Engl. bot. <sup>5</sup> Willdenow. <sup>6</sup> Guener.

<sup>7</sup> Tournefort. <sup>8</sup> Hort. kew. <sup>9</sup> Jacquin. <sup>10</sup> Willdenow. <sup>11</sup> Smith, brit. & Engl. bot. <sup>12</sup> Engl. bot. <sup>13</sup> Desfontaines.



in plenty. Plant them in pots filled with fresh light earth, placing them in the shade during summer, but exposed to the sun in winter. Take off all the offsets, leaving the plants single, which will cause them to produce a much stronger stem for flowering. Plant these offsets in separate halfpenny pots, to succeed the old plants, which generally perish after flowering. They will produce flowers the second year.

2. 3. Are to be treated in the same way:—*mutata* (n. 3.) must be sheltered from much wet and severe frost.

4. May be increased by parting the roots: it loves a moist soil and a shady situation; and is never injured by cold.

[14. Increased readily by parting the roots, either in spring or autumn. It flowers early, and if cold winds prevail at that time, the plant should be covered with a hand-glass; or, if in a pot, may be removed into the greenhouse<sup>1</sup>.]

15. This must have a shady situation and a loamy soil.

[18. This increases so fast by runners, as to be even troublesome. It is properly a greenhouse plant; in mild winters indeed it will bear the open air, especially if placed at the foot of a wall, or among rock-work; but in such situations it is frequently killed in severe seasons<sup>k</sup>.]

20. 21. Like many of the other species, these may be propagated by offsets taken off in autumn, and planted in a shady situation.

24. [At the end of march divide a plant which has filled a pot the preceding year, into many small pieces, taking care that each piece has a few fibres to it; plant about six of these in the middle of a small pot, filled with a composition of loam and rotten leaves or bog earth, in equal parts, water them and set them by in a shady place for about a week, then plunge them in an open border, exposed not more than half the day to the sun; in dry weather water them once a day; the ensuing spring each pot will be covered with a profusion of bloom: to continue this plant in perfection it must be thus treated yearly. It is very hardy, and disdains all tender treatment.

26. Plant it in a pot of bog earth, and keep the pot in a pan of water, so that the earth shall be constantly moist: in winter set it under a frame, to guard against severe frost. It will thrive very well in an open border, if moist and formed chiefly of bog earth, and throw out shoots which will take root. It may also be increased by cuttings of the shoots, which will strike root under a close glass towards the close of summer. If the plant be kept in a pot, it must be renewed every two or three years<sup>1</sup>.]

27. This species, growing upon bogs, is difficult to propagate in gardens, unless it be planted in loose rotten earth, and kept constantly moist.

[This difficulty has been in great measure overcome by having a shady moist border filled with bog-earth. In such a border many elegant plants of this and various other genera thrive tolerably well. Some of the Alpine Saxifrages require a pure air, and will not thrive within the reach of smoke.]

28. Part the roots early in autumn, that the plants may be well rooted before the dry weather in spring. It succeeds best in a moist shady situation, and a stiffish loamy soil.

29. The double White Saxifrage is increased by offsets, which the old roots put forth in great plenty. Transplant them in July, after the leaves are decayed, into fresh undunged earth, placing them in the shade until autumn, but in winter exposing them to the sun. These plants will flower in April, and if they are in large tufts will make a handsome appearance. In the full ground they must have a shady situation.

48. This sort propagates fast enough by its trailing branches, provided it be planted in a moist soil and a shady situation, but it will not thrive on dry ground, or where it is much exposed to the sun. The best time to remove this or any of these plants is in autumn, that they may have the benefit of the winter's rain to

establish them well before the dry weather of the spring comes on.

[The above directions will suffice for the culture of all the other species of this numerous and elegant genus. They are mostly perennial, and to be increased by offsets or parting the roots; many of them not growing very readily from seed. The few annual sorts, which are to be increased by seed, are particularly specified at the foot of the descriptions.]

SAXIFRAGA. See *Æthusa*, *Arenaria*, *Ligusticum*, *Pimpinella*, *Sagina*, *Saponaria*, *Satureia*, *Seseli*, *Silene*.

Saxifraga aurea, } See *Chrysosplenium*.  
Saxifrage, Golden. }

SCABIOSA. (This is a modern name, which some derive from scaber, rough or rugged; but others with more reason from scabies, the itch, which disorder the common sort is said to cure.)

Lin. gen. n. 115. Reich. n. 121. Schreb. n. 149.

Tournef. t. 263, 264. Vaill. act. gall. 1722.

Juss. 194. Gært. t. 86. Asterocephalus. Vaill.

ibid. Succisa. Vaill. ibid. Pteroccephalus. Vaill.

ibid.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Aggregatae*. *Dipsacæ*, Juss.

GENERIC CHARACTER.

CAL. Common Perianth many-flowered, spreading, many-leaved: leaflets in various rows surrounding the receptacle and placed upon it, the inner ones gradually less.

Proper Perianth double, both superior:—outer shorter, membranaceous, plaited, permanent; inner five-parted, with the segments subulate-capillaceous.

COR. universal equal, often from unequal ones.

Proper one-petalled, tubular, four or five-cleft, equal or unequal.

STAM. Filaments four, subulate-capillary, weak. Anthers oblong, incumbent.

PIST. Germ inferior, involved in its proper sheath as in a calycle. Style filiform, length of the corolla. Stigma obtuse, obliquely emarginate.

PER. none.

SEEDS solitary, ovate-oblong, involute, crowned variously with proper calyxes.

REC. common convex, chaffy or naked.

OBS. Exterior corollets often larger, more unequal. Crowns of the seeds various in the different species.

The primary distinction of the species is to be taken from the division of the florets into four-cleft and five-cleft.

ESSENTIAL CHARACTER.

Cal. common many-leaved: proper double, superior. Recept. chaffy or naked.

SPECIES.

\* With four-cleft Corollets.

1. Scabiosa alpina. Alpine Scabious.

Lin. spec. 141. Syst. 143. Reich. 1. 276. Willd. 1.

545. hort. cliff. 30. upf. 26. Gært. fruct. 2. 39.

Villars dauph. 2. 290. Allion. pedem. n. 503.

Lob. adv. 233. ic. 537.

S. alp. foliis centaurei majoris. Baub. pin. 270. Mor.

hist. f. 6. t. 13. f. 10. Tournef. inst. 465.

S. alp. centauroides. Bess. syst. aest. 122. ord. 9. t. 8.

f. 1.

S. montana & Centaurium nothum. Dalech. hist.

1108. 1291.

S. mont. maxima. Ger. emac. 721. 7. Park. theat.

487. f. 1. Raii hist. 374.

Dipsacus fol. pinnatis, pinnis serratis, capitulis globosis.

Phil. trans. n. 337. Hall. helv. n. 200.

Corollets four-cleft equal, calyxes imbricate, flowers drooping, leaves pinnate, leaflets lanceolate serrate.

[2. Scabiosa ustulata.

Lin. spec. ed. Willd. 1. 545. Thunb. prodr. 29.

Corollets four-cleft equal, scales of the calyx acute, leaves lyrate toothed.

3. Scabiosa rigida. Rigid-leaved Scabious.

Lin. spec. 142. Syst. 143. Reich. 1. 276. Willd. 1.

546. mant. 328. amoen. 6. afr. 4. Thunb. prodr.

28. Comm. hort. 1. 185. t. 93. Raii suppl. 237.

n. 39.

Corollets

<sup>1</sup> Curtis.

<sup>k</sup> Idem.

<sup>1</sup> Idem.



- Corollets four-cleft subradiant, calyxes imbricate obtuse, leaves lanceolate serrate eared.*
4. *Scabiosa attenuata*. Narrow-leaved Scabious.  
*Lin. syst.* 144. *ed. Willd.* 1. 546. *suppl.* 118. *Ait. kew.* 1. 134.  
*S. trifida*. Thunb. *prodr.* 28.  
*Corollets four-cleft equal, calyxes imbricate, scales oblong obtuse, leaves linear smooth entire and pinnatifid at the base.*
5. *Scabiosa scabra*. Rugged-leaved Scabious.  
*Lin. syst.* 244. *ed. Willd.* 546. *suppl.* 118. Thunb. *prodr.* 29.  
*Corollets four-cleft equal, scales of the calyx obtuse, leaves bipinnatifid rugged rigid.*
6. *Scabiosa transylvanica*. Transylvanian Scabious.  
*Lin. spec.* 141. *syst.* 143. Reich. 1. 276. Willd. 1. 547. *hort. upf.* 26. Jacqu. *hort.* 2. 50. t. 111. Mor. *hist.* 3. 46. f. 6. t. 13. f. 13.  
*Corollets four-cleft equal, calyxes and chaffs awned, root-leaves lyrate, stem-leaves pinnatifid.*
- [7. *Scabiosa syriaca*. Syrian Scabious.  
*Lin. spec.* 141. *syst.* 144. Reich. 1. 277. Willd. 1. 547. *hort. cliff.* 30.  
*S. fruticans latifolia alba*. Bauh. *pin.* 269. Mor. *hist.* f. 6. t. 14. f. 14.  
*S. perlicæ folio, flore amethystino*. Vaill. *act.* 1722. p. 233.  
*Corollets four-cleft equal, calyxes imbricate and chaffs awned, stem dichotomous, leaves lanceolate.*
8. *Scabiosa leucantha*. Snowy Scabious.  
*Lin. spec.* 142. *syst.* 144. Reich. 1. 277. Willd. 1. 547. *hort. cliff.* 30. Gært. *fruct.* 2. 39. Villars *dauph.* 2. 290. Allion. *pedem.* n. 505. Scop. *carn.* n. 137.  
*S. rigida*. Mill. *dict.* n. 7.  
*S. flore globofo niveo*. Bauh. *pin.* 270.  
*S. fruticans angustifolia alba*. Bauh. *pin.* 270.  
*S. glabra fol. rigidis viridibus*. Bauh. *hist.* 3. p. 2. 8. Raii *hist.* 377. Mor. *hist.* f. 6. t. 14. f. 11.  
*S. trenta*. Hacquet. *pl. alp.* 13. t. 4. f. 1.  
*Corollets four-cleft almost equal, calycine scales ovate imbricate, leaves pinnatifid.*
9. *Scabiosa succisa*. Devil's-bit Scabious.  
*Lin. spec.* 142. *syst.* 144. Reich. 1. 277. Willd. 1. 548. *hort. cliff.* 30. fl. *suec.* n. 119. Hudf. *angl.* 62. Wither. *arr. ed.* 3. 183. Smith, *brit.* 170. *engl. bot.* t. 878. Curt. *lond.* 3. t. 10. Relb. *cant.* n. 112. Sibth. *oxon.* n. 171. Fl. *dan.* t. 279. Hoffm. *germ.* 45. Roth. *germ.* 1. 58. 2. 163. Pollich *pal.* n. 140. Leers *herborn.* n. 104. Scop. *carn.* n. 138. Krock. *filef.* n. 203. Villars *dauph.* 2. 291. Allion. *pedem.* n. 506. Gmel. *fib.* 2. 210. Blackw. t. 142. Ludw. *est.* t. 193. Knorr *hort.* 1. t. T. 7. Plenck, *ic.* t. 51. Hall. *helv.* n. 201. (Succisa.)  
*S. folio integro glabro, flore cæruleo*. Tournef. *inst.* 466.  
*S. radice succisa, flore globofo*. Raii *syn.* 191.  
*Succisa*. Fuchs. *hist.* 715.—glabra. Bauh. *pin.* 269. Mor. *hist.* f. 6. t. 13. f. 7.  
*Succ. f. Morfus diaboli*. Camer. *epit.* 397. Matth. 623. Dod. *pempt.* 124. 1. Bauh. *hist.* 3. 11. Raii *hist.* 380.  
*Morfus diaboli*. Ger. 587. *emac.* 726.—vulgaris *flore purpureo*. Park. *theat.* 491. t. 492. f. 1.  
*S. Succisa hirsuta*. Bauh. *pin.* 269.  
*Corollets four-cleft equal, stem-leaves toothed, flowers subglobular.*
- [10. *Scabiosa integrifolia*. Red-flowered annual Scabious.  
*Lin. spec.* 142. *syst.* 144. Reich. 1. 278. Willd. 1. 548. Hoffm. *germ.* 45. Roth. *germ.* 1. 58. 2. 164. Hall. *helv.* n. 205. Ger. *prov.* 220. Sauv. *monsp.* 156. Magn. *monsp.* 231. Allion. *pedem.* n. 507.  
*Corollets four-cleft radiant, leaves undivided, root-leaves ovate serrate, branch-leaves lanceolate, stem herbaceous.*
11. *Scabiosa amplexicaulis*. Blue-flowered annual Scabious.  
*Lin. syst.* 144. Reich. 1. 278. Willd. 1. 549. *mant.* 195.  
*S. capitulo globofo minor var. 3*. Bauh. *pin.* 270?  
*Corollets four-cleft radiant, leaves embracing lanceolate quite entire, root-leaves trifid crenate.*

12. *Scabiosa humilis*. Humble Scabious.  
*Lin. spec. ed. Willd.* 649. Thunb. *prodr.* 28.  
*Corollets four-cleft unequal, scales of the calyx obtuse, leaves linear tooth-pinnatifid.*
13. *Scabiosa decurrens*. Decurrent-leaved Scabious.  
*Lin. spec. ed. Willd.* 1. 649. Thunb. *prodr.* 28.  
*Corollets four-cleft unequal, scales of the calyx ovate, leaves pinnatifid with the pinnae decurrent.*
14. *Scabiosa tatarica*. Giant Scabious.  
*Lin. spec.* 143. *syst.* 144. Reich. 1. 279. Willd. 1. 550. Gmel. *it.* 1. 159. *Act. upf.* 1744. p. 11. t. 1.  
*S. altissima*. Mill. *dict.* n. 6.—segetum Triumfetti. Raii *suppl.* 236?  
*Corollets four-cleft radiant, stem hispid, leaves lanceolate pinnatifid, lobes subimbricate.*
15. *Scabiosa arvensis*. Field Scabious.  
*Lin. spec.* 143. *syst.* 144. Reich. 1. 279. Willd. 1. 550. *hort. cliff.* 31. fl. *suec.* n. 118. *mat. med.* 49. Hudf. *angl.* 62. Wither. *arr. ed.* 3. 183. Smith, *brit.* 170. Curt. *lond.* 4. t. 13. Relb. *cant.* n. 113. Sibth. *oxon.* n. 172. Dickf. *hort. sic.* 12. 6. Fl. *dan.* t. 447. Hall. *helv.* n. 126. Hoffm. *germ.* 46. Roth. *germ.* 1. 59. 2. 164. Pollich *pal.* n. 142. Leers *herborn.* n. 105. Krock. *filef.* n. 205. Scop. *carn.* n. 135. Villars *dauph.* 2. 292. Allion. *pedem.* n. 508. Desfont. *atlant.* 119. Gmel. *fib.* 2. 210. n. 3. Gouan *illustr.* 5. Ludw. *est.* t. 21. Kniph. *orig.* 3. n. 82. Plenck, *ic.* t. 52. Blackw. t. 185.  
*Scabiosa*. Trag. 242. Fuchs. *hist.* 716.  
*S. pratensis hirsuta quæ officinarum*. Bauh. *pin.* 269. Mor. *hist.* f. 6. t. 13. f. 1. Tournef. *inst.* 464.  
*S. arvensis, f. fegetalis*. Tabern. *ic.* 159. *hist.* 422.  
*S. vulgaris major*. Dod. *pempt.* 122. 1. Ger. 583. 4. *emac.* 720. 4.  
*S. vulg. pratensis*. Park. *theat.* 485. 1.  
*S. major communior hirsuta folio laciniato*. Bauh. *hist.* 3. 2. 1. Raii *hist.* 374. *syn.* 191. 1.  
[*S. Sc. calyce dilatato flore longiore*. Willd. *spec.*  
*S. Sc. dubia*. Moench. *hass.* n. 116. t. 3.  
*Corollets four-cleft radiant, leaves pinnatifid gashed, stem hispid.*
16. *Scabiosa parviflora*. Small-flowered Scabious.  
*Desfont. atlant.* 119.  
*S. sicula Cardiacæ folio*. Tournef. *inst.* 465.  
*S. alpina Hieracii folio*. Bocc. *mus.* t. 120.  
*Asteroccephalus annuus, foliis imis Senecionis retusis*. Vaill. *acad.* 1722. p. 181.  
*Corollets four-cleft almost equal, in ovate heads, interior proper calyx very short, lower leaves obovate crenate, stem dichotomous.*
17. *Scabiosa uralensis*. Uralian Scabious.  
*Lin. syst.* 144. Willd. 1. 550. Murr. *comm. gott.* 1782. p. 13. t. 4.  
*Corollets four-cleft radiant, root-leaves simple, stem-leaves decussately pinnate, chaffs dry reflexed at the tip.*
18. *Scabiosa sylvatica*. Broad-leaved Scabious.  
*Lin. spec.* 142. *syst.* 144. Reich. 1. 280. Willd. 1. 551. *mant.* 329. Hall. *helv.* n. 204. Hoffm. *germ.* 46. Roth. *germ.* 1. 39. 2. 165. Pollich *pal.* n. 141. Krock. *filef.* n. 204. Scop. *carn.* n. 136. Jacqu. *aust.* 4. 32. t. 362. *obs.* 1. 28. & 3. 20. t. 72. Villars *dauph.* 2. 291. Allion. *pedem.* n. 509. Pallas *it.* 2. 316.  
*S. pannonica*. Jacqu. *vind.* 22.  
*S. maxima dumetorum, folio non laciniato*. Bauh. *hist.* 3. 10. Fabric. *helmst.* 162. 163. Raii *hist.* 379.  
*S. latifolia Pan. rubro flore f. 3*. Clus. *hist.* 2. 1. f. 1. *in p.* 2.—item, *purp. flore f. 4*. Ej. *ib.* p. 2. Raii *hist.* 378. n. 16.  
*S. montana non laciniata rubra 1*. Bauh. *pin.* 270. Mor. *hist.* f. 6. t. 13. f. 5.  
*Corollets four-cleft radiant, all the leaves undivided ovate-oblong serrate, stem hispid.*

\*\* With five-cleft Corollets.

19. *Scabiosa gramuntia*. Cut-leaved Scabious.  
*Lin. spec.* 143. *syst.* 145. Reich. 1. 280. Willd. 1. 551. Sauv. *monsp.* 268. Gouan *monsp.* 62.  
13 M Ger.



- Ger. prov. 220. Villars dauph. 2. 294. Allion. pedem. n. 511. Desfont. atlant. 120.
- S. capitulo globofo minor.* Baub. pin. 270. sec. Gouan. Mor. hist. f. 6. t. 14. f. 21.
- S. cap. glob. foliis in tenuissimas lacinijs divisjs.* Baub. pin. 271. Magn. monsp. 231. Mor hist. f. 6. t. 15. f. 25.
- Afterocephalus subincanus Sophiæ foliis.* Vaill. acad. 1722. p. 179.
- Corollets five-cleft, calyxes very short, stem-leaves bipinnate filiform.
20. *Scabiosa columbaria.* Small Scabious. Lin. spec. 143. fyst. 145. Reich. 1. 280. Willd. 1. 552. hort. cliff. 31. fl. suec. n. 118. Hudf. angl. 62. Wither. arr. ed. 3. 184. Smith, brit. 171. Relb. cant. n. 114. Sibth. oxon. n. 173. Fl. dan. t. 314. Hoffm. germ. 46. Roth. germ. 1. 59. 2. 166. Pollich pal. n. 143. Krock. siles. n. 206. Scop. carn. n. 140. Sauv. monsp. 242. Villars dauph. 2. 293. Allion. pedem. n. 510. Gmel. sib. 2. 211. Desfont. atlant. 120. Kniph. orig. 12. n. 85. Knorr. del. 2. t. S. 13.
- Succisa*, n. 202. Hall. helv.
- Scabiosa minor.* Camer. epit. 711. Matth. 970. Tabern. 161. 162.—vulgaris. Baub. hist. 3. 4. Raii hist. 374. syn. 191.
- S. capitulo globofo major & minor.* Baub. pin. 270. Mor. hist. f. 6. t. 14. f. 20. Tournef. inst. 465.
- S. minor f. Columbaria.* Lob. ic. 535. Ger. 582. 2. emac. 719. 2.
- S. minor campestris.* Park. theat. 484. 1.
- S. media.* Dod. pempt. 122. 3.
- S. montana f. 5.* Clus. hist. 2. f. 2.
- S. glabra foliis carnosjs virentibus.* Herm. par. t. 221.
- Phyteuma.* Col. phyt. t. 22.
- Afterocephalus vulgaris*, flore cæruleo. Vaill. acad. 1722. p. 179.
- Corollets five-cleft radiant, root-leaves ovate or lyrate crenate, stem-leaves pinnatifid, segments linear.
21. *Scabiosa pyrenaica.* Pyrenean Scabious. Lin. spec. ed. Willd. 1. 552. Allion. pedem. n. 512. t. 25. f. 2. t. 26. f. 1. Hall. helv. n. 207.
- S. grandiflora.* Scop. insubr. 3. 29. t. 14. Desfont. atlant. 123.
- S. pyren. cinerea villosa*, magno flore. Tournef. inst. 465.
- S. multifida alpina repens.* Bocc. mus. 22. t. 6.
- Corollets four-cleft radiant, leaves tomentose entire toothed and pinnatifid, stem one-flowered.
22. *Scabiosa sicula.* Sicilian Scabious. Lin. fyst. 145. Reich. 1. 281. Willd. 1. 553. mant. 196.
- S. divaricata.* Jacqu. hort. 1. p. 5. t. 15.
- Corollets five-cleft equal shorter than the calyx, leaves lyrate-pinnatifid.
23. *Scabiosa rutæfolia.* Rue-leaved Scabious. Lin. spec. ed. Willd. 1. 553. Vahl symb. 2. 26.
- S. urceolata.* Desfont. atlant. 122?
- S. marina rutæ caninæ folio.* Bocc. sic. 95. t. 52.
- Corollets five-cleft, leaves pinnate the upper ones linear, calyxes one-leaved five-cleft.
24. *Scabiosa maritima.* Sea Scabious. Lin. spec. 144. fyst. 145. Reich. 1. 282. Willd. 1. 554. mant. 329. amoen. 4. 304. Murr. prodr. 139. Villars dauph. 2. 295. Thunb. jap. 38.
- S. maritima parva.* Baub. hist. 3. 7. Raii hist. 378.
- Corollets five-cleft radiant shorter than the calyx, leaves pinnate, the upper ones linear quite entire.]
25. *Scabiosa stellata.* Starry Scabious. Lin. spec. 144. fyst. 145. Reich. 1. 282. Willd. 1. 554. mant. 329. hort. cliff. 31. upf. 26. Gärtn. fruct. 2. 39. Allion. pedem. n. 513. D'Allo arag. n. 111. Desfont. atlant. 124.
- S. stellata folio laciniato major.* Baub. pin. 271. Tournef. inst. 465. Mor. f. 6. t. 15. f. 39.
- S. major hispanica.* Clus. hist. 2. 1. Tabern. ic. 159. Lob. ic. 539. Ger. 585. 9. emac. 722. 9. Park. theat. 489. 1. t. 490. Raii hist. 377.
- S. peregrina.* Dod. pempt. 122.
- β. *S. stellata folio laciniato minor.* Baub. pin. 271.
- γ. *S. stell. minima.* Baub. pin. 271. prodr. 126. Mor. hist. f. 6. t. 14. f. 42.
- Corollets five-cleft radiant, leaves cut, receptacles of the flowers roundish.
26. *Scabiosa prolifera.* Prolific Scabious. Lin. spec. 144. fyst. 145. Reich. 1. 282. Willd. 1. 554. mant. 329. Desfont. atlant. 121.
- S. stellata humilis integrifolia prolifera.* Herm. parad. t. 125. Raii suppl. 236.
- S. stell. prolifera annua.* Aët. gall. 1666—98. t. 4. Dodart. ic.
- Corollets five-cleft radiant, flowers subsessile, stem proli-ferous, leaves undivided.]
27. *Scabiosa atropurpurea.* Sweet Scabious. Lin. spec. 144. fyst. 145. Reich. 1. 283. Willd. 1. 555. hort. cliff. 31. upf. 26. Gärtn. fruct. 2. 38. Curt. magaz. t. 247.
- S. peregrina rubra*, capite oblongo. Baub. pin. 270. Mor. hist. f. 6. t. 14. f. 26.
- S. 6. indica.* Clus. hist. 2. 3. f. 1. Best. cyst. 2. 9. t. 10. f. 1, 2.
- S. rubra indica.* Park. parad. 324. n. 3. t. 325. f. 3. Ger. emac. 724. 16. Raii hist. 375. 5.
- Corollets five-cleft radiant, leaves cut, receptacles of the flowers subulate.
28. *Scabiosa argentea.* Silvery Scabious. Lin. spec. 145. fyst. 145. Reich. 1. 283. Willd. 1. 555. Desfont. atlant. 121.
- S. orientalis argentea*, foliis inferioribus incisjs. Tournef. cor. 34.
- Afterocephalus perennis argenteus laciniatus*, caule tenui eburneo. Vaill. aët. gall. 1722. p. 181.
- β. *S. orient. hirsuta tenuissime laciniata*, flore parvo purpureo & albicante. Tournef. cor. 34. Desfont. 122. var. A.
- Corollets five-cleft radiant, leaves pinnatifid, segments linear, peduncles very long, stem round.
29. *Scabiosa daucoides.* Carrot-like Scabious. Desfont. atlant. 123.
- Corollets five-cleft radiant, leaves bipinnate, common calyx villose pinnatifid.
30. *Scabiosa indurata.* Lin. fyst. 146. Reich. 1. 283. Gmel. 230. Willd. 1. 555. mant. 196.
- S. altissima.* Jacqu. hort. 2. t. 185.
- S. africana β.* Gmel. fyst. 230.
- Corollets five-cleft radiant, leaves ovate-lanceolate gnate toothed at the base, stem rigid.]
31. *Scabiosa africana.* African Scabious. Lin. spec. 145. fyst. 146. Reich. 1. 284. Willd. 1. 556. hort. cliff. 31. Berg. cap. 32. Kniph. cent. 7. n. 82.
- S. africana frutescens.* Herm. parad. t. 219.
- β. *S. afr. frut. maxima*, fol. rugosis & crenatis, minor. Herm. parad. 220. Raii suppl. 237. n. 38.
- γ. *S. incisa.* Mill. dict. n. 18.
- S. afr. frut. max. foliis tenuissime incisjs.* Boerb. lugdb. 1. 128.
- δ. *S. minor æthiopica frutescens*, fol. lanuginosis. Breyn. ic. 33. t. 26.
- Corollets five-cleft equal, leaves simple gashed, stem shrubby.
32. *Scabiosa monspeliensis.* Montpellier Scabious. Lin. fyst. 146. Willd. 1. 556. Jacqu. misc. 2. 320. ic. rar. 1. t. 24.
- Corollets five-cleft equal shorter than the calyx, all the leaves pinnate ciliate.
33. *Scabiosa pumila.* Dwarf Scabious. Lin. fyst. 146. Reich. 1. 284. Willd. 1. 556. mant. 196. Burm. prodr. 4.
- S. acaulis.* Thunb. prodr. 29?
- Corollets five-cleft radiant, almost stemless, leaves very hairy, root-leaves lyrate, stem-leaves pinnate gashed.]
34. *Scabiosa cretica.* Cretan Scabious. Lin. spec. 145. fyst. 146. Reich. 1. 284. Willd. 1. 557. hort. cliff. 31.
- S. stellata folio non dissecto.* Baub. pin. 271. Mor. hist. f. 6. t. 15. f. 31.
- S. fruticosa folio non dissecto peregrina.* Baub. hist. Raii hist. 378.
- S. peregrina.* Ger. 585. 10. emac. 722. 10.
- S. arborea cretica.* Park. theat. 486. n. 7.
- β. *S. cretica frutescens*, auriculæ ursi folio. Tournef. cor. 34.



- Asterocephalus frutescens*, leucoli folio longiore angusto. *Vaill. aët. par.* 1722. p. 247.  
*Corollets five-cleft radiant, leaves lanceolate almost quite entire, stem shrubby.*
- [35. *Scabiosa limonifolia*.  
*Lin. spec. ed. Willd.* 1. 557. *Vahl symb.* 2. 27.  
*S. cophanensis fruticans laureolæ folio crasso rotundo lucido molli subtus incano. Hort. cathol.* 196. *Raii suppl.* 238. n. 53.  
*S. sicula frut. laureolæ folio subtus incano. Tournef. inst.* 465.  
*Corollets five-cleft equal, leaves wedge-shaped quite entire, wrinkled and hoary underneath.*]
36. *Scabiosa graminifolia*. *Grass-leaved Scabious*.  
*Lin. spec.* 145. *fyst.* 146. *Reich.* 1. 285. *Willd.* 1. 558. *mant.* 329. *amoen.* 4. 267. *Scop. carn.* n. 139. *Allion. pedem.* n. 515. *Villars dauph.* 2. 296. *Krock. filef.* n. 207. *Desfont. atlant.* 124. *Hall. belv.* n. 203. (Succisa.)  
*S. argentea angustifolia. Bauh. pin.* 270. *prodr.* 127. *ic. Park. theat.* 487. n. 5. *Raii hist.* 380. n. 22.  
*S. graminea argentea. Bauh. hist.* 3. 12.  
*S. stellata argentea angustifolia. Mor. hist. f.* 6. t. 15. f. 36.  
*Asterocephalus argenteus graminifolius; flore cæruleo. Vaill. acad. par.* 1722. p. 183.  
*Corollets five-cleft radiant, leaves linear-lanceolate quite entire, stem herbaceous.*
- [37. *Scabiosa lyrata*. *Lyrate-leaved Scabious*.  
*Lin. spec. ed. Willd.* 1. 558. *Vahl symb.* 2. 27. *Foršk. descr.* 203.  
*Corollets five-cleft radiant, segments entire, lower leaves oblong serrate, upper pinnatifid at the base.*
38. *Scabiosa palæstina*. *Palestine Scabious*.  
*Lin. fyst.* 146. *Reich.* 1. 285. *Willd.* 1. 558. *mant.* 37. *Jacqu. hort.* 1. 42. t. 96.  
*Corollets five-cleft radiant, all the segments trifid, leaves undivided subserrate, upper pinnatifid at the base.*
39. *Scabiosa iletensis*.  
*Lin. fyst.* 146. *Reich.* 1. 285. *Willd.* 1. 559. *mant.* 37. *Gmel. fib.* 2. 214. t. 88. f. 1.  
*Corollets five-cleft radiant longer than the calyx, leaves bipinnate linear.*
40. *Scabiosa ucranica*. *Ukraine Scabious*.  
*Lin. spec.* 144. *Reich.* 1. 286. *Willd.* 1. 559. *Gmel. fib.* 2. 213. t. 87. it. 1. 138. *Allion. pedem.* n. 514.  
*Corollets five-cleft radiant, root-leaves pinnatifid, stem-leaves linear-lanceolate at the base.*]
41. *Scabiosa ochroleuca*. *Pale Scabious*.  
*Lin. spec.* 146. *fyst.* 146. *Reich.* 1. 286. *Willd.* 1. 559. *Jacqu. obs.* 3. 20. t. 73, 74. *austr.* 5. 19. t. 439. *Gmel. it.* 1. 138. *Hoffm. germ.* 46. *Krock. filef.* n. 208. *Sauv. monsp.* 241. *Villars dauph.* 2. 296.  
*S. tenuifolia. Roth. germ.* 1. 59. 2. 167.  
*S. multifido folio, flore flavescente. Bauh. pin.* 270. *Mor. hist. f.* 6. t. 13. f. 23. *Tournef. inst.* 464.  
*S. angustifolia alba altera. Bauh. pin.* 270. *Barr. ic.* 770. f. 2.  
*S. ochroleuco flore f.* 7. *Clus. hist.* 2. 3. f. 2.  
*S. flore pallido. Ger. emac.* 723. f. 14.  
*S. multifido folio, albo flore vel potius ochroleuco. Bauh. hist.* 3. 8. *Raii hist.* 376.  
*Corollets five-cleft radiant, leaves bipinnate linear.*
- [42. *Scabiosa papposa*. *Downy-headed Scabious*.  
*Lin. spec.* 146. *fyst.* 146. *Reich.* 1. 286. *Willd.* 1. 560. *Willich illustr.* n. 62. *Gärtner. fruct.* 2. 38.  
*S. cretica, capitulo pappos mentiente. Tournef. cor.* 34. *Boerh. lugdb.* 1. 130.  
*Corollets five-cleft unequal, stem herbaceous erect, leaves pinnatifid, seeds awned and feather-downed.*
43. *Scabiosa pterocephala*. *Wing-headed Scabious*.  
*Lin. spec.* 146. *Reich.* 1. 287. *Willd.* 1. 560.  
*Pterocephalus perennis humilis laciniatus & incanus. Vaill. aët. par.* 1722. p. 184.  
*Corollets five-cleft, stem procumbent shrubby, leaves lacinate bifurcate, down feathered.*]
- DESCRIPTIONS, &c.
1. Root perennial, composed of many strong fibres which run deep in the ground. Stems several, strong, channelled, upwards of four feet high. Leaflets four

or five pairs, unequal in size and irregularly placed, ending in acute points. Flowers on naked peduncles at the ends of the branches, of a whitish yellow colour, and appearing at the end of June.

[Calyx shorter than the flower. Fruit half-ovate. Receptacle globular, with lanceolate channelled permanent chaffs. Seeds quadrangular, crowned with eight teeth, four larger and four smaller alternately. Pappus having twenty patulous rays<sup>m</sup>.

Involucre oblong, four-cornered, membranaceous-chaffy, striated, subvillose, ending in eight setaceous ruggedish unequal teeth. Seed ovate, striated, pale, narrowed into a short stipe. Pappus silky-ash-coloured, very short, one-leaved at the base, divided at top into several villose or plumose rays. Albumen fleshy. Embryo greenish yellow<sup>n</sup>.

Villars says it is the largest of all their species, growing to the height of five or six feet, and that it is frequently mistaken for the Great Centaury, from the similitude of its leaves to those of that plant.

According to Haller it is three or four feet high, with a hollow branched stem resembling that of *Sambucus Ebulus*; the root-leaves are elliptic, the rest pinnate with six or seven pairs of leaflets, the outmost of which is very large. He makes it a *Dipsacus* from the form of the seed-crown.

Native of the Alps of Switzerland, Dauphiné and Italy. Ray found it abundantly on Thuir, one of the highest parts of the Jura chain. Haller says it is common about Aigle.

Ray calls it *Great Mountain Scabious*. Gerarde, who names it simply *Mountain Scabious*, says that the root grew in his garden to the bigness of a man's body. It was cultivated here in 1570, by Mr. Hugh Morgan, as appears from Lobel<sup>o</sup>.

2. Native of the Cape of Good Hope, where it was found by Thunberg.

3. Stem suffruticose, rugged. Leaves ovate, serrate, with two teeth at the base. Peduncles terminating, very long<sup>p</sup>.

In the *amoenitates* it is said to resemble *leucantha* very much; the stem to be shrubby and naked; the leaves naked, the lower ones obovate ending in the petiole, the rest lanceolate, sessile; two linear stipules from the axils; scales from the calyx roundish; corollets tomentose on the outside, with the outmost segment a little larger than the others.

Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1731<sup>q</sup>. Omitted, with several other species, in the later editions of the Dictionary. It has been long known in the Dutch gardens.

4. This is a smooth plant, with grooved filiform branches, the younger ones subpubescent. Leaves quite entire, long, narrow, bluntish, sometimes pinnatifid at the base, the segments solitary, linear, shorter by half than the leaf. Peduncle filiform, terminating the branches, one-flowered. Calyx-scales very blunt, subpubescent. Common corolla few-flowered. Corollets white, pubescent on the outside<sup>r</sup>.

Native of the Cape of Good Hope, where it was found by Thunberg and Mañon. Introduced by the latter in 1774. It flowers from July to September<sup>s</sup>.

5. This is an herbaceous plant, of the stature and with the stem and flowers of *Sc. rigida*. Stems round, simple, rugged. Leaves sessile; leaflets linear, acute, with leafy rudiments of branches from the axils. Flowers terminating, on long peduncles solitary. Florets between the scales of the calyx, white<sup>t</sup>. They are said in the description to be unequal, but in the specific character to be equal.—Native of the Cape of Good Hope.]

6. This is an annual plant, with stems rising four or five feet high, and dividing into several branches. Leaves hairy, cut almost to the midrib. Flowers small, of a pale purplish colour.

[Calyx and chaffs mucronate-awned, as in *Sc. syriaca*<sup>u</sup>.

Native of Transylvania; and cultivated in the Ox-

<sup>m</sup> Linn. spec.

<sup>p</sup> Linn. mant.

<sup>q</sup> Hort. kew.

<sup>n</sup> Gärtn.

<sup>r</sup> Hort. kew.

<sup>s</sup> Linn. suppl.

<sup>t</sup> Hort. kew.

<sup>u</sup> Willdenow.

<sup>v</sup> Linn. spec.



ford botanic garden by Jacob Bobart in 1699<sup>x</sup>: from seeds which were sent by the celebrated Hermann<sup>y</sup>.

7. Root annual. Stem hairy. Leaves serrate. Flowers subsessile in the forks of the stem. Calyx scarcely any, but the chaffs collected into an ovate cone, imbricate, awned, and ovate themselves. Pappus hemispherical, with twenty toothlets<sup>z</sup>.

Native of Syria. Cultivated in 1699, by Jacob Bobart<sup>a</sup>, from seeds sent to him from Aleppo. This, and the preceding are very lofty for annual plants, attaining the height of a man, and that even more<sup>b</sup>.]

8. Root perennial. Lower leaves almost entire, serrate. Stem stiff, two feet high, bifid at top, spreading; in the division arises a naked peduncle, which, as also the divisions, are each terminated by a single flower, composed of many white florets.

[Leaves linear, pinnate: leaflets decurrent; the lowest rugged. Flowers subglobular, white. Calyx hemispherical, imbricate. The lower segments of the corollets bent down and a little longer than the rest<sup>c</sup>.

Involucre four-cornered, oblong, membranous-coriaceous, striated, terminated by four acuminate larger toothlets, and as many shorter blunt ones. Seed shorter than its involucre, ovate-oblong, rhomb-compressed, attenuated into a very short pappigerous stipe. Pappus very short, with about ten converging rays, feathered or villose. Albumen thin. Embryo inverted<sup>d</sup>.

Native of the South of France and Piedmont.—Cultivated in 1739, by Mr. Miller<sup>e</sup>; who has it under the name of *rigida*.

9. Root perennial, oblong, blackish, near the thickness of the little finger, often growing obliquely, stumped at the lower end so as to appear as if bitten off, whence its trivial name, and furnished with long whitish fibres. Stem from a foot to eighteen inches in height, upright, branched at top, round, rough with hair, and often of a reddish colour: the branches are lengthened out, and each bears one flower. Root-leaves ovate, quite entire, blunter than the others; stem-leaves lanceolate, the lower ones remotely toothed, but the upper ones entire; all dark-green, rather coriaceous, harsh and hairy. Flowers in nearly globular heads. Calyx hairy. Corolla violet or dark purplish blue, varying to flesh-coloured and milk-white, nearly regular, but the uppermost segment somewhat longer than the other three. Outer perianth four-cornered, with four shallow clefts fringed with white hairs: the inner, which Withering calls the nectary, inclosing the germ, crowned with a concave glandular receptacle, armed with four or five strong reddish-black bristles. Besides this apparatus, each floret is furnished with a green spear-shaped floral leaf, terminated by a white taper bristle. Filaments almost twice the length of the corolla: anthers violet, with white pollen. Germ very small, whitish; style, whilst the anthers are shedding their pollen, the same length with the lower lip of the corolla; stigma round, flat, with a depression in the middle. Seed oblong, angular, grooved, beset with rough hairs and crowned with five bristles<sup>f</sup>.

Native of Europe, in pastures; flowering from august to the end of october. It varies much; according to Haller, the flowers are sometimes profliferous, and the leaves are sometimes gashed: the flowers not only vary in colour but are also double: with us the plant is commonly hirsute, but it is more often described as smooth by foreign authors.

Mr. Curtis remarks, that in the garden it grows more branched.

In days of superstition it was fabled, that the Devil, envying the good this herb might do to mankind, bit away a part of the root. This appearance of a stumped root is not peculiar to *Succisa*, but is found in *Plantain* and many other herbs, when full grown.

According to Bergius, the root is astringent, and the infusion of it bitterish, but not unpleasant<sup>g</sup>. A strong decoction of it, continued a good while together, is an empirical secret for gonorrhoeas. Linneus

says, that the dried leaves are used to dye wool yellow or green<sup>h</sup>.

10. Root annual. Stem not hispid. Branches patulous. Root-leaves like those of the Daisy, ovate, bluntish, rugged, more acutely serrate; stem-leaves few; branch-leaves lanceolate, embracing, ciliate at the base, seldom toothed or pinnatifid, very long. Calyx ten-leaved, shorter than the flower. Corolla purple: corollets two-lipped, the inner lip undivided, the outer three-parted, linear. Pappus with a toothletted crown<sup>i</sup>.

Haller compares it with the *sylvatica*, and doubts whether this be different from that.

Allioni at first had considered it as a new species: he remarks, that the leaves are sometimes quite entire, but more frequently somewhat toothed; that the calyx is ciliate, with the ten leaflets alternately larger and smaller; that the florets are often eight, four-cleft and two-lipped; and the seeds silky crowned with toothlets.

Native of Germany, Switzerland, the South of France and the county of Nice. Cultivated in 1748, by Mr. Miller. It flowers from June to August<sup>k</sup>.

11. Stem a foot high, rugged, brachiate. Root-leaves oblong, somewhat rugged: stem-leaves widish at the base. Panicle dichotomous. Peduncles very long. Corolla blue. Calyx the length of the corolla.—It differs from the preceding in the root-leaves not being undivided, the stem-leaves being wider at the base, and in the calyx not being shorter by half than the corolla. It is not known from what country it comes<sup>l</sup>.

12. Native of the Cape of Good Hope, where it was found by Thunberg.

13. This also is a native of the Cape, and was found there by Thunberg.]

14. This rises with a strong branching stalk four or five feet high, closely armed with stiff prickly hairs; lower hairs spear-shaped, about seven inches long, and near four broad in the middle, deeply cut on the sides; stem-leaves more entire, some of them sharply serrate; those at the top linear and entire. Flowers from the sides and at the top of the stalks, white and each sitting in a bristly calyx. Root biennial.

[Chaffs linear, longer than the seeds, deciduous. The plant is twelve feet high; and, according to Gmelin, the flowers are yellow<sup>m</sup>.

Native of Tartary; and perhaps of Italy. According to the Kew catalogue, it was introduced in 1779, by Chevalier Thunberg; but if it be the *altissima* of Miller, he cultivated it before 1759.

15. Root perennial, long, spindle-shaped, mostly branched, running deep into the ground. Stem from one or two feet to near a yard in height, branched, rough with bristles which rather point downward, towards the bottom spotted with dark purple. Leaves for the most part hairy; radical ones numerous, lanceolate, more or less serrate; stem-leaves pinnatifid, often gashed; the upper ones are entire: the stem-leaves are embracing. Branches spreading, each terminated by a single flower, composed of very numerous pale-purple florets, of which the outmost are larger, labiate, and give the whole a radiate figure; they are a little villose within. The outer perianth is four-cornered and hairy, with four small teeth; the inner incloses the germ, and is crowned with a concave receptacle, set with shining glands on the inside, and armed with eight or twelve spear-shaped serrate greenish bristly substances, hairy at the base. Filaments of the same length with the corolla, with flesh-coloured or pale purple anthers, which in the outer florets are abortive. Germ four-cornered, covered with numerous stiffish hairs, and crowned with a bell-shaped pappus formed of numerous ash-coloured bristles. Style longer than the corolla. Receptacle bearded with hairs shorter than the germs. Seed quadrangular, crowned by the perianth, which forms a bristly villose pappus<sup>n</sup>.—Linneus, in his *Species plantarum*,

<sup>x</sup> Hort. kew.

<sup>a</sup> Hort. kew.

<sup>d</sup> Gartner.

<sup>f</sup> Smith, brit. engl. bot. Curtis, Withering.

<sup>y</sup> Hist. oxon.

<sup>b</sup> Hist. oxon.

<sup>e</sup> Hort. kew.

<sup>z</sup> Linn. syst.

<sup>c</sup> Linn. syst.

<sup>g</sup> Curtis.

<sup>h</sup> Withering.

<sup>i</sup> Linn. mant.

<sup>k</sup> Linn. spec.

<sup>m</sup> Linn. spec.

<sup>l</sup> Hort. kew.

<sup>n</sup> Smith, brit. & engl. bot. Curtis, Withering.



remarks, that the fruit is very like that of *S. tatarica*, but without chaffs.

Native of Europe, both in pastures and corn fields, but more commonly in the latter: flowering in July and August. The flowers and whole plant are much larger than *S. Succisa*; the leaves are more jagged; it flowers earlier, and affects a drier situation<sup>a</sup>.

The flowers, held over the smoke of tobacco, in a few minutes become of a most beautiful green<sup>b</sup>. The plant is slightly astringent, bitter and saponaceous. This species, as well as the *Succisa* has been recommended internally in coughs, asthmas, malignant fevers, lues venerea, epilepsy, &c. and externally in the scurvy, itch, tetters, &c.: but woe be to him who trusts on such broken reeds.

In corn-fields it is undoubtedly a troublesome weed, but in grass, being a hardy plant, and producing a large quantity of foliage, which is not refused by kine, horses or sheep, it may perhaps be considered rather as useful<sup>c</sup>.

It varies much in the divisions of the leaves, and sometimes they are all entire. The whole plant is sometimes smooth. It occurs with white flowers:— with the calyx widened and longer than the flower:— and with the corollas five-cleft and equal, with a four-leaved involucre<sup>d</sup>.

In Yorkshire, the common Field Scabious is known by the name of *Great Blue-caps*.

16. Stem villose, upright. Leaves subvillose: the lower obovate, crenate or crenate-gashed, with wide, unequal, blunt notches; the upper pinnatifid at the base, with the outer lobe larger. Heads of flowers small, close, oblong when the fruit is ripe, one in each forking; the lower sessile, the upper peduncled. Calyx many-parted; composed of linear leaflets, shorter than the head, bent down after the flowering is over. Corolllets small, subvillose. Outer perianth membranaceous small; inner very small, radiate. Seed grooved, subvillose. Receptacle slender, elongated, bristly.— Native of Algiers<sup>e</sup>: also of Sicily.

17. This is an annual plant, native of Siberia.

18. Root perennial. Stem herbaceous, green, round, hollow, hispid with stiffish hairs springing from black (or deep purple) dots, subdichotomous, erect, from one foot to two feet high. Leaves veined, acute, hirsute on both sides; the lower ovate, tooth-ferrate, never lacinate or gashed, three, four or five inches long; the upper linear-lanceolate and quite entire: those by the ground and the next above them often attenuated into a very long winged petiole; the rest sessile. Peduncles very long supporting purple flowers, longer than the leaflets of the common calyx, which are lanceolate and ciliate below. The difference between the outer and inner corolllets is not very great; the former however have the segments so much longer as to give the flower a title to be called radiant. Between the florets are villose and very short bristles instead of scales, as in *Sc. arvensis*. Fruit convex, scarcely to be distinguished from that. Seeds pale brown, somewhat hairy, crowned with the outer perianth, which is only a very short irregular rim, and also with the inner, which is bell-shaped, commonly ten-toothed, with the teeth ending in an awl-shaped bristle, but caducous<sup>f</sup>.

Villars remarks, that this plant varies much; that the leaves are either entire at bottom, but towards the middle of the stem cut with large teeth, or else toothed at bottom and lacinate or pinnatifid at the base in the upper part of the plant; that the stems are two feet high, and in some places even three or four; that the corolllets are more or less irregular, the outer ones having the lower segments long enough to place this plant among the radiant Scabiouses, though improperly, and that the colour of them is more or less red.

Native of Germany, Switzerland, Austria, Carniola, and Piedmont, in woods, among bushes, and sometimes in fields; flowering the greater part of the summer.—It was cultivated in 1748, by Mr. Miller<sup>g</sup>.

<sup>a</sup> Curtis.

<sup>b</sup> Engl. bot.

<sup>c</sup> Curtis.

<sup>d</sup> Haller and Willdenow.

<sup>e</sup> Desfontaines.

<sup>f</sup> Jacq. obi.

<sup>g</sup> Hort. kew.

19. Root-leaves villose, ash-coloured, deeply pinnatifid; with the pinnae blunt; distinct, the lower ones linear and entire, the upper gradually wider; blunt, gash-toothed. Stem-leaves bipinnate, with the leaflets linear, narrow, unequal, scarcely pubescent. Common calyx shorter than the corollas, many-parted; the leaflets linear, acute. Seeds gathered into a small round head, deeply grooved. Outer perianth short, membranaceous; inner five-bristled, brown. Receptacle chaffy. Allied to *S. Columbaria*, and perhaps only a variety of it. The stem is shorter, the lower leaves villose and ash-coloured, and the head of flowers only half the size<sup>h</sup>.

According to Villars, the stems are a foot and half in height; the lower leaves villose and pinnate: the stem-leaves less villose, narrower, and bipinnate; the peduncles very long; calyx-leaves linear, unequal, the length of the flowers; these are hemispherical, deep blue; seeds villose, marked with eight streaks, crowned with a little open rayed membrane, of the same length with the five starry rays which almost adhere to the centre. It flowers very late, even in November, and is perennial.

Native of the South of France, the county of Nice, and Barbary. Cultivated in 1739, by Mr. Miller<sup>i</sup>.

20. This is easily distinguished from the other British species by its five-cleft corollas, much more radiant than they, that is, having the outer segments of the outer corolllets much larger than the inner. It has the habit of *arvensis*, but is lower and much more slender in all its parts. The stem-leaves are sometimes bipinnatifid. The flowers are of a blueish lilac colour. The pappus or crown consists of five brown bristles as long as the corolllet. Root perennial, tapering to a point<sup>j</sup>.

Native of Europe, Barbary and Siberia, on hilly pastures in a gravelly or calcareous soil; flowering from June to September.

Weigel unites this to *Sc. ochroleuca*, under the name of *Scabiosa polymorpha*<sup>k</sup>.

21. All the leaves are tomentose, the bottom ones ovate, crenate, like those of the Daisy; the next semipinnate with the pinnae short and bluntly lanceolate, semipinnate also, or toothed; with the extreme pinna larger. Stem, except one pair of pinnate leaves, naked, half a foot or a long span in height. Flower single, radiate, purple, with the scales of the calyx ovate-lanceolate, not longer than the flower<sup>l</sup>.

Allioni does not altogether insist that this is a different species from the *columbaria*. He has given a figure of it, as it commonly appears; and also of a variety, with the leaves more deeply pinnatifid, having the extreme pinna roundish of a silky substance, the stem naked and one-flowered.

Scopoli describes it under the name of *grandiflora*. Desfontaines has adopted his name, and remarks, that it is allied to *columbaria*, but differs in having the stem-leaves simply pinnate or pinnatifid, with the terminating lobe lanceolate: the corollas are a third part larger.

Native of the Pyrenees, Switzerland, Savoy, Lombardy, Barbary. Allioni marks both this and *columbaria* as biennial.

22. Root annual. Stem herbaceous, a foot high, dichotomous, divaricating; red, weak. Leaves petioled, almost naked, a little hairy: the lower ones lyrate; the upper subpinnate, linear. Peduncles from the forkings, long, scarcely pubescent, purple. Calyx eight-leaved: leaflets lanceolate, reflexed, much longer than the corolla. Corolla equal (by no means radiate) red. Corolllets small, irregular but equal in size, much narrower than the calycle. Stamens whitish, longer than the corolllets. Pappus a bell-shaped crown, plaited, many-toothed, with eight calluses in the centre. Star stiped, consisting of five dark-purple bristles, longer than the floret. It differs principally from *Sc. maritima* in the flowers not being radiate.—Native of Sicily<sup>m</sup>. Introduced in 1782, by Abbé Pourret<sup>n</sup>.

<sup>h</sup> Desfontaines.

<sup>i</sup> Hort. kew.

<sup>j</sup> Smith, brit. and Withering.

<sup>k</sup> Willdenow.

<sup>l</sup> Haller.

<sup>m</sup> Linn. mant.

<sup>n</sup> Hort. kew.



23. Root perennial, woody, divided at top. Stems several, erect, a foot high, stiff, scarcely striated, smooth except at bottom where they are villose, simple, covered at the base with imbricate ovate acuminate ciliate embracing scales, being the permanent base of the leaves. Leaves thickish, connate at the base, subciliate, an inch long; on each side are five pinnae, narrow-linear, longer outwards, the end one four times as large as the rest: stem-leaves few, the uppermost linear, undivided, far remote. Peduncles opposite above, somewhat branched, elongated; one-flowered. Common perianth turbinate, somewhat hairy, one-leafed, five-cleft, with the segments awl-shaped: proper perianth four-toothed. Corollets nearly equal, scarcely longer than the calyx; few, villose. Chaffs lanceolate, only half the length of the corollets.

Vahl gathered it at Cape Zebibo, in the kingdom of Tunis, flowering in the middle of July. He says it is Boccone's plant as it appears in Vaillant's herbarium.

Desfontaines describes a plant under the name of *S. urceolata*, which he found on the sea shore of Barbary, which he says is certainly Boccone's; but that Vaillant's herbarium has a different species under the same name. He refers to the *divaricata* of Lamarek (illustr. n. 1311.) His description differs from the above in some respects.—Branches numerous, opposite, divaricating, slender, dichotomous. Leaves smooth, shining: root-leaves lanceolate, toothed; the lower and middle ones deeply pinnatifid, with the pinnae linear, entire or toothed; upper branch-leaves linear-subulate, quite entire. Flowers small, on long, leafless, striated peduncles. Common calyx simple, goblet-shaped, shorter than the corolla, half six or eight-cleft, the segments narrow and acute, often alternately larger and smaller. Corollets radiant, funnel-shaped, pale-yellow, irregular in the ray, regular in the disk. Proper perianth double: outer short, with four blunt teeth; inner small, five-bristled. Seed oblong, four-cornered, smooth, grooved. Chaffs convex on one side, mucronate.

24. Calyx imbricate, hemispherical, with the scales ovate obtuse.

Stem upright, branched, round, striated, villose, a foot and half high. Branches in threes, long, like the stem. Lower leaves lyrate-pinnate, entirely villose: lower pinnae about three pairs, remote, linear, blunt, unequal; the lower of these smaller, more alternate, entire, the upper gradually larger, more opposite, toothed, decurrent: terminating pinna very large, very blunt, gashed, toothed. Stem-leaves embracing, linear, pinnate with solitary linear lobes, entire: the upper ones altogether lanceolate and quite entire. Peduncles elongated. Common involucre many-leaved, longer than the head of flowers: leaflets lanceolate, entire, villose.

Villars doubts whether his *maritima* be the same with that of Linneus's *mantissa*. Linneus, in his species, supposed it to be Boccone's plant, which is now referred to the preceding species, but he corrected that error in his *mantissa*.

Native of Italy, France and Japan.—It was cultivated in 1683, by Mr. James Sutherland, flowers here in July, and is an annual. Thunberg found it flowering about Nagasaki, in September and October.]

25. This is an annual plant. Stems three feet high, hairy. Leaves oblong, deeply notched; the upper ones cut almost to the midrib into fine segments. Flowers on long peduncles. Receptacles globular. Florets large, spreading open like a star, of a pale purple colour.

[The lower leaves obovate-oblong, gash-ferrate: the upper ones lyrate. Corollets of the disk regular; those of the ray have the three outer segments larger. Head of fruit globular. Seeds hairy, engraved at top with eight cavities. Pappus with the border of the star wheel-shaped, membranaceous, rayed with forty bristles: the central starlet is five-rayed.]

According to Gartner, the involucre of the seed is turbinate, fungous, woolly, white, near the top very deeply eight-plaited, terminated by a wide rounded, membranaceous disk, striated in rays and toothletted at the edge. The rest as in *atropurpurea*.

Native of Spain and Barbary; cultivated in 1596, by Gerarde. It flowers in July and August.

Variety  $\gamma$  has the flowers scarcely radiate; the leaves linear and pinnate: the leaflets of the calyx have an elongated tooth on each side.

26. Stem herbaceous, dichotomous or proliferous. Leaves lanceolate, subpubescent, connate at the base; the lower ones subserrate. Flowers axillary, subsessile. Calyx loose, the length of the corolla. Corolla yellow, radiate, with the three outer segments larger.

Stem erect, villose, striated. Outer perianth large, membranaceous, bell-shaped, striated, toothletted; inner five-bristled, villose at the base, pedicelled, scarcely longer. Seed deeply grooved, villose. Receptacle roundish. Chaffs setaceous, villose at the top.

It is an annual plant, native of Barbary and Egypt, in corn fields.—Cultivated by Mr. Miller in 1768.

27. Calyx twelve-leaved, linear, recurved, the length of the corolla. Flower very dark purple, with white anthers. Fruit ovate. Receptacle subulate, with bristle-shaped chaffs. Seeds four-cornered, terminated by an involute plaited præputium. Pappus composed of five bristle-shaped rays.

Involucre of the seed from a globular base, which is eight-grooved, ending in a dome which is inversely conical, membranaceous, terminated by an inflexed crenulate margin, and inscribed on the sides with eight raised opaque bows, inclosing oblong subdiaphanous areas. Seed subglobular, small, ending in a filiform stipe, terminated by a bristle-shaped, five-rayed pappus. Albumen thin. Embryo inverted, white.

It is an annual (biennial) plant, and the flowers are very sweet. There is a great variety in their colour, some being of a purple approaching to black, others of a pale purple, some red and others variegated. It also varies in the leaves, some being finer cut than others: and sometimes from the side of the calyx come out many slender peduncles sustaining small flowers; like the (proliferous or) hen-and-chicken Daisy.

[We have no certain account of what country the Sweet Scabious is a native. Clusius relates, that he received the seeds of it from Italy, under the name of Indian Scabious, that the seeds which he gave to some friends produced paler-coloured flowers, and that seeds were sent him from Vienna which came from Spain, and also produced flowers of a paler red. Parkinson says, that this reputed Indian Scabious is verily thought to grow naturally in Spain and Italy. Clusius does not affirm that, nor does Parkinson give any authority. Linneus mentions it as a native of India with a note of doubt. Miller gives it expressly as a native of that country. But in the Kew catalogue its place of growth is left unsettled. In all probability it is not a native of India, but of the South of Europe. If however the *S. cochinchinensis* of Loureiro should turn out to be the same with this, it would determine the matter.

It flowers from June to October. Parkinson, in 1629, says, "if it be carefully defended from the extremity of winter, it will flower the sooner the next year, as I myself have often found by experience." It flowered first with Clusius in 1591.

It is remarkable that Parkinson describes it as having no scent; but perhaps he meant to speak only of that which has paler flowers, and has certainly not so much of the musky smell. Clusius however, makes no mention of the sweetness of these flowers.]

28. This is a low perennial plant, with a branching stalk spreading wide on every side; the leaves are of a silvery colour; the flowers are small, pale, and have no scent.

[The stem has white hairs thinly scattered over it.

\* Vahl.      † Linn. mant.      ‡ Thunberg.  
\* Hort. kew.      † Linn. mant.

\* Hort. kew.      † Linn. mant.      ‡ Idem.  
\* Desfontaines.      • Hort. kew.      † Linn. spec. & syst.  
\* Gartner.  
\* Clus. hist. 2. p. 2. Park. parad. Curt. magaz.



Root-leaves somewhat toothed; stem-leaves undivided, ciliate towards the base. Calyx very hairy at the base, eight-leaved, recurved, length of the corolla. Corollas whitish with a blueish border. Corollets of the ray six, larger, with the upper lip very short and bifid, the lower wide trifid blunt somewhat plaited equal. Corollets of the disk white, regular, hirsute on the outside. Stamens white<sup>a</sup>.

Native of the Levant. Cultivated in 1713, by Mr. Thomas Fairchild. It flowers from June to October<sup>c</sup>.

β. Leaves villose: root-leaves spatulate, narrow, blunt, toothed, running down into the petiole: stem-leaves deeply pinnatifid, with the segments linear-lanceolate, distinct, quite entire or sometimes but more rarely toothed. Stem rough, villose, erect, dichotomous. Peduncles filiform, elongated, one-flowered. Common calyx hirsute, longer than the flowers; deeply many-parted: segments unequal, linear, erect, bent down when the fruit is ripe. Corollets silky, white or rose-coloured. Seeds in a roundish head. Outer perianth scarious, wheel-bell-shaped, toothletted, striated; inner five-bristled, longer, the bristles rufescent. Seed cylindrical, villose below, having eight or nine little holes in it.—It varies with a smooth stem and leaves. Native of Algiers<sup>d</sup>.

29. Stem erect, striated, subvillose, rough, simple or with a few upright branches. Leaves pubescent: those next the root ovate or ovate-oblong, toothed, blunt, pinnatifid at the base, petioled; lower stem-leaves pinnatifid, with the terminating lobe ovate, blunt, toothed; middle stem-leaves bipinnate, with the segments unequal, linear, acute; upper ones pinnate, with the pinnules linear-subulate. Peduncles long, striated. Common calyx shorter than the corollas, hirsute, with the leaflets pinnatifid. Flowers the same size with those of the *Sc. columbaria*: Corollets blue or violet, irregular in the ray, regular in the disk. Outer perianth subcampanulate; inner five-awned. Germ oblong, slightly four-cornered. Receptacle convex. Chaffs membranaceous, awl-shaped, convex on one side. It is allied to *S. columbaria*, but differs in having a villose pinnatifid calyx.—Native of Algiers, on hills<sup>e</sup>.

30. Leaves sessile, a span long, ferrate or gnawn, the upper ones more sharply, subtomentose but green, deeply toothed at the base with from one to three teeth on each side. Panicle dichotomous; the first division pedunculiferous; the others floriferous at the top. Peduncles very long. Calyx ten-leaved, spreading, short, almost equal, by no means imbricate. Corolla pale blue, longer than the calyx. Chaffs bristle-shaped. Seeds oblong; eight-grooved: crown membranaceous and with stars of five longer bristles<sup>f</sup>.

It is so nearly allied to *S. africana*, that it may be doubted whether it is not a variety<sup>g</sup>.—Native of Africa.]

31. This has a weak shrubby stalk, which divides into several branches, and rises about five feet high. Leaves ovate-lanceolate, three inches long, and an inch and half broad, deeply crenate, of a light green, and a little hairy. Peduncle terminating, sustaining one pale flesh-coloured flower.

[This species varies in the leaves: that variety with the leaves very finely cut, is distinguished by Miller, under the name of *S. incisa*. He thus describes it.] The stalks are hairy, and divide into several branches. The bottom leaves are lanceolate crenate and entire; but those on the upper part of the stalk are bipinnate. The flowers are produced upon long naked foot-stalks from the end of the branches; they are of a pale flesh-colour and large, but have no scent.

[Native of Africa. Introduced in 1690, by Mr. Bentick. It flowers from July to October<sup>h</sup>.

32. Plant a foot and half high, hirsute all over, biennial, flowering from May to July. Stem round, weak, purplish at bottom. All the leaves pinnate, petioled and opposite: pinnas distant, oblong, acute, some quite entire; others here and there gashed at the top. Peduncles terminating. Leaflets of the com-

mon calyx hirsute, acute; entire. Corollets purple, somewhat hairy on the outside, funnel-shaped, with the segments almost equal and blunt. Filaments scarcely exceeding the corolla. Anthers purple. Seeds hirsute, crowned by the outer perianth which is membranaceous wide shaped like a basin and striated, also by the inner perianth which is pedicelled and ends in five awl-shaped and very spreading bristles<sup>i</sup>.—Native of France about Montpellier.

33. The whole plant is extremely hirsute. It has scarcely any stem.—Native of the Cape of Good Hope<sup>j</sup>.]

34. This rises with a shrubby stalk three feet high; and divides into several woody knotty branches. Leaves narrow, silvery, entire, four inches long and a quarter of an inch broad. The flowers stand upon very long naked peduncles at the end of the branches; and are of a fine blue colour.

[Linnetus remarks; that the leaves are so closely clustered on the stem as to be almost imbricate; and that the calyxes are obtuse. Willdenow informs us; that in the wild plant the leaves are ciliate at the edge with white hairs.

Native of Candia and Sicily. Mr. Miller distinguishes them; and says that the plant from Candia has] shorter and much broader leaves, not so white as those of the Sicilian; that the flowers are not so large, and are of a pale purple colour.

[Gerarde cultivated it in 1596<sup>k</sup>.

35. Root divided above. Stems frutescent at the base, erect, simple: flowering-scape among the leaves, grooved-angular, almost leafless, a foot high. Leaves at bottom almost like those of *Statice Limonium* but smaller, aggregate, scarcely an inch in length, oblong, ending in the petiole, thick, above smooth and veinless, beneath veiny-wrinkled, with the margin reflexed, emarginate: on the flowering-scapes at bottom two under the lowest peduncles, lanceolate, acute, with a single tooth at the base on each side, the upper ones linear. Peduncles two at bottom from the axils of the leaves of the scape; three above, very remote, terminating; the lateral ones branched a little. Leaflets of the common calyx lanceolate, bluntnish, tomentose, hoary. Outer perianth short, unequally toothletted; inner twice as long with five purple bristles. Corollets equal, tomentose on the outside. Chaffs linear, narrower at the base, length of the florets, tomentose.—Native of Sicily<sup>l</sup>.]

36. This has a perennial root, from which arise three or four stalks, the lower parts of which have linear leaves about four inches long, and the eighth of an inch broad; of a silvery colour, ending in acute points. The upper part of the stalk is naked for six or seven inches in length; and sustains at the top one pale-blue flower.

[Stems branching at the base, procumbent; knobbed. Leaves clustered, opposite, resembling those of grass, quite entire; drawn to a point at each end; connate or sheathing at the base, silvery, shining, with villose hairs pressed close to the leaf. Peduncle terminating; long, leafless; pubescent, round not striated, one-flowered. Common calyx villose; with linear segments; nearly equal, almost as short again as the flower. Head of flowers flat. Corollets blue, longer and irregular in the ray; the segments toothletted. Outer perianth membranaceous, bell-shaped, striated; inner five-bristled, scarcely longer. Seed villose, cylindrical. Receptacle oblong; with concave, mucronate chaffs<sup>m</sup>.

Native of the mountains of Dauphiné, Carniola, Italy, Switzerland, Silesia, Barbary. Cultivated in 1683, by Mr. James Sutherland. It flowers in July<sup>n</sup>.

37. Stem herbaceous, erect, a foot high, simple, striated, somewhat hairy. Leaves an inch and half long, smooth above, hairy on the veins underneath; the lower ones oblong, undivided; grossly and bluntly ferrate, ending in a petiole shorter by half than the leaf: the upper ones sessile, pinnatifid; segments lanceolate, wider outwards, gash-toothed, the end one

<sup>a</sup> Linn. syst. <sup>b</sup> Hort. kew. <sup>c</sup> Desfontaines. <sup>d</sup> Idem.  
<sup>e</sup> Linn. mant. <sup>f</sup> Linn. syst. <sup>g</sup> Hort. kew.

<sup>h</sup> Jacqu. misc. <sup>i</sup> Linn. mant. <sup>j</sup> Hort. kew.  
<sup>k</sup> Vahl. <sup>l</sup> Desfontaines. <sup>m</sup> Hort. kew.



very large, and oblong. Peduncles terminating, foliary, elongated, leaflets, hairy, one-flowered. Common calyx eight-leaved; leaflets lanceolate, tomentose at the base, length of the corolla. Outer perianth grooved, angular, short, having twelve or fourteen teeth, erect, with a purple mouth: inner having five bristle-shaped segments, a little shorter than the corollets and purple. Corollets hairy on the outside. Chaffs lanceolate, the length of the calyx.—*S. palestina* differs from this in having the segments of the corollets in the ray trifid; the calycle of the seeds is spread out flat, as in *S. stellata*<sup>h</sup>.—Native of the shore of the Dardanelles.

38. Stem a foot high, round. Leaves broad-lanceolate, cut with a few gashes, and pubescent: the uppermost linear-lanceolate, pinnatifid at the lower base. Peduncles very long. Flowers white, or lemon-coloured, the length of the calyx. Corollets in the ray very beautiful, all its segments, as well the two upper small ones, as the three outer ones, subdivided into three segments. The fruit is the same as in *Sc. stellata*.

Native of Palestine, where it was found by Hasselquist<sup>i</sup>. Introduced in 1771, by Mons. Richard<sup>k</sup>.

39. Stems a foot high, ascending, subtomentose. The leaves have stiffish hairs scattered over them: the upper ones simply pinnate. Branches very few, often none. Flower white, not shorter than the calyx; which is many-leaved and spreading. Seeds as in *Sc. stellata*.—Native of Siberia, on rocks<sup>l</sup>.

40. The stem-leaves are not always ciliate at the base, Linneus's specific character therefore is not accurate in that respect.

Native of the Ukraine<sup>m</sup>. Allioni says it is found also in Piedmont.

41. Root perennial, whitish brown, the thickness of a finger and woody. Stem round, equal, either wholly shining, or wholly or only at bottom pubescent, pale green, but most frequently tinged with purple at the base and at the axils of the leaves, frequently the colour is very dark; it is from a foot to three feet in height, and erect. The primary division is dichotomous; the other divisions are by elongated peduncles. Root-leaves in plants of the first year, and lower stem-leaves obversely lanceolate, entire, unequally serrate, sometimes pinnatifid, attenuated into a very long petiole, subtomentose or smoothish on both sides. As the plants advance the leaves are more cut, and become pinnatifid or subbipinnatifid, and more smooth. Stem-leaves smooth, the upper ones quite simple, the next pinnate, the lower bipinnatifid; the pinnales are linear acute and confluent. Petioles connate at the base. In larger plants the leaves are much more divided; and sometimes they are all pinnatifid gashed, except the uppermost. The inner perianth has five bristles. The corollets are constantly of a pale sulphur-colour. Fruit ovate. Seed, or rather its involucre, ovate, eight-grooved, villose at the base, crowned with a membranaceous margin<sup>n</sup>.

Linneus remarks, that it is allied to *Sc. columbaria*. It is a biennial plant, native of Germany; and was cultivated in 1739, by Mr. Miller. It flowers in July and August<sup>o</sup>.

42. Root annual. Stem filiform, brachiate, with a subdichotomous panicle. Peduncles axillary, filiform, long. Calyx-leaflets ovate, very acuminate. Seeds crowned with a feathered down, and a thicker longer awn close to it. Peduncles and calyxes tomentose<sup>p</sup>. Proper involucre of the flower cylindric-pitcher-shaped, fungous, eight-plaited, truncate at the top, and terminated by twelve or more very short, bristle-shaped toothlets. Receptacle slightly convex. Seed ovate-acuminate, attenuated into a short pappigerous stipe. Pappus feathered, white, longer than the seed<sup>q</sup>.

Native of the island of Crete or Candia:—of the South of Europe. Cultivated in 1739, by Mr. Miller. It flowers in July<sup>r</sup>.

43. Supposed to be a native of Greece.]

<sup>h</sup> Vahl.

<sup>i</sup> Linn. mant.

<sup>k</sup> Hort. kew.

<sup>l</sup> Linn. mant.

<sup>m</sup> Gmelin.

<sup>n</sup> Jacquin obs.

<sup>o</sup> Hort. kew.

<sup>p</sup> Linn.

<sup>q</sup> Gærtner.

<sup>r</sup> Hort. kew.

#### PROPAGATION AND CULTURE.

1. This may be propagated either by seeds or parting the roots. It loves a loamy soil.

6. Sow the seeds in a shady moist border; keep the ground clean, and allow the plants room to spread.

8. Part the roots in autumn, and set the plants in a light loamy soil.

14. Rises from scattered seeds, and requires no care.

25. Sow the seeds in a bed of light loamy earth, where the plants are to remain; when they come up, thin them and keep them clean from weeds.

27. Sow the seeds of the Sweet or Musk Scabious at the end of May or beginning of June, upon a shady border of fresh earth; for if they are too much exposed to the sun, and the season should prove dry, few of them will grow. And if they are sown early in the spring, they will flower in the autumn, and the winter coming on, will prevent the seeds from ripening; besides which, the flowers will be few and weak. Whereas if they are left to form a strong root and leaves in the autumn, they will send up their flower-stems early in the next summer, branching out on every side, producing a great number of flowers, continuing in succession from June to September, and producing good seeds in plenty.

When the plants sown in May come up, transplant them into a bed or border of fresh earth, watering and shading them till they have taken root; and, having kept them clean from weeds, transplant them at Michaelmas into the middle of the borders in the pleasure-garden. It is very hardy, being rarely injured by cold, unless it shoots up to flower before winter: but it does not continue after ripening the seeds.

31. This, with the other African species, may be increased by cuttings, planted in a shady border, during any of the summer months. When these have put out good roots, plant them in pots filled with light loamy earth, and placed in the shade till they have taken new root; then remove them to a sheltered situation till frosts come on, when they must be put into the dry stove or a glass-case for the winter, giving them as much free air as possible in mild weather. In the middle or end of April they may be removed into the open air in a warm situation.

34. This also may be increased by cuttings or by slips. When these have taken good root, plant some on a dry border near a south wall, where they will live in common winters. But as severe frost frequently destroys them, put some of the plants in pots, placing them under a frame in winter, giving them air in mild weather.

36. This, not producing seeds in England, may be increased by slips, planted on a shady border the beginning of April. When these have put out good roots, take them up with balls of earth, and transplant them where they are to remain. It loves a soft loamy soil, and a shady situation.

41. May be propagated by seeds, and will thrive any where.

[The above directions are sufficient for the propagation and treatment of the other species, which are either hardy annuals, to be increased by seeds, or hardy perennials, to be increased by parting the roots.

SCABIOSA. See *Centaurea*, *Cephalanthus*, *Conyza*, *Echinops*, *Eclipta*, *Eriocaulon*, *Globularia*, *Knautia*, *Spermacoce*, *Sphaeranthus*.

Scabiosæ Affinis. See *Brunia*, *Clinopodium*.

Scabious, Sheep's. See *Fasione*.

SCABRITA. See *Nyctanthes*.

SCÆVOLA.

Lin. gen. Reich. n. 244. Schreb. n. 300. Juss. 165.

Lobelia. Plum. gen. t. 31. Jacq. amer. 219.

Gertn. t. 25.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanulaceæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth superior, very short, five-cleft, permanent. COR. one-petalled, unequal. Tube long, with a longitudinal fissure. Border five-cleft, ascending: segments directed



directed one way, lanceolate, membranaceous at the edge.

STAM. Filaments five, short, capillary, inserted into the receptacle. Anthers distinct, erect, oblong, obtuse.

PIST. Germ inferior, ovate. Style filiform, thicker above, longer than the stamens, issuing from the fissure, curved in towards the border. Stigma flattened, obtuse, with the mouth open.

PER. Drupe roundish, umbilicate with a dot, one-celled.

SEED. Nut ovate, wrinkled, acute, two-celled.

Obs. It differs from the Lobelias in fruit, in having no milkiness, &c. according to Jacquin.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, with the tube cloven longitudinally, the border five-cleft and lateral. Drupe inferior, containing one two-celled Nut.]

#### SPECIES.

##### 1. *Scævola Lobelia*.

Lin. syst. 213. Reich. 1. 476. Willd. 1. 955. Vahl symb. 2. 36. Lamarck encycl. t. 124. f. 1. Swartz obs. 70. Jacquin. amer. pict. 36. t. 199.

*Lobelia Plumieri*. Lin. spec. 1317. fl. zeyl. n. 313.

Osbeck. it. 275. ed. angl. 2. 57. Jacquin. amer. 219. t. 179. f. 88.

*L. Taccada*. Gærtner. fruct. 1. 119.

*L. frutescens*. Mill. dict.—portulacæ folio. Plum. gen. 21. ic. 165. f. 1. Catesby. car. 1. t. 79.

*Buglossum littoreum*. Rumph. amb. 4. 116. t. 54.

*Taccada*. Zeylon.

Leaves obovate smooth quite entire.

##### [2. *Scævola Koenigii*.

Lin. spec. ed. Willd. 1. 956. Vahl symb. 3. 36.

Lamarck encycl. t. 124. f. 2.

Leaves obovate smooth tooth-subrepand at top, calyx five-toothed.

##### 3. *Scævola fericea*.

Lin. spec. ed. Willd. 1. 956. Vahl symb. 2. 37.

Forst. prodr. n. 504.

Leaves obovate villose very soft, toothed at top.

#### DESCRIPTIONS, &c.

1. Stem suffrutescent, two feet high, almost single, thick, round, smooth. Leaves petioled, scattered, oblong, entire, fleshy, veinless, very smooth. Racemes axillary, dichotomous, terminating. Pedicels one-flowered. Under the flowers or in the forkings of the racemes are little, opposite, awl-shaped bractes, villose beneath.

Jacquin describes it as a brittle diffused shrub, branched at the base and decumbent, frequently covering the sandy sea shores very thick; the leaves thick, shining and succulent; the flowers whitish; and the drupe dark.

Linneus remarks, that the corolla is villose within.]

Mr. Miller says that this plant rises with a succulent stalk five or six feet high; that the leaves are ovate-oblong, succulent, sessile, alternate; that the peduncles are long, lateral, and sustain two or three white flowers, which are succeeded by two oval berries as large as Bullace, containing a stone with two cells, in each of which is lodged a single seed.

[The above are descriptions of the American plant. Osbeck describes that which he found in Java, to be a little tree growing on the sea shore, with wrinkled pendulous branches; obovate, mucronate, smooth, petioled leaves, without incisions, and almost without nerves; the petioles of equal thickness all the way; the flowers white and axillary; the nut almost round and the size of a pea.

Willdenow suspects the plant of the East Indies to be different from that of America; and remarks, that in the latter the calyx is superior with the margin quite entire scarce apparently toothed; with two bractes at the base of the germ: whereas in the former the calyx is obtusely five-toothed.

Gærtner observes, that Rumphius's figure agrees very well with the fruit which he describes; and that the figure of *Bela-modagam* in the Hortus Malabaricus (4. t. 59.) does not much differ from it, except that the calyx is contracted into too narrow a tube: whereas in the American plant, the corolla is diffe-

rently divided, the calyx of the fruit is only a very short margin unequally five-toothed, the drupe oval smooth and black, the shell ovate-acuminate muricated all over with larger tubercles. Hence he concludes that the East Indian plant, if not a different species, is at least a remarkable variety. He describes the fruit as a berried Drupe, inferior, crowned with the permanent calyx, subglobular, transversely a little thicker, grossly striated with from seven to ten grooves, flesh-coloured becoming the colour of smoke: pulp fungous, thick: shell bony, spherical, tubercled and wrinkled, having a spurious raised suture, two-celled. Seed in each cell one, rounded or obovate, slightly acuminate towards the base, plano-convex, whitish, fastened to the bottom of the cell.

Native of both Indies. That from America was cultivated by Mr. Miller in 1724:] Mr. Catesby, who gathered the seeds on the sea shore of the Bahama islands, having that year sent them to England. Dr. Houttoun afterwards gathered them at La Vera Cruz; [Jacquin found the plant in the island of St. Martin, Herman in Ceylon, and Osbeck in Java: but it seems to grow very generally within the Tropics.

2. Branches round, smooth, warted, the thickness of a goose quill. Leaves alternate, by pairs remote, subsessile, three inches long, very smooth, even and almost veinless, quite entire below, above and at the tip tooth-subrepand: axils woolly. Peduncles axillary, an inch long, bifid. Flower in the first forking pedicelled, as the rest of the flowers, but not sessile as in Plumier's plant; none in the second division. Pedicels short, subopposite. Bractes lanceolate, shorter than the pedicel, at the base of each pedicel, woolly within at the bottom. Calyx with five awl-shaped teeth. Corolla smooth, divided on one side almost to the base: tube hirsute within at bottom: segments of the border smooth, lanceolate. Filaments shorter by half than the tube of the corolla. Anthers distinct. Style villose at the base. Stigma shaped like a drinking glass, the inside hirsute with a great abundance of white villose hairs. Fruit (which is here called a capsule) five-cornered with five raised lines, obovate, crowned with the calyx, smooth.

Native of the East Indies, where it was found by Koenig.

3. Branches brown, villose, muricated with the remains of fallen leaves. Leaves scattered, three inches long, veinless, softly villose yet green. Petiole inserted obliquely. Axils bearded. Panicle few-flowered, dichotomous, axillary. Bractes opposite, at the base of the pedicels, lanceolate, a little recurved. Calyx five-parted, superior, with lanceolate segments. Corolla villose on the outside: tube very short, coriaceous: segments of the border lanceolate, obtuse, having a thin membrane at the side. Filaments inserted into the base of the side, filiform, the length of the style. Anthers oblong, cohering a little under the stigma, rounded at the base, transverse at the tip. Style short, linear, three times as thick as the filaments. Stigma shaped like a drinking-glass, three times as wide as the style, green, pellucid, very finely toothletted at the edge. Pericarp globular, villose, the size of a pea, crowned with the calyx.

Native of Botany island by New Caledonia\*. Savage island\*.—Forster mentions another species, as a native of New Caledonia, under the name of *Scævola faligna*.]

#### PROPAGATION AND CULTURE.

1. It is propagated by seeds, which must be procured from the countries of its natural growth, for the plants will not produce them in Europe; these seeds should be sown in pots filled with light sandy earth, and plunged into a hot-bed of tanner's bark, where the plants will come up in about a month or five weeks, provided the bed is warm, and the earth often watered. When the plants are up, they should be kept in a temperate hot-bed, and frequently refreshed with water, but it must not be given them in large quantities, for they are very succulent, and subject to perish with much moisture, especially while they are young.

\* Swartz.

\* Vahl.

\* Forster.

\* Willdenow.



When the plants are about two inches high, they should be carefully taken out of the pots in which they were sown, and each planted in a separate small pot filled with fresh light sandy earth, and then plunged into the hot-bed again, observing to shade them in the heat of the day until they have taken new root. In this hot-bed the plants may remain until the middle, or latter end of september, when they must be removed into the stove, and plunged into the tan-bed, in the warmest part of the stove, for they are very tender plants while young, therefore must be kept very warm, otherwise they will not live through the first winter in this country. In the spring following the plants may be shifted into somewhat larger pots, and then plunged into a fresh hot-bed to forward their growth; for if they are not pushed on while they are young, they seldom grow to any size, nor will they ever flower; so that in order to have them in any beauty, they must be carefully managed. The leaves of this plant are very subject to contract filth, by being constantly kept in the stove, therefore they should be washed with a sponge frequently, to keep them clean, otherwise they will appear unsightly.

[SCALLION. See *Allium*.

SCAMMONEA. See *Cynanchum*.

SCAMMONIA and SCAMMONY. See *Convolvulus*.

Scammoniae affinis. See *Cynanchum*.]

SCANDIX (of Pliny, Σκανδίζ of Theophrastus and Dioscorides.)

Lin. gen. n. 357. Reich. n. 387. Schreb. n. 489. Tournef. t. 173. Juss. 220. Chærophyllum. Tournef. t. 166. Gært. t. 23. Myrrhis. Tournef. t. 166. Gært. t. 23.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatae or Umbelliferae.

#### GENERIC CHARACTER.

CAL. Umbel universal long, with few rays: partial more abundant.

Involucre universal none: partial five-leaved, length of the umbellet.

Perianth proper obsolete.

COR. universal difform, radiate: florets of the disk abortive. Proper Petals five, inflex-emarginate: the inner ones smaller; outmost larger.

STAM. Filaments five, capillary. Anthers roundish.

PIST. Germ oblong, inferior. Styles two, awl-shaped, length of the least petal, distant, permanent. Stigmas in the radiant florets obtuse.

PER. none. Fruit very long, awl-shaped, bipartile.

SEEDS two, awl-shaped, convex and grooved on one side, flat on the other.

OBS. The florets of the disk are abortive in some species.

The involucrets vary in the number of leaves.

Pecten Veneris has the seeds filiform, hiding the nucleus at the base.

Cerefolium, Riv. has ovate-subulate striated seeds, a green permanent involucre, and all the florets hermaphrodite.

Odorata has angular seeds, and a caducous involucre.

In the true Scandix the nucleus is scarcely a fourth part of the length of the seed; in Chærophyllum (or Cerefolium) three quarters; in Myrrhis (Scandix odorata) it is the full length of the seed. Gærtner.

#### ESSENTIAL CHARACTER.

Florets of the disk most commonly male. Cor. radiate. Pet. emarginate. Fruit awl-shaped.

#### SPECIES.

1. Scandix odorata. Sweet Cicely or great Chervil.

Lin. spec. 368. syst. 287. Reich. 1. 705. Willd. 1. 1449. hort. cliff. 101. ups. 64. Hudf. angl. 124. Wither. arr. ed. 3. 306. Smith brit. 323. engl. bot. t. 697. Lightf. scot. 166. Sibth. oxon. n. 306. Hoffm. germ. 103. Jacqu. austr. 5. 48. app. t. 37. Krock. files. n. 449. Blackw. t. 243. Kniph. cent. 4. n. 74. Plenck, ic. 206.

Myrrhis odorata. Scop. carn. n. 341. Roth. germ. 1. 122. 2. 314. Allion. pedem. n. 1371. Hall. helv. n. 753.

Myrrhis. Dod. pempt. 701. 1. Lob. obs. 423. 2. ic. 1. 734. 1. Camer. epit. 898.

M. major vel Cicutaria odorata. Baub. pin. 160. Tournef. inst. 315.

M. perennis alba odorata. Mor. hist. 3. f. 9. t. 10. f. 1. umb. t. 1. f. 34.

M. magno femine longo fulcato. Baub. hist. 3. 77. Raii hist. 431.

M. major vulgaris, f. Cerefolium majus. Park. theat. 935. 1. parad. 494.

Odorata. Rivin. pent. t. 57.

Chærophyllum odoratum. Villars dauph. 2. 646. Crantz, umb. 75.

Cerefolium magnum f. Myrrhis. Ger. 882. 2. emac. 1039. 3.

Seeds grooved angular.

2. Scandix Pecten Veneris. Needle Chervil, Shepherd's Needle or Venus's Comb.

Lin. spec. 368. syst. 287. Reich. 1. 705. Willd. 1. 1449. hort. cliff. 101. ups. 64. Hudf. angl. 123. Wither. arr. ed. 3. 307. Smith brit. 324. Curt. lond. 5. t. 21. 249. Relb. cant. n. 233. Sibth. oxon. n. 307. Dickf. hort. succ. 15. 4. Fl. dan. t. 844. Jacqu. austr. 3. t. 263. Scop. carn. n. 349. Pollich pal. n. 296. Roth. germ. 1. 122. 2. 315. Hoffm. germ. 103. Krock. files. n. 446. Villars dauph. 2. 647. Neck. gallob. 150. Leers herborn. n. 209. Fl. rust. t. 38.

Scandix. Dod. purg. 502. pempt. 701. 2. Riv. pent. t. 38.

S. femine rostrato vulgaris. Baub. pin. 152. Tournef. inst. 326. Raii syn. 207. Mor. hist. f. 9. t. 11. f. 1. ord. 2.

S. vulgaris f. Pecten Veneris. Park. theat. 916. 1.

Pecten Veneris. Camer. epit. 304. Baub. hist. 3. 71. 2. Lob. obs. 419. 2. ic. 1. 726. 2. Matth. 527. Raii hist. 428.—f. Scandix. Ger. 884. emac. 1040. 1.

Myrrhis Pecten Veneris. Allion. pedem. n. 1375. Hall. helv. n. 754.

Chærophyllum Pecten Veneris. Crantz austr. 189. umb. 75.

Seeds with very long ruggedish beaks, leaflets linear-multifid.

[3. Scandix chilensis. Chili Chervil.

Lin. spec. ed. Willd. 1. 1449. Molina chil. ed. germ. 103.

Seeds with very long beaks, leaflets entire ovate-lanceolate.]

4. Scandix Cerefolium. Garden Chervil.

Lin. spec. 368. syst. 287. Reich. 1. 706. Willd. 1. 1450. hort. cliff. 110. fl. succ. n. 255. mat. med. 83. Gron. virg. 32. Jacqu. austr. 4. 47. t. 390. Hoffm. germ. 103. Krock. files. n. 447. Plenck, ic. t. 205. Wither. arr. ed. 3. 307.

Cerefolium. Matth. 526.—fativum. Park. theat. 915. f. 1. Mor. hist. f. 9. t. 11. f. 1. umb. t. 1. f. 40. Riv. pent. t. 43. Blackw. t. 236.—vulgare. Ger. 882. f. 1.—vulg. fativum. Ger. emac. 1038. f. 1. Trag. 471.

Chærefolium. Dod. pempt. 700. f. 2.

Chærophyllon. Baub. hist. 3. 75.

Chærophyllum n. 5. Mill. dict. ed. 7. & abr. ed. 5.

Ch. fativum. Baub. pin. 152. Gært. fruct. 1. 107. Hall. helv. n. 747. Raii hist. 430. Knorr. del. hort. 2. t. C. 8.

Ch. Cerefolium. Crantz austr. 191. umb. 75.

Seeds shining ovate-subulate, umbels sessile lateral.

5. Scandix Anthriscus. Rough Chervil.

Lin. spec. 368. syst. 287. Reich. 1. 706. Willd. 1. 1450. hort. cliff. 101. fl. succ. n. 256. Hudf. angl. 124. Smith brit. 325. Curt. lond. 1. t. 19. Relb. cant. n. 234. Sibth. oxon. n. 308. Dickf. hort. succ. 15. 3. Jacqu. austr. 2. 35. t. 154. Pollich pal. n. 297. Hoffm. germ. 103. Leers herborn. n. 211. Krock. files. n. 448. t. 41. Fl. rust. t. 75.

Caucalis Scandix. Scop. carn. n. 312. Hall. helv. n. 743.

C. scandicina. Wigg. holsat. 23. Wither. arr. ed. 3. 289. Fl. dan. t. 863. Roth. germ. 1. 121. 2. 312.

C. folio chærophylli. Riv. pent. t. 35.

Myrrhis sylvestris feminibus asperis. Baub. pin. 160. Raii syn. 220. Petiv. brit. t. 27. f. 12.

M. æquicolum nova. Column. ecphr. 110. t. 112. Ger. emac. n. 5.

Chæro-



- Chærophyllum Anthriscus*. Crantz, umb. 76. Villars dauph. 2. 643.  
*C. silvestre* femin. brevibus hirsutis. Tournef. inst. 314. Vaill. bot. 33. Tournef. par.  
*Cerofolium sylvestre* annuum, femine villosa brevi. Mor. hist. f. 9. t. 10. f. 2.  
 Seeds ovate hispid, corollas uniform, stem even.
6. *Scandix australis*. Radiated Chervil.  
 Lin. spec. 369. Reich. 1. 707. Willd. 1. 1450. Sauv. monsp. 260. Villars dauph. 2. 647. Ger. prov. 251. 2. var.  
*S. cretica* minor. Bauh. pin. 152. Raii hist. 428.  
*S. femine* rostrato, italica. Bauh. prodr. 78.  
*S. cret.* minor f. *Anthriscus*. Park. theat. 916. f. 3.  
*S. minor* f. *Anthriscus*. Ger. emac. 1040. f. 2.  
*Chærophyllum australe*. Crantz, umb. 76.  
*Myrrhis australis*. Allion. pedem. n. 1377.  
*Anisomarathrum*. Col. ecphr. 1. 89. t. 90.  
 Seeds awl-shaped hispid, flowers radiate, stems even.
- [7. *Scandix nodosa*. Knotted Chervil.  
 Lin. spec. 369. syst. 287. Reich. 1. 707. Willd. 1. 1451. mant. 356. hort. cliff. 102. (*Chærophyllum*.) Jacq. hort. 3. t. 25.  
*Chærophyllum nodosum*. Crantz, umb. 76.  
*Cerofolium annuum* nodosum, femine aspero majore. Mor. hist. 3. 303. f. 9. t. 10. f. 4.  
*Myrrhis nodosa* annua, fem. aspero. Mor. blas. 288.  
 Seeds subcylindrical hispid, stem hispid, joints swelling.
8. *Scandix trichosperma*. Hairy-seeded Chervil.  
 Lin. syst. 287. Reich. 1. 707. Willd. 1. 1451. mant. 57.  
 Seeds extremely hirsute with hairs double the length of the seed.
9. *Scandix infesta*.  
 Lin. syst. 287. Reich. 1. 707. Willd. 1. 1451. Willch illustr. 54. Forsk. descr. 58?  
 Outer seed hispid, umbellets very much clustered hemispherical.]
10. *Scandix grandiflora*. Great-flowered Chervil.  
 Lin. spec. 369. Reich. 1. 708. Willd. 1. 1452.  
*S. orientalis* flore maximo. Tournef. cor. 23.  
*Chærophyllum grandiflorum*. Crantz, umb. 77.  
 Seeds shorter than the villose peduncle.
- [11. *Scandix procumbens*. Trailing Chervil.  
 Lin. spec. 369. Reich. 1. 708. Willd. 1. 1452. Gron. virg. 147.  
*Cerofolium virginianum* procumbens, fumarie foliis. Mor. hist. 3. 303. f. 9. t. 11. f. ult.  
*Chærophyllum procumbens*. Crantz, umb. 77.  
 Seeds shining ovate-subulate, leaves decompose.]

## DESCRIPTIONS, &amp;c.

1. Root perennial, very thick, branched, of a sweet aromatic taste, like Aniseed. Leaves large, branching, somewhat like those of Fern, whence it has been called *Sweet Fern*. Stems four or five feet high, hairy and fistulous. Flowers white, with a sweet aromatic scent; the outer petal large, the two side ones middle-sized, the two inner ones small. The seeds have the taste and scent of Aniseed.

[Root fusiform, aromatic. Stems a foot and half high, almost equal, striated, leafy. Leaves sessile, subtripinnate: leaflets pinnatifid, acute, serrate, hairy, pale green. Umbels terminating, erect, many-rayed. Involucrets lanceolate, acuminate, membranaceous, whitish, bent down. Flowers small, snow-white; in the disk very numerous, male with abortive pistils. Seeds very large, erect, almost an inch long, lanceolate, acute, not beaked, deeply grooved, of a shining brown, sweet and aromatic, crowned with the two divaricating styles.

Dr. Stokes remarks that the umbels are lateral as well as terminating:—Mr. Woodward, that the leaves are almost quadruplicate pinnate. They are often spotted with white.

Native of Germany, Switzerland, Austria, the South of France, and the north part of Italy. Ray has not recorded it as indigenous of Britain: nor did Dillenius insert it in the third edition of the Synopsis. It appears however by Buddle's herbarium, that Dr. Richardson found it in meadows betwixt Morton and Rushworth,

✓ Smith brit.

in the west riding of Yorkshire. He affirms it to be certainly a native. It is frequent, as Hudson remarks, in Westmoreland, Cumberland and Lancashire; but generally near houses. Mr. Wood informs us that it is pretty common near Leeds, and certainly wild<sup>2</sup>. Mr. Whately found it on the banks of the Derwent above Chatworth: Mr. Ballard, in an orchard at the top of Soustons Roche, near Shelsley Walsh, Worcestershire. Mr. Dickenson, at White Ladies, near Boscobel, Shropshire: Dr. Withering, at Tixall, near Stafford<sup>a</sup>: Dr. Sibthorp, in Rose-lane, Oxfordshire: Dr. Smith, behind a farm-house about a mile west of Hafod, Cardiganshire: and Mr. Dickenson, at Llangollen monastery in Denbighshire. Mr. Lightfoot says it is frequent in the low-lands of Scotland, in orchards and waste places, but always near houses, so that it is probably not indigenous but naturalized:—and Mr. Miller, that of late years the seeds have been thrown out of gardens, so that the plants are frequently found growing naturally in their neighbourhood. [Indeed had it been as common in Ray's time as it is now; one can scarcely conceive how so large a plant could have escaped the searching eyes of so indefatigable a botanist.

It has been long cultivated in England: Gerarde (in 1597) says, "it groweth in my garden, and in the gardens of other men, who have been diligent in these matters."

This was one of the old medicinal plants, but it is now disused. Formerly the young leaves were put into salads; and the roots were boiled and eaten cold or in tarts, and in a variety of sauces.—"Sweet Chervil, gathered while it is young," says Parkinson, "and put among other herbs for a sallet, addeth a marvellous good relish to all the rest. Some commend the green seeds sliced and put in a sallet of herbs, and eaten with vinegar and oyle, to comfort the cold stomacke of the aged. The roots are used by divers, being boyled; and after eaten with oyle and vinegar, as an excellent sallet for the same purpose. The preserved or candid rootes are of singular good use to warm and comfort a cold flegmaticke stomack, and is thought to be a good preservative in the time of the plague."

In Germany it is said to be still used in soups. It no longer appears at the table with us; but in the north of England the seeds are employed in polishing and perfuming oak floors and furniture<sup>b</sup>.

2. Root annual, small. Stem from six inches to a foot in height, branched, spreading, round and scarcely thickened at the joints, villose, at bottom purple or striped with purple lines. Leaves finely cut like those of wild Carrot, springing from a sheath and tripinnate: leaflets many-parted; segments alternate, linear, smoothish: if viewed with a microscope thinly edged with hairs. The universal umbel generally consists of two rays, sometimes three: the partial of about seven to ten. The leaflets of the involucre are uncommonly large, ribbed, ciliate or rugged at the edge, and at the end bifid, trifid or pinnatifid. Flowers white: some in the middle regular and male; others in the circumference female and irregular, having the outer petals largest. Seeds cylindrical, somewhat rugged, running out into a very long beak, which is flattened, and has fine prickles pointing upwards at the angles<sup>c</sup>.

Dr. Withering remarks, that the glandular receptacle crowning the germ is of a fine purple: and that by carefully dividing the germ after it has shot out an inch or more in length, a tube continued from the styles down to the seeds may be discovered.

This plant may easily be known by its fine-cut leaves, its singular large cloven involucre, and particularly by the beaks to the seeds, which are two inches in length, and so much resemble those of Crane's-bill, that it might be mistaken at first sight for one of that genus by a novice in botany. These beaks have given occasion to the names *Pecten Veneris*, *Venus's Comb*, and *Shepherd's Needle*. In Yorkshire it is called *Crake Needle*.

Native of Europe. With us a very common weed

<sup>a</sup> Smith.

<sup>b</sup> Withering.

<sup>c</sup> Woodward, Mss.

<sup>d</sup> Smith brit. Curtis, Fl. rust.



among corn; and though a small annual plant, it is sometimes in such abundance as to be injurious to the crop. It flowers in June; and the seeds ripen before harvest.

This plant has never been applied to any use. It is of the same genus with Chervil, and having something of the same smell and taste, might perhaps be put to the same use. But we should be cautious what substitutions we make in this natural order of umbellate plants, in which many species are poisonous. One even of this genus, *Scandix Anthriscus*, is of a suspicious character<sup>d</sup>.

3. Native of Chili.

4. Root annual. Leaves of an exceedingly delicate texture, smooth, shining, tripinnate; with the segments deeply semipinnate; and the lobules lanceolate, shortly two-toothed or three-toothed. Stem smooth, from a foot to two feet in height, hairy only under the origin of the branches, whence always are produced two branches and a single leaf<sup>e</sup>. Umbels sometimes from the forks of the stem; often on peduncles from a line to an inch in length. Rays woolly, generally four, but sometimes three or five: those of the umbellets ten or twelve. Leaf of the involucre linear<sup>f</sup>, red; sometimes there are two leaflets. Flowers white: those in the ray difform; petals emarginate, the outermost very large, the two innermost very small: those of the disk almost regular, most of them male<sup>g</sup>. Fruit from an ovate and transversely thicker base extending to an awl-shaped beak terminated by the two short clawed styles, elongated, smooth, blackish. Seeds smooth, having scarcely perceptible dots scattered over them, very obscurely angular, having a longitudinal groove on the inner part<sup>h</sup>.

Native of many parts of Europe. Dr. Withering has set it down as indigenous of England, it having been found by Dr. Stokes near Worcester, in considerable plenty, on the S. E. side of the Bristol road; and in the hedges in upper and lower Old Swinford. But Dr. Smith has not admitted it into his Flora.

It flowers in May.—Gerarde cultivated it in 1597<sup>i</sup>; and it was formerly much more cultivated in the English gardens than at present.

The leaves are frequently used in soups, especially by the Dutch; but whoever makes use of it should be cautious not to take the leaves of the Annual Myrrhis (*Scandix Anthriscus*) instead of this, as some of the Dutch soldiers did, who were in England in 1745, and were poisoned with it.

[Chervil is described as grateful to the palate and stomach, slightly aromatic, gently aperient and diuretic. Geoffroi relates, that he has found it from experience of remarkable service in the dropsy, that it acts mildly and without irritation, and abates inflammatory symptoms. He observes that it is to be used with caution where the patient is troubled with a cough or a spitting of blood, as being liable to aggravate those complaints, in consequence of a nitrous salt, by virtue of which he supposes this juice to act. The extract is manifestly saline, but more pungent than nitre, and does not visibly deflagrate in the fire. (Linneus says, sicca, in igne fulgurat, nitri instar.) Of the aromatic flavour little or nothing accompanies the juice; though water or spirit extracts the greater part of it by infusion. The aromatic part is very volatile; in distillation with water there separates a small portion of essential oil, resembling in taste, as Hoffmann observes, that of fennel seeds<sup>k</sup>.

Haller, who is copious on the properties of Chervil, has no opinion of it in the dropsy; but thinks it may be of service in obstructions of the bowels, in external hæmorrhoids, and a stoppage of urine.

Chervil is not admitted into our practice; and has almost disappeared from our kitchens and tables.—Cows are said to be extremely fond of it; sheep and goats to eat it; and horses to refuse it<sup>l</sup>.

5. Root annual. Stem commonly a foot or eighteen inches in height; but two or three feet or even higher

in moist situations, upright, branching, cylindrical, smooth, swelled and slightly striated at the joints, generally of a green colour. Leaves tripinnate, soft and tender, hairy especially underneath and along the midrib, of a yellowish green colour: leaflets ovate, lobed. Petioles channelled, villose, embracing with a large sheath; shortening as the leaves are higher up the stem. Peduncles axillary, opposite to a leaf. The general umbel has commonly four or five rays; the umbellets five (or from two to six or seven.) General involucre wanting, though sometimes there is a single leaflet: involucre small, ovate, consisting of four or five pointed, ciliate, permanent leaflets. Flowers small, regular, almost all fertile; petals white, heart-shaped and bent in. Seeds ovate or lanceolate, dark brown, with stiff hairs or prickles curved upwards on the convex side, and a very short smooth beak<sup>m</sup>.

The prickly fruit induced Haller, Scopoli, Wiggers, Roth, Rivinus and Withering to consider this plant as a *Caucalis*. Tournefort, Vaillant, Crantz and Villars make it a *Chærophyllum*. But it is undoubtedly a species of *Scandix*, as evidently appears from the character, habit and whole structure<sup>n</sup>.

Rough Chervil is however very distinct from Needle Chervil in the roughness of its fruit, and shortness of the beaks. In habit it approaches nearer to the true Chervil, but may be easily distinguished from it by the want of that pleasant smell which Chervil possesses when rubbed; but especially by the seeds, which in Chervil are black, smooth and glossy, longer and narrower, with two blunt ridges. This rough Chervil can scarcely be confounded with true Hemlock (*Conium maculatum*), that being a much taller plant, with a spotted stalk, the leaves perfectly smooth, not so finely divided, and of a darker green; having a general involucre and smooth seeds: the strong hircine smell also betrays the Hemlock.

This rough Chervil, or Hemlock Chervil, as our older writers call it, is common by way sides, on banks, in hedges, and under walls: flowering in May and June<sup>o</sup>.

Mr. Miller relates, that there have been some instances of the ill effects of this plant when taken inwardly; some who have eaten this herb in soups, by mistaking it for Garden Chervil, having narrowly escaped with their lives. He mentions a case of the Dutch soldiers who were in England in 1745. [I have not seen his account of its poisonous quality confirmed by any other writer.]

6. This is an annual plant with long spreading stalks, and very narrow fine-cut leaves, placed thinly. The flowers are small, white, in terminating umbels. Seeds awl-shaped and rough.

[Gerard and Villars consider it as a variety of *Pecten Veneris*, with finer cut leaves; the plant is lower, and the seeds are sensibly villose<sup>p</sup>.

Native of the South of France, Italy and Candia. Cultivated in England in 1713<sup>q</sup>.

7. Root annual. Stem rugged with soft reflexed prickles: the joints thickened above. Leaves triternate, gashed, rugged, patulous. Umbel of two or three rays: umbellet of five or six. Involucre none: involucrets two or three-leaved, awl-shaped, small. Fruits long, cylindrical, blunt at both ends, rugged, hispid with ascending hairs.—Native of Sicily<sup>r</sup>.

8. Root annual. Stems several, oblique, half a foot high, branched, flexuose, almost smooth. Leaves bipinnate, smooth, paler beneath: leaflets ovate-lanceolate, gash-ferrate, rugged at the edge: petioles somewhat hairy. Peduncles opposite to a leaf. Universal umbel of three or four unequal rays: umbellet of ten or twelve, almost equal. Involucrets of seven awl-shaped leaflets, the length of the umbellet. Flowers regular, flesh-coloured, fertile.—Native of Egypt<sup>s</sup>.

9. Root annual. Stem erect, about a foot high (in a pot,) rugged. Leaves like those of *Sc. Cerefolium*. Umbel five-cleft: umbellets hemispherical, crowded. Involucrets seven-leaved, awl-shaped, not reflexed.

<sup>d</sup> Curtis, Fl. rust.

<sup>e</sup> Haller.

<sup>f</sup> Stokes in Withering.

<sup>g</sup> Haller.

<sup>h</sup> Gærtner.

<sup>i</sup> Hort. kew.

<sup>k</sup> Lewis mat. med.

<sup>l</sup> Withering.

<sup>m</sup> Smith brit. Curtis, Fl. rust.

<sup>n</sup> Fl. rust.

<sup>p</sup> Villars.

<sup>q</sup> Linn. spec. and mant.

<sup>r</sup> Smith brit.

<sup>s</sup> Hort. kew.

<sup>t</sup> Linn. mant.



Flowers subradiate, white: florets about six fertile, the rest male. Stamens longer than the florets, with purplish anthers. Outer seed hispid with jointed spines: inner rugged only, like both seeds of the central floret. It is doubtful whether this be the same with *Sc. infesta* of Forskahl. According to Reichard it is not *Sc. infesta* of Jacquin.—We do not know where it is a native.]

10. This is an annual plant with fine-cut leaves. The stalks rise eight inches high, have at each joint a fine-cut leaf, and are terminated by an umbel of white flowers, with large heart-shaped petals. The horns (beaks) of this are longer than any of the other sorts, and the peduncles are very hairy.

Native of the Levant, where it was found by Tournefort. [Cultivated by Mr. Miller in 1759.]

11. This is a low trailing plant, native of Virginia. [Cultivated by Mr. Miller in 1768.]

#### PROPAGATION AND CULTURE.

1, 2, 5, 6, 10, 11. These will increase fast by seeds, which, if permitted to scatter, will produce plenty of plants; these may be left in their place, or transplanted to any part of the garden, for they will grow in any soil or situation, and require no care.

4. Sow the seeds of Chervil in autumn, soon after they are ripe, either in drills or broad-cast. Seeds sown in the spring rarely come up, and if they do, the plants never thrive, for as soon as the warm weather sets in, they soon wither and decay; whereas the plants which rise in autumn, continue green all the winter, and in april they flower; soon after which the seeds ripen, and the whole plants decay. [This species will also maintain itself by scattered seeds.]

SCANDIX. See *Aphanes*, *Caucalis*, *Chærophyllum*.

SCARIOLA. See *Lactuca*.

Scarlet Bean. See *Phaseolus*.

—— Cardinal Flower. See *Lobelia Cardinalis*.

—— Convolvulus. See *Ipomæa*.

—— Horse Chestnut. See *Pavia*.

—— Jasmin. See *Bignonia*.

—— Lupin. See *Lathyrus*.

—— Lychnis. See *Lychnis*.

—— Oak. See *Quercus*.

SCEMBRA VALLI. See *Vitis indica*.

SCEPTRUM CAROLINUM. See *Pedicularis*.

SCEURA MARINA. See *Avicennia tomentosa*.

SCHADAVELI KELANGU. See *Asparagus*.

SCHADIDACALLI. See *Euphorbia*.

SCHÆFFERA. (So named by Jacquin, in honour of Jacob Christian Schæffer, superintendant of the church at Ratisbon; author of *Studii Botanici Methodus*, 1758.—*Isagoge in Botanicam*, 1759.—*Fungi*, 1759. *Botanica expeditior*, 1760.

*Lin. gen. Schreb. n. 1507. Schæfferia. Swartz prodr. 38. descr. t. 7. A. B. Jacq. amer. 259. Juss. 426.*

Class. 22. 4. Dioecia Tetrandria.

#### GENERIC CHARACTER.

##### \* Male.

CAL. Perianth four or five-leaved: leaflets ovate, concave, spreading.

COR. Petals four, lanceolate-ovate, spreading: or in place of these a four-cornered, convex Nectary, in the middle of the flower.

STAM. Filaments four, filiform, erect: Anthers roundish, erect.

PIST. Rudiment of a Germ, without style or stigma.

##### \* Female.

CAL. Perianth one-leaved four or five-parted, inferior: segments obtuse, spreading.

COR. Petals four, lanceolate-ovate, concave, wider at the end, spreading, deciduous: or in place of these a Nectary, which is a fleshy rim about the germ.

PIST. Germ roundish. Styles two, very short, reflexed. Stigmas bifid or entire compressed-headed.

PER. Berry roundish, two-celled.

SEEDS solitary, hemispherical.

#### ESSENTIAL CHARACTER.

MALE. Cal. four or five-leaved. Cor. four-petalled or none.

<sup>1</sup> Linn. syst.

FEM. Cal. four or five-parted. Cor. four-parted or none. Berry two-celled. Seeds solitary.

#### SPECIES.

1. *Schæfferia completa*.

*Swartz prodr. 38. descr. 327.*

*S. frutescens. Jacq. amer. 259.*

*Buxi folio majore acuminato, arbor baccifera, fructu minore croceo dipyreno. Sloan. jam. 2. 102. t. 209. f. 1.*

*Flowers four-petalled axillary.*

2. *Schæfferia lateriflora*.

*Swartz prodr. 38. descr. 329.*

*Flowers lateral apetalous.*

#### DESCRIPTIONS, &c.

1. This is a small tree or a shrub. Trunk upright, with a smooth ash-coloured bark. Branches almost upright, unequal, rigid, smooth. Leaves on short petioles, alternately smaller, ovate acute, almost entire or very slightly crenate, veined, rigid, with the end recurved a little, green, shining. Peduncles several crowded many times shorter than the leaves, one-flowered, deciduous, having small calyx-form scalelets at their base. Flowers white.

Jacquin, who first discovered and named this species, says it is a shrub ten feet high; in thick copices frequently throwing out very long branches like the vine. Leaves lanceolate-ovate or ovate-roundish, acute or obtuse, quite entire, greasy to the touch, deciduous, coming out afresh after the flowers burst forth, one, two or three from the same tubercle in alternate order. Flowers small. Berries the size of a small pea, yellowish red.

Native of the West Indies. Discovered by Jacquin about Carthagena in New Spain, flowering in july, and ripening its fruit in september. Sloane found it in Jamaica. Swartz in the same island and in Hispaniola. The latter saw it flowering twice in the year, in january and june.

2. This is a small tree, with the trunk a fathom high or more, upright and smooth; and the branches round, smooth, ash-coloured. Leaves alternate, ovate-acuminate, membranaceous, stiffish, brownish-green, beautifully veined and somewhat reticulate. Peduncles lateral, aggregate on the branches below the leaves, subsessile or on very short pedicels, whitish green. Calyx, in the male, sometimes but seldom five-leaved, white-ciliate, two smaller. Instead of the petals a small yellow subvillose body in the middle of the calyx, which may be called a nectary. Filaments four or five, longer than the calyx, villose at the base. Anthers twin, yellow, villose. Calyx, in the female, four or five-parted, ciliate. A compressed fleshy yellow rim at the base of the germ instead of petals. Berry the size of a large pepper-corn, pubescent, scarlet when ripe. It flowers in february; and was discovered in the island of Hispaniola by Swartz; who thinks it may perhaps be of a different genus from the preceding species.

SCHAGERI-COTTAM. See *Grewia*.

SCHEFFLERA. (So named by Forster, in honour of Scheffler, physician and botanist at Dantzic, who inserted many new plants in Reyger's *Flora Gedanensis*.)

*Lin. gen. Schreb. n. 537. Forst. gen. t. 23. Juss. 429.*

Class. 5. 6. Pentandria Decagynia.

#### GENERIC CHARACTER.

CAL. Perianth very small, five-toothed, superior, permanent: segments awl-shaped.

COR. Petals five, oblong.

STAM. Filaments five, filiform, scarcely longer than the petals. Anthers roundish.

PIST. Germ globular-depressed, inferior. Styles eight or ten, round, short, permanent. Stigmas simple.

PER. Capsule globular-depressed, eight or ten-celled.

SEEDS solitary, semicircular, compressed.

#### ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. five-petalled. Caps. eight or ten-celled. Seeds solitary, semicircular.

<sup>u</sup> Swartz.

<sup>x</sup> Idem.



# SCH

## SPECIES.

1. *Schefflera digitata*.  
*Forst. gen.* 46. *prodr. n.* 146.  
 Native of New Zealand.  
*SCHERUBALA*. See *Illecebrum*.  
*SCHERUNAM-COTTAM*. See *Clusia* and *Cluytia*.  
*SCHERU-PARITI*. See *Hibiscus Rosa-sinensis*.  
*SCHETTI*. See *Ixora* and *Plumbago*.]  
*SCHEUCHZERIA*. (So named by Linneus, in memory  
 of the two brothers, John James, professor of mathema-  
 tics at Zurich, author of *Itinera Alpina*; and John  
 Scheuchzer, professor of physics at Zurich, author of a  
 famous treatise on Grasses.)  
*Lin. gen. n.* 452. *Reich. n.* 487. *Schreb. n.* 615.  
*Fl. lapp. t.* 10. *f.* 1. *Juss.* 46.  
*Class.* 6. 3. Hexandria Trigynia.  
 Nat. order of *Tripetaloidæ*. *Junci*, *Juss.*

## GENERIC CHARACTER.

- CAL.* Perianth six-parted: leaflets oblong, acute, reflex-  
 spreading, rude, permanent.  
*COR.* none.  
*STAM.* Filaments six, capillary, very short, flaccid. *An-*  
*thers* erect, obtuse, very long, compressed.  
*PIST.* Germs three, ovate, compressed, size of the calyx.  
*Styles* none. *Stigmas* oblong, blunt at top, fastened  
 outwardly to the germ.  
*PER.* Capsules as many as there are germs, roundish,  
 compressed, inflated, reflex-distant, two-valved.  
*SEEDS* solitary, oblong.

*OBS.* Number of the germs and capsules varying from  
 three to six; but three is the most natural  
 number.

## ESSENTIAL CHARACTER.

- Cal.* six-parted. *Cor.* none. *Styles* none. *Caps.* three,  
 inflated, one-seeded.

## SPECIES.

1. *Scheuchzeria palustris*.  
*Lin. spec.* 482. *syst.* 348. *Reich.* 2. 125. *Willd.* 2.  
 263. *fl. lapp. n.* 133. *succ. n.* 320. *Hall. belv.*  
*n.* 1310. *Gmel. fib.* 1. 73. *Fl. dan. t.* 76.  
*Pollich pal. n.* 363. *Hoffm. germ.* 130. *Roth.*  
*germ.* 1. 159. 2. 419. *Krock. files. n.* 474. *Villars*  
*dauph. 2.* 227.  
*Juncus floridus minor.* *Baub. pin.* 12. *prodr.* 43.  
*theat.* 190. *Rudb. elys.* 1. 110. *f.* 2. *Raii hist.*  
 1913.  
*Juncoidi affinis palustris.* *Scheuch. gram.* 336.  
*Gramen juncum aquaticum, semine racemoso.* *Loef.*  
*pruss.* 114. *t.* 28.

## [DESCRIPTION, &c.

Root perennial, creeping, jointed, covered at top  
 with scales, which are the relics of departed leaves,  
 among which it puts forth fibres. Stem upright, sim-  
 ple, a span high, round. Root-leaves few: stem-  
 leaves two, one involving the base of the stem with  
 its sheath, the other a little higher, each shorter than  
 the stem. Villars remarks, that there are two or  
 three joints on the stem, with a leaf at each, which  
 is firm, rolled back, a little recurved, pointed and  
 cylindrical. The floral leaves come out above the  
 middle of the stem alternately, most frequently five  
 in number, the lower ones longer, each proceeding  
 from a sheath, which is loose and does not invert the  
 upper part of the culm. Flowers from each axil of  
 the floral leaves solitary, on upright peduncles, of a  
 yellowish-green colour. Germs commonly three, but  
 frequently four or five in a flower. Pollich says,  
 from three to six capsules to a flower; and one or  
 two, sometimes but seldom three seeds in a capsule.

Native of Lapland, Sweden, Denmark, Germany,  
 Switzerland, Prussia, Dauphiné, Siberia, in marshes.

*SCHEUCHZERIA*. See *Anthericum*.

*SCHINOIDES*. See *Fagara*.]

*SCHINUS*. (*Σχινος* of *Athenæus*. From *σχίζω*, *findo*,  
 to cleave.)

*Lin. gen. n.* 1130. *Reich. n.* 1234. *Schreb. n.* 1539.  
*Juss.* 371. *Gartn. t.* 140. *Molle. Tournef.*  
*Class.* 22. 9. Dioecia Decandria.  
 Nat. order of *Dumofcæ*. *Terebintaceæ*, *Juss.*

<sup>1</sup> Linn. lapp.

# SCH

## GENERIC CHARACTER.

### \* Male.

- CAL.* Perianth one-leafed, five-parted, spreading, acute.  
*COR.* Petals five, oval, spreading, petioled.  
*STAM.* Filaments ten, filiform, length of the corolla,  
 spreading. *Anthers* roundish.  
*PIST.* Rudiment without a stigma.

### \* Female.

- CAL.* Perianth one-leafed, five-parted, acute, perma-  
 nent.  
*COR.* Petals five, oblong, spreading, petioled.  
*PIST.* Germ roundish. *Style* none. *Stigmas* three, ovate.  
*PER.* Berry globular, three-celled.  
*SEEDS* solitary, globular.

## ESSENTIAL CHARACTER.

- Cal.* five-parted. *Pet.* five.  
*FEM.* Berry three-celled?

## SPECIES.

1. *Schinus Molle*. *Peruvian Mastick Tree*.  
*Lin. spec.* 1467. *syst.* 891. *Reich.* 4. 269. *hort. cliff.*  
 483. *Gartn. fruct.* 2. 276. *Mill. fig.* 246.  
*Lentiscus peruana.* *Baub. pin.* 399. *Raii hist.* 1582.  
*Park. theat.* 1525.  
*L. per. f. Molle arbor.* *Jonst. dendr. t.* 84. *f.* 1.  
*L. africana.* *Seb. mus.* 2. 7. *t.* 5. *f.* 5.  
*Molle. Clus. cur. post.* 50. *monard.* 322. *Ger.* 1346.  
*emac.* 1530.  
*Leaves pinnate, leaflets serrate with the end one very*  
*long, petioles equal.*  
 2. *Schinus Arcira*. *Brazilian Mastick Tree*.  
*Lin. spec.* 1467. *syst.* 891. *Reich.* 4. 269.  
*Molle foliis non ferratis.* *Fevill. peruv.* 3. 43. *t.* 30.  
*Piperodendron Heist.* *Fabric. helmst.* 397.  
*Leaves pinnate, leaflets quite entire equal, petioles equal.*

## DESCRIPTIONS, &c.

1. This rises with a woody stem eight or ten feet  
 high, dividing into many branches, covered with a  
 brown rough bark. Leaves alternate on the branches,  
 composed of several pairs of leaflets from ten to fif-  
 teen, each about an inch and half long, and a quarter  
 of an inch broad at the base, lessening gradually to  
 the point, and having a few ferratures on their edges;  
 they are of a lucid green, and emit a turpentine odour  
 when bruised. The flowers are produced in loose  
 bunches at the end of the branches; they are very  
 small, white, and have no odour.

[Linneus remarks, that the female flowers have  
 stamens, but that they are barren.

Gærtner describes the berry as spherical, the size of  
 a pea, succulent, one-celled, one-seeded: cuticle pa-  
 pery, very smooth, shining, whitish: pulp fugacious:  
 shell cartilaginous, hard, but it may be cut when sof-  
 tened, ovate-turbinate, very obscurely angular, some-  
 what wrinkled, divided into several cells, the central  
 cell larger and having a seed in it, the outer ones (six  
 at most) spurious, narrow, abounding in a fragrant  
 aromatic oil. Seed one in each shell, of the same  
 shape with the central cavity, or obovate, irregularly  
 and deeply angular, acuminate downwards, pale.

The number of seeds is variously given by different  
 authors. Adanson and Gærtner saw only one shell.  
 Feuillée mentions two seeds having the taste of pep-  
 per, in the middle of a bright red berry filled with a  
 gummy substance. All other authors ascribe three  
 seeds to *Schinus* <sup>2</sup>.

Native of Peru.] Mr. Miller says, he has received  
 the seeds both from Peru and Mexico. [The Mastick  
 tree was cultivated by Gerarde before 1597<sup>2</sup>. As also  
 by Mr. Nicholas Lete, merchant of London, and Mr.  
 James Garret, a most skilful apothecary, who received  
 the seeds from Lord Hunsdon, Lord High Chamber-  
 lain of England; worthy (says Gerarde) of triple ho-  
 nour for his care in getting, as also for his curious  
 keeping rare things brought from the farthest part of  
 the world: which seeds we have sown in our gardens,  
 where they have brought forth plants of a foot high,  
 and also their beautiful leaves: but notwithstanding  
 our care, diligence and industry, they have perished  
 at the first approach of winter, as not being able by

<sup>2</sup> Gærtner.

<sup>2</sup> Hort. kew.



reason of their tenderness to indure the cold of our winter blasts<sup>b</sup>. And yet we have them now in our greenhouses.]

2. This differs from the preceding only in having the leaflets entire and all equal in size. [Alstroemer remarks, that the fructification is quite the same as in the other:—Fabricius, that the stamens are from eight to eleven in number.—Native of Brasil and Peru.]

## PROPAGATION AND CULTURE.

This plant is propagated best by seeds, which must be procured from the countries where they naturally grow: these should be sown in pots filled with fresh earth, and plunged into a moderate hot-bed. If the seeds are good, the plants will appear in about five or six weeks: and if they are properly managed by admitting fresh air daily to them, according to the warmth of the season, and are duly refreshed with water, they will be fit to transplant in about five or six weeks after, when they should be carefully turned out of the pots and their roots separated: then they must be each planted in a small pot filled with soft loamy earth, and plunged again into a moderate hot-bed, shading them from the sun till they have taken fresh root; then they must be gradually inured to the open air, into which they should be removed soon after, placing them in a sheltered situation, where they may remain till autumn, but they must be removed into shelter before the first frosts, otherwise their tops will be killed, and thereby the plants are frequently destroyed.

These plants being tender when young, require a little warmth in winter; but after two or three years growth, they will live in a good green-house, where, as they retain their leaves all the year, they will make a good variety. It may also be propagated by layers and cuttings; the layers should be put down in the spring, and by the following spring they will be rooted; the cuttings should be planted in april, which will put out roots in about two months, and may afterwards be treated as the seedling plants.

2. The second sort may be propagated in the same manner; but the young plants being much more tender, will require to be placed in a moderate stove for four or five winters, after which they may be kept in a good green-house, giving them little water in winter.

[SCHINUS. See *Fagara* and *Limonia*.

SCHIT-ELU. See *Sesamum*.

SCHMIDELIA. (So named by Linneus, in honour of Casimir Christopher Schmidel, professor of botany at Erlang, author of *Icones et Analyses Plantarum*, 1747 and 1763.—Geßneri Botanica, and various dissertations.)

Lin. gen. Reich. n. 533. Schreb. n. 672. Juss.

247. Ufubis. Burm. ind. 81. Toxicodendrum.

Gertn. t. 44. Rhus Cobbe. Lin. spec.

Class. 8. 2. Octandria Digynia.

Nat. order of Sapindi, Juss.

## GENERIC CHARACTER.

CAL. Perianth two-leaved: leaflets roundish, coloured, permanent.

COR. Petals four, roundish, sessile, erect.

STAM. Filaments eight, simple, length of the flower. Anthers roundish.

PIST. Germs two, pedicelled, compressed, longer than the flower. Styles filiform, bifid at the top. Stigmas simple.

PER. Berries two, subglobular.

SEEDS solitary.

## ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. four-petalled. Germs pedicelled, longer than the flower.

## SPECIES.

1. Schmidelia racemosa.

Lin. syst. 375. Reich. 2. 201. Willd. 2. 435.

mant. 67. 514.

Rhus Cobbe. Lin. spec. 382.

Ufubis triphylla. Burm. ind. 81. t. 32. f. 1.

<sup>b</sup> Gerarde herb.

Toxicodendrum Cobbe. Gertn. fruct. 1. 207.

Kobbæ. Zeyl. Linn. zeyl. n. 441.

## DESCRIPTION, &amp;c.

This is a tree in appearance resembling *Rhus trifoliata*, with flexuose branches as in *Rhus Toxicodendron*. Leaves alternate, ternate: leaflets petioled, ovate-oblong, acuminate, subserrate, naked. Common petioles round, submentose, the length of the leaves. Racemes axillary, simple, with many scattered flowers at each point<sup>c</sup>.

Berry superior, oblong-sphæroidal, produced at the base into a point fastened to the calyx, fleshy, smooth, black, one-celled. Seed single, ovate, large, adhering all round to the pulp of the berry. It differs from *Rhus* in having the seed erect, and the radicle of the embryo not bent in<sup>d</sup>.

Native of the East Indies.

SCHOENANTHUS. See *Andropogon* and *Apluda*.

SCHOENOIDES. See *Scirpus*.

SCHOENOPRASUM. See *Allium*.

SCHOENUS. (Σχοινος of Dioscorides. From σχοινος, funis, a rope; to making which this plant is adapted: from σχειν, retinere.)

Lin. gen. n. 65. Reich. n. 71. Schreb. n. 92.

Juss. 27. Cyperella. Mich. 31. Pseudocyperus.

Mich. 31. Melanoschoenus. Mich. gen. 31.

Class. 3. 1. Triandria Monogynia.

Nat. order of Calamariæ. Cyperoides, Juss.

## GENERIC CHARACTER.

CAL. Glumes chaffy, one-valved, heaped.

COR. none.

STAM. Filaments three, capillary. Anthers oblong, erect.

PIST. Germ. ovate-three-sided, obtuse. Style bristle-shaped, length of the corolla. Stigma bifid or trifid, slender.

PER. none.

SEED single, roundish, among the glumes.

OBS. There are some species in which a few very small bristles springing from the proper receptacle surround the seed.

## ESSENTIAL CHARACTER.

Glumes chaffy, (one-valved,) heaped, the outer ones barren. Cor. none. Seed one, roundish among the glumes.

## SPECIES.

\* With a round culm.

1. Schoenus Mariscus. Prickly or long-rooted Bog-rush.

Lin. spec. 62. Reich. 1. 117. Willd. 1. 259.

f. succ. n. 38. Smith brit. 43. Hudf. angl. 14.

Wither. arr. ed. 3. 79. Relb. cant. n. 30. Roth.

germ. 1. 19. 2. 46. Hoffm. germ. 14. Neck.

gallob. 21. Krock. files. n. 62. Villars dauph. 2.

185. Allion. pedem. n. 2372. Jacqu. collect. 3. 72.

Desfont. atlant. 42.

Mariscus panicula ramosa foliorum oris dorsoque ferrato. Hall. belv. n. 1343.

Cyperus longus inodorus germanicus. Baub. pin. 14. theat. 221.

C. longus inodorus sylvestris. Lob. ic. 76. 1. Baub.

hist. 2. 504. 1. Ger. emac. 29. 3. Raii hist. 1300.

syn. 426.—vulgaris. Park. theat. 1264. 1.

C. longus major & elatior, foliis & carina ferratis.

Mor. hist. f. 8. t. 11. f. 24.

Pseudo-cyperus palustris, foliis & carina ferratis.

Scheuch. gram. 375. t. 8. f. 7—11.

Scirpus palustris altissimus, fol. & carina ferratis. Tourn. inst. 528.

Gramen cyperoides altissimum, foliis et carina ferratis.

Bocc. sic. 72. t. 39.

Culm round, leaves prickly along the edge and back.

2. Schoenus junceus. Rushy Bog-rush.

Lin. spec. ed. Willd. 1. 259. phyt. 1. 2. n. 9. t. 1.

f. 4.

Culm round almost naked, umbel sessile lateral.

3. Schoenus mucronatus. Dagger-pointed or clustered Bog-rush.

Lin. spec. 63. syst. 95. Reich. 1. 117. Willd. 1.

259. Allion. pedem. n. 2373. Desfont. atlant.

41.

<sup>c</sup> Linn. mant.

<sup>d</sup> Gartner.



- Cyperus ægyptiacus.* *Gloxin obs.* 20. t. 3.  
*Juncus maritimus.* *Lob. ic.* 87.—panicula subrotunda glumosa. *Barr. ic.* 203. f. 1.  
*Melanoschoenus maritimus humilis, cyperi effigie.* *Mich. gen.* 46.  
*Scirpus culmo tereti, foliis tribus patulis flosculisque congestis terminato.* *Sauv. monsp.* 9.  
*S. maritimus, capite glomerato.* *Tournef. inst.* 528. *Scheuch. gram.* 367. t. 8. f. 1.  
*Gramen cyperoides maritimum.* *Bauh. pin.* 6. theat. 91. *Bauh. hist.* 2. 498.  
*Gr. junceum marit. capite squamoso foliaceo.* *Mor. hist.* 3. 227. f. 8. t. 9. f. 6.  
*Culm round naked, spikelets ovate in bundles, involucre six-leaved, leaves channelled.*  
 4. *Schoenus pilosus.* *Hairy Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 260. *phyt.* 1. 3. n. 10. t. 1. f. 3.  
*Culm round, sheaths of the leaves hairy, flowers in bundles.*  
 5. *Schoenus filiformis.* *Slender-stalked Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 260. *Thunb. prodr.* 16. *Pluk. amaltb. t.* 416. f. 1.  
*S. indicus.* *Lamarck encycl.* 1. 733.  
*Culm round capillary, head oblong, involucre three-leaved.*  
 6. *Schoenus striatus.* *Striated Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 260. *Thunb. prodr.* 16.  
*Culm round, head ovate, involucre three-leaved.*  
 7. *Schoenus Capitellum.*  
*Lin. spec. ed. Willd.* 1. 260. *Thunb. prodr.* 16.  
*Culm round, head ovate, involucre two-leaved.*  
 8. *Schoenus scariosus.*  
*Lin. spec. ed. Willd.* 1. 261. *Thunb. prodr.* 16.  
*S. deustus.* *Berg. cap.* 10.  
*S. trigynus.* *Lin. mant.* 180.  
*S. bulbosus.* *Rottb. gram.* 46. t. 16. f. 2.  
*Culm round, head oblong, involucre one-leaved, glumes scariosae at the edge.*  
 9. *Schoenus nigricans.* *Black Bog-rush.*  
*Lin. spec.* 64. *Reich.* 1. 118. *Willd.* 1. 261. *fl. suec. n.* 39. *Huds. angl.* 15. *Smith brit.* 43. *Relb. cant. n.* 31. *Sibth. oxon. n.* 63. *Dicks. hort. succ.* 1. 1. *Roth. germ.* 1. 19. 2. 47. *Hoffm. germ.* 14. *Pollich pal. n.* 37. *Krock. files. n.* 64. *Villars dauph.* 2. 185. *Allion. pedem. n.* 2374. *Thunb. prodr.* 19. *Desfont. atlant.* 41. *Lamarck illustr. n.* 626. t. 38. f. 1.  
*Cyperus.* *Hall. helv. n.* 1347.  
*Scirpus flosculus spicatus.* *Aët. stock.* 1741. p. 182.  
*Juncus lævis minor, panicula glomerata nigricante.* *Raii hist.* 1305. *syn.* 430. *Mor. hist.* 3. 233. f. 8. t. 10. f. 28.  
*J. lithospermi femine.* *Magn. monsp.* 145. t. 144. *Mor. blas.* 106.  
*J. palustris panic. glom. ex rubro nigricante.* *Raii cant.*  
*Juncus affinis capitulo glomerato nigricante.* *Scheuch. gram.* 349. t. 7. f. 13, 14, 15.  
*Gramen spicatum junci facie, Lithospermi femine.* *Tourn. inst.* 518.  
*Culm round naked, head ovate, involucre two-leaved with one of the valves awl-shaped and longer.*  
 10. *Schoenus compressus.* *Compressed Bog-rush.*  
*Lin. spec.* 65. *yst.* 95. *Reich.* 1. 121. *Huds. angl.* 15. *Wither. arr. ed.* 3. 80. *Smith brit.* 44. *Engl. bot. t.* 791. *Relb. cant. n.* 32. *Dicks. hort. succ.* 3. 2. *Leers herb. n.* 32. t. 1. f. 1. *Pollich pal. n.* 38. t. 1. f. 2. *Krock. files. n.* 65. t. 9. *Villars dauph.* 2. 186. *Allion. pedem. n.* 2375. *Reliqu. Rudb.* 3. f. 2. *Hall. helv. n.* 1342. (*Scirpus.*) *Mich. gen.* 53. t. 31. (*Cyperella* 3.)  
*Carex uliginosa.* *Lin. spec.* 1381. *fl. suec. n.* 325.  
*Scirpus Caricis.* *Lin. spec. ed. Willd.* 292.  
*Gramen cyperoides spica simplici compressa disticha.* *Pluk. phyt. t.* 34. f. 9. *Raii hist.* 1910. *syn.* 425. *Mor. hist.* 3. 245. *Scheuch. gram.* 490. t. 11. f. 6.  
*Culm roundish naked, spike distich shorter than the one-leaved involucre, spikelets many-flowered, leaves flat.*  
 11. *Schoenus ferrugineus.* *Rust-coloured Bog-rush.*  
*Lin. spec.* 64. *Reich.* 118. *Willd.* 1. 261. *Fl. suec. n.* 40. *Hoffm. germ.* 14. *Villars dauph.* 2. 186.

- Culm round naked, spike double, larger valve of the involucre equal to the spike.*  
 12. *Schoenus rufus.* *Brown Bog-rush.*  
*Huds. angl.* 15. *Wither. arr. ed.* 3. 80. *Smith brit.* 45. *Dicks. hort. succ.* 10. 6.  
*S. brunneus.* *Soland. Mss. in herb. Lightf.*  
*S. ferrugineus.* *Huds. angl.* 15. *Wither. arr. ed.* 2. 42. *Lightf. scot.* 86.  
*S. compressi varietas.* *Lightf. scot.* 1138. t. 24. f. 2.  
*Culm round naked, spike distich longer than the one-leaved blunt involucre, spikelets few-flowered, leaflets channelled.*  
 13. *Schoenus fuscus.* *Dusky Bog-rush.*  
*Lin. spec.* 1664. *yst.* 95. *Reich.* 1. 119. *Willd.* 1. 262. *Hoffm. germ.* 15. *Roth. germ.* 1. 19. 2. 48. *Pollich pal. n.* 40. *Mich. gen.* 53. (*Cyperella* 2.) *Mor. hist.* f. 8. t. 11. f. 40. (*Cyperus.*)  
*Culm round leafy, spikelets subfascicled, leaves filiform channelled.*  
 14. *Schoenus tristachyos.* *Three-spiked Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 262. *Thunb. prodr.* 16.  
*Culm round jointed even, heads three terminating.*  
 15. *Schoenus cuspidatus.* *Cusped Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 262. *Thunb. prodr.* 16. *Rottb. gram.* 66. t. 18. f. 3.  
*Culm round, spikes panicled shorter than the involucre.*  
 16. *Schoenus aristatus.* *Awined Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 262. *Thunb. prodr.* 16.  
*Culm round leafless, spikes aggregate, involucre one-leaved, glumes cusped.*  
 17. *Schoenus compar.* *Equal-spiked Bog-rush.*  
*Lin. syst.* 95. *Reich.* 1. 119. *Willd.* 1. 263. *mant.* 117. *Thunb. prodr.* 16. *Rottb. gram.* 65. t. 18. f. 4.  
*Culm round leafless, spikes aggregate, involucre one-leaved shorter, glumes acute.*  
 18. *Schoenus flexuosus.* *Flexuose Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 263. *Thunb. prodr.* 16.  
*S. involucrat.* *Rottb. gram.* 64. t. 19. f. 5?  
*Culm round leafy, spikes panicled, glumes mucronate.*  
 19. *Schoenus capillaceus.* *Hair-leaved Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 263. *Thunb. prodr.* 16.  
*Culm round leafy, spikes subracemed, glumes cusped, leaves capillary.*  
 20. *Schoenus ustulatus.* *Burnt Bog-rush.*  
*Lin. syst.* 95. *Reich.* 1. 119. *Willd.* 1. 263. *mant.* 178. *Thunb. prodr.* 16. *Rottb. gram.* 63. t. 18. f. 1.  
*Culm round leafy, spikes peduncled pendulous oblong awned.*  
 21. *Schoenus spicatus.* *Spiked Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 264. *Thunb. prodr.* 16.  
*Culm round capillary, heads spiked involucre.*  
 22. *Schoenus Bobartiae.*  
*Lin. spec. ed. Willd.* 1. 264. *Retz. obs.* 4. 9.  
*Culm compressed, head terminating, involucre five-leaved.*  
 23. *Schoenus stellatus.* *Starry Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 264. *Swartz prodr.* 19. *descr.* 102. *Lamarck encycl.* 1. 733. *Sloan. jam.* 1. 119. t. 78. f. 1. *Raii hist.* 3. 624.  
*Culm subtriquetrous, spikelets conglomerate, with a leafy involucre coloured at the base.*  
 24. *Schoenus bulbosus.* *Bulbous Bog-rush.*  
*Lin. syst.* 95. *Reich.* 1. 120. *Willd.* 1. 264. *mant.* 178. *Thunb. prodr.* 16.  
*Scirpus capensis.* *Rottb. gram.* 53. t. 16. f. 3.  
*Culm round filiform, spikes racemed directed one way, involucre solitary.*  
 25. *Schoenus inanis.*  
*Lin. spec. ed. Willd.* 1. 265. *Thunb. prodr.* 16.  
*Culm round leafless, spikes panicled, glumes acute.*  
 \*\* With a three-sided culm.  
 26. *Schoenus cephalotes.*  
*Lin. spec. ed. Willd.* 1. 265. *Rottb. gram.* 61. t. 20.  
*Culm leafy three-sided, involucre four-leaved, bent down, head oblong terminating.*  
 27. *Schoenus cyperoides.*  
*Lin. spec. ed. Willd.* 1. 265. *Swartz prodr.* 19. *descr.* 110.  
*Culm three-sided leafy, umbel terminating, spikelets glomerate.*  
 28. *Schoenus*



28. *Schoenus cymosus*.  
*Lin. spec. ed. Willd.* 1. 265.  
*Culm three-sided leafy, umbel terminating compound, spikelets ovate striated glomerate.*
29. *Schoenus glomeratus*.  
*Lin. spec. 65. syst. 96. Reich.* 1. 121. *Willd.* 1. 266. *Swartz obs.* 29. *Gron. virg.* 131. *Thunb. prodr.* 17?  
*Culm three-sided leafy, flowers in bundles, leaves flat, peduncles lateral in pairs.*
30. *Schoenus Cladium*.  
*Lin. spec. ed. Willd.* 1. 266. *Swartz prodr.* 19. *descr.* 97. *Brown. jam.* 114. (*Cladium*.)  
*Culm bluntly three-sided leafy even, leaves prickly in front, panicles diffused, spikelets one-flowered sessile two-stamened.*
31. *Schoenus effusus*.  
*Lin. spec. ed. Willd.* 1. 266. *Swartz prodr.* 19.  
*Culm leafy bluntly three-sided even, leaves prickly in front, panicles more erect, spikelets one-flowered sessile two-stamened.*
32. *Schoenus Reftioides*.  
*Lin. spec. ed. Willd.* 1. 266. *Swartz prodr.* 19. *descr.* 104.  
*Culms at bottom compressed-ancipital and very smooth, flowers panicled, sheath lanceolate at the top.*
33. *Schoenus furinamentis*. *Surinam Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 266. *Swartz prodr.* 19. *descr.* 99. *Rottb. gram.* 68. t. 21. f. 1. *Pluk. amalib.* 112. (*Gramen cyperoides indianum, &c.*)  
*Scirpus corymbosus. Lin. syst.* 100. *sec. Swartz. Willd.* 1. 308.  
*Culm leafy three-sided, peduncles corymbes, the lower ones alternate distant, the upper ones crowded.*
34. *Schoenus thermalis*. *Warm-bath Bog-rush.*  
*Lin. syst.* 96. *Reich.* 1. 121. *Willd.* 1. 267. *mant.* 179. *Thunb. prodr.* 17. *Rottb. gram.* 63. n. 83.  
*Culm three-sided leafy, heads lateral compound subsessile, leaves ensiform keeled.*
35. *Schoenus lævis*.  
*Lin. spec. ed. Willd.* 267. *Thunb. prodr.* 17.  
*Culm three-cornered leafy, heads lateral, glumes mucronate, spikes ovate.*
36. *Schoenus lanceus*.  
*Lin. spec. ed. Willd.* 1. 267. *Thunb. prodr.* 17.  
*Culm. three-cornered leafy; spikes panicled lateral, glumes and spikelets lanceolate.*
37. *Schoenus albus*. *White-headed Bog-rush.*  
*Lin. spec.* 65. *syst.* 96. *Reich.* 1. 122. *Willd.* 1. 267. *fl. lapp. n.* 17. *succ. n.* 41. *hort. cliff.* 22. *Huds. angl.* 16. *Witber. arr. ed.* 3. 81. *Smith brit.* 46. *Relb. cant. n.* 33. *Abbot bedf.* 10. n. 29. *Dicks. hort. succ.* 1. 2. *Fl. dan. t.* 320. *Hoffm. germ.* 15. *Roth. germ.* 1. 20. 2. 49. *Pollich pal. n.* 39. *Scop. carn. n.* 52. *Krock. filef. n.* 66. t. 10. *Allion. pedem. n.* 2376. *Hall. belv. n.* 1341. (*Scirpus*.) *Mich. gen.* 53. (*Cyperella* 1.) *Pluk. phyt. t.* 34. f. 11.  
*Cyperus minor palustris hirsutus, paniculis albis paleaceis. Mor. hist. f.* 8. t. 9. f. 39. *Raii syn.* 427.  
*Gramen junceum leucanthemum. Ger. emac.* 30.  
*Gr. cyperoides palustre leucanth. Scheuch. gram.* 503.  
 β. *Schoenus fuscus. Lin. spec.* 1664. *Huds. angl.* 16. β. *Witber. arr. ed.* 3. 80. *Smith brit.* 46.—v. n. 13.  
*Cyperus minor angustifolius palustris, capitulis fuscis paleaceis. Mor. hist. f.* 8. t. 11. f. 40. *Raii syn.* 427.  
*Culm three-sided leafy, flowers in bundles, leaves bristle-shaped.*
38. *Schoenus gracilis*. *Slender Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 268. *Swartz prodr.* 19. *descr.* 109.  
*Culm three-sided leafy very long filiform, spikes lateral peduncled.*
39. *Schoenus setaceus*. *Bristle-stalked Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 268. *Swartz prodr.* 20. *descr.* 107. *Rottb. gram.* 62. t. 21. f. 2. *Berg. aet. belv.* 7. 130. t. 9.  
*Culm three-sided almost naked, leaves bristle-shaped, spikelets aggregate, flowers two-stamened.*

40. *Schoenus pusillus*. *Dwarf Bog-rush.*  
*Lin. spec. ed. Willd.* 1. 268. *Swartz prodr.* 20. *descr.* 112. *icon.* 1. 7. t. 6.  
*Culm three-sided naked filiform, spikelets terminating sub-fascicled sessile, with a leaflet beneath equalling the spike.*
41. *Schoenus capillaris*.  
*Lin. spec. ed. Willd.* 1. 268. *Swartz prodr.* 20. *descr.* 106.  
*Culm three-sided naked capillary, leaves capillary, spikelets fascicled reflex involucred, involucret two-leaved.*

## DESCRIPTIONS, &amp;c.

1. Root perennial. Culm three or four feet high, smooth and even, leafy, branched at top. Leaves linear-lanceolate, very long, acuminate, sheathing at the base, entire, very sharply serrulate along the edge and keel. Flowers ferruginous, in terminating and lateral corymbs, with sheathing alternate bractes<sup>c</sup>. Glumes ovate-acuminate. Stigma trifid. Capsule subtriquetrous, mucronate, with a roundish seed<sup>f</sup>.—According to Scheuchzer, this species has only two stamens.

Native of Europe and Africa, in fens and ditches. In the moors near Cambridge, the Isle of Ely, and the great level of the fens. On St. Faith's Newton bogs near Norwich, and Ellingham fen in Norfolk. By the Thame at Dorsthill near Tamworth, Warwickshire. By the sea side between Pensance and Marketjeu, Cornwall. Hell-kettles near Darlington. In a large pool called Cars y Crom-Llyn, between Breton-ferry and Swansea, &c. It is so common in the Isle of Ely, &c. that it is brought up to Cambridge for lighting fires and heating ovens. In the fen towns it is frequently used instead of straw for thatching; and in pools often grows in such quantities as to form floating islands.

2. Native of Guinea.

3. Root perennial, creeping. Leaves very many, radical, collected into a bundle, very long, rugged at the edge, neither fleshy nor flat. Culm firm, even, thicker and much shorter than the leaves. Involucre three-leaved, like the leaves but shorter: within this there are also three other leaflets still shorter. Spikes very many, sessile and forming a head, sharpish, imbricate with ovate concave acute scales. Filaments three, linear. Germ obovate. Style single. Stigmas three, oblong<sup>g</sup>.

Native of the South of France, Spain, Italy, Barbary, Smyrna, on sandy sea coasts.

4. Native of Guinea.

5, 6, 7. Natives of the Cape of Good Hope.

8. This has the appearance of *Scirpus palustris*. Radical leaves abundant, crowded, filiform, channelled on the inner side, having a wide white lateral membrane at the base. Culm naked, striated, without any knot, a span high. Spike terminating, cylindrical, an inch long; with lanceolate acuminate scales, the lower ones membranaceous. Stamens three. Styles three<sup>h</sup>.

Native of the East Indies and the Cape of Good Hope.

9. Root perennial. Culm a foot high, quite single, smooth. Leaves linear, half-round, somewhat rugged, widening at the base, brown, shining, thinner at the edge, sheathing, shorter than the culm. Head roundish or ovate, composed of several spikelets, which are blackish-brown and shining. Involucre double, membranaceous; the inner one very short; the outer ending in a leafy straight point, three times as high as the head<sup>i</sup>.

The numerous leaves form a thick tuft composed of small bundles, each bundle covered with many broad scales of a blackish brown colour<sup>k</sup>. The spike-stalk is flexuose; and the seeds are roundish, approaching to three-sided, of a pearly lustre<sup>l</sup>. Each seed lies within the corresponding curvature of the spike-stalk<sup>m</sup>.

Native of Europe and Barbary, in bogs and marshes. In England not uncommon; flowering in June:

<sup>c</sup> Smith. <sup>f</sup> Relhan. <sup>g</sup> Linn. syst. <sup>h</sup> Linn. mant.  
<sup>i</sup> Smith. <sup>k</sup> Linn. <sup>l</sup> Haller.  
<sup>m</sup> Stokes in Withering.



10. Root perennial, fibrous, a little creeping. Culm half a foot high, roundish a little flattened on one side, smooth, striated, with a single sheathing leaf at the base, the rest naked. Leaves almost all radical, alternate, shorter than the culm, linear, flat, keeled with the dorsal nerve, somewhat rugged at the edge. Spike terminating, almost upright, of a shining brown colour, composed of from five to twelve distich spikelets, the lowest more remote from each other. Bracte solitary, leafy, with a triangular sharpish top, roughish along the edges, mostly longer than the spike. Flowers hermaphrodite. Seed surrounded with six rough bristles at the base; which is also the case in *Sc. glomeratus*, an American species: hence they have both a great affinity to *Eriophorum*, in their character<sup>a</sup>.—The two-rowed spike, says Dr. Withering, would almost induce one to refer *Sc. compressus* to the genus *Cyperus*, did not a more accurate examination support its present arrangement.

Linneus has placed this among the species with a three-sided culm; and Leers remarks, that although it is round and somewhat flattened, yet that below the spike it is triquetrous.

Native of Europe, in bogs. On Hinton moor, and between Little Shelford and Whittlesford in Cambridgeshire. Near Darsingham-Bath, Norfolk. Chiselmhurst in Kent. Basford Scottum, Nottinghamshire. Not uncommon in other counties of England: flowering in July.

11. This is very nearly allied to *Sc. nigricans*, but it is six times shorter and narrower. Head ferruginous as in that, but composed of a double spike, and hence very narrow. Each of these spikes consists of two flowers, very like those of *nigricans*. The universal involucre is a two-valved ferruginous glume, the outer or larger valve mucronate, exactly the length of the whole spike, but the smaller valve is far shorter<sup>o</sup>.—Native of Gothland.

Linneus himself confounded this with the next species. Our English botanists were mistaken about it, till Dr. Smith set them right in his *Flora Britannica*. It has not been found in England: but whether the *ferrugineus* of Germany and Dauphiné be the same with that of Sweden, I am not able to determine. Villars compares it with *nigricans*, and says it is not so high, that the leaves are smaller, and one of them embraces the stem: that the spike is blacker, and in a manner separate, more sensibly, into two or three lobes; the two leaves which support it are shorter than the spike.

12. Root perennial, creeping, horizontal. Culm from four to six inches high, seldom higher, quite round, striated, smooth, naked except at the base, where it has two short leaves. Leaves half-round, even, channelled above, not keeled on the back, widening at the base, membranaceous, sheathing: the radical leaves equalling the culm, twice as long as the stem-leaves. Spike terminating, shining brown, composed of five or six distich, approximating spikelets, with a subtriangular rachis. Bracte solitary, leafy, blunt, channelled, even, scarcely equalling the spike, but commonly much shorter, and sometimes there is none. Spikelets usually two-flowered, with the glumes swelling a little, even not striated. Anthers linear, standing out. Stigmas revolute. Seed bristly at the base. Hudson and Solander (from Yalden's manuscript description) have ascribed to it a double row of glumes, under the name of calyx and corolla, which perhaps are the *glumæ congestæ* of Linneus.—Yalden observed two stigmas; Hudson three.

Native of Scotland in marshes: doubtful if in Westmoreland.—Isles of Mull and Skye. Dunglas Castle. It flowers in July<sup>p</sup>.

Lightfoot has figured it, very indifferently, as a variety of *Sch. compressus*.

13. Very like *Sch. albus* in stature, size, appearance and place, yet different in its glomerate brown spikelets, not fastigate and white: it also flowers earlier<sup>a</sup>.

Linneus first inserted this in the appendix to his *Species Plantarum*; and it has been continued since, even by Willdenow. Dr. Smith has ascertained that it is no more than a variety of *Sch. albus*, n. 37. which see.

14, 15, 16. Natives of the Cape of Good Hope.

17. Culms even, a foot high. Spike terminating, composed of several, commonly six, heaped together. Spikelets two at each tooth of the rachis, sessile, equal, ovate, ferruginous. Calyx distich imbricate with several barren scales; the innermost pair bearing two flowers. Petals two, very small, awl-shaped, with distant valves. Stamens three, white, longer than the calyx. Germ with a filiform semitrifid style. Floral leaf under the lowest pair of spikelets, linear or awl-shaped, erect, longer than the whole spike.—Native of the Cape of Good Hope<sup>r</sup>.

18, 19. Natives of the Cape of Good Hope.

20. Culm two feet high, without joints. Stem-leaves few, filiform, even, a foot long, loose, channelled, acute, with a striated sheath brownish at top. Floral leaves two, alternate, not exceeding the culm, with a widening ferruginous sheath. Peduncles from each sheath commonly two, loose and almost membranaceous, length of the spike. Spikes compound, dark-ferruginous, oblong, awned, with an awned bracte of the same colour, commonly exceeding the spike. It differs manifestly from *Sch. glomeratus*, by its oblong spikes.—Native of the Cape<sup>r</sup>.

21. Native of the Cape of Good Hope.

22. Roots many, heaped, appearing to be bulbous with brown inflated coats, putting forth long perpendicular fibres. Leaves linear, loose, often exceeding the culm; which is about a foot high. Head spiked, short, with a round rachis. Spikelets several, with about five ovate, hollow, scarious scales. Involucre five-leaved; the leaflets decreasing, the longest being nine lines, and the shortest being six lines in length. Supposed to be native of Ceylon; found by Koenig<sup>r</sup>.

23. Root perennial. Plant a foot high or less. Culm single, upright, striated, smooth, sheathed with leaves at the base, roundish but bluntly three-cornered towards the top. Leaves almost the length of the culm, erect, linear, acuminate, entire, striated, smooth. Sheaths surrounding the culm, hirsute or ciliate at the neck. Involucre manifold or three-fold. Leaflets very long, ternately alternate, spreading, linear-lanceolate, sessile, striated, smooth, towards the base snow-white or white coloured. Spikes terminating, clustered, sessile, small, oblong, acuminate, whitish. Chaffs or glumes in bundles, imbricate, ovate, acute, concave, scarcely keeled, entire, one-flowered. Filaments three, the length of the glumes, upright. Germ roundish. Style longer than the glumes, cloven to the middle. Stigmas short, erect. Seed roundish, flattened a little, large. It resembles the *Kyllingias*, and is probably mixed with them by authors, especially with *Kyllingia triiceps*.—Native of the West Indies<sup>a</sup>.

24. Root bulbous, covered with the rudiments of fallen leaves. Leaves numerous, bristle-shaped, striated, erect, almost the length of the culm, separated at the base by white membranaceous scales. Culms a span high, leafless, subtriquetrous, scarcely longer or wider than the leaves. Flowers red, glomerate, small, in three or four little sessile alternate balls towards the top of the culm. Under each little ball is a bristle-shaped leaf longer than the ball. It has the appearance of *Juncus bulbosus*.—Native of the Cape of Good Hope<sup>x</sup>.

25. Native of the Cape of Good Hope.

26. Distinct from *Scirpus cephalotes*. Native of Surinam.

27. Two feet high. Culm striated, smooth. Leaves sheathing, half a foot long, linear, keeled, striated, smooth, with the keel of the leaves subserrate. Spikes terminating, umbelled. Peduncles from the sheaths of the terminating leaves several, unequal, three-sided. Involucre none, but only the two alternate leaflets, from the sheaths of which the peduncles rise. Spike-

<sup>a</sup> Smith.

<sup>o</sup> Linn. succ.

<sup>p</sup> Smith.

<sup>q</sup> Linn. spec.

<sup>r</sup> Linn. mant.

<sup>s</sup> Idem.

<sup>t</sup> Retzius.

<sup>u</sup> Swartz.

<sup>x</sup> Linn. mant.



lets in little terminating balls (sometimes compound) very much crowded, sessile, acuminate, spreading, ferruginous. Glumes chaffy, heaped, unequal, subimbricate; the inner ones more tender, narrower, less, one-flowered. Filaments three, very short. Germ extremely small. Style longer than the glumes, trifid at the top, permanent. Stigmas capillary, cirrhose. At the base of the germ are two bristles the length of the glumes. Seed inclosed within the glumes, obovate, mostly obcordate, bluntly three-cornered, ferruginous, smooth.

It is not a *Cyperus*, because the chaffs are not distinct, and the seed is not three-sided. It is very different from the *umbellatus*, figured by Jacquin in his *Icones rariores*, and described by him in the first volume of his *Colletanea*: that having altogether the appearance of a *Cyperus*, and a many-leaved terminating involucre.<sup>y</sup>—Native of Jamaica.

28. Root perennial. Culm a foot high, erect. Leaves linear, smooth, keeled, numerous on the culm; the upper ones longer than the umbel. Branches of the umbel unequal. Spikelets the size of Mustard seed, three always glomerate sessile. Scales ovate acuminate nerved brown. Universal involucre many-leaved, unequal, with one leaflet longer than the umbel, but the rest much smaller. It has no partial involucre. It is difficult to decide from a short description how far it differs from the preceding: but it is certainly very different from Jacquin's *umbellatus*.<sup>z</sup>—Native of North America.

29. Native of Jamaica and North America. Thunberg's plant seems, in Willdenow's opinion, to be different from Linneus's.

30. Culm eight or ten feet high, single, jointed, smooth, striated. Leaves sheathing, very long, keeled, half an inch wide, cartilaginous-ferrate along the back and edge, striated, smooth, rigid: sheaths closed in front, ferrate. Flowers in lateral panicles from the sheaths. Peduncles solitary, short, compressed, sheathed; sheaths numerous, crowded, alternate, from which spring some partial peduncles, which are elongated, loose, diffused, towards the top next the sheathlet subdivided into many unequal umbelled pedicels, frequently terminating in an umbellet, with the ultimate pedicels three-flowered. Spikelets three or four, ovate, acuminate, small, ferruginous. Glumes or scales oblong, acute, unequal: at the side of the inner glume surrounding the germ are capillary bristles the length of the glume. Filaments very short. Germ linear-oblong. Style longer than the glumes, trifid. Stigmas reflexed, convolute, permanent. Seed ovate, acute, shining brown.

It is allied to Sch. *Mariscus*, and was formerly taken for a variety of it by Linneus: but the culm is higher and bluntly three-sided; the panicle very large, with peduncles and pedicels longer and filiform; the spikelets smaller and ferruginous.

Native of Jamaica, in sea marshes.<sup>a</sup>

31. This also is a native of Jamaica, and it was gathered by Houstoun in the salt marshes near La Vera Cruz. Swartz gave it as a distinct species in his *Prodromus*, being intermediate between the preceding and *Mariscus*. But in his descriptions he says that it resembles the latter so nearly, that he dares not any longer to propose it as a distinct species.

32. Almost a fathom in height. Culm jointed, erect, striated: joints swelling. Leaves sheathed at the base, long, wide, linear, quite entire, very finely striated longitudinally, rigid: sheaths ancipital, finely striated. Panicles bursting from ancipital-lanceolate cowed sheaths, subdivided into dichotomous subfastigate diffused branchlets, having sheathlets underneath at all the divisions, of a red-ferruginous colour. Spikelets solitary or in pairs, sessile, two-flowered, polygamous, on prickly-ferrate peduncles. Glumes four-valved, two-flowered: valves decussated, ovate, acute, concave, slightly keeled, sometimes ferrate, brown. Filaments none. Germ three-cornered. Style long, trifid at top. Stigmas cirrhose. Serrate bristles are placed upon the pistil. One of the florets is small, in-

terior and two-valved; the valves equal and lanceolate. Filaments two or three minute. Pistil small.—Native of the West Indies.

Though it approach very near to this genus; and particularly to *Mariscus*, yet it is so singular, and so different in habit, that it might make a distinct genus if sufficient characters could be found.

33. From one to four feet high, growing in tufts. Culms simple, sharply three-sided, rugged, leafy below. Leaves sheathed, very long, equal to the culm or longer, flattish, slightly keeled, striated, linear, serrate-prickly along the keel and edge, stiffish; the upper ones shorter and distant: sheaths alternate, crowded, keeled, with a blunt dagger-point in front. Corymbs peduncled, lateral, compound, shorter than the leaves, before flowering crowded, nodding, afterwards divaricating: peduncles elongated, from the sheaths of the upper leaves, solitary, remote, loose; the upper ones crowded. Spikelets cylindrical-subulate, very shortly pedicelled, patulous, ferruginous. Bractes capillary, longer than the florets, at the base of the pedicels. Lower glumes shorter, ovate, imbricate: upper a little longer, and between them a middle flower male and solitary, between the outer ones females or an hermaphrodite. Filaments three very short. Anthers linear. Germ ovate, margined, blackish, surrounded at the base with from two to four jointed bristles. Style long, undivided. Stigma linear. Seed roundish, black-rust-coloured.—Most commonly many of the spikelets are male, without any females. Rottboell's figure is but indifferent, but the parts of fructification are accurately drawn. The habit, and affinity of this species to Sch. *Mariscus*, place it rather in this genus than in that of *Scirpus*, where it stands in *Systema Vegetabilium*.

Native of the West Indies, in Jamaica and Surinam: also in the East Indies and China.<sup>b</sup>

34. Root perennial. Culms six feet high, the thickness of a swan's quill, stiff, somewhat woody, even. Leaves sheathed, strict, even, erect. Heads alternate, towards the top of the culm, subsessile, each from a leafy sheath scarcely longer than the head. Each head is composed of smaller heads, and these of smaller yet till we come to the proper flower, divided by a leafy mucronate scale. Glume four-leaved: leaflets in pairs, opposite, oblong, membranaceous: the inner pair very thin and blunt. Stamens three, filiform, membranaceous; with anthers standing out the length of the flower. Germ very small. Style filiform. Stigmas three, filiform.

Native of the Cape of Good Hope, where it was found by Koenig.<sup>c</sup>

35, 36. Natives of the same Cape.

37. Root perennial, creeping. Culms half a foot high, ascending, striated, smooth, divided at top into upright flowering-branches, sheathed at the base by wide concave scales. Almost all the leaves on the stem, alternate, sheathing, linear, bluntish, a little recurved, smooth, never exceeding the stem: sheath entire. Flowers in terminating erect bundles, subcorymbed, pedicelled, snow-white, becoming brownish after flowering. In the variety, which Linneus and others made a species under the name of *fuscus*, always brown. Bractes like the leaves, but short.<sup>d</sup> Dr. Stokes remarks, that it has two stamens, seldom three.

β. Dr. Smith, in comparing the original specimens in the Linnean herbarium, has not been able to discover the least difference between the white and brown-headed Bog-rush. He remarks, that they have both three-sided culms, though Linneus has placed his *fuscus* among the round ones.

Native of Europe, in bogs. Near Gamlingay park in Cambridgeshire. Ampthill moor, Pottton and Aspley, Bedfordshire, Mr. Abbott. Felthorpe bogs, and near Haydon, Norfolk, Mr. Bryant. Birmingham heath. New Forest. About Kendal. Bagshot heath. Between Wickham and Croydon in Surry. Near Tunbridge in Kent. Common in Cornwall, Lancashire, Westmoreland, Cumberland, and Scotland. It flowers in July and August.

<sup>y</sup> Swartz.

<sup>z</sup> Willdenow.

<sup>a</sup> Swartz.

<sup>b</sup> Swartz.

<sup>c</sup> Lin. mant.

<sup>d</sup> Smith.



38. Height from three to six feet. Culm very long, simple, loose, striated. Leaves linear, very long, sessile, keeled, striated, ferrate. Spikes axillary. Peduncles solitary, elongated, filiform. Spikelets in bundles, small, six to ten, unequal, round and linear, sessile, ferruginous, smooth. Glumes chaffy, many, unequal: the lowest small; the rest convex, acuminate, imbricate; the interior ones more tender, smaller, one-flowered. Filaments three, very short. Germ roundish. Style awl-shaped, scarcely longer than the glumes, trifid. Stigmas capillary, reflexed. Seed three-cornered, very small, ferruginous.—Native of Jamaica, in the woods on the highest mountains.

39. Height about a foot. Culm simple, setaceous, weak. Leaves mostly shorter than the culm, somewhat striated, erect. Culms towards the upper part simply two-parted or subdichotomous, into axillary, peduncled, aggregate spikelets, three to six in number, awl-shaped and small. Lower peduncles often solitary, an inch long: upper crowded, bundled, very short. Lower glumes smaller, ovate, acute, keeled, terminated by a very short awn: upper glumes lanceolate, awnless, convolute at the top. Filaments two, very short. Style bifid. Stigmas capillary. At the sides of the germ are two capillary bristles, the length of the glume. Seeds roundish, compressed at the edge, acuminate, transversely wrinkled.

Native of the West Indies, in dry pastures. Jamaica. Found at Surinam by Rolander; from whose collection Bergius and Rottboell had their specimens.

40. Height about an inch. Roots capillary, simple. Culms almost upright, capillary. Leaves radical, equalling the culm, filiform, keeled at the base, sheathing, ciliate at the edge, striated, smooth. Spikelets three or four, very small, one above another, ovate, acuminate. Under the lowest spike is an awl-shaped leaflet, sheathed at the base. Glumes chaffy, heaped, imbricate, separating the flowers, ovate, keeled, awnless, one-flowered. Filaments three, the length of the chaffs. Anthers linear. Germ roundish. Style filiform, three-sided at the base, trifid at top. Stigmas capillary, reflexed. Seed roundish, bluntly three-cornered, rugged, ferruginous, appearing as it were echinate, when examined by a microscope; without which the parts of fructification are not visible.—Native of Jamaica in the southern parts.

41. About a foot high. Roots filiform, creeping a little. Culms in bundles, crowded, filiform. Leaves equalling the culm, sheathing at the base, linear with convolute margins, loose, lightly striated. Spikelets terminating, three-sided, awl-shaped, from reflex spreading. Involucre two or three-leaved: upper leaflet much the longest; the third very small and often wanting. Glumes imbricate, ovate acuminate keeled, ferruginous, almost equal, striated. Stamens one, two or three very small. Style trifid. Stigmas very short, reflexed. Seed ovate-three-cornered, smooth, ferruginous. Receptacle or rachis permanent, warted from the spikelets that have fallen off.—Native of Hispaniola; flowering in spring.

Five new species of *Schoenus* are described in Vahl's *Eclogæ Americanae*.

*Schoenus*. See *Carex*, *Cryptis*, *Cyperus*, *Kyllingia*, *Restio*, *Scirpus*, *Scleria*.

*Schoenus coloratus*. See *Kyllingia monocephala*.

— *odoratus*. Gmel. is *Kyllingia triceps*.

Loureiro has a *Schoenus* under the name of *coloratus*, which Willdenow thinks to be a different species from the *coloratus* of Linneus. He also has a *Schoenus ruber*. Both are natives of CochinChina.

SCHOEPFIA. (So named by Schreber, in honour of Johann David Schoepf, President of the medical college at Anspach, author of *Materia medica Americana*, &c.)

Lin. gen. Schreb. n. 325. Codonium. Vahl.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Aggregatæ*. *Caprifolia*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth incrusting the germ at bottom, turbinate-angular indistinctly five-toothed.

COR. one-petalled, bell-shaped, ten-grooved at the base, five-cleft: segments triangular, acute, reflexed.

\* Swartz.

STAM. Filaments five, very short. Anthers twin, erect, in the mouth of the corolla.

PIST. Germ turbinate, half inferior, within the corolla, crowned with a semiglobular porous gland. Style shorter than the corolla, cylindrical, erect. Stigma capitate, trifid.

PER. Drupe, with a one-celled nut.

SEED one.

#### ESSENTIAL CHARACTER.

Cal. double; outer bifid, inferior; inner superior, quite entire. Cor. bell-shaped. Stigma capitate. Drupe one-seeded.

#### SPECIES.

1. *Schoepfia americana*.

Lin. spec. ed. Willd. 1. 996.

Codonium arborecens. Vahl symb. 3. 36. æt. basif.

2. 1. 206. t. 6.

#### DESCRIPTION, &c.

It is a small tree eight or ten feet in height, with round smooth branches. Leaves petioled, alternate, ovate, very smooth, attenuated, blunt, quite entire. Peduncles axillary, often in pairs, one-flowered, but sometimes two or three-flowered. Calyx double; one inferior, one-leaved subbifid, the other half-superior entire. Sometimes there are only four stamens. The genus is allied to *Lonicera* and *Loranthus*.

Native of Santa Cruz and Montserrat, where it was found by von Rohr.

SCHONGA-CUSPI. See *Clitoria*.

SCHORIGERAM. See *Clitoria*.

SCHOTIA. (So named by Jacquin, from Richard van der Schot, his companion in his travels.)

Lin. gen. Schreb. n. 705. Jacq. collect. 1. 93. Juss.

347. Theodora. Medic. monogr. 1786. Guajaci species. Linn.

Class. 10. 2. Decandria Mongynia.

Nat. order of *Lomentaceæ*. *Leguminosæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, coloured: tube turbinate, sub-compressed, fleshy, permanent: border half-five-cleft; segments ovate, concave, blunt, erect, equal.

COR. Petals five, placed on the tube of the calyx, oblong, concave, blunt, erect, equal, lying over each other at the sides, sessile, twice as long as the segments of the calyx.

STAM. Filaments ten, awl-shaped, erect, a little longer than the petals, inserted in a ring into the tube of the calyx. Anthers oblong, incumbent.

PIST. Germ oblong, compressed, pedicelled. Style filiform, length of the stamens. Stigma simple, blunt.

PER. Legume? pedicelled.

SEEDS two. Medicus.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Petals five, inserted into the calyx, closed by the sides lying over each other. Legume pedicelled.

#### SPECIES.

1. *Schotia speciosa*. *Lentiscus-leaved Schotia*.

Lin. spec. ed. Willd. 2. 537. Jacq. ic. rar. 1. t. 75. collect. 1. 93. Ait. kew. 2. 56.

*Schotia afra*. Thunb. prodr. 79.

*Theodora speciosa*. Medic. monogr. 16. t. 1.

*Guajacum afrum*. Lin. spec. 547. Mill. dict. n. 3. Dict. nostr. n. 3.

It is found to be a native of Senegal, as well as of the Cape of Good Hope.

For the Description and Culture, see *Guajacum afrum*.

Schouanna-Adamboe. See *Convolvulus Pes capræ*.

Modela-Muccu. See *Polygonum orientale*.

SCHRADERA. (So named by Vahl, in honour of Henr. Adolph. Schrader, author of *Spicilegium Floræ Germanicæ*. Hann. 1794. oct.)

Vahl ecl. 2. 36. Fuchsia. Swartz.

Class. 6. 1. Hexandria Monogynia.

#### GENERIC CHARACTER.

CAL. A superior rim, quite entire, closely surrounding the base of the corolla.

COR. thick, one-petalled: tube half an inch long, gradually widening upwards, within smooth below, hairy above: border five or six-parted; segments fleshy,

† Vahl.

lanceolate,



lanceolate, a little reflexed, above towards the throat flat; in front triangular, on the compressed sides keeled; at the base of the keel a triangular fleshy toothlet; beneath flat.

STAM. *Filaments* scarcely any. *Anthers* five or six, linear, between the segments of the border, three times shorter than the border.

PIST. *Germ* inferior, four-cornered at the base, the sides a little pressed in, the corners acute. *Style* one, shorter than the tube of the corolla. *Stigmas* two, thick, oblong.

PER. *Berry* one celled.

SEEDS very many, minute.

#### ESSENTIAL CHARACTER.

*Cal.* a superior rim, quite entire. *Cor.* five or six-cleft. *Stigmas* two. *Berry* one-celled, many-seeded; or *Invol.* univ. many-flowered. *Cal.* superior, pitcher-shaped. *Cor.* five or six-cleft, bell-shaped, hairy at the throat. *Berry* many-seeded. *Willd.*

#### SPECIES.

1. *Schradera capitata*.

*Lin. spec. ed. Willd.* 2. 238. *Vahl ecl.* 1. 35. t. 5.

*Urceolaria.* *Coth. disp. veg.* 10. n. 74.

*Involucre* toothed, calyx quite entire, leaves blunt.

2. *Schradera cephalotes*.

*Lin. spec. ed. Willd.* 2. 238.

*Fuchsia involucrata.* *Swartz prodr.* 62. *descr.* 2. 674. *Dist. nostr.*

*Involucre* quite entire, calyx toothed, leaves acuminate.

#### DESCRIPTIONS, &c.

1. This is a climbing parasitical shrub, with square branches covered by an ash-coloured bark. Leaves opposite roundish-elliptic quite entire coriaceous bluntish petioled. Peduncle terminating, an inch and half long. Flowers in heads. Involucre coriaceous one-leaved five-cleft containing about fifteen flowers, segments roundish blunt. Calyx bell-shaped coriaceous permanent, with the margin truncate and quite entire. The number of segments in the corolla and of the stamens varies from five to six<sup>2</sup>.

Discovered in the high mountains of the island of Montserrat, by Ryan<sup>h</sup>.

2. Involucre one-leaved truncate four-cornered smooth thick containing from four to eight aggregate flowers. Perianth one-leaved ovate-campanulate erect, a little longer than the involucre undivided subtruncate, with eight very small toothlets. The leaves are thinner and much more acute. The number eight is more frequent in this, five, seven, nine, ten more rarely.—Native of Jamaica<sup>1</sup>.

SCHRANCKIA *quinquefaria* of Gmelin, *sys.* 515. *Scop. introd.* 1043. is *Goupia* of Aublet<sup>k</sup>: which see under *Glossopetalum*.

SCHREBERA. (So named in honour of Jo. Christian Dan. Schreber, Professor of Physic, &c. at Erlang, editor of Linneus's *Genera Plantarum*, and author of many works in Botany.)

*Roxb. corom.* 2. 101.

Class. 2. 1. Diandria Monogynia.

#### GENERIC CHARACTER.

CAL. inferior, tubular, somewhat two-lipped with the lips nearly equal, emarginate: often two lateral toothlets, one on each side, in the divisions of the lips.

COR. one-petalled, falver-form: tube cylindric, three times longer than the calyx: border spreading, divided into five, six or seven wedge-form truncate segments.

STAM. *Filaments* two, short, inserted below the middle of the tube. *Anthers* oblong, hid within the tube of the corolla.

PIST. *Germ* superior oval. *Style* a little longer than the tube. *Stigma* bifid.

PER. *Capsule* pear-shaped, scabrous, two-celled, two-valved.

SEEDS four in each cell, irregularly oval, compressed, with a long membranaceous wing.

#### ESSENTIAL CHARACTER.

*Cal.* two-lipped. *Cor.* from five to seven-cleft. *Caps.* pear-shaped, two-celled, two-valved. *Seeds* from eight to ten, membranaceous-winged.

<sup>2</sup> Willdenow. <sup>h</sup> Vahl. <sup>i</sup> Swartz and Willdenow.

<sup>k</sup> Dryander in Linn. *trans.* 2. 229.

#### SPECIES.

1. *Schrebera swietenoides*.

*Roxb. corom.* 2. p. 2. t. 101.

#### DESCRIPTION, &c.

Trunk erect, with a scabrous bark. Branches numerous, spreading in every direction, so as to form a large beautiful shady head. Leaves nearly opposite, on round smooth petioles; pinnate with an odd leaflet, about a foot long. Leaflets three or four pairs, opposite, on short pedicels; the lowest largest and obliquely ovate, whilst those towards the apex become more lanceolate: all are entire, pointed, smooth on both sides, and three or four inches long. Panicles terminating, thin, trichotomous. Bractes small, falling. Flowers white and brown variegated, very fragrant during the night. Capsule large, the size of a pullet's egg.

It is a large timber tree, a native of vallies in the mountainous parts of the Rajahmundry Circar; flowering about the beginning of the hot season. The wood is of a gray colour, very close-grained, heavy and durable. It is reckoned less subject to crack and warp than any other; on which account it is employed by weavers in many parts of their looms, particularly for the beam: it serves also for a great variety of other uses; and probably would answer well for scales to mathematical instruments. Though not so handsome as Box; it is less subject to warp.

SCHREBERA SCHINOIDES of Linneus, is a species of *Cuscuta*, growing on *Myrica aethiopica*.

ALBENS of Retzius (*obs.* 6. 25.) *Celastrus glaucus* of Vahl (*Symb.* 2. 42.) is a species of *Elaeodendrum*.

SCHINOIDES of Thunberg's prodromus, is *Hartogia capensis*. *Linn. suppl.* 128. *Thunb. nov. gen.* 87<sup>1</sup>.

SCHUNDA PANA. See *Caryota*.

SCHUNUMPI VALLI. See *Cissus*.

SCHWALBEA. (So named by Linneus, from Schwalbe, a physician.)

*Lin. gen. n.* 744. *Reich. n.* 802. *Schreb. n.* 1001.

*Gron. virg.* 71. *Walth. carol.* 167. *Gærtn. t.* 55.

*Juss.* 123.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personate*. *Schrophulariæ*, *Juss.*

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular-ventricose, striated: mouth four-cleft, oblique: upper segment very short; lateral ones longer; lowest still longer; wider, emarginate.

COR. one-petalled, ringent: tube length of the calyx: border erect: upper lip erect, concave, quite entire: lower lip of the same length, trifid, blunt, the little segments equal.

STAM. *Filaments* four, filiform, length of the corolla, of which two are a little shorter. *Anthers* incumbent.

PIST. *Germ* roundish. *Style* in the same situation and of the same form and length with the stamens. *Stigma* thickish, recurved.

PER. *Capsule* ovate, compressed, two-celled, two-valved: partitions folded.

SEEDS very many, chaffy, lanceolate, small. *Gærtn.*

#### ESSENTIAL CHARACTER.

*Cal.* four-cleft; the upper lobe very small; the lowest very large and emarginate.

#### SPECIES.

1. *Schwalbea americana*.

*Lin. spec.* 844. *sys.* 551. *Reich.* 3. 114. *mant.* 414.

*Gron. virg.* 92. *Pluk. mant.* 1. 348. f. 2?

(*Euphrasia*.)

#### DESCRIPTION, &c.

Stem quite simple, four-cornered, pubescent. Leaves lanceolate, pubescent. Flowers alternate, sessile. Calyx pubescent. Corolla dark-red, inclining. The fructification wants to be farther examined, Gronovius's specimen not being sufficient for that purpose<sup>m</sup>.—Native of North America.

Gærtner describes the capsule as elliptic-acuminate, smooth, with an indistinct groove on each side, two-celled,

<sup>1</sup> Roxburgh, *corom.*

<sup>m</sup> Linn. *mant.*



two-valved; the valves when ripe sometimes bifid at the top: partition doubled, formed of the margins of the valves bent in. Receptacle oblong, narrow, compressed a little, not fastened to the partition, but falling when ripe. Seeds very numerous, small, chaffy, acuminate towards the umbilicus, widening outwards with the end rounded. Nucleus a little turgid in the middle of the seed on one side of it.

**SCHWENKFELDIA.** (So named by Schreber, in memory of Caspar Schenckfeldt, a Silesian physician, author of a catalogue of the plants and fossils in Silesia. Lips. 1601. He died in 1609.)

Lin. gen. Schreb. n. 306. & p. 822. Sabicea.

Aublet. t. 75, 76. Swartz prodr. 46. Juss. 207.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rubiaceae.

#### GENERIC CHARACTER.

**CAL.** Involucre four-leaved.

Perianth one-leaved, five-parted, superior, permanent: segments lanceolate, acute.

**COR.** one-petalled, funnel-form: tube long, slender: throat hirsute: border five-parted: segments lanceolate, acute.

**STAM.** Filaments five, inserted into the tube of the corolla. Anthers paralleliped, incumbent.

**PIST.** Germ inferior, ovate. Style filiform. Stigmas five, oblong.

**PER.** Berry globular, crowned with the calyx, five-celled.

**SEEDS** very many, very small, fastened to semilunar receptacles.

#### ESSENTIAL CHARACTER.

Invol. four-leaved. Cor. funnel-form. Stigmas five.

Berry five-celled, many-seeded: (Cor. salver-form.

Stigma five-parted. Willd.)

#### SPECIES.

1. Schwenkfeldia hirta.

Lin. spec. ed. Willd. 1. 982. Swartz descr. 1. 450.

Sabicea hirta. Swartz prodr. 46.

Leaves ovate-lanceolate acuminate, flowers peduncled.

2. Schwenkfeldia cinerea.

Lin. spec. ed. Willd. 1. 982. Swartz descr. 1. 452.

Sabicea cinerea. Swartz prodr. 46. Aubl. guian. 1.

192. t. 75.

Leaves oblong acute tomentose hoary beneath, flowers subsessile.

3. Schwenkfeldia aspera.

Lin. spec. ed. Willd. 1. 982.

Sabicea aspera. Aubl. guian. 1. 197. t. 76.

Leaves elliptic acuminate rough hoary beneath, flowers sessile.

#### DESCRIPTIONS, &c.

1. This is a climbing shrub, branched, with the stem and branches striated and hirsute. Leaves opposite, nerved, hirsute, on short, round, hirsute petioles. Stipules large, interposed between the petioles, wide, cordate-ovate, membranaceous, whitish. Peduncles axillary, from the bosom of the stipules, shorter than the petioles, umbelliferous. Umbellules three-flowered. Involucrum one-leaved four-cleft; segments ovate, spreading, rough-haired. Flowers pedicelled, white, void of scent. Segments of the perianth long, erect, striated, rough-haired, permanent. Corolla funnel-form, with the tube twice as long as the calyx, and the border flat and five-cleft, with lanceolate patulous segments. Anthers linear, the length of the filaments. Style the length of the corolla. Stigma five-parted. Berry snow-white when ripe.

Native of Jamaica, in the western parts of the island, in mountain woods, flowering in April.

2. This also is a climbing shrub, with the stem and branches round and hispid; the branchlets scattered, spreading, tomentose. Leaves opposite, decussate, soft beneath, nerved and veined. Petioles short, tomentose. Stipules between the petioles, wide, ovate, membranaceous, villose. Flowers axillary, from three to five, subsessile, crowded, with a few small whitish bractes between the flowers. Involucrum four-parted, with the segments ovate and whitish-tomentose. Perianth villose. Corolla white: tube hirsute on the outside: border five-cleft, with oblong acute segments. Filaments short. Anthers oblong. Germ hoary. Stigmas five oblong. Berry villose, according to

Aublet red when ripe.—Native of Cayenne and Guiana, in hedges<sup>a</sup>.

3. The corolla of this is sometimes four-cleft, accompanied by four stamens, and the berry three or four-celled<sup>o</sup>.—Native of Guiana, on the banks of rivers.

**SCHWENKIA.** (So named by van Royen, from Martin Wilhelm Schwencke, physician and professor of botany at the Hague, who died in 1785, aged 78.)

Lin. gen. Reich. n. 31. Schreb. n. 38. Juss. 123.

Class. 2. 1. Diandria Monogynia.

Nat. order of Luridae. Scrophularia, Juss.

#### GENERIC CHARACTER.

**CAL.** Perianth one-leaved, tubular, striated, straight, five-toothed, permanent.

**COR.** one-petalled: tube cylindrical, length of the calyx: border almost regular, length of the calyx, inflated at the throat, five-plaited: plaits closing the orifice in form of a star; with a glandular body growing upon the exterior angles of the plaits; the two upper ones longer than the glands.

**STAM.** Filaments five: three shorter, bristle-shaped, castrated; two upper, longer, fertile. Anthers two, ovate, acute, two-celled.

**PIST.** Germ globular. Style simple, length of the stamens. Stigma obtuse.

**PER.** Capsule compressed like a lens, smooth, longer than the enlarged calyx, two-celled, two-valved.

**SEEDS** very many, very small, somewhat angular. Receptacle subglobular.

**OBS.** In a natural order it approaches very near to Browallia.

#### ESSENTIAL CHARACTER.

Cor. almost equal, with the throat plaited and glandular. Stam. three barren. Caps. two-celled, many-seeded.

#### SPECIES.

1. Schwenkia americana. Guinea Schwenkia.

Lin. syst. 64. Reich. 1. 48. Willd. 1. 106. Schwenk.

hort. med. Hag. 1766. oct. p. 328. t. 1. Ait.

kew. 1. 29.

#### DESCRIPTION, &c.

1. It is a biennial plant, with alternate leaves<sup>p</sup>: and axillary flowers. Native of Guinea. Introduced in 1781, by Mess. Kennedy and Lee. It flowers in August and September<sup>q</sup>.

**SCHYBUM.** See Gundelia.

**SCIATICA CRESS.** See Iberis.]

**SCILLA** (of Pliny. Σκίλλα, or rather σκίλη of Theophrastus and Dioscorides.)

Lin. gen. n. 419. Reich. n. 452. Schreb. n. 567.

Juss. 53. Lilio-Hyacinthus. Tournef. t. 196.

B. F. G. Hyacinthus stellaris. Raii meth. 119.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Coronariae. Asphodeli, Juss.

#### GENERIC CHARACTER.

**CAL.** none.

**COR.** Petals six, ovate, spreading very much, deciduous.

**STAM.** Filaments six, awl-shaped, shorter by half than the corolla. Anthers oblong, incumbent.

**PIST.** Germ roundish. Style simple, length of the stamens, deciduous. Stigma simple.

**PER.** Capsule subovate, smooth, three-grooved, three-celled, three-valved.

**SEEDS** many, roundish.

#### ESSENTIAL CHARACTER.

Cor. six-petalled, spreading, deciduous. Filam. filiform:

#### SPECIES.

1. Scilla maritima. Official Squill.

Lin. spec. 442. Reich. 2. 57. Willd. 2. 125. hort.

cliff. 123. upf. 89. mat. med. 94. Woodv. med.

bot. 322. t. 118. Allion. pedem. n. 1894. Desfont.

atlant. 297. Blackw. t. 591. Plenck, ic. 271.

Scilla. Fuchs. hist. 782. Dalech. hist. 1576.

a. S. vulgaris radice rubra. Bauh. pin. 73. Mor. hist.

2. 395. f. 4. t. 16. f. 1. ord. 3.—major rad. rubr.

Matth. 454.—rubentibus radicis tunicis. Lob. ic.

152.

<sup>a</sup> Swartz.

<sup>o</sup> Jussieu.

<sup>p</sup> Linn. syst.

<sup>q</sup> Hort. kew.



- S. rufa magna vulg.* *Baub. hist.* 2. 615. *Raii hist.* 1164.  
*S. rubra.* *Park. parad.* 133.  
*Pancratium.* *Clus. hist.* 171. *Dod. pempt.* 691.  
*Tabern. ic.* 630. *Ger.* 136. i. *emac.* 172.  
*Ornithogalum maritimum* f. *Scilla rad. rubra.*  
*Tournef. inst.* 381.  
*Red-rooted Squill or Sea Onion.*  
 β. *Scilla radice alba.* *Baub. pin.* 73. *Raii hist.* 1164. 2.  
*Best. cyst. vern.* 2. p. 3. f. 1. *Seba mus.* t. 44.  
 f. 4, 5.  
*S. alba.* *Park. parad.* 132.  
*S. hispanica.* *Clus. hist.* 1. 171. *Dod. pempt.* 690.  
*Lob. ic.* 151. *Dalech. hist.* 1576, 1577. *Matth.*  
 453.  
*S. hisp. vulgaris.* *Ger. emac.* 171.  
*Scillæ magnæ albæ.* *Baub. hist.* 2. 618.  
*Ornithogalum maritimum* f. *Scilla rad. alba.* *Tournef.*  
*inst.* 381.  
*White-rooted Squill or Sea Onion.*  
*Naked-flowered with refracted bractes.*  
 2. *Scilla Lilio-Hyacinthus.* *Lily-rooted Squill.*  
*Lin. spec.* 442. *Reich.* 2. 57. *Willd.* 2. 126.  
*hort. cliff.* 123.  
*Hyacinthus stellaris folio & radice lilii.* *Baub. pin.* 46.  
*Mor. hist.* 2. 375. f. 4. t. 12. f. 21.  
*H. stellatus lilifolius cæruleus & albus.* *Park. parad.*  
 130. t. 131. f. 7.  
*Raceme few-flowered, peduncles without bractes, leaves*  
*lanceolate, pressed close to the ground, bulb scaly.*  
 3. *Scilla italica.* *Italian Squill.*  
*Lin. spec.* 442. *syft.* 328. *Reich.* 2. 57. *Willd.* 2.  
 126. *mant.* 364. *hort. cliff.* 123. *Retz. obs.* 1. 15.  
*Allion. pedem.* n. 1896.  
*Hyacinthus stellaris spicatus cinereus.* *Baub. pin.* 46.  
*H. stell. italicus.* *Best. cyst. vern.* 42. f. 1.  
*H. stellatus cinerei coloris.* *Clus. hist.* 1. 184.  
*H. stellaris flore cinereo.* *Park. parad.* 129. t. 131.  
 f. 6. *Raii hist.* 1156.  
*Raceme conical oblong.*  
 [4. *Scilla tetraphylla.* *Four-leaved Squill.*  
*Lin. syft.* 329. *Willd.* 2. 126. *suppl.* 200.  
*Stemless, flowers in bundles, leaves in fours ovate-lan-*  
*ceolate.]*  
 5. *Scilla peruviana.* *Peruvian Squill.*  
*Lin. spec.* 442. *Reich.* 2. 58. *Willd.* 2. 127.  
*Desfont. atlant.* 298.  
*Hyacinthus indicus bulbosus stellatus.* *Baub. pin.* 47.  
*Rudb. elyf.* 1. 37. f. 1.  
*H. stellatus peruanus.* *Clus. hist.* 1. 182.—item,  
*Eriophorus peruvianus. ejusd.* 1. 173.  
*H. peruanus.* *Ger. emac.* 109. f. 13. *Raii hist.*  
 1158.  
*H. peruvianus.* *Baub. hist.* 2. 585.  
*H. stellatus Boeticus major, vulgo Peruanus.* *Park.*  
*parad.* 124. t. 125. f. 7.  
*H. stell. peruv. multiflorus.* *Mor. hist.* 2. 375. f. 4.  
 t. 12. f. 19.  
 β. *H. stellatus Boeticus f. Peruanus flore albo.* *Park.*  
*parad.* 124.—item, *flore carneo.*  
*Corymb crowded conical.*  
 [6. *Scilla japonica.* *Japan Squill.*  
*Lin. syft.* 329. *Willd.* 2. 127. *Thunb. jap.* 137.  
*Umbel terminating fastigate.]*  
 7. *Scilla amoena.* *Nodding Squill.*  
*Lin. spec.* 443. *syft.* 328. *Reich.* 2. 58. *Willd.* 2.  
 127. *hort. cliff.* 123. *Jacqu. austr.* 3. 10. t. 218.  
*Hoffm. germ.* 120. *Roth. germ.* 1. 151. 2. 396.  
*Kniph. cent.* 11. n. 91. *Curt. magaz.* 341.  
*Hyacinthus stellaris cæruleus amoenus.* *Baub. pin.*  
 46. *Rudb. elyf.* 2. 34. t. 7.  
*H. stell. bizantinus.* *Best. cyst. vern.* 43. f. 2. *Clus.*  
*hist.* 1. 184.  
*H. stellatus byzantinus major flore boraginis.* *Ger.*  
*emac.* 109. 7. *Park. parad.* 128. 3. t. 131.  
 f. 4.  
*H. stell. byzant. alter elegantissimus ferotinus bul-*  
*latus.* *Baub. hist.* *Lob. adv.* 2. 486.  
 β. *Corolla campanulata.* *Willd. spec.* 2. 128.  
*Scape angular, peduncles alternate shorter than the*  
*flower, bractes obtuse very short.*

- [8. *Scilla præcox.* *Early Squill.*  
*Lin. spec. ed. Willd.* 2. 128.  
*Scape angular, raceme subcorymbed, peduncles twice as*  
*long as the flower, bractes obscure.]*  
 9. *Scilla campanulata.* *Spanish Squill.*  
*Lin. spec. ed. Willd.* 2. 128. *Ait. kew.* 1. 444.  
*Curt. magaz.* 128.  
*S. hispanica.* *Mill. dict.* n. 8.  
*S. hyacinthoides.* *Jacqu. collect.* 1. 61. *ic. rar.* 1.  
 t. 65.  
*Hyacinthus stellaris fature cæruleus.* *Baub. pin.* 46.  
*Raii hist.* 1157.  
*H. hispanicus stellato flore.* *Clus. cur. post.* 20.  
*H. hisp. stellaris flore fature cæruleo.* *Ger. emac.* 109.  
 12.  
*Ornithogalum hisp. fature cæruleum.* *Tournef. inst.*  
 381.  
*Bulb solid, raceme many-flowered oblong-subconical, co-*  
*rollas bell-shaped erect, bractes two-parted longer than*  
*the peduncle, leaves lanceolate.*  
 10. *Scilla bifolia.* *Two-leaved Squill.*  
*Lin. spec.* 443. *syft.* 329. *Reich.* 2. 58. *Willd.* 2.  
 128. *hort. cliff.* 123. *Retz. obs.* 6. 27. n. 37.  
*Wither. arr. ed.* 3. 338. *Smith brit.* 365. *engl.*  
*bot. t.* 24. *Hoffm. germ.* 120. *Jacqu. austr.* 2.  
 11. t. 117. *Villars dauph.* 2. 264. *Allion. pedem.*  
 n. 1895. *Hall. belv. n.* 1211. (*Phalangium.*)  
*Anthericum bifolium.* *Scop. carn. n.* 414.  
*Ornithogalum bifolium.* *Neck. æt. palat.* 2. 46.  
*Hyacinthus stellaris bifolius germanicus.* *Baub. pin.*  
 45. *Rudb. elyf.* 2. 33. f. 1. *Mor. hist.* f. 4. t. 12.  
 f. 15.  
*H. stellatus, bifolius vernus dumetorum, flore cæru-*  
*leo.* *Baub. hist.* 2. 679.  
*H. Fuchsi.* *Dod. cor.* 181. *pempt.* 219. 2.  
*H. stellatus Fuchsi.* *Ger.* 97. *emac.* 106. f. 1.  
*H. cæruleus mas minor.* *Fuchf. hist.* 837.  
*H. stell. vulgaris, f. bifolius Fuchsi.* *Park. parad.*  
 126. *Petiv. brit. t.* 67. f. 5.  
 β. *H. stellatus albo flore.* *Clus. hist.* 1. 184. *Park.*  
*parad.* 126.  
*H. stellaris albicans.* *Ger. emac.* 106. f. 2.  
*H. albicans f. foeminea.* *Fuchf. hist.* 838.  
*Root solid, flowers corymb-racemed without bractes almost*  
*upright, leaves lanceolate by twos.*  
 [11. *Scilla verna.* *Vernal Squill.*  
*Lin. spec.* 443. *ed. Willd.* 2. 129. *Ait. kew.* 1. 445.  
*Hudf. angl.* 142. *Wither. arr. ed.* 3. 338. *Smith*  
*brit.* 364. *engl. bot. t.* 23. *Dicks. hort. succ.* 10. 8.  
*S. bifolia.* *Lightf. scot.* 181. *Fl. dan. t.* 568.  
*Hyacinthus n. 1.* *Raii hist.* 1155. *syn.* 372. *sine syno-*  
*nymis.*  
*H. stellaris vernus pumilus.* *Dill. in Raii syn. indic.*  
*pl. dub.*  
*Ornithogalum hispanicum minus.* *Clus. hist.* 1. 188.  
*Park. parad.* 139. *Ger. emac.* 166. *Raii hist.*  
 1153?  
*Root solid, corymb hemispherical few-flowered, bractes*  
*lanceolate obtuse, leaves linear channelled.*  
 12. *Scilla lusitanica.* *Portugal Squill.*  
*Lin. syft.* 329. *Reich.* 2. 58. *Willd.* 2. 129.  
*Hyacinthus stellaris cæruleus, staminibus e viridi luteis.*  
*Baub. pin.* 46. *Rudb. elyf.* 2. 34. f. 4.  
*Raceme oblong conical, petals marked with lines.*  
 13. *Scilla orientalis.* *Oriental Squill.*  
*Lin. spec. ed. Willd.* 2. 129. *Thunb. in Linn. transf.*  
 2. 334.  
*S. bifolia.* *Thunb. jap.* 158.  
*Flowers erect racemed, leaves elliptic-ensiform.*  
 14. *Scilla hyacinthoides.* *Hyacinth Squill.*  
*Lin. syft.* 329. *Reich.* 2. 59. *Willd.* 2. 130. *Ait.*  
*kew.* 1. 445. *Gouan illustr.* 26.  
*Bulbus eriophorus orientalis.* *Baub. pin.* 47.  
*Ornithogalum eriophorum orientale.* *Tournef. inst.*  
 381.  
*Raceme cylindrical many-flowered, petals half as long*  
*again as the germ, peduncles coloured, leaves lanceo-*  
*late.*  
 15. *Scilla lingulata.* *Tongue-leaved Squill.*  
*Desfont. atlant.* 298. t. 85. f. 1. *Potret. itin.* 2. 151.  
*Leaves lanceolate flat, raceme dense conical, bractes awl-*  
*shaped equalling the pedicels.*



16. *Scilla villosa*. *Villose-leaved Squill*.  
Desfont. atlant. 299. t. 85. f. 2.  
Leaves lanceolate flat villose, flowers corymbed.
17. *Scilla obtusifolia*. *Blunt-leaved Squill*.  
Desfont. atlant. 299. t. 86. Poiret itin. 2. 149.  
Scape lateral, leaves tongue-shaped waved, flowers racemed without bractes.
18. *Scilla parviflora*. *Small-flowered Squill*.  
Desfont. atlant. 300. t. 87.  
*S. numidica*. Poiret itin. 2. 150.  
Leaves linear-lanceolate acute smooth shorter than the scape, flowers racemed crowded, bractes very short.
19. *Scilla undulata*. *Waved-leaved Squill*.  
Desfont. atlant. 300. t. 88.  
Leaves lanceolate waved, flowers loosely racemed, bractes very short.]
20. *Scilla autumnalis*. *Autumnal Squill*.  
Lin. spec. 443. fyst. 329. Reich. 2. 59. Willd. 2. 130. Hudf. angl. 142. Wither. arr. ed. 3. 338. Smith brit. 366. engl. bot. t. 78. Curt. lond. 6. t. 25. Villars dauph. 2. 265. Allion. pedem. n. 1897. Desfont. atlant. 301. Cavan. ic. 38. n. 300. t. 274. f. 2. Guett. stamp. 131. Sauv. monsp. 19.  
*Anthericum autumnale*. Scop. carn. n. 415.  
*Hyacinthus stellaris autumnalis minor*. Baub. pin. 47.  
*H. autumn. minor*. Clus. hist. 1. 185. 2. Lob. obs. 53. 3. ic. 102. Dod. pempt. 219. 1. Dalech. hist. 1513. Ger. 98. 4. emac. 110. 1. Park. parad. 132. Baub. hist. 2. 574. Raii hist. 1157. syn. 373. Mor. hist. f. 4. t. 12. f. 18. Best. exst. aut. 3. 5. f. 2.
- Ornithogalum autumnale minus flore dilute purpureo*.  
Tournef. inst. 381.  
Leaves linear, flowers corymb-racemed, peduncles without bractes ascending length of the flowers.
- [21. *Scilla anthericoides*. *Anthericum-like Squill*.  
Desfont. atlant. 301. Poiret itin. 2. 150.  
Raceme long, bractes awl-shaped, pedicels shorter than the corolla.
22. *Scilla unifolia*. *One-leaved Squill*.  
Lin. spec. 443. fyst. 329. Reich. 2. 59. Willd. 2. 131.  
*Ornithogalum spicatum unifolium, flore niveo odorato*.  
Griseb. lusit.  
*Bulbus monophyllus flore albo*. Baub. hist. 2. 622.  
Leaf subcylindrical subspiked at the side.]

## DESCRIPTIONS, &amp;c.

1. Root very large, somewhat pear-shaped, composed of many coats as in the Onion, and having several fibres coming out at the bottom, and striking deep in the ground. From the middle of the root arise several shining leaves, a foot long, and two inches broad at their base, lessening all the way to the top, where they end in points; they continue green all the winter, and decay in the spring: then the flower-stalk comes out, rising two feet high, naked about half way, and terminated by a pyramidal thyrse of flowers, which are white.

[Leaves lanceolate, strict. Scape before the leaves, very long, many-flowered. Bractes linear-lanceolate, bent with a knee-joint in the middle, turned upwards, and having a spur beneath.]

Bulb almost as big as the human head. Leaves ovate-oblong, blunt. Scape round, as thick as the little finger, upright. Raceme dense, almost the length of the scape: each flower on a filiform pedicel, twice or thrice the length of the flowers. Bractes membranaceous, awl-shaped, erect. Stamens equal in length to the corolla. Capsule triangular.\*

Native of Spain, Portugal, Italy, Barbary, Syria, on sandy coasts. Desfontaines says it is common in Barbary, in fields; flowering in autumn. In England it flowers in april and may: and was cultivated in the botanic garden at Oxford, in 1648†.]

There are two varieties, one with a red, the other with a white root; but the white is generally preferred for medicinal use: [Dr. Woodville on the contrary says, that the red-rooted variety has been supposed to

be more efficacious; but remarks justly that this red colour is confined to the outer coats of the root.

It is very nauseous, intensely bitter and acrimonious, without any perceptible smell. Alkalines considerably abate the bitterness and acrimony: vegetable acids make little alteration in either; but the taste of the acid makes that of the Squill more supportable.

This is one of the few medicines known in the early ages of Greece, which is held in great estimation and is in frequent use at this time; though it manifests a poisonous quality to several animals; as appears from Hillefield, Bergius, Vogel, and others. If much handled, it exulcerates the skin; and in large doses frequently repeated, it not only excites nausea, &c. but strangury, bloody urine, hæmorrhoids, &c. with fatal inflammation and gangrene of the stomach and bowels. Under proper management however it is a medicine of great practical utility. In dropsy it has long been esteemed the most certain and effectual diuretic with which we are acquainted: and in asthma or dyspnoea, occasioned by the lodgment of tenacious phlegm, it has been the expectorant usually employed. In large doses, it is apt to prove emetic, and sometimes purgative, and thus the patient is deprived of its diuretic effects: it is given therefore in small doses repeated at more distant intervals, or an opiate is joined with it. From a continued repetition, the dose may be gradually increased, and the intervals shortened: when thus the doses come to be tolerably large, the opiate may be most conveniently employed to direct the operation of the Squill more certainly to the kidneys. In dropsy, when from an effusion of water into the cavities, less water goes to the kidneys; it may be of use to add neutral salt.

Dr. Cullen recommends a solution of corrosive sublimate to promote the diuretic effects of Squills. When the *primæ viæ* abound with mucous matter, and the lungs are oppressed with viscid phlegm, Squills are in general estimation. As an expectorant they may be supposed not only to attenuate the mucus, and thus facilitate its ejection, but by stimulating the secretory organs and mucous follicles, to excite a more copious excretion of it from the lungs, and thereby lessen the congestion, upon which the difficulty of respiration very generally depends. Therefore in all pulmonic affections, excepting those of actual or violent inflammation; ulcer and spasm, the Squill has been experienced to be a useful medicine.

The officinal preparations are a conserve, the dried root, a syrup and vinegar, an oxymel, and pills. When this root is intended as a diuretic, it has most commonly been used in powder, with the addition of neutral salts, as nitre or crystals of tartar, especially if the patient complained of much thirst; others recommend calomel; and to render the Squills less offensive to the stomach, it has been usual to join an aromatic. The dose of dried Squill is from two to four or six grains, once a day, or half this quantity twice a day. The dose of the other preparations, when fresh, should be four times this weight‡.]

2. This has a scaly root like the Lily, for which reason Tournefort separated it under the name of *Lilio-Hyacinthus*. The root (or bulb) is oblong and yellow, very like that of Martagon: the leaves are shaped like those of the White Lily, but are smaller. The stalk is slender, and rises a foot high; it is terminated by blue flowers; which appear in june.— Native of Spain, Portugal, and the Pyrenees.

3. Bulb roundish, solid, like that of the Hyacinth. The leaves come out sparsely, and are very like those of the English Hare-bells (*Hyacinthus non-scriptus* or *Scilla nutans*.) Stem seven or eight inches high, terminated by clustered flowers of a pale blue colour; at first disposed in a sort of umbel or depressed spike, but afterwards drawing up to a point and forming a conical corymb.

[Raceme conical-oblong with pedicels almost erect, the length of the flower. Flower spreading with petals bent back at the sides, blunt at the top, white or blue. Bractes the length of the pedicels\*.]

\* Linn. spec.

\* Desfontaines.

\* Hort. kew.

\* Woodville.

\* Linn. mant.



Bulbs clustered, coated. Scape a large span high, round below, somewhat angular above. Leaves commonly rather longer than the scape, scarcely half an inch wide. Raceme conical, composed of from seven to thirty and more scattered, peduncled flowers. Bractes two to each peduncle, coloured, one longer, the other shorter than the peduncle. Corolla spreading very much; petals ovate, pale blue, with the sides of the claws bent back. Filaments and anthers erect, blue. Pistil blue: germ subglobular, six-grooved; style the same length with the stamens, linear, permanent; stigma minute. Capsule tricoccus, three-celled, six-valved, three-seeded<sup>y</sup>.

By the trivial name this should be a native of Italy; Linneus and Aiton assign no place for it: neither do Clusius or Parkinson. Miller affirms it to be a native of Portugal. Allioni says that it is found in the county of Nice. Retzius will have this to be Haller's Phalangium, n. 1212. which he found in the meadows near Berne; but Haller himself denies it. Cultivated here in 1629<sup>z</sup>.

4. Root bulbous. Leaves four, radical, spreading, cruciate, cordate-lanceolate, sessile, nerved, even. Scape none. Flowers shorter by half than the leaves: peduncles filiform-fetaceous, one-flowered, very abundant. Petals lanceolate, membranaceous at the edge. Filaments fetaceous, shorter than the petals. Anthers oblong. Germ roundish, hexangular, obtuse. Style filiform. Stigma obtuse.

Native of Africa<sup>a</sup>.]

5. Root large, solid, raised a little pyramidal in the middle, covered with a brown coat, from this come out before winter five or seven leaves, six or eight inches long, of a lucid green, keeled, and spreading almost flat on the ground. From the centre of these come out one, two or three scapes, thick, succulent, six or eight inches high, terminated by a conical corymb of flowers, upon pretty long pedicels.

[Bulb ovate, coated. Leaves ciliate, slightly waved, channelled at the base. Scape shorter than the leaves. Flowers blue or violet, very numerous, clustered, in a very large convex corymb. Bractes membranaceous, long, lanceolate, acute. Petals elliptic, subacute, spreading out horizontally. Stamens of the same colour, shorter than the corolla<sup>b</sup>.]

There are two varieties of this, one with a deep blue, and the other with a white flower. It has been long known in the English gardens by the name of Hyacinth of Peru. [How it came by that name I know not, but it is a native of Spain, Portugal and Barbary. Parkinson calls it, the great Spanish Starry Jacinth, and adds a bluish-coloured variety. According to him, it is found in the meadows near Cadiz, and in going thence to Porto Santa Maria, so thick together, as to cover the ground, when in flower, like a tapestry of divers colours; as he was informed by Guillaume Boel, a Freeze-lander, who being in search of rare plants in Spain, in 1607, after that most violent frosty winter, which perished both the roots of this, and many other fine plants with us, sent Parkinson over some of these roots for his garden, which he gathered in the places named, with his own hands.

6. Scape erect, simple, smooth, a palm high. Bractes on the scape and below the flowers alternate, membranaceous, lanceolate, upright and pressed close, shorter than the interstices. Flowers subumbelled, on pedicels about a quarter of an inch in length. Corolla spreading, white-purple. Petals oblong, blunt. Filaments a little shorter than the corolla. Anthers oblong, blueish. Style a little longer than the corolla. Stigma capitate, lobed.—Native of Japan<sup>c</sup>.]

7. Root large, solid, purplish, from which come out five or six leaves, lying on the ground, above a foot long, and an inch broad, keeled, channelled, and of a lucid green; from among these arise two, three or four purplish stalks, eight or nine inches high, sustaining towards the top five or six flowers, which come out singly from the side; they are of a violet-blue colour, and appear in april. The seeds ripen in june.

[When the plant is in flower, the stems are altogether upright, but as the seed-vessels advance in size and weight, they bend down. The seeds are of a pale amber colour, and drop soon. The germ in the flower is distinguished for the paleness of its colour<sup>d</sup>. Linneus calls it yellow, and says that there are two whitish lines at the base of the petals.

Native of the Levant. Introduced by Edward Lord Zouch about the year 1600<sup>e</sup>. Clusius says it came from Constantinople, and was sent to him at Frankfort, with other plants, in the year 1590, by a lady of the name of Ungnadin.

8. This is distinguishable at first sight from the preceding by its habit, smallness, and earliness of flowering: but it differs farther in the length of the peduncles, the lower ones being three times as long and more, the upper ones twice as long as the flower: the bractes are blunt and so very small as to be hardly visible: the corolla is bell-shaped and one third only of the size: the leaves linear never bluntish, as in the preceding, attenuated at the base. The native country is not known<sup>f</sup>.]

9. Bulb oblong, white; whence come out five or six leaves, a foot long, and half an inch broad, of a lucid green, and a little keeled. Scape nine or ten inches high, firm, and sustaining many flowers at the top, disposed in a loose panicle, each on a pretty long pedicel which is erect, but the flower itself nods. Corolla of a deep blue violet colour.

Native of Spain and Portugal: flowering in may. [Cultivated in 1759 by Mr. Miller<sup>g</sup>.

10. Bulb subovate. Leaves scarcely ever more than two in number, lanceolate, bluntish, somewhat keeled. Scape a little higher than the leaves, erect, round. Bractes either altogether wanting, or so minute as to be hardly perceptible. Corymb terminating, subracemed. Flowers from four to ten (Linneus says, often four, equal in height) on long pedicels, blue. Petals bluntish. Anthers brownish<sup>h</sup>.

Scape roundish. Peduncles all or mostly on one side, the lower ones longer, tinged with red, round. Bractes wanting. Corolla as in the *italica*. Filaments blue. Anthers blueish with a dirty blackish pollen. Pistil blue. Germ conical, six-grooved<sup>i</sup>.

Native of Germany, Switzerland, Austria, France, Italy and England. It was cultivated in our gardens in the times of Gerard and Parkinson, and was not, till very lately, ascertained to be a native of this country. Dr. Smith first introduced it into his English Botany, on the authority of Buddle's herbarium: but it has been since received from the west of England by Mr. Sims, druggist of Norwich<sup>k</sup>. It flowers in march and april.

β. It varies with a white flower: and having sometimes three leaves, that is given also as a variety.

11. Bulb ovate, small. Leaves many, linear, channelled, attenuated at the base. Scape round, erect. Corymb terminating, hemispherical. Flowers from three to six, seldom more, pedicelled, blue. Bractes the length of the pedicels, permanent, blunt. Petals ovate, keeled. Filaments round, with blue anthers. Germ roundish. Style short. Stigma blunt<sup>l</sup>.

According to Hudson, the bulb is brown, the size of a hazel nut. Scape from two to six inches high. Leaves subulate-linear, acute, almost the length of the scape. Flowers from three to eight, and in gardens from six to sixteen, pale blue. Bractes membranaceous, concave, acute, almost the length of the peduncle. Withering says, they are longer than the peduncle; that the flowers are from four to six; and that in a wild state, the root-leaves are seldom more than two. Lightfoot also attributes only two or three leaves to it; and from two to ten flowers, on a scape about four inches high.

Native of Great Britain; and of Spain; if it be the *Ornithogalum hispanicum minus* of Clusius. But Dr. Smith thinks that the synonyms quoted by Hudson belong rather to *S. italica*. Mr. Hudson first

<sup>d</sup> Curtis.

<sup>e</sup> Hort. kew.

<sup>f</sup> Willdenow.

<sup>g</sup> Hort. kew.

<sup>h</sup> Smith brit.

<sup>i</sup> Retzius.

<sup>k</sup> Smith brit.

<sup>l</sup> Idem.

<sup>y</sup> Retzius.

<sup>z</sup> Hort. kew.

<sup>a</sup> Linn. suppl.

<sup>b</sup> Desfontaines.

<sup>c</sup> Thunberg.



proved this to be distinct from the Linnean *Scilla bifolia*, with which it had been confounded even by Ray himself.

*I. verna* is a maritime plant found among rocks in Cornwall, the western coast of Wales, the Isle of Man, and the Hebrides<sup>m</sup>. Mr. Heaton found it in Barge-island, North Wales, and at King's-end near Dublin; Mr. Willoughby, in Anglesey; Ray, in Bardsey-island abundantly, and in other islands and cliffs on the coast of Wales; Hudson, about St. Ives and elsewhere in Cornwall; Mrs. Watt, near Redruth, and Dr. Withering, near Penzance, in Cornwall, and Gloddaeth in Caernarvonshire; Mr. Hall, on cliffs in the Isle of Man; and Lightfoot, in the islands of Jona and Staffa abundantly. It flowers in april.

12. This resembles *Sc. amoena*. Scape round. Flowers distant, commonly shorter than the pedicel: petals elliptic, bluntish, marked with grooves and lines, spreading. Stamens a little shorter than the petals, with yellow anthers<sup>o</sup>.

Native of Portugal. Introduced in 1777, by Edward Whitaker Gray, M. D. It flowers in may<sup>p</sup>.

13. Root-leaves many, attenuated below, smooth, a span long. Scape erect, smooth, two feet high, with alternate spathaceous scales.—Native of Japan, in the island Nippon<sup>q</sup>.

14. Flowers numerous, small, blue. Pedicels scattered, filiform, blue, three times as long as the flowers<sup>r</sup>.

The offsets from the principal bulb are very numerous and bigger than the first. Scape three feet high, flowering almost from the middle to the top. Leaves flat, more than half a foot long, and an inch wide. Pedicels in threes or fours, so close as almost to seem in whorls, and an inch long. Corollas very small. Germ whitish. Bractes scarcely visible, solitary, and removed a small space from the pedicel<sup>s</sup>.

Native of the Island of Madeira. Introduced by Masson in 1778. It flowers in august<sup>t</sup>.

Gouan relates that it had been cultivated about a century in the botanic garden at Montpellier, and many other gardens thereabouts, when he first observed it flowering (in may) in the year 1767; when he sent it to Linneus, who reduced it to its proper genus.

15. Bulb ovate, coated, solid. Leaves five to seven, smooth, acute, flat, involved in a membranaceous sheath at the base. Scape slender, erect. Raceme short, ovate. Flowers on filiform pedicels, equal to the flowers. Bractes awl-shaped, membranaceous, scarcely longer than the pedicel. Corolla blue, of the same size as in *S. italica*; segments elliptic, obtuse. Filaments wide at bottom. Germ roundish.—Native of Barbary, in fields; flowering in winter.

16. Bulb ovate, solid, coated. Leaves spreading in a ring, unequal, obtuse or acute. Scape erect. Pedicels filiform. Bractes lanceolate, acute, concave, membranaceous, now shorter, now longer than the pedicels. Corolla blue, the same size as in *Sc. amoena*: the segments elliptic, bluntish. Stamens shorter than the corolla. Filaments flattened, wider below. Germ roundish.

Native of Barbary, in sands near Kerwan, flowering in winter.

17. Bulb ovate, solid. Leaves blunt, sometimes mucronate. Scapes often two, slender, round, simple, erect. Flowers like those of *Sc. autumnalis*, on filiform pedicels three times as long as the flowers. Corolla violet, with the segments elliptic. Stamens the length of the corolla. Capsule small, short, bluntly three-cornered. Seeds oblong, black.—Native of Barbary near la Calle.

18. Bulb ovate, solid, with the outer coat brown and membranaceous. Leaves four to six, unequal, thickish, very finely striated. Scape slender, erect, often twice as long as the leaves, quite simple. Flowers like those of *Sc. autumnalis*, on filiform pedicels twice or thrice the length of the flower spreading out hori-

zontally. Raceme at first conical, then cylindrical. Corolla violet, with the segments elliptic and blunt. Stamens length of the corolla, with the filaments wider at bottom. Anthers blueish.

Native of Barbary, in fields about Algiers; flowering in winter.

19. Bulb ovate, compact, with the outer coats membranaceous and separating. Leaves spreading in a ring. Scape slender, simple, erect. Flowers on filiform pedicels. Bractes awl-shaped, very small. Corolla bell-shaped, spreading, pale rose-coloured; with the segments linear, bluntish, more deeply coloured in the middle. Stamens a little shorter than the corolla. Filaments slender equal. Style length of the stamens. Capsule blunt, triangular, pressed close to the scape. Seeds black, angular. The leaves come out after the flowering is over.

Very common in Barbary, on barren hills about Tunis, Constantine, Algiers, &c. flowering in autumn and at the beginning of winter<sup>u</sup>.

20. Bulb ovate-roundish, coated, whitish. Leaves numerous, much shorter than the scape, two or three inches long, linear, obtuse, channelled, spreading. Scape from three or four to six inches in height, round, upright, striated, below whitish green, above purplish, appearing villose when magnified. Sometimes there is a second scape. Flowers six, ten or even twenty in a corymb, which is soon lengthened out into a raceme. Pedicels short, always pointing upwards, and after flowering pressed close to the scape, entirely destitute of bractes. Petals variegated with blue and purple: germ and stamens blue. The petals are callous and of a greenish-brown colour at the tips, three of them a little narrower than the other three. Anthers heart-shaped, large, at first deep purple, but blackish on shedding the pollen. Germ marked with six impressed white lines: style three-cornered, three-grooved, length of the stamens. Capsule roundish, having in each of the three cells two seeds, which are large, blackish, shining, three-cornered, the outer side convex, the two inner ones flat<sup>x</sup>.

Native of France, Spain, Italy, Barbary and England.

The autumnal Squill, or Starry Hyacinth, as our old writers call it, is not very uncommon in dry pastures, in the southern and western parts of England. Gerard was not aware of its being a native. Parkinson (in 1629) informs us, "that it is wild in many places of England, and that he gathered it from the foot of a high bank by the Thames side, at the hither end of Chelsey, before you come at the King's Barge-house." It occurs still in several places near London; as on Blackheath, where Plukenet observed it; near Ditton, on Moulsey-hurst, over against Hampton-Court, &c. where it was found by Merret; not many years since it was observed sparingly on Kew-green. Ray remarked it abundantly on St. Vincent's rocks near Bristol, and on the Lizard point in Cornwall. It is still found in those places; and according to Mr. Watt, it is common near Chace Water Mine in Cornwall<sup>y</sup>.

It grows among grass, in a light and not very fertile loam, and is seldom above three inches in height. In a garden it is double the size, and produces several stems. It begins to flower about the third week in august, and continues three weeks or a month. In a wild state the flowering-stalks mostly come up without the leaves, in some few plants the leaves accompany them, and appear the greatest part of the year; but being small and grassy, they do not readily lead to a discovery of the plant.

Most old writers distinguish a larger and a smaller sort; but these differ merely in size. Parkinson notices a variety with white flowers<sup>z</sup>.

21. Bulb ovate, coated. Flowers loosely racemed, on filiform pedicels a little shorter than the corolla. Bractes narrow, equal to the pedicels or shorter. Corolla nearly the size of *Ornithogalum pyrenaicum*, with elliptic, blunt, pale yellow segments.

<sup>m</sup> Engl. bot.

<sup>p</sup> Hort. kew.

<sup>q</sup> Raii syn. & Dill. indic. dub.

<sup>r</sup> Thunb. in Linn. trans.

<sup>s</sup> Gouan.

<sup>t</sup> Hort. kew.

<sup>u</sup> Linn. syst.

<sup>v</sup> Linn. syst.

<sup>w</sup> Desfontaines.

<sup>x</sup> Smith brit. & engl. bot. Curt. lond.

<sup>y</sup> Ray, Curtis, Withering.

<sup>z</sup> Curtis.



Native of Barbary near La Calle; flowering in autumn and winter<sup>a</sup>.

22. Native of Portugal.

Dr. Smith has very properly removed *Hyacinthus non-scriptus* into this genus under the name of *Scilla nutans*. But it has already been described under the former name.]

#### PROPAGATION AND CULTURE.

1. The Official Squill growing on sea-shores, and in ditches where the salt water flows in with the tide, in the warm parts of Europe, cannot be propagated in gardens, the frost in winter always destroying the roots, and for want of salt water they do not thrive in summer. Sometimes the roots put out stems and produce flowers as they lie in the druggist's shops.

2, &c. The other species are mostly hardy, and may be propagated by seeds or offsets: the latter, being the more expeditious way, is generally practised. The roots may be transplanted after the leaves are decayed; but if they are removed after they have put out new fibres, they rarely succeed, at least they will not flower the following spring. They may be treated in every respect like the ordinary sorts of Hyacinths.

The seeds should be sown in autumn soon after they are ripe, either in shallow boxes or pans in the manner before directed for Hyacinths.

[14. Dodonæus remarks, that unless the offsets are frequently taken from this species, it will not flower for twenty years together.

20. This may be raised from seeds, which it produces in plenty, and it will flower the third year. It may be increased also, though slowly, by its bulbs, which should be planted in a light loamy soil, and placed in a dry part of the garden. It is best to plant the bulbs in pots, plunged in the border; for they will thus be secured from destruction, when the border is dug. This hint is applicable to any other small hardy bulbs<sup>b</sup>.

SCILLA. See *Aletris*.

SCIRPO-CYPERUS. See *Scirpus*.

SCIRPOIDES. See *Carex* and *Scirpus*.

SCIRPUS (of *Pliny*, *q. Sirpus*, *a sirpo*, *i. e. ligō, vincio*. It being proper to tie or bind. Hence it is called Binte or Binte in German, from the verb binden.)

*Lin. gen. n. 67. Reich. n. 73. Schreb. n. 94.*

*Mich. t. 31. Tournef. t. 300. Juss. 27. Gärtn.*

*i. 2. Scirpo-Cyperus. Mich. t. 31.*

Class. 3. 1. Triandria Monogynia.

Nat. order of *Calamariæ. Cyperideæ*, Juss.

#### GENERIC CHARACTER.

CAL. Spike imbricate all round: scales ovate, from flat bent in, distinguishing the flowers.

COR. none.

STAM. Filaments three, finally becoming longer. Anthers oblong.

PIST. Germ very small. Style filiform, long. Stigmas three, capillary.

PER. none.

SEED one, three-sided, acuminate, surrounded with villose hairs shorter than the calyx, or without any.

OBS. Those villose hairs of the seed, in some species are fastened to the tip, in others to the base of the seed.

#### ESSENTIAL CHARACTER.

Glumes chaffy, imbricate every way. Cor. none. Seed one, beardless.

#### SPECIES.

\* With a single spike.

1. *Scirpus mutatus*.

*Lin. spec. 71. Reich. 1. 130. Willd. 1. 290. amæn. 5. 391. Brown. jam. 126. n. 4.*

Culm three-sided naked, spike cylindrical terminating.

2. *Scirpus spiralis. Spiral Club-rush.*

*Lin. spec. ed. Willd. 1. 290. Rottb. gram. 45. t. 75. f. 1.*

Culms aggregate almost naked three-sided, spike cylindrical terminating, florets wedge-form truncate disposed spirally.

<sup>a</sup> Desfontaines.

<sup>b</sup> Curtis.

3. *Scirpus articulatus. Half-jointed Club-rush.*

*Lin. spec. 70. Reich. 1. 130. Willd. 1. 290. Rottb. gram. 53. Vahl symb. 1. 8. Thunb. jap. 36.*

*S. fistulosus. Forsk. descr. 14. n. 45.*

*Tieli. Rheed. mal. 12. 135. t. 71.*

Culm round almost naked half jointed, head glomerate lateral.

4. *Scirpus plantagineus.*

*Lin. spec. ed. Willd. 1. 291. Retz. obs. 5. 14. n. 18.*

*S. plantaginoides. Rottb. gram. 45. t. 15. f. 2.*

Culms round jointed naked, spike terminating cylindrical naked.

5. *Scirpus nutans.*

*Lin. spec. ed. Willd. 1. 291. Retz. obs. 4. 12. n. 22.*

Culm compressed, bluntly four-cornered naked, spike ovate solitary terminating nodding.

6. *Scirpus palustris. Marsh creeping Club-rush.*

*Lin. spec. 70. syst. 98. Reich. 1. 130. Willd. 1.*

*291. fl. lapp. n. 19. fuc. n. 42. Hudf. angl. 17.*

*Wither. arr. ed. 3. 17. Smith brit. 48. engl. bot.*

*t. 131. Relb. cant. n. 34. Sibth. oxon. n. 64.*

*Abbot bedf. n. 30. Fl. dan. t. 273. Hall. helv.*

*n. 1336. Hoffm. germ. 16. Roth. germ. 1. 21.*

*2. 52. Pollich pal. n. 43. Leers herb. n. 34.*

*t. 1. f. 3. Krock. filef. n. 70. Neck. gallob. 24.*

*Scop. carn. n. 56. Villars dauph. 2. 187. Gmel.*

*fib. 1. 83. n. 8. Desfont. atlant. 47. Reliqu.*

*Rudb. 27. f. 2.*

*S. equiseti capitulo majori. Scheuch. gram. 360.*

*Monti prodr. 15. Tournef. inst. 528. Raii syn.*

*429.*

*Juncus capitulis equiseti major. Baub. pin. 12.*

*theat. 186. Mor. hist. f. 8. t. 10. f. 32. Raii*

*hist. 1305. 18.*

*J. capit longis f. clavatus. Baub. hist. 2. 523.*

*J. aquaticus capitulis equiseti. Park. theat. 1196.*

*J. minor capit. equiseti. Ger. emac. 35. 5. t. 1631.*

*Lob. obs. 44. 1. ic. 86.*

*J. cyperoides capitulo simplici. Loef. pruss. 131.*

*t. 36.*

β. *S. equiseti capit. majori alter. Scheuch. gram. 361.*

*t. 7. f. 17.*

*Juncus capit. equiseti longioribus. Mor. 3. 233.*

*f. 33.*

Culm round sheathed at the base, spike suboval termi-

nating, glumes acute, root creeping.

7. *Scirpus multicaulis. Many-stalked Club-rush.*

*Smith brit. 48. Fl. dan. t. 167. conf. t. 287. descr.*

*S. palustris β. Lin. lapp. n. 19.*

*S. multicaulis, equiseti capitulis minoribus. Reliqu.*

*Rudb. t. 28. f. 2.*

*S. equiseti capit. crassioribus & habitioribus pumilus*

*& multicaulis. Rupp. jen. ed. Hall. 319.*

*S. caule aphylo, spica imbricata subrotunda, glumis*

*obtusis. Hall. helv. ed. 1. 249?*

Culm round sheathed at the base, spike ovate terminating,

glumes obtuse equal, root fibrous.

8. *Scirpus geniculatus. Knee-jointed Club-rush.*

*Lin. spec. 71. Reich. 1. 131. Willd. 1. 291.*

*hort. cliff. 21. Rottb. gram. 44. Brown. jam.*

*126. n. 5. Sloan. jam. 1. 121. & 122. n. 52, 53.*

*t. 75. f. 2. & t. 81. f. 3. Raii suppl. 628.*

*(Juncus.)*

Culm round naked, spike oblong terminating.

9. *Scirpus cæspitosus. Scaly-stalked Club-rush.*

*Lin. spec. 71. syst. 98. Reich. 1. 131. Willd. 1.*

*292. Fl. lapp. n. 20. fuc. n. 43. Hudf. angl.*

*17. Wither. arr. ed. 3. 73. Smith brit. 49.*

*Relb. cant. n. 35. Abbot bedf. n. 32. Hall. helv.*

*n. 1334. Hoffm. germ. 16. Roth. germ. 1. 21.*

*2. 52. catalect. bot. 1. 7. Pollich pal. n. 44.*

*Neck. gallob. 26. Reliqu. Rudb. 28. f. 1. Krock.*

*filef. n. 72. t. 14. Villars dauph. 2. 187.*

*S. montanus capitulo breviori. Scheuch. gram. 363.*

*t. 7. f. 18. Raii syn. 429. Tournef. inst. 528.*

*Juncus parvus montanus, cum parvis capitulis luteis.*

*Baub. hist. 2. 525. f. 2. Mor. hist. f. 8. t. 10.*

*f. 35. ord. 3.*

*J. parvus palustris, cum parvis capit. equiseti. Raii*

*hist. 1306. n. 22. syn. ed. 2. 15. Pluk. phyt. t. 40.*

*f. 6.*



- Gramen junceum, foliis & spica junci minus. *Baub. pin. 6. theat. 79.*  
*Culm round striated sheathed at the base with numerous scales, spike terminating, outer glumes very large.*
10. *Juncus pauciflorus.* Chocolate-headed Club-rush.  
*Lightf. scot. 1078. Hudf. angl. 648. Wither. arr. ed. 3. 74. Smith brit. 30. Sibth. oxon. n. 65. Hall. belv. n. 1335.*  
*S. Bæothryon. Lin. suppl. 103. Lin. spec. ed. Willd. 1. 293. Ehrh. phyt. n. 31.*  
*S. Halleri. Villars dauph. 2. 188.*  
*S. minimus spica brevior squamosa spadicea. Scheuch. gram. 364. t. 7. f. 19.*  
*Culm round striated sheathed at the base, spike terminating few-flowered longer than the outer glumes.*
11. *Scirpus campestris.*  
*Lin. spec. ed. Willd. 1. 293. Roth. catal. bot. 1. 5.*  
*Culm striated naked, spike terminating scarcely exceeding the two-valved calyx, calyx-glumes oblong membranaceous at the tip blunt almost equal.*
12. *Scirpus capitatus.*  
*Lin. spec. 70. Reich. 1. 132. Grön. virg. 12. Brown. jam. 126. n. 3. Sloan. jam. 122. (Juncus.)*  
*S. caribæus. Rottb. gram. 46. t. 15. f. 3.*  
*Culm round naked bristle-form, spike subglobular terminating.*
13. *Scirpus ovatus.*  
*Lin. spec. ed. Willd. 1. 294. Roth. catalect. bot. 1. 5.*  
*S. compressus. Moench. meth. 349.*  
*S. capitatus. Schreb. spicil. 60. Krock. files. n. 71. Hoffm. germ. 17. Roth. germ. 1. 21. 2. 54. Ehrh. phyt. 4. 155. n. 16.*  
*Juncus clavatus minor capitulis rotundioribus. Mor. hist. 3. 233. f. 8. t. 10. f. 34.*  
*Culm subcompressed naked filiform, spike ovate terminating naked, flowers two-stamened.*
14. *Scirpus atropurpureus.*  
*Lin. spec. ed. Willd. 1. 294. Retz. obs. 5. 14. n. 19.*  
*Culms setaceous round in bundles, spikes terminating ovate solitary, flowers one-stamened.*
15. *Scirpus polytrichoides.*  
*Lin. spec. ed. Willd. 1. 295. Retz. obs. 4. 11. n. 21.*  
*Gramen polytrichum. Rumph. amb. 6. 17. t. 7. f. 1.*  
*Culms compressed setaceous, spikes terminating solitary somewhat nodding one-stamened.*
16. *Scirpus acicularis.* Least Club-rush.  
*Lin. spec. 71. syst. 98. Reich. 1. 132. Willd. 1. 295. mant. 321. fl. lapp. n. 21. suæc. n. 44. Hudf. angl. 18. Smith brit. 51. engl. bot. t. 749. Sibth. oxon. n. 66. Dickf. hort. succ. 14. 1. Fl. dan. t. 287. Hoffm. germ. 17. Roth. germ. 1. 21. 2. 55. Pollich pal. n. 45. Krock. files. n. 73. Villars dauph. 2. 187. Hall. belv. n. 1346. (Mariscus.)*  
*S. minimus capitulis equiseti. Dill. cat. giff. 165. Raii syn. 429.*  
*Cyperus acicularis. Wither. arr. ed. 3. 78.*  
*Juncus inutilis f. Chamæschœnus. Baub. theat. 183.*  
*Juncellus minimus capit. equiseti. Mor. hist. f. 8. t. 10. f. 37. Pluk. phyt. t. 40. f. 7. Plot oxon. 145. t. 9. f. 3.*  
*Culm quadrangular, with a beardless sheath at the base, spike ovate acute terminating, outer glumes larger.*
17. *Scirpus fluitans.* Floating Club-rush.  
*Lin. spec. 71. Reich. 1. 132. Willd. 1. 295. Hudf. angl. 18. Wither. arr. ed. 3. 74. Smith brit. 51. engl. bot. t. 216. Sibth. oxon. n. 67. Dickf. hort. succ. 3. 4. Hoffm. germ. 17. Roth. germ. 1. 22. 2. 55. Krock. files. n. 74. Neck. gallob. 25. Guett. stamp. 141. Sauv. monsp. 9.*  
*S. equiseti capitulo minori. Tournef. inst. 528. Raii syn. 431. Scheuch. gram. 365. t. 7. f. 20.*  
*Juncellus capit. equiseti minor fluitans. Baub. pin. 12. prodr. 23. theat. 187. Raii syn. ed. 2. 274. 13. hist. 1306. 20.*  
*Gramen junceum clavatum repens, foliis & capitulis Pŷyllii. Mor. hist. f. 8. t. 10. f. 31.*  
*β. S. stolonifer. Roth in Usteri Neu Annal. 4. 36.*  
*Stem leafy flaccid floating, peduncles alternate naked, spikes solitary terminating.*
18. *Scirpus lacustris.* Tall Club-rush or Bull-rush.  
*Lin. spec. 72. Reich. 1. 132. Willd. 1. 296. fl. suæc. n. 46. Hudf. angl. 19. Wither. arr. ed. 3. 75. Smith brit. 52. Relb. cent. n. 36. Sibth. oxon. n. 68. Abbot bedf. n. 31. Hall. belv. n. 1337. Hoffm. germ. 17. Roth. germ. 1. 22. 2. 57. Pollich pal. n. 46. Neck. gallob. 25. Scop. carn. n. 59. Villars dauph. 2. 189. Krock. files. n. 75. Gmel. fib. 1. 79. Thunb. jap. 37. Brown. jam. 127. 6.*  
*S. palustris altissimus. Tournef. inst. 528. Scheuch. agroft. 354. Raii syn. 428.*  
*Juncus maximus f. Scirpus major. Baub. pin. 12. theat. 178.*  
*J. lævis maximus. Park. theat. 1191. 1. Mor. hist. f. 8. t. 10. f. 1.*  
*J. aquaticus maximus. Lob. ic. 85. Ger. 31. 3. emac. 35. 3. Raii hist. 1304. 7.*  
*J. holoschoenus. Dod. pempt. 605. f. 1.*  
*J. maximus holosch. Baub. hist. 2. 522. 2.*  
*J. palustris major. Tabern. ic. 249.*  
*Holoschoenus. Dalech. hist. 987. (Villars.)*  
*β. Juncus f. Scirpus medius. Baub. pin. 12. theat. 181. Raii hist. 1304. syn. 428. 2. Lesser Bull-rush.*  
*γ. J. aquaticus medius, caulē carinato. Raii syn. 428.*  
*Culm round naked, panicle cymed decomposed terminating, spikelets ovate.*
19. *Scirpus glomeratus.*  
*Lin. spec. ed. Willd. 1. 296. Retz. obs. 4. 11. n. 19.*  
*Culm naked roundish, umbel glomerate, involucre two-leaved short, flowers two-stamened.*
20. *Scirpus arvensis.*  
*Lin. spec. ed. Willd. 1. 296. Retz. obs. 4. 11. n. 20.*  
*Culms compressed striated, umbels simple, involucre one-leaved short.*
21. *Scirpus truncatus.*  
*Lin. spec. ed. Willd. 1. 296. Thunb. prodr. 17.*  
*Culm round, head glomerate-globular, involucre two-leaved, leaves linear.*
22. *Scirpus laciniatus.*  
*Lin. spec. ed. Willd. 1. 296. Thunb. prodr. 17.*  
*Culm round, head triangular, glumes ovate ciliate, involucre two-leaved.*
23. *Scirpus membranaceus.*  
*Lin. spec. ed. Willd. 1. 297. Thunb. prodr. 17.*  
*Culm round, head angular, glumes ovate membranaceous, involucre three-leaved.*
24. *Scirpus pilosus.*  
*Lin. spec. ed. Willd. 1. 297. Thunb. prodr. 18.*  
*Culm compressed, head ovate, glumes lanceolate ciliate, involucre four-leaved.*
25. *Scirpus Hystris.*  
*Lin. spec. ed. Willd. 1. 297. Thunb. prodr. 17.*  
*Culm capillary, head commonly two-spiked, glumes acuminate squarrose, involucre one-leaved.*
26. *Scirpus Holoschoenus.* Round cluster-headed Club-rush.  
*Lin. spec. 72. syst. 99. Reich. 1. 133. Willd. 1. 297. Hudf. angl. 19. Wither. arr. ed. 3. 75. Smith brit. 53. Dickf. hort. succ. 2. Hoffm. germ. 17. Roth. germ. 1. 22. 2. 58. Scop. carn. n. 61. Sauv. monsp. 8. Villars dauph. 2. 190. Krock. files. n. 76. Desfont. atlant. 49.*  
*S. maritimus, capitulis rotundioribus glomeratis. Tournef. inst. 528. Raii syn. 429.*  
*Scirpoides maritimum capitulis sparsis glomeratis. Scheuch. agr. 371. t. 8. f. 2.*  
*Juncus acutus maritimus, capitulis rotundis. Baub. pin. 11. theat. 174. Raii hist. 1303. 2.*  
*J. maritimus capit. rotundis. Mor. hist. f. 8. t. 10. f. 17. Pluk. phyt. t. 40. f. 4. Reliqu. Rudb. 22. f. 1. & 25. f. 3.*  
*J. acutus marit. alter. Park. theat. 1194. 4.*  
*Holoschoenus. Dalech. hist. 987. (sec. Linn.)*
- β. *Scirpus australis.*  
*Lin. syst. 99. Reich. 1. 133. Willd. 1. 297. Smith brit. 53. 8. β.*  
*Juncus minor acutus maritimus prolifer. Pluk. phyt. t. 40. f. 5.*
- γ. *Scirpus*



7. *Scirpus romanus*.  
*Lin. spec.* 72. *fyst.* 99. *Reich.* 1. 133. *Willd.* 1. 298. *Huds. angl.* 19. *Witber. arr. ed.* 3. 76. *Jacqu. austr.* 5. 23. t. 448.  
*Scirpoides acutum maritimum*, capitulo glomerato folitario. *Scheuch. agr.* 373. t. 8. f. 6.  
*S. marit.* capit. non omnibus in pediculis insidentibus, foliis & scapo supra paniculam carinam ferentibus viridem. *Mich. gen.* 52. *Segu. veron.* 3. 73.  
*Culm round naked, heads glomerate peduncled or sessile, involucre two-leaved unequal, leaves channelled.*
27. *Scirpus nodosus*.  
*Lin. spec. ed. Willd.* 1. 298. *Rottb. gram.* 52. t. 8. f. 3.  
*Culm compressed knotted, head glomerate mucronate.*
28. *Scirpus radiatus*.  
*Lin. spec. ed. Willd.* 1. 298. *Thunb. prodr.* 18.  
*Schoenus radiatus.* *Lin. suppl.* 101. *fyst.* 95.  
*Culm round, head hemispherical, involucre many-leaved.*
29. *Scirpus setaceus.* *Least Club-rush.*  
*Lin. spec.* 73. *fyst.* 99. *Reich.* 1. 134. *Willd.* 1. 298. *fl. jucc. n.* 45. *Gaertn. fruct.* 1. 10. *Huds. angl.* 20. *Witber. arr. ed.* 3. 76. *Smith brit.* 55. *Relb. cant. n.* 37. *Sibth. oxon. n.* 69. *Abbot bedf. n.* 33. *Fl. dan. t.* 311. *Hoffm. germ.* 17. *Roth. germ.* 1. 22. 2. 58. *Leers herbörn. n.* 35. t. 1. f. 6. *Krock. flesf. n.* 77. t. 16. *Neck. gallob.* 23. *Pollich pal. n.* 47. *Scop. carn. n.* 62. *Villars dauph.* 2. 188. *Desfont. atlant.* 49. *Rottb. gram.* 47. t. 15. f. 5, 6. *Hall. belv. n.* 1345. (Mariscus.)  
*S. foliaceus humilis.* *Dill. cat. giff.* 158. *Raii syn.* 430.  
*S. omnium minimus*, capitulo brevior. *Tournef. inst.* 528. *Scheuch. gram.* 358.  
*Juncellus omnium minimus.* *Mor. hist. f.* 8. t. 10. f. 23. — *Chamaeschoenos.* *Lob. adv.* 44. *Raii hist.* 1305. 14. *syn.* 2. 274. 16.  
*J. Lobelii.* *Park. theat.* 1270. 10. & 9.  
*Gramen junceum minimum*, capite squamoso. *Bauh. pin.* 6. *prodr.* 13.  
*Culm naked setaceous, spikes lateral commonly two sessile without bractes.*
30. *Scirpus supinus*.  
*Lin. spec.* 73. *Reich.* 1. 134. *Willd.* 1. 299. *Roth. germ.* 2. 58. *Dalib. par.* 16. *Lour. cochinch.* 43. *ed. Willd.* 55.  
*S. supinus minimus*, capitulis conglobatis, foliis rotunditeretibus. *Tournef. inst.* 528.  
*Culm round naked, spikes sessile glomerate in the middle of the culm.*
31. *Scirpus natans*.  
*Lin. spec. ed. Willd.* 299. *Thunb. prodr.* 17.  
*Culm compressed leafy, flexuose-erect, spikes two lateral.*
32. *Scirpus vaginatus*.  
*Lin. spec. ed. Willd.* 1. 300. *Thunb. prodr.* 17.  
*Culm filiform, heads lateral alternate shorter than the involucre.*
33. *Scirpus tristachyos*.  
*Lin. fyst.* 99. *Willd.* 1. 300. *suppl.* 103. *Thunb. prodr.* 17. *Rottb. gram.* 48. t. 13. f. 4.  
*Culm capillary, head three-spiked, glumes entire, involucre two-leaved.*
34. *Scirpus uncinatus*.  
*Lin. spec. ed. Willd.* 1. 300. *Pluk. phyt. t.* 190. f. 7.  
*S. capitatus.* *Burm. ind.* 21?  
*Hairy, culm round leafy, spikes conglomerated into a head terminating and axillary.*
35. *Scirpus aristatus*.  
*Lin. spec. ed. Willd.* 1. 300.  
*S. pilosus.* *Retz. obs.* 6. 19. n. 12.  
*Culm striated round leafy, panicle terminating two-leaved, spikelets ovate squarrose-echinate.*
36. *Scirpus autumnalis*.  
*Lin. fyst.* 99. *Reich.* 1. 134. *Willd.* 1. 301. *mant.* 180. *Rottb. gram.* 58. t. 17. f. 3? *Clayt.* 772.  
*Culm ancipital naked, umbel decomposed, spikelets ovate.*
37. *Scirpus diphyllus*.  
*Lin. spec. ed. Willd.* 1. 301. *Retz. obs.* 5. 15. n. 22.  
*Culms semicylindrical striated two-leaved, umbel compound with a two-leaved involucre longer than it.*

38. *Scirpus fastigiatus*.  
*Lin. spec. ed. Willd.* 1. 301. *Thunb. prodr.* 18.  
*Culm filiform, head convex compressed, outer glumes mucronate, involucre none.*
39. *Scirpus globulosus*.  
*Lin. spec. ed. Willd.* 1. 301. *Retz. obs.* 6. 19. n. 11.  
*Culm compressed naked, panicle terminating, spikelet single sessile, several peduncled globular.*
40. *Scirpus globiferus*.  
*Lin. fyst.* 99. *Willd.* 1. 301. *suppl.* 104.  
*Culm naked round, umbel terminating compound, heads globular composed of several spikelets closely beaped.*
41. *Scirpus capillaris*.  
*Lin. fyst.* 99. *Reich.* 1. 135. *Willd.* 1. 302. *mant.* 321. *fl. zeyl. n.* 39. *hort. cliff.* 21. (Cyperus.) *Burm. zeyl.* 109. t. 47. f. 2. (Gramen pusillum.)  
*Culm naked capillary, spikes peduncled in threes, the middle one sessile.*  
 \*\*\* *Culm three-sided, panicle naked.*
42. *Scirpus trispicatus*.  
*Lin. fyst.* 99. *Willd.* 1. 302. *suppl.* 10. *Thunb. prodr.* 17.  
*Culm angular naked, spikes terminating in threes sessile naked.*
43. *Scirpus lateralis*.  
*Lin. spec. ed. Willd.* 1. 302. *Retz. obs.* 4. 12. n. 24. & 5. 16. n. 25.  
*Culms three-sided naked, spikes subtern lateral, involucre one-leaved short.*
44. *Scirpus triquetus.* *Triangular Club-rush or Bull-rush.*  
*Lin. fyst.* 99. *Reich.* 1. 135. *Willd.* 1. 302. *mant.* 29. *Roth. germ.* 1. 23. 2. 59. *Smith brit.* 55. *Witber. arr. ed.* 3. 70. *Mich. gen.* 47. (Scirpo-Cyperus.)  
 a. *S. mucronatus.* *Pollich pal. n.* 48. *Scop. carn. n.* 60. *Hoffm. germ.* 18.  
*S. mucr. β. triquetus.* *Huds. angl.* 20.  
*Juncus acutus maritimus*, caule triquetro molli procerior. *Pluk. phyt. t.* 40. f. 2. *Raii suppl.* 629. 2. *syn.* 428. 4.  
*Spikes mostly peduncled numerous and sometimes reaching to the apex of the culm.*  
 β. *S. mucronatus.* *Roth. germ.* 1. 23. 2. 60. *Witber. arr. ed.* 2. 50. *Huds.* 20. α.  
*Juncus acutus maritimus caule triangulo.* *Bauh. pin.* 11. *prodr.* 22. *theat.* 175. *Mor. hist.* 3. 332. f. 8. t. 10. f. 20. *Reliqu. Rudb.* 22. f. 2, 3. *Park. theat.* 1194. *Raii hist.* 1303. 3. & 3. 629. 1.  
*J. acut. marit. caule triquetro, rigido, mucrone pungente.* *Pluk. phyt. t.* 40. f. 1. *Raii hist.* 3. 629. 1.  
*Spikes almost all sessile conglomerate.*  
*Culm three-sided straight naked acuminate, spikes lateral sessile or peduncled.*
45. *Scirpus mucronatus*.  
*Lin. spec.* 73. *fyst.* 100. *Reich.* 1. 135. *Willd.* 1. 303. *Hall. belv. n.* 1338. *Villars dauph.* 2. 191. *Dicks. hort. succ.* 26.  
*S. glomeratus.* *Scop. carn. n.* 63.  
*Cyperus maritimus capitulo glomerato.* *Tournef. inst.* 527.  
*Scirpo-Cyperus maritimus.* *Mich. gen.* 47. *ord.* 3.  
*Scirpo-Cyperus panicula glomerata e spicis imbricatis composita.* *Scheuch. agr.* 404. t. 9. f. 14.  
*Culm triangular naked acuminate, spikes conglomerate sessile lateral.*
46. *Scirpus dichotomus*.  
*Lin. spec.* 74. *fyst.* 136. *Willd.* 1. 303. *fl. zeyl. n.* 40. *Rottb. gram.* 57. t. 13. f. 1. *Retz. obs.* 4. 12. n. 23. *Vabl symb.* 1. 8. *Forst. prodr. n.* 28. *Pluk. phyt. t.* 119. f. 3. (Gramen cyperoides.) *Mich. gen.* 49. (Scirpo-Cyperus.)  
*S. bifumbellatus.* *Forsk. descr.* 15. n. 46.  
*S. annuus.* *Allion. pedem. n.* 2371. t. 88. f. 5. *Desfont. atlant.* 51.  
*Cyperus maderaspatanus calamo compresso, spicis minoribus fuscis.* *Scheuch. agr.* 395.  
*C. supinus minor, sparsa panic. ex rarioribus locustis.* *Monti prodr.* 13.  
*Culm three-sided naked, umbel decomposed, spikes in the forks sessile.*



47. *Scirpus echinatus*.  
*Lin. spec.* 74. *Reich.* 1. 136. *Willd.* 1. 304.  
*fl. zeyl.* n. 38. *Gron. virg.* 12. (Cyperus.) *Pluk.*  
*phyt.* t. 91. f. 4. (Gramen cyperoides.)  
*Culm three-sided naked, umbel simple, spikes ovate.*
48. *Scirpus retrofractus*.  
*Lin. spec.* 74. *Reich.* 1. 136. *Willd.* 1. 304.  
*Pluk. phyt.* t. 415. f. 4.  
*Culm three-sided, umbel simple, floscules of the spikes retrofracted.*
49. *Scirpus ferrugineus*.  
*Lin. spec.* 74. *Reich.* 1. 136. *Willd.* 1. 304.  
*Swartz obs.* 31. *Sloan. jam.* 1. 36. t. 77. f. 2.  
 (Gramen Cyperoides.)  
*Schoenus polymorphus.* *Rottb. gram.* 67.  
*Culm three-sided almost naked, involucre length of the panicle and ciliate.*
50. *Scirpus spadiceus*.  
*Lin. spec.* 74. *Reich.* 1. 137. *Willd.* 1. 305.  
*Vahl, ecl.* 1. 7. *Gron. virg.* 132. *Sloan. jam.* 1. 118. t. 76. f. 2. (Gramen Cyperoides.)  
*Culm three-sided naked, umbel almost naked, spikes oblong sessile and terminating.*  
 \*\*\*\* *Culm three-sided, panicle leafy.*
51. *Scirpus anomalus*.  
*Lin. spec. ed. Willd.* 1. 305. *Retz. obs.* 5. 15.  
 n. 23.—conf. *Schoenum nemorum.* *Vahl, symb.* 3. 8.  
*Culm three-sided leafy, panicle terminating short, spikelets ovate, flowers corolla the lower one-stamened, the upper two-stamened.*
52. *Scirpus miliaceus*.  
*Lin. spec.* 75. *syst.* 100. *Reich.* 1. 137. *Willd.* 1. 305. *Burm. ind.* 22. t. 9. f. 2. *Retz. obs.* 5. 16.  
 n. 26. *Thunb. jap.* 37. *Lour. cochinch.* 43. ed. *Willd.* 55. *Rottb. gram.* 57. t. 5. f. 2.  
*Culm three-sided naked, umbel superdecompound, intermediate spikes sessile, involucre setaceous.*
53. *Scirpus maritimus.* *Salt-marsh Club-rush.*  
*Lin. spec.* 74. *syst.* 100. *Reich.* 1. 138. *Willd.* 1. 306. *fl. suec.* n. 47. *Huds. angl.* 21. *Wither. arr. ed.* 3. 77. *Smith brit.* 56. *engl. bot.* t. 542. *Curt. lond.* 4. t. 4. *Relb. cant.* n. 38. *Gunn. norv.* n. 340. *Hall. belv.* n. 1339. *Hoffm. germ.* 18. *Roth. germ.* 1. 23. 2. 60. *Pollich pal.* n. 49. *Krock. files.* n. 78. t. 15. *Neck. gallob.* 26. *Scop. carn.* n. 57. *Villars dauph.* 2. 190? *Gmel. fib.* 1. 79. *Desfont. atlant.* 50. *Kniph. orig. cent.* 12. n. 86.
- α. *Cyperus rotundus inodorus germanicus.* *Baub. pin.* 14. *theat.* 215.  
*C. rotundus vulgaris.* *Baub. pin.* 13.  
*Gramen cyperoides vulgatus germanicum.* *Baub. hist.* 2. 495.  
*Scirpus tuberosus.* *Desfont. atlant.* 50.
- β. *Cyperus rotundus inodorus anglicus.* *Baub. pin.* 14.  
*C. rot. littoreus.* *Ger. emac.* 31.—*inodorus.* *Lob. ic.* 77. *Baub. hist.* 2. 503. *Raii hist.* 1300. 6. *syn.* 426.—*anglicus.* *Park. theat.* 1264.  
*C. rot. inod. aquaticus septentrionalis.* *Mor. hist.* f. 8. t. 11. f. 9.
- γ. *C. panicula compacta e spicis teretibus crassioribus composita.* *Scheuch. agr.* 400. t. 9. f. 9, 10.
- δ. *C. longus inodorus latifolius, spicis tumidioribus.* *Mor. hist.* f. 8. t. 11. f. 25.  
*Gramen cyperoides panicula sparsa majus.* *Baub. pin.* 6. *theat.* 86. *Scheuch. agr.* 398. t. 9. f. 7, 8.  
*Gr. cyp. palustris panic. sparsa.* *Park. theat.* 1266. *Raii syn.* 425.  
*Gr. cyperoides vulgatus aquaticum.* *Baub. hist.* 2. 495. *Lob. ic.* 20. *Ger. emac.* 22.
- ε. *Scirpo-Cyperus palustris, radice repente nodosa inodora, panicula sparsa, capitulis majoribus.* *Mich. gen.* 48.  
*Culm three-sided, panicle congestate leafy terminating, glumes mucronate lacerate-trifid.*
54. *Scirpus pubescens.*  
*Desfont. atlant.* 52. *Lamarck illustr.* n. 663.  
*Carex pubescens.* *Poir. itin.* 2. 254.  
*Culm three-sided leafy pubescent at top, spikelets few directed one way terminating ovate, glumes mucronate.*
55. *Scirpus grossus.*  
*Lin. syst.* 100. *Willd.* 1. 306. *suppl.* 104.  
*Culm three-sided naked, umbel superdecompound, spikes pedicelled, involucre three-leaved lanceolate-subulate very long.*
56. *Scirpus luzulae.*  
*Lin. spec.* 75. *syst.* 100. *Reich.* 1. 139. *Willd.* 1. 307. *Burm. ind.* 22. *Pluk. mant.* 97. t. 417. f. 3.—v. *Retz. obs.* 4. 11. n. 18.  
*Culm three-sided naked, umbel leafy proliferous; spikelets roundish.*
57. *Scirpus sylvaticus.* *Wood Club-rush.*  
*Lin. spec.* 75. *syst.* 100. *Reich.* 1. 139. *Willd.* 1. 307. *fl. suec.* n. 48. *Huds. angl.* 21. *Wither. arr. ed.* 3. 77. *Smith brit.* 57. *Sibth. oxon.* n. 70. *Fl. dan.* t. 307. *Hall. belv.* n. 1340. *Hoffm. germ.* 18. *Roth. germ.* 1. 23. 2. 61. *Pollich pal.* n. 50. *Leers herb. born.* n. 36. t. 1. f. 4. *Krock. files.* n. 79. *Jacqu. vind.* 19. *Scop. carn.* n. 58. *Villars dauph.* 1. 190. *Gmel. fib.* 1. 81. n. 3. *Kniph. orig. cent.* 12. n. 87.  
*S. gramineus.* *Neck. gallob.* 27.  
*Cyperus gramineus.* *Baub. hist.* 2. 504. 2. *Lob. adv.* 38. 1. *Raii hist.* 1301. *syn.* 426. *Dill. giff.* 86. *Scheuch. agr.* 393. *Tournef. inst.* 527. —*miliaceus.* *Ger. emac.* 30. 5.  
*C. longus miliaceus inodorus locustis plurimis brevioribus.* *Mor. hist.* f. 8. t. 11. f. 15.  
*Pseudo-Cyperus miliaceus.* *Park. theat.* 1171. 2.  
*Gramen cyperoides miliaceum.* *Baub. pin.* 6. n. 13. *theat.* 90.  
*Gr. arundinaceum, foliis acutissimis, panicula multiplici, cyperi facie.* *Loef. pruss.* 119. t. 33.
- β. *Scirpus radicans.* *Schkuhr. in Usteri annal.* 4. 48. t. 1. *Willd.*  
*Culm three-sided leafy, cyme leafy terminating, peduncles naked superdecompound, spikes clustered.*
58. *Scirpus corymbosus.*  
*Lin. spec.* 76. *syst.* 100. *Reich.* 1. 139. *Willd.* 1. 308. *cent.* 112. *amoen.* 4. 303. *Burm. ind.* 23.  
*Kadira-pullu.* *Rheed. mal.* 12. 97. t. 43.  
*Culm three-sided leafy, corymbs lateral simple, the terminating one proliferous, spikes subulate.*
59. *Scirpus æstivalis.*  
*Lin. spec. ed. Willd.* 1. 308. *Retz. obs.* 4. 12. n. 26.  
*Culms depressed three-sided naked, umbels compound involucred, flowers one-stamened.*
60. *Scirpus squarrosus.*  
*Lin. syst.* 101. *Reich.* 1. 140. *Willd.* 1. 308. *mant.* 181. *Rottb. gram.* 49. t. 17. f. 5. *Pluk. mant.* 98. t. 350. f. 6.  
*S. chinensis.* *Osbeck it.* 220.  
*Motta pullu.* *Rheed. mal.* 12. p. 72. t. 38. *Rottb.*  
*Avenacu.* *Rheed. mal.* 12. p. 72. t. 36. *Linn.*  
*Culm three-sided naked setaceous, spikes in threes sessile ovate squarrose.*
61. *Scirpus diplaceus.*  
*Lin. spec. ed. Willd.* 1. 309. *Rottb. gram.* 56. t. 12. f. 1.  
*Culms setaceous three-sided, umbel simple, heads oblong squarrose, floscules subulate recurved two-stamened, germ echinate.*
62. *Scirpus junciformis.*  
*Lin. spec. ed. Willd.* 1. 309. *Retz. obs.* 6. 19. n. 11.  
*Culm naked filiform subtrigonal, spikelets of the panicle sessile and peduncled, involucre two-leaved.*
63. *Scirpus michelianus.*  
*Lin. spec.* 67. *Reich.* 1. 141. *Willd.* 1. 309. *Hoffm. germ.* 18. *Schkuhr in Usteri annal.* 1. 20. t. 2. *Gouan illustr.* 3. *Allion. pedem.* n. 2370. *Desfont. atlant.* 51.  
*Cyperus italicus omnium minimus.* *Till. pis.* 51. t. 21. f. 5.  
*C. humilis, spicis brevibus rotundis conglomeratis.* *Buxb. cent.* 1. 34. t. 55. f. 1.  
*Juncus foliatus minimus.* *Baub. hist.* 2. 523.—item, *Gramen juncum marinum, capitulo squamoso, ejusd.* 2. 509. *Gouan.*  
*Culm three-sided, head globular, involucre many-leaved long.*
64. *Scirpus*



64. *Scirpus ciliaris*.  
*Lin. syst.* 101. *Reich.* 1. 141. *Willd.* 1. 309.  
*mant.* 182. *Rottb. gram.* 55. t. 17. f. 1. *Pluk.*  
*mant.* 98. t. 417. f. 6.  
*Culm three-sided leafy, umbels scattered, scales of the*  
*calyx with ciliate awns.*  
 \*\*\*\*\* *Culm three-sided, head terminating.*
65. *Scirpus hottentottus*.  
*Lin. syst.* 101. *Reich.* 1. 141. *Willd.* 1. 310. *mant.*  
 182. *Thunb. prodr.* 18.  
*Culm three-sided leafy, head globular, calycine scales lan-*  
*ceolate rough-haired.*
66. *Scirpus antarcticus*.  
*Lin. syst.* 101. *Reich.* 1. 141. *Willd.* 1. 310.  
*mant.* 181. *Thunb. prodr.* 17. *Pluk. phyt.* t. 299.  
 f. 3.  
*S. barbatus.* *Rottb. gram.* 52. t. 17. f. 4.  
*Culm three-sided naked, head globular, involucre one-*  
*leafed.*
67. *Scirpus argenteus*.  
*Lin. spec. ed. Willd.* 1. 311. *Rottb. gram.* 51. t. 17.  
 f. 6.  
*Mullen-pullu.* *Rheed. mal.* 12. 101. t. 54.  
*Culms setaceous three-sided, involucre four-leaved very long,*  
*spikes cylindrical very many glomerate into a head.*
68. *Scirpus monandrus*.  
*Lin. spec. ed. Willd.* 1. 311. *Rottb. gram.* 50. t. 14.  
 f. 3.  
*Culm setaceous three-sided, involucre three-leaved long,*  
*head sessile glomerate, floscules one-stamened.*
69. *Scirpus cephalotes*.  
*Lin. spec.* 76. *syst.* 101. *Reich.* 1. 142. *Willd.* 1. 311.  
*Culm three-sided naked, head ovate squarrose, involucre*  
*three-leaved long.*

## DESCRIPTIONS, &amp;c.

1. This resembles *S. geniculatus* very much, but the culm is three-sided, softish and not jointed:—almost hollow; and partitioned by frequent transverse septa. It is frequent in all the shallow standing waters of Jamaica, especially those to the east and west of Kingston.

2. Native of the East Indies.

3. Culm hollow, jointed but not all round. Spikes lateral collected into a half-whorled head.

Root in bundles, fibrous, eatable. Culms several broken by joints at an inch distance, striated, smooth. Between the joints the streaks approximate and become indistinct.—Native of Malabar, Egypt and Japan.

4. Culms three or four feet high, sheathed at the base, striated, jointed with very frequent transverse septa between the joints, appearing on the outside, at least in the dry specimen. Leaves shorter and compressed towards the end. Spike an inch long, closely imbricate.—Native of the East Indies.

5. Root fibrous. Culms several, a span high, filiform, compressed, in a manner four-cornered by a deeper streak on the narrower sides, having short brown scales at the base, and one or two leafless sheaths an inch in length. Spike naked, with ovate, entire, scarious brownish scales.—Native of Malacca.

6. Root creeping horizontally, throwing out many yellowish fibres, and producing thick tufts of upright, cylindrical, smooth, naked stems, becoming striated when dry, clothed at their base with a close blunt sheath, which is invested with two or three other shorter more membranous and reddish sheaths. It has no leaves, unless the barren culms or stems be taken for them. Spikes solitary at the end of each stem, erect, naked, many-flowered, oblong, appearing oval from the spreading of the scales in flowering, and sometimes accompanied by a small, membranous, close-pressed bracte. Scales brown, acute, with a white scarious edge. Anthers large, yellow, projecting entirely beyond the scales. Seed roundish, smooth, yellow, with a brown apex; having four bristles at the base, according to Leers: who says also that the flowers have always two anthers, never three.

It varies in height from six inches to two feet or more: hence some authors make two varieties of it.

<sup>c</sup> Linn. spec. <sup>d</sup> Browne. <sup>e</sup> Linn. spec. <sup>f</sup> Thunberg.  
<sup>g</sup> Retz. <sup>h</sup> Idem.

Native of Europe, Asia and Africa. Very common in England, in ditches, ponds, marshes and rivulets; flowering in June and July.

Swine devour the roots greedily when fresh, but will not touch them when dry.

7. Root putting out long thicker fibres, but not creeping. Culms numerous, in tufts, spreading loosely, a span high, cylindrical, smooth, striated chiefly at the base and closely sheathed separately, with cylindrical, stiff, truncate, entire, subacuminate sheaths, generally doubled, but without any scales between. Leaves none. Spike ovate or elliptic, ferruginous, naked, many-flowered. All the scales are equal, imbricate, ovate, blunt, dark-purple or brown, somewhat scarious at the top, with an indistinct green keel. One or two of the floscules at the base of the spike frequently become viviparous and divaricate.

Native of Lapland, where it was observed by Rudbeck, and considered by Linneus as a variety of the preceding: also of Denmark. Mr. John Mackay, discovered it in 1794, on a bog near the house of Mr. McKinnon, at Corrybattachan, in the Isle of Skye.

8. Culms five or six, from two to three feet high, of a fine shining green colour, hollow, with many transverse membranes. Head oblong, scaly, white. It varies in size, and is found in holes of the low lands where water has stood, in Jamaica. Browne says it is very like the common Bull-rush.

9. Root fibrous, tufted. Culms numerous, upright, varying much in height (according to Dr. Stokes, from two to six inches,) equal, smooth, striated, sheathed at the base, with one or two loose leafy striated entire sheaths, having the top oblique, ending in a short blunt point, and fenced with numerous membranaceous whitish-brown striated concave imbricately sheathing scales, smaller outwards and permanent. Spike small, rufous. The two outer glumes (a little unequal) are the length of the whole spike, and have a leafy point. Dr. Stokes remarks that the seeds have hairs at the base. Dr. Withering observes, that the length of the spike and of its lower scales is extremely uncertain: sometimes these lower scales are as long as the spike, sometimes not half so long, and in other instances considerably longer, the point of the outer valve being lengthened into a kind of awn. This species is therefore best distinguished from the *palustris* by the green and leaf-like appearance of the upper sheaths at the bottom of the culm.

Native of Europe, in bogs, flowering in July. The principal food of sheep and cattle in the highlands of Scotland in March and April till the end of May.

10. Root tufted, blackish. Culms almost upright, from three to six inches high, slender, smooth, having a stiff, awnless, equal sheath at the base. Root-leaves (or rather barren culms) similar and often higher, sheathed in the same manner at the base. Spike small, reddish brown, having about four flowers, with the two lower glumes almost equal, elliptic, shorter than the spike and awnless.

It is very distinct from the preceding, with which it has been confounded by Linneus and Hudson, by the almost total want of the radical scales; by the sheaths being strict, blunt and awnless; the lower glumes shorter than the spike; and by having radical leaves (or barren culms).

Mr. Woodward remarks, that this is very different in habit from the *caespitosus*; that besides its growing single and not in tufts, the stems generally decline and scatter from each other, instead of being upright and close together; that the stems are also more rigid, of shorter growth, and the flowers fewer.

Native of Sweden, Germany, Switzerland, France and Britain. Found in Ellingham fen, Norfolk, by Mr. Woodward; plentifully on Poringland heath, near Norwich, by Mr. Crowe; Houghton-moor, near Newbold, and near Beverley, Yorkshire, by Mr. Teesdale; and on the highlands of Scotland, by Mr. Stuart: flowering in August.

<sup>i</sup> Smith brit. and engl. bot. Withering.  
<sup>k</sup> Smith brit. <sup>l</sup> Sloane. <sup>m</sup> Smith.  
<sup>n</sup> Lightfoot. <sup>o</sup> Smith.



11. Native of the Dutchies of Oldenburgh and Bremen.

12. Native of Virginia and the Caribee islands.

13. This differs from *acicularis* in habit, in having much larger ovate heads of a bay colour, and a longer culm which is yellow not green. The pale-yellow colour of the plant distinguishes it at first sight from *palustris*; the tufts are also much thicker, and the culms have scarcely any pith<sup>a</sup>.—Native of Germany and Silesia.

14. This resembles *Sc. capitatus*, (n. 12.) but is more slender. Culms clustered, strict, roundish, striated; naked, having a short purplish sheath at the base; from an inch to half a foot in height. Leaves similar, few. Spike naked, dark purple, especially in the rainy season. Scales ovate, blunt, with a green keel. Seed dark, with a few snow-white bristles at the base. Native of the East Indies, in boggy grounds: found by Koenig.

15. Culms in tufts, depressed, from four to six inches high, striated, sheathed together with the leaves at the base. Leaves shorter, filiform. Spike sub-ovate. Bracte somewhat shorter than the spike, acuminate. Scales ovate, keeled, blunt, scariose, brown at the tip. Stamen one, seldom two.

Very common in low wet pastures in Ceylon<sup>a</sup>. Also in Amboyna.

16. Root fibrous, tufted. Stems numerous, from two to four inches high, very slender, erect, roundish when fresh, but marked with four smooth angles, which in drying become very conspicuous: the base is invested with a tight blunt beardless sheath. Leaves few, shorter than the stems, obsoletely quadrangular, being flat above, and somewhat rounded beneath. Spike small, solitary, composed of five or six flowers, the glumes of which are truly imbricate in every direction, not two-ranked; so that it properly belongs to this genus, and by no means agrees in character or habit with *Cyperus*. Each glume is sharply keeled and pointed, with a membranous margin; the two lowermost are rather larger, and sometimes barren. Seed elliptical, without any bristles at the base.—All authors, except Hudson, have described the culm as round, which is a mistake. This small plant grows in damp places, where water has stagnated in winter, on heaths and commons: flowering in august<sup>b</sup>. In England, it has been observed on Hounslow-heath, towards Hampton, by Mr. Doody; on Epping Forest, near Wanstead, and in Wanstead-park, Essex, by Mr. Edward Forster, jun.; on Malvern-chace, in Worcestershire, by Mr. Stokes; on Binsey-common, by Dodsworth, and near Eynsham-bridge, in Oxfordshire, by Sibthorp; in Dorsetshire, by Pulteney, who remarks that it was first noticed by Plot; as *caespitosus* seems to have been, in England, by Merret, and *fluitans*, by Ray: on Stockton Common, Terrington Car, and other watery heaths in Yorkshire, by Mr. Teesdale.

17. Root small fibrous; the stems also throw out many long fibres from the joints as they float many together on the surface of the water. Stems round, striated, branched, very long, most slender at the base, with the internodes there lengthened out; towards the top thickened a little, with the joints nearer. Leaves linear, sheathing at the base, flaccid, floating, in alternate single bundles at the joints. Peduncles axillary towards the upper part of the stem, solitary, round, striated, straight, two inches long. Spikes erect above the surface, and though small conspicuous by their number and whitish colour. Their form is ovate, and each consists of few flowers, the glumes of which are not much shorter than the stamens; the two lower or outer are mucronate and particularly large, so as to appear like bractes, but they have always parts of fructification belonging to them. The stigmas are only two in number.

Native of Germany, France, Flanders and England, in ditches and little pools upon grassy commons and heaths, where the water is apt to be dried up in

summer; in which case it sometimes grows more luxuriantly<sup>c</sup>.

Mr. Doody gathered it on Wandsworth-common, and in the same place with the Pepper-grass<sup>d</sup>, that is on Streatham-common in Surry. Mr. Blackstone, in the bogs on Harefield-common. Mr. Hudson, on Putney and Hounslow heaths. Mr. Crowe and Mr. Dickson, on the heath between Farnham and Godalmin. Dr. Smith, on St. Faith's bogs near Norwich<sup>e</sup>. Dr. Pulteney, on Chorley-forest in Leicestershire, and in Dorsetshire abundantly. Mr. Hall, in small rills about Newton Cartmell. Mr. Robson, at Salemoor near Manchester<sup>f</sup>. Mr. Teesdale, upon Stockton-common, Terrington Car, and many other watery heaths in Yorkshire; with the *caespitosus*, *acicularis* and *setaceus*<sup>g</sup>. By Morton, at Badby in Northamptonshire. By Ray, at Madern near Haverford-West in Pembrokehire<sup>h</sup>.

18. Roots creeping under water horizontally, thick and strong. Stems straight, four or five feet or much more in height, naked, round, smooth, dark green, very spongy and full of watery juice within, with several alternate sheathing scales at the base. Panicle decomposed in a cyme-like form: its branches are very unequal, compressed, and fringed towards their extremities. Bractes two exterior, lanceolate, acute, sheathing, commonly shorter than the panicle; and many interior ones which are smaller. Spikes clustered, (generally two or three together) ovate, brown with a shining rusty tinge. Glumes concave, keeled, pointed, fringed, sometimes cloven; but with a serrated point in the cleft. Stamens not very long. Stigma three-cleft. Seed flat on one side, convex on the other, with five or six short rough bristles at its base.

It varies in the length of the bractes, and height of the culm: in  $\beta$  the panicle is smaller; and in  $\gamma$  the culm, according to the observation is flattened on one side.

Native of Europe, Siberia, Japan and Jamaica; growing abundantly in clear ditches and streams, fens, pools and lakes; flowering in July and August<sup>i</sup>.

Bottoms of chairs are very commonly made of the Bull-rush: if cut at one year old, it makes the fine bottoms; coarse bottoms are made of it at two years old; such as are still older, mixed with the leaves of Flag, (*Iris Pseudacorus*) make the coarsest bottoms. Mats are likewise made either of this alone, or mixed with Flag leaves. Cottages are sometimes thatched, and pack-saddles stuffed with it<sup>j</sup>. It is of a soft pliant texture, totally destitute of the roughness or cutting edges of many grass-like plants. In hard seasons cattle will eat it<sup>k</sup>.

19. Roots long, filiform. Leaves radical, clustered, short, rigid, curved. Culm grooved, naked, solitary, a palm high. Umbel compound. The two leaves of the involucre are stiffish and shorter than the umbel; besides these there are a few scariose scales. Spikelets ovate. Scales wide, blunt, concave, brown edged with white.—Native of Ceylon. Found by Koenig.

20. Culms two feet high, clothed at the base by a brown angular sheath two inches in length. A short leaf issues from the sheath with the culm. The umbel is composed of from five to eight spikes; and sometimes, but seldom, an intermediate peduncle bears two pedicelled spikes. The involucre is mostly one-leaved and shorter than the umbel. Spikes ovate, brown, peduncled; with lanceolate scales, gradually deciduous from the base.—Koenig sent it from Ceylon<sup>l</sup>.

21. 22. 23. 24. 25. All natives of the Cape of Good Hope, where they were found by Thunberg<sup>m</sup>.

26. Root tufted. Culms almost upright, two or three feet high, smooth, very finely striated, sheathed at the base with a torn membrane. Leaves radical, linear, acute, pungent, smooth, not keeled but channelled above with a white hollow. Heads sessile or on angular peduncles sheathed at the base sometimes branched, brown, composed of numerous blunt spikelets, with concave acute striated scales between, pu-

<sup>a</sup> Krock. Retzius.

<sup>b</sup> Smith engl. bot. and fl. brit.

<sup>c</sup> Smith brit. and engl. bot.

<sup>d</sup> Wither.

<sup>e</sup> Smith brit. and engl. bot.

<sup>f</sup> Ray syn.

<sup>g</sup> Linn. tranf. 2.

<sup>h</sup> Withering.

<sup>i</sup> Retzius.

<sup>j</sup> Thunb. prodr.

<sup>k</sup> Smith brit.

<sup>l</sup> Ray syn.

<sup>m</sup> Engl. bot.



bescent at the edge. Bractes two unequal, quite similar to the leaves, the upper one seeming to be a continuation of the culm, varying much in length from two inches to a foot, from straight curved in; the lower much shorter, more or less divaricating. The structure of the flower is scarcely known. The seeds, according to Scheuchzer, seem to be beardless; stigma trifid. The upper involucre, as also the lower, being channelled with a white hollow line, and mucronate-pungent, like the leaves, shews that the fructification is truly terminating in this as in *lacustris*.

Dr. Smith has joined this with *australis* and *romanus* as one species, on a comparison of the specimens of Linneus, Jacquin, Seguier and others, and on the admonition of Linneus himself in his later manuscripts.

In  $\alpha$  and  $\gamma$  the culm is more slender, the heads fewer and somewhat larger. Linneus had not seen the leaves of *S. romanus* when he described *S. australis* in *Systema Vegetabilium* from the Hortus Upsalienfis<sup>f</sup>.

Native of England, Germany, the southern parts of Europe and Barbary.—Found by Mr. Stephens in Branton Boroughs, Devonshire; in Somersetshire and Hampshire<sup>g</sup>; the place of  $\beta$  is unknown, Dr. Smith has not found it:— $\gamma$  occurs in the South of France, Austria, Siberia, about Rome, and in England in marshes near Throgmorton in Worcestershire; found there by the Rev. Mr. Sheffield<sup>h</sup>.

27. Native of the Cape of Good Hope.

28. Culm leafless, a palm high, roundish, striated. Leaves linear, channelled, even, stiffish, a span high. Head the size of a Plum. Involucre eight-leaved, length of the culm, lanceolate, three times as wide as the leaves, yellow. There are other leaflets among the heaps of flowers, like the involucre, but smaller. Flowers from small lanceolate one-flowered scales, all from the base and not imbricate. Stamens three. Style one. Seeds without any beard.—Native of the Cape of Good Hope<sup>i</sup>.

29. Root fibrous tufted. Culms numerous, two or three inches high, striated, smooth. Leaves like the culms, but shorter, with a cylindrical striated sheath. Spikes commonly two, but often single, sometimes three or four, breaking out laterally a little below the top of the culm, without any bracte beneath, ovate, smooth; glumes nearly equal, brown, keeled with a green nerve and mucronate. Seeds, according to Leers, beardless<sup>k</sup>. Dr. Stokes also says that they are naked. Dr. Withering describes the plant as from two to six inches high; and the spikes as greenish-brown with a rosy tinge.

According to Gärtner, the glumes are simple, convex, imbricate every way into ovate spikes, which are not compressed. He considers the fruit as a nut, which is very small, roundish or obovate, crustaceous, brittle, convex on one side, flattish on the other, acuminate at top with the permanent style, contracted below into an umbilical tubercle, longitudinally grooved, of a chestnut-ruffet colour. Seed obovate, lenticular, ruffet-coloured, fastened to the bottom of the nut.

Native of most parts of Europe, in wet sandy ground, and on sandy coasts: flowering in July and August.

The description in Linneus's Mantissa (321) belongs to another species, native of Portugal and the Cape of Good Hope, which is perhaps *Cyperus minimus* of Linneus; united with this by Rottboell.—*Sc. supinus*, which the same author confounds with this, is certainly distinct from both<sup>l</sup>.

30. Culms a foot and half high, striated. Leaves awl-shaped, short. Spikes ovate, three or four together. Seed turbinate, compressed, short, surrounded by rough villose hairs shorter than the calyx<sup>m</sup>.

Native of France near Paris, the March of Brandenburg, and Cochinchina.

31. 32. Natives of the Cape of Good Hope.

33. Culms and leaves setaceous and very smooth. Head lateral, immediately below the top of the culm, composed of from three to seven spikes. It varies in

size, and very much resembles *S. capillaris*, but the spikes are not peduncled; perhaps it is only a variety of that. Native of the Cape of Good Hope<sup>n</sup>.

34. Culm two inches high, hairy. Leaves grassy, hairy on both sides, wide in proportion to the plant. The terminating ball of flowers has a two-leaved short hairy involucre; the other is peduncled and naked, in the axil of the uppermost leaf. Scales lanceolate, straw-coloured, mucronate, uncinat, with a raised nerve.—Native of the East Indies<sup>o</sup>.

35. Culm a span high, slender, hairy towards the upper part. Leaves radical, and one in the middle of the culm, somewhat longer than it, one sixth of an inch wide, nerved, hairy above and about the edge. Panicle short, almost fastigate; peduncles one or two-spiked and very hairy. Involucre two-leaved: lower leaf five times as long, upper as long and half as the panicle, of the same form with the leaf, and hairy even beneath. Spikelets one sixth of an inch in length, with abundance of whitish hairs on them. Scales imbricate, obovate, thin, pellucid, striated, terminated by a white thread like an awn the length of the scale itself, and pinnate as it were with straight white hairs on each side. Stamens three brown the length of the scale. Germ three-sided, brown. Style length of the stamens. Stigmas three.

Native of the East Indies<sup>p</sup>. Willdenow has changed Retzius's trivial name; another species having been named *pilosus* by Thunberg.

36. This has the appearance of *Juncus pilosus*. Leaves radical, grassy, loose, somewhat rugged, often the length of the culm. Culms a hand high, compressed, keeled a little on one side. Involucre terminating, two-leaved, like the leaves, commonly longer than the umbel; which is spreading and unequal. The peduncles have generally three spikes. Scales ovate, ferruginous with a green keel, scarcely mucronate<sup>q</sup>.

Rottboell's plant appears to be different from this<sup>r</sup>.

Native of Virginia and Jamaica.

37. Culms two or three feet high, filiform. Leaves glaucous; those next the root shorter, those on the stem almost the length of the culm, grassy. Umbel unequal. The two leaves of the involucre like the radical leaves, and besides these one or two filiform and shorter. Involucres short, scariosae. Spikelets ovate, pedicelled. Scales ovate, acute, concave, brown, with a green line on the back. Filaments flat. Germ obovate, acute, compressed, convex on both sides, striated longitudinally, very minutely wrinkled transversely. Style widish, compressed, longitudinally haired on each side. Stigma bifid.—Koenig sent it from Tranquebar<sup>s</sup>.

38. Native of the Cape of Good Hope.

39. Culms a span high, the thickness of a coarse thread. Peduncles undivided one-spiked, seldom bearing a second sessile spike, from two to eight lines in length, unequal, clothed with a very short sheath at the base: these sheaths are terminated by a very short leaf, or rather the top is free or loose. Scales roundish, very blunt, concave, brown with a whitish margin. Stamens three. Style one. Stigmas three, hirsute, brown.—Native of the East Indies<sup>t</sup>.

40. Culm very smooth, terminated by a very short two-leaved spathe; the leaflets equal, awl-shaped, mucronate. Peduncles springing from the spathe many, ancipital, terminated by little balls, composed of very short spikes clustered together. These little balls put forth about the base, other rays bearing balls, which are again subdivided: hence the inflorescence resembles a compound umbel with the umbels proliferous at the base.—Native of Teneriffe<sup>u</sup>.

41. Leaves capillary, scarcely a finger's length. Culms scarcely longer or thicker than the leaves. Under the umbel is a setaceous leaflet longer than the spikes. Spikes terminating, ovate. Scales ferruginous with a green keel, blunt.—Native of Ceylon<sup>v</sup>.

42. Leaves scarcely any except ferruginous radical

<sup>f</sup> Smith brit.

<sup>g</sup> Ray fyn.

<sup>h</sup> Hudson.

<sup>i</sup> Linn. suppl.

<sup>k</sup> Smith brit.

<sup>l</sup> Idem and Reichard.

<sup>m</sup> Loureiro.

<sup>n</sup> Linn. suppl.

<sup>o</sup> Willdenow.

<sup>p</sup> Retzius.

<sup>q</sup> Linn. mant.

<sup>r</sup> Willdenow.

<sup>s</sup> Retzius.

<sup>t</sup> Idem.

<sup>u</sup> Linn. suppl.

<sup>v</sup> Linn. mant.



scales. Culms many from a foot to two feet in height, very smooth. Spikelets oblong, small, equal, erect. Involucre many-leaved; the leaves awl-shaped, very short.—Native of the Cape of Good Hope<sup>v</sup>.

43. Culms from a span to a foot in height, filiform, sheathed at the base. Leaves of the same form, but shorter. Spikes from two to eight, ovate, of which one is on a peduncle a little above the middle of the culm. They generally have a short, one-leaved involucre. Scales pale brown with a green keel, ovate, acute, concave. Stamens three, with linear anthers. Germen three-cornered, acute at both ends. Style short, with the stigma slightly bifid.—Koenig gathered it in Ceylon<sup>z</sup>.

44. Root fibrous, tufted. Culms erect, three feet high, flat at the sides and even at the corners, spongy within, with a sharp top a little bent in; (in variety  $\beta$ , which is maritime, firmer, according to Dillenius.) Spikes without bractes, having a few membranaceous scales between, on triangular peduncles, sometimes branched and equalling the top of the culm. Glumes bay-coloured, ovate, keeled, mucronate, with a widened torn margin<sup>a</sup>.

Native of Germany, England and some other parts of Europe; also of North America. With us it is found on the sea shore, and on the banks of large rivers, as by the Thames, both above and below London. In ditches by the side of Acle dam, Norfolk, by Mr. Crowe. It was observed by Merret, and was first showed to Mr. Ray by Doody. Ray had not seen it when he published his history of plants.

*Sc. mucronatus* of Linneus, not yet discovered in England, has the sides of the culm not flat, but a little hollowed, with the point bent back; the glumes more numerous, striated, green, with the margin ferruginous and entire, not widened and torn<sup>b</sup>.

$\beta$ . This variety was found in the island of Jersey, by Sherard<sup>c</sup>.

45. This is easily distinguished from the preceding by its greater stature, its thicker culm with the sides hollowed, its thicker ovate spikelets, twenty or more collected into a head, finally by the point or upper part of the culm not being upright but bent horizontally<sup>d</sup>.

Native of Switzerland, the South of France, Carniola and Italy.

46. Koenig sent two varieties from Ceylon: one two feet high, with a large, diffused and very branching umbel; the other half a foot high, with a small umbel, sparingly branched: both have naked compressed culms, with one side plane the other somewhat convex, and white seeds<sup>e</sup>.

Vahl remarks, that Forskahl's *bisumbellatus* from Arabia, recedes from East Indian specimens only in size and villosity; and this species is polymorphous.

It is an annual plant, which few of the *Scirpi* are. Allioni describes his *annuus* as having the leaves even striated linear and soft, the culm striated, a little higher than the leaves, from three to six inches in height, many from the same root, involucre of two unequal leaves, the shorter scarcely equalling the peduncle, the longer sometimes measuring the entire umbel, spikelets ovate-acuminate, one sessile in the centre, the others on unequal three-sided peduncles. The peduncles commonly bear one spike, but they are sometimes proliferous, and put forth another sessile spikelet placed lower and also peduncled, having a leaflet at its base, but the spikes and peduncles are naked. Number of the peduncles in the umbel various, from two to seven. Glumes pressed close, acute, bay with a green nerve; but the lower ones and those which embrace the spike at the base are awned, the nerve being produced into an awn. Seed elliptical, ash-coloured, striated.

According to Desfontaines, the leaves are pubescent, acute, soft, very slightly ferrate; culm striated, upright, a little higher than the leaves; involucre five-leaved or thereabouts, the leaflets unequal, some longer than

the corymb. Peduncles many-spiked; the central ones very short or none, the lateral ones superdecimipound, with the pedicels unequal and short; the central spikelet sessile. Spikelets ovate, rufescent. Scales ovoid, mucronate, membranaceous at the edge, and having a raised dorsal line. Seed striated. Number of the peduncles variable from two to eight.

Thus if the *annuus* of Allioni, the *bisumbellatus* of Forskal, and the *dichotomus* of Linneus, be the same plant; it is a native of the East Indies, Arabia, Italy and Barbary.

47. Culm a span high. Leaves carex-form, length of the culm. Spikes eight, each on its proper peduncle forming a sort of umbel, composed of capules which are acuminate and have no scales between them. Involucre of four or five long leaflets<sup>f</sup>.—Native of both Indies.

48. Native of Virginia.

49. This species varies remarkably, from a span to two feet in height. It is easily distinguished by its unequal ciliate involucre.

Native of Jamaica and other islands of the West Indies, both in dry and wet situations<sup>g</sup>.

50. Culms two feet high, erect, slender, striated, smooth, convex on one side, flattish on the other, with the angles rugged backwards. Leaves narrow, smooth, shorter than the culm. Umbel terminating compound: universal with eight or nine unequal rays, three or four inches long or less, convex on one side channelled on the other, smooth, rugged at the edge like the culms: partial with eight rays, an inch long or shorter. Universal involucre three or four-leaved; with a leaflet equal to the longer rays, the rest an inch in length or less, rugged as before and channelled; the two opposite exterior ones larger, brown at the base: partial involucre two or three-leaved. Spikes three on each ray of the partial umbel, oblong, finally cylindrical, sharpish, imbricate, brown and shining: the middle one sessile. Scales oblong, blunt, convex, concave, keeled at the tip; the keel running out into an obscure point.—Native of South America<sup>h</sup>, Virginia, and Jamaica.

51. Culm about two feet high, even. Leaves at the base many, length of the culm, flat, three-nerved, naked, unarmed, half an inch wide: on the culm three like these but shorter. Panicle an inch and half long, with short half-round ciliate-scabrous peduncles. The involucre consists of a leaf under the lowest peduncle four times as long as the panicle and ciliate-scabrous, another like this but scarcely longer than the panicle under the second peduncle, and of several other leaves gradually shorter but all ciliate-scabrous. Peduncles from three to five-flowered. Pedicels very short, with two or three lanceolate scales. Spikelets ovate, with imbricate ovate blunt scales. Lower flowers one-stamened, upper two-stamened. Corolla two-petalled, about the five of the calycine scale. Glumes equal, compressed, with the keel ciliate. Style length of the corolla. Stigmas two, shorter than the filaments, villose<sup>i</sup>.

According to Vahl, his *Schoenus nemorum*, to which he refers Rheede's *Beera-Kaida*, (hort. malab. 12. 109. t. 58.) seems to agree with this, but he does not decide, Koenig's specimens being imperfect in the fructification. On his authority, Vahl has made it a *Schoenus*.

Willdenow remarks, that respecting the genus it is yet doubtful; having a two-valved corolla. He suspects that it may belong to the genus *Kyllingia*.

Native of the East Indies.

52. Culms very many, even, half a foot high. Leaves grassy, clothing the base of the culm, even. Umbel loose, diffused. Involucres general and partial leafy-setaceous, shorter than the umbel. Spikes peduncled except one which is sessile in the ramifications of the umbel; all ovate, as small as the seeds of Millet<sup>k</sup>.

According to Retzius, the culms vary from half a foot to a foot and half in height. Leaves equitant at

<sup>v</sup> Linn. suppl.    <sup>z</sup> Retzius.    <sup>a</sup> Smith.    <sup>b</sup> Idem.  
<sup>c</sup> Ray syn.    <sup>d</sup> Willdenow.    <sup>e</sup> Retzius.

<sup>f</sup> Linn. zeyl.    <sup>g</sup> Swartz obs.    <sup>h</sup> Vahl ecl.  
<sup>i</sup> Retzius.    <sup>k</sup> Linn. spec.



the base. Spikelets globular, by no means ovate. Stigmas two, bent.—Native of the East Indies.

53. Roots creeping, knotty at the extremities, sometimes more evidently and constantly so than they are in general; hence variety  $\beta$ . Stems upright, from a foot to three feet in height, striated, leafy, the angles roughish. Leaves linear, acute, very long, rugged at the edge, keeled, suddenly for the most part contracted to a sharp point; the lower ones sheathing and alternate, those under the panicle sessile and very unequal in length. Spikes terminating among the upper leaves, chestnut-coloured, glomerate, sessile or peduncled; ovate; peduncles three-sided, simple; sometimes cylindrical and very long. Glumes shining, dusky rusty-coloured, ovate, keeled, long-pointed, torn at the summit. Seeds triangular, flattest on one side, having mostly one short rough bristle at the base, sometimes more. So nearly are the genera of *Scirpus* and *Eriophorum* allied!

There are many varieties of this species. The panicle is sometimes branched, sometimes simple. In some the spikes are sessile, and the stem-leaves shorter than the culm; in others they are longer; and in some plants the spikes are some sessile, others peduncled, as described above<sup>m</sup>.

Desfontaines gives the knobby-rooted variety as a distinct species; under the name of *tuberosus*. He adds the synonyms of Caspar Bauhin, in our variety  $\alpha$ ; of Morison, in our variety  $\gamma$ ; and of Scheuchzer, in our variety  $\delta$ .—He doubts whether it be a distinct species from the *maritimus* of Linneus; but says that it differs not only in having roots with round knobs, but spikelets fewer in number, clustered, narrower, sessile or on short peduncles. He found it in lakes near La Calle in Barbary.

Linneus remarks, that the anatomy of the parts of fructification shows that all these varieties make but one species.

Native of Europe, Barbary and Siberia, on sea coasts, salt marshes and æstuaries, or the banks of great rivers exposed to the tide; flowering through July and August. At Sheerness and the Isle of Dogs. Near Yarmouth. Shirley wych near Stafford. Between Stockton and Portrack, by the Tees, &c.

The Bishop of Drontheim informs us that it is very greedily devoured by all sorts of cattle. Mr. Curtis suggests, that swine being extremely fond of the roots of *Sc. palustris*, which the Swedish peasants collect and fodder them with in the winter, and the roots of this species being much larger, it would probably be preferable to that for this or similar purposes.—Dr. Withering relates, that the roots, dried and ground to powder, have been used instead of flour in times of scarcity.

Monf. Villars observes of the Scirpi in general, that being mostly natives of bogs, marshes and watery places, they have a tendency to raise and dry such spots. The roots and base of the stems rot and become turf, and thus are useful for firing, and to fertilize grounds that we have exhausted by a long course of culture.

54. Culm erect, with the angles acute. Leaves sheathing, long, keeled, acute, striated, quite entire; the lower ones shorter. Spikelets from three to six, blunt, pale, single or two together from the top of the peduncles; which are three-sided, pubescent, unequal, short; the lower ones longer. Scales imbricate, ovate, concave, striated, mucronate, membranaceous at the edge. Spikelets sometimes sessile.—On banks of lakes near La Calle in Barbary, flowering in summer<sup>n</sup>.

55. Culm a fathom high, almost as thick as the human finger, erect, the sides flat, very smooth, towards the root clothed with radicate lanceolate very smooth somewhat warted leaves. Spikelets ovate, ferruginous. Leaflets of the involucre rugged at the edge and one of them very long. It is very like *S. miliaceus*, but differs much in thickness and size.—Native of the East Indies<sup>o</sup>.

56. Culm more than a foot high, even. Universal

involucre many-leaved: leaves ensiform longer than the umbel. Partial involucre scarcely any except a very short bristle. Middle peduncles of the umbel very short; all terminated by a little head, which is again proliferous. Heads roundish, composed of roundish spikelets in a ball.—Native of the East Indies<sup>p</sup>.

Introduced in 1776, by Lady Ann Monson: and flowering here in August and September<sup>q</sup>.

57. Culm solitary, erect, smooth. Leaves wideish, rugged at the edge, those next the root closely tufted; stem-leaves sheathing, alternate; floral-leaves sessile. Cyme many-flowered, superdecompound, with three-sided, rugged, alternate peduncles, and lanceolate membranaceous bracts. Spikes small, solitary or heaped, ovate, dusky green. Glumes keeled, bluntish, undivided. Seeds surrounded by bristles longer than the seed itself<sup>r</sup>.

Native of Europe and Siberia in wet woods and shady places: as in Essex, Warwickshire and Pembrokehire. Mr. Dale observed it by the river Blackwater, below Bocking. Mr. Newton, by the road to Kentish Town, a little beyond Pancras church<sup>s</sup>. Dr. Smith in Charlton wood. It has been seen formerly between Hampstead and Highgate. Mr. Stone found it at Ditchingham, and Dr. Smith, in other parts of Norfolk<sup>t</sup>. Dr. Sibthorp, in Heythorp woods, Oxfordshire. Ray, by the Thame side near Tamworth in Warwickshire; in a brook near Haverford-west in Pembrokehire, and many other places<sup>u</sup>. Morton, between Kettering and Thorp-Malsor in Northamptonshire. Deering, near Nottingham. Mr. Aikin, in a ditch near York. And Mr. Brown, a little east of Breakinbridge over the South Esk, on the south side. It flowers in July<sup>v</sup>.

58. Culm two feet high. Leaves sheathing at the base. Corymb terminating, with the middle peduncles longer and proliferous. Between the pedicels a leafy bristle. Spikelets ferruginous, composed of imbricate scales, of which the upper ones are longer and convolute into a subulate spike. There is a simple peduncled corymb from the axil of each stem-leaf.—Native of the East Indies<sup>w</sup>.

According to Swartz, *Sc. corymbosus* of *Systema Vegetabilium*, is the same with his *Schoenus surinamensis*.

59. Culms filiform, two inches high. Leaves filiform, channelled, commonly longer than the culm, rough-haired, sheathed at the base. Umbels with simple and umbelled peduncles. Involucres filiform, rough-haired, composed of from five to eight leaves, three of which are longer than the umbel. Involucres short, capillary. Spikelets somewhat angular. Scales brown, keeled, acuminate with the points divaricating. Found abundantly in Ceylon by Koenig<sup>x</sup>.

60. Leaves radical, setaceous, channelled, erect, shorter than the culm. Culms from a hand to a foot in height. Involucre terminating two-leaved: leaflets setaceous, one scarcely longer than the spikes, the other often six times as long and more upright. Spikes heaped: scales awl-shaped, standing out, knotted at the base, much imbricated.—Native of the East Indies<sup>y</sup>.

61. Native of the East Indies.

62. Leaves radical linear, even, shorter than the culm. Culm a foot high, with one angle obliterated, so that it is in a manner irregularly quadrangular. Panicle like that of *Juncus bufonius*, but shorter. Universal involucre shorter than the panicle. Spikelets acutely three-cornered, few-flowered. Scales, especially the three outer, acutely keeled, mucronate, between which a stamen or two, or a pistil only, with a small oblong germ, a simple style, and three long villose stigmas.—Native of China<sup>z</sup>.

63. Height an inch or half an inch. Culm commonly reddish, naked or with a single leaf at the base, the length of the scape. Head reddish. Involucre of two or three leaflets, the largest of which is twice or thrice the length of the head. Flowers one to four<sup>a</sup>.

<sup>p</sup> Linn. spec.

<sup>q</sup> Ray syn.

<sup>r</sup> Withering.

<sup>s</sup> Linn. mant.

<sup>t</sup> Hort. kew.

<sup>u</sup> Smith brit.

<sup>v</sup> Linn. amoen.

<sup>w</sup> Retzius.

<sup>x</sup> Smith brit.

<sup>y</sup> Ray syn.

<sup>z</sup> Retzius.

<sup>a</sup> Gouan.

<sup>1</sup> Smith brit. and engl. bot.

<sup>2</sup> Desfontaines.

<sup>m</sup> Hudson and Scopoli.

<sup>n</sup> Linn. suppl.



Leaves keeled, even. Involucre of about five unequal leaflets, much longer than the head. Flowers in a close terminating head, simple or compound. Spikelets pale green, ovate, imbricate with acuminate loofish scales<sup>a</sup>.

Native of Germany, France about Montpellier, Italy, Media, Morocco by the river Sebon. It is an annual, which is the case with very few of the species.

64. Culms a hand high, upright, loose. Stem-leaves four or five, alternate, grassy, wide, loose, sheathing, often the length of the culm. Peduncles axillary and terminating, shorter than the leaves, with from three to five sessile spikes at the end, divaricating into a head. Spikes ovate, imbricate, rough with thin-set hairs, blunt, mucronate with an awn shorter than the scales, erect, ciliate, distant. In place of an involucre, one or two small subulate leaflets under the head. Native of the East Indies. Annual<sup>c</sup>.

65. Culms a foot high, strict, even. Leaves on the stem three, alternate, very remote, sheathing, grassy, somewhat keeled, even, acute, erect, several times shorter than the culm. Head compound, terminating, roundish, appearing to be simple but composed of several parcels of floscules heaped together. Scales terminated by a rough-haired slightly awned point. Involucre of the head three-leaved, unequal, scarcely longer than the head.—Native of the Cape of Good Hope<sup>f</sup>.

66. Leaves radical, filiform, half-round on the outside, channelled on the inner side, length of the culm. Culms filiform, about a foot high. Head terminating, composed of numerous sessile equal spikes. Involucre setaceous, longer than the head, standing out laterally. Spikes ovate, imbricate in three rows, three-sided, brown with a pale edge, bluntish.—Native of the Cape of Good Hope and Guinea<sup>g</sup>.

67, 68. Natives of the East Indies.

69. Culm lofty even striated. Head terminating, with the pedicels not conspicuous. Calyxes imbricate, acuminate squarrose or recurved. Universal involucre very long, three or four-leaved, reflexed, rugged at the edge<sup>h</sup>.

*S. cephalotes* of Jacquin (hort. t. 97.) is quite a different plant from this of Linneus's<sup>i</sup>.

*S. junceus* of Forster (prodr. n. 29.) a native of the Society Isles, seems, in Willdenow's opinion, to belong to the genus *Schoenus*.

*S. capsularis* of Loureiro, a native both of China and Cochinchina, is referred to the genus *Juncus*, by Willdenow. It has only three stamens, in which it agrees with this genus. (But as Willdenow remarks, some European species of *Juncus* have only three stamens.) It approaches in fructification to *Juncus*, in habit both to that and *Scirpus*, in calyx and corolla to neither. Loureiro chose to place it among the *Scirpi*, because there are many species of *Scirpus* in India, but few of *Juncus*.—The culm furnishes an excellent wick for candles and lamps. *Juncus indicus porosus*. *Clus. sur. post.* 64. seems to be this species<sup>k</sup>.

SCIRPUS. See *Bobartia*, *Carex*, *Eriophorum*, *Juncus*, *Schoenus*, *Scleria*.

SCIURIS.

*Lin. gen. Schreb. n. 53. Raputia. Aubl. t. 272. Juss. 421.*

Class. 2. 1. Diandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-toothed, short, acute.

COR. one-petalled, tubular, curved in, two-lipped. Upper lip trifid, with the middle segment a little longer: lower, a little shorter, bifid.

STAM. Filaments two, short, inserted into the upper lip, fenced by two scalelets at the base, antheriferous; three longer, inserted into the lower lip, hairy at the base, barren. Anthers oblong, bifid at the base.

PIST. Germ. five cornered, surrounded by a gland. Style length of the corolla, curved in. Stigma flatish, three-lobed.

PER. Capsules five, united, outwardly rounded, depressed, one-celled, two-valved, opening inwardly.

SEEDS solitary, oblong.

<sup>a</sup> Desfontaines.

<sup>g</sup> Idem.

<sup>c</sup> Linn. mant.

<sup>h</sup> Linn. spec.

<sup>k</sup> Loureiro.

<sup>f</sup> Idem.

<sup>i</sup> Swartz obs.

# ESSENTIAL CHARACTER.

Cor. unequal, with the upper lip trifid, the lower bifid and shorter. Stam. five, but three barren. Caps. five, united, one-celled, one-seeded.

## SPECIES.

1. *Sciuris aromatica*.

*Lin. spec. ed. Willd. 1. 153.*

*Raputia aromatica. Aubl. guian. 670. t. 272.*

## DESCRIPTION, &c.

This is a shrub, two feet in height, with opposite divaricating branches. Leaves opposite petioled ternate: leaflets oblong acuminate quite entire. Spikes axillary nodding<sup>l</sup>.

The leaves have pellucid dots scattered over them. Each flower has a little bracte. It is allied to *Monniera* of Linneus, and *Galipaea* of Aublet<sup>m</sup>.

Native of Guiana, in woods.

SCLAREA. See *Salvia*.

SCLERANTHUS. (From *σκληρος* hard or juiceless, and *ανθος* a flower.)

*Lin. gen. n. 562. Reich. n. 611. Schreb. n. 767.*

*& p. 831. Gertn. t. 126. Juss. 314. Knawel.*

*Dill. gen. 3.*

Class. 10. 2. Decandria Digynia.

Nat. order of *Caryophyllei. Portulacæ, Juss.*

## GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, half-five-cleft, acute, permanent, contracted at the neck.

COR. none.

STAM. Filaments ten, awl-shaped, erect, very small, placed on the calyx. Anthers roundish.

PIST. Germ roundish. Styles two, erect, capillary, length of the stamens. Stigmas simple.

PER. none.

SEED single, (or two) ovate, inclosed in the cartilaginous tube of the calyx.

## ESSENTIAL CHARACTER.

Cal. one-leaved, inferior. Cor. none. Seeds two inclosed in the calyx.

## SPECIES.

1. *Scleranthus annuus. Annual Knawel.*

*Lin. spec. 580. syst. 415. Reich. 2. 323. Willd. 2.*

*660. fl. succ. n. 377. hort. cliff. 166. Gertn.*

*fruct. 2. 196. Hudf. angl. 178. Witber. arr. ed.*

*3. 407. Smith brit. 458. engl. bot. t. 351. Relb.*

*cant. n. 313. Sibth. oxon. n. 403. Fl. dan.*

*t. 504. Hall. belv. n. 1551. Hoffm. germ. 145.*

*Roth. germ. 1. 183. 2. 467. Pollich pal. n. 404.*

*Leers herb. n. 310. Kröck. fles. n. 643.*

*Neck. gallob. 192. Villars dauph. 3. 649. Allion.*

*pedem. n. 1998. Gmel. fib. 3. 39. t. 6. f. 2.*

*Knawel annum. Scop. carn. n. 501. Rupp. jen. 3.*

*Knawel. Dod. pempt. 115. 1. Raii syn. 159. Petiv.*

*brit. t. 9. f. 6.*

*Polygonum gramineo folio majus erectum. Baub. pin. 281.*

*P. angustifolium & gramineo folio minus repens. Baub. pin. 281.*

*P. minus alterum. Tabern. hist. 1217.*

*P. Germanis Knawel. Trag. hist. 393.*

*P. felinoides f. Knawel. Ger. 452. 2. emac. 566. 4.*

*P. germanicum f. Knawel Germanorum. Park. theat.*

*447. f. 7. Raii hist. 213. 1.*

*Calyxes of the fruit patulous acute, stems spreading.*

2. *Scleranthus perennis. Perennial Knawel.*

*Lin. spec. 580. syst. 415. Reich. 2. 323. Willd. 2.*

*661. fl. succ. n. 378. Hudf. angl. 178. Witber.*

*arr. ed. 3. 407. Smith brit. 458. engl. bot.*

*t. 352. Fl. dan. t. 563. Hoffm. germ. 145.*

*Roth. germ. 1. 183. 2. 468. Pollich pal. n. 405.*

*Leers herb. n. 311. Hall. belv. n. 1550.*

*Krock. fles. n. 644. Villars dauph. 3. 649.*

*Allion. pedem. n. 1999. Gmel. fib. 3. t. 6. f. 1.*

*Kniph. cent. 10. n. 76. Plenck, ic. t. 344.*

*Knawel incanum flore majore perenne. Raii hist.*

*213. syn. 160. t. 5. f. 1. Petiv. brit. t. 9. f. 7.*

*Polygonum minus polycarpon. Tabern. hist. 1215.*

*Alchimilla gramineo folio, majori flore. Tournef.*

*inst. 508. Vaill. par. t. 1. f. 5.*

<sup>l</sup> Willdenow.

<sup>m</sup> Justea.



- Saxifraga anglicana alpinefolia.* Ger. 453. *emac.* 567. 5.  
*S. anglica occidentalis Lobelii.* Park. theat. 427. n. & f. 2.  
 β. *Polygonum cocciferum.* Camer. epit. 691. Mer. hist. 2. f. 5. t. ult. f. 2. ord. 1.  
*P. polonicum cocciferum.* Baub. hist. 3. 378.  
*Calyxes of the fruit closed obtuse, stems procumbent.*  
 3. *Scleranthus polycarpus.* Lin. spec. 581. Reich. 2. 324. Willd. 2. 661. amoen. 4. 313. Villars dauph. 3. 649.  
*Polycarpus.* Dalech. hist. 444.  
*Polygonum montanum Vermiculatae foliis.* Baub. pin. 281.  
*Vermiculata nova planta.* Col. ecphr. 1. 295. t. 294.  
*Alchemilla lupina gramineo folio, minore flore.* Tournef. inst. 508. par. 49 & 373.  
*Calyxes of the fruit spreading very much and spiny, stem subvillose.*

## DESCRIPTIONS, &amp;c.

1. Root annual, fibrous, small but striking deep, little or not at all branched. Stems very numerous, spreading in all directions, the outermost decumbent at the base only, not prostrate their whole length, all round, a little downy, branched at top, leafy, pale sometimes reddish. Leaves opposite, united at their base by a dilated membranous downy margin, linear, acute, ciliate at the bottom, of a grassy green. Heads of flowers of the same colour, sessile, terminating, leafy. Calyx with ten ribs, and cloven half way down into five sharp spreading segments a little membranous at their edges. Stamens shorter than the calyx, sometimes ten, but generally from five to eight, of which several are short and imperfect. Germ superior, ovate. Styles spreading. Stigmas downy. Seed inclosed in the permanent hardened calyx, often solitary, (as Dil- lenius, Haller, Leers, Adanson and Gærtner remark) but there are certainly rudiments of two seeds, though one of them is commonly abortive. Branches either opposite or alternate, always woolly. Leaves smooth above. Stamens six to nine, generally eight, two or three of them twice as long as the rest and producing pollen, the others barren.

According to Leers the stamens are from five to seven; Gærtner says from five to ten. The latter describes the pericarp as formed from the ripened calyx, coriaceous-tuberous and almost nucamentaceous, involving the seed and not parting from it. Seed one, ovate-acuminate, smooth, pale straw-colour: covering three-fold: the outmost from the calyx, hard, perforated at the top; the middle, membranaceous, loose, bearing the style; the inmost like a cobweb. The middle integument might, with Linneus, be considered as a utricular capsule.

Native of Europe and Siberia.—Scarcely any plant is more common than this on a sandy soil, especially in fallow fields. It flowers about the middle of summer, and sows its seeds very abundantly in autumn, which produce a crop of young plants that generally survive the winter, or, if destroyed, are replaced by another crop arising from those seeds that happen not to vegetate till spring.

The Swedes and Germans receive the vapour arising from a decoction of it into their mouths, to cure the tooth-ach.

2. Root perennial, as it is said. It has the habit of the preceding, but the stems are perfectly prostrate, and close pressed to the ground, downy in the upper part, much branched, especially towards their extremities. The colour of the whole herb is glaucous, and somewhat glittering with shining pellucid tubercles. Leaves sometimes pubescent. Segments of the calyx with a wider membranous border than in *S. annuus*; their points much more obtuse and curved inwards. The earlier flowers at the end of summer are of a very silvery appearance, and attract the eye at a distance. The stamens are seldom or ever all perfect. Calyx, in the flowering state cloven rather more than

half way down, but not so when the germ swells, externally pubescent. The whole plant when growing old becomes of a reddish brown.

Stems sometimes, but not always woolly. Leaves sea-green, fringed at the edge. Calyx not perfectly closed, but less open than in *S. annuus*.

Native of Europe and Siberia. In England at least it is much more rare than the preceding, having hitherto been observed only in Norfolk and Suffolk; always on the driest barren sandy heaths. Mr. Ray first found it at Elden in Suffolk, between Newmarket and Thetford. It has been since discovered about Bury by Sir Thomas Gery Cullum, Mr. Woodward, and Mr. Mathew; and near Snettisham in Norfolk by Mr. Crowe. It flowers in november.

The Polish Cochineal (*Coccus polonicus*) is found upon the roots in the summer months: hence some authors have a variety of this species, under the name of *Polygonum cocciferum*.

3. Root annual. Stem branching and procumbent, a little villose and ash-coloured, as are also the leaves. Flowers terminating, whitish, with a calyx slightly membranaceous. Anthers twice as large as in the first species.—Native of France and Italy.

Miller mentions the two first species, but gives neither character nor description.

Lightfoot (app. 1134.) informs us, that the third species is said to have been found at Broomholm near Langholm in Eskdale, Scotland: but this report has not been confirmed.

**SCLERIA.** (So named by Bergius, from *Σκληρός*, hard; on account of the hardness of the seed and whole plant.)

Lin. gen. Schreb. n. 1408. Berg. act. botm. 1765. t. 4. Retz. 4. 13. Gært. t. 2. Swartz prodr. 18.

Class. 21. 3. Monoecia Triandria.

Nat. order of *Calamariae*.

## GENERIC CHARACTER.

Male flowers in the same spikelet or panicle mixed with the females.

\* Male spikelets solitary, or androgynous.

**CAL.** Glume from two to six-valved, many-flowered: valves ovate, acute, keeled, concave, awnless, permanent.

**COR.** Glumes very many, oblong, awnless, longer and more slender than those of the calyx, separating the stamens.

**STAM.** Filaments solitary or three, within each corolline glume. Anthers linear.

Female spikelets solitary, axillary, terminating, or inserted between the male calycine glumes.

**CAL.** Glume two to four-valved, one-flowered: valves ovate, acute, awnless, keeled, concave, permanent.

**COR.** none.

**PIST.** Germ roundish, attenuated at the base. Style filiform, length of the glumes, undivided or trifid. Stigmas capillary, reflexed.

**PER.** none.

**SEED.** Nut subglobular or oblong, coloured, shining. Nucleus roundish, veined.

## ESSENTIAL CHARACTER.

**MALE.** Cal. Glume from two to six-valved, many-flowered awnless.

**COR.** Glumes awnless. Filam. one to three.

**FEM.** Cal. from two to six-valved, one-flowered, awnless. Stigmas one to three.

**SEED.** Nut subglobular, somewhat bony, coloured.

## SPECIES.

1. *Scleria Flagellum.*

Berg. act. botm. 1765. 144. t. 4. Swartz prodr. 18. descr. 88.

*S. margaritifera.* Gært. fruct. 1. 13.

*Schoenus secans.* Lin. amoen. 5. 391.

*S. lithospermus.* Lin. spec. 65.

*Carex lithosperma.* Lin. syst. ed. 13. 706. ed. 14. 846.

Grainen cyperoides sylvaticum maximum geniculatum asperius, femine milii folis. Sloane jam. 1. 118. t. 77. f. 1. Raii hist. 3. 624.

<sup>a</sup> Smith brit. & engl. bot.

<sup>•</sup> Gough, Woodw. and Stokes in Withering.

<sup>•</sup> Engl. bot.

<sup>•</sup> Withering.

<sup>•</sup> Smith brit. & engl. bot.

<sup>•</sup> Woodw. and Haller in Withering.

<sup>•</sup> Withering.

<sup>•</sup> Villars.



*Culm three sided scandent very rugged, leaves prickly backwards three ways, flowers panicled, rachis villose.*

2. *Scleria mitis.*

*Berg. act. holm. 1765. 145. t. 5. Swartz prodr. 18. descr. 90.*

*Carex tenuior altissime scandens. Brown. jam. 335?*

*Culm three-sided scandent even, leaves even, flowers panicled, rachis smooth.*

3. *Scleria lithosperma.*

*Swartz prodr. 18.*

*Scirpus lithospermus. Lin. spec. 1. 51.*

*Cyperus. Mor. hist. 3. 237. f. 8. t. 11. f. 16.*

*Carex amboinica. Rumph. amb. 6. 20.*

*Kaden-Pullu. Rheed. mal. 12. 89. t. 48.*

*Culm three-sided somewhat rugged erect, leaves strict linear rugged at the edge, flowers panicled, rachis rough.*

4. *Scleria filiformis.*

*Swartz prodr. 19. descr. 91.*

*Culm simple filiform even, leaves subulate, spike almost simple, floscules smooth having a filiform leaflet under them.*

5. *Scleria hirtella.*

*Swartz prodr. 19. descr. 93.*

*Culm simple filiform pubescent, leaves linear, spike simple, floscules rough-haired.*

6. *Scleria latifolia.*

*Swartz prodr. 18. descr. 95.*

*Culm three-sided leafy erect even, leaves broad-lanceolate nerved, flowers panicled.*

7. *Scleria poæformis.*

*Retz. obs. 4. 13.*

*Culm leafless, panicles contracted with flexuose branches, spikelets sessile, female spikes axillary, males two-flowered.*

8. *Scleria tenuis.*

*Retz. obs. 4. 13.*

*Culm leafy, leaves unarmed, panicle capillary, flowers sessile, outer male, inner female.*

9. *Scleria lævis.*

*Retz. obs. 4. 13.*

*Culm leafy, leaves unarmed, branches of the panicle divided involucred, male spikes sessile and peduncled.*

DESCRIPTIONS, &c.

1. Culm climbing very high, flaccid, subdivided, striated, hispid with very minute bristles, and the angles rugged with very short recurved prickles. Leaves sheathed, a foot long, linear, acute, striated, keeled, smooth above with a longitudinal hispid line, hispid beneath, with the keel and edges prickly backwards. Sheaths strict, short, with a truncate hairy ligule. Panicles axillary, on compressed prickly peduncles from the sheaths of the leaves; ovate with simple spreading subvillose branches. Floral leaflets bristle-shaped, short at the base of the branches and pedicels of the panicle. Pedicels alternate surrounded at the base by a little sheath. Males mixed with the females. In the males, the calycine glume is six-valved, with the upper valves larger, all compressed at the top. Glumes of the corolla membranaceous, lanceolate. Filaments three or fewer, setaceous, length of the corolline glumes.—In the females, glumes from four to six-valved; the inner valves shorter. Germ oblong, bluntly three-cornered. Stigma simple, acute. Nut placed on the base of the permanent calyx, globular, brown and white variegated, with a tubercled whitish top\*.

According to Gærtner, the male spikelets are oblong, pyramidal, imbricate with ovate-acuminate scales; of which the lower are less and empty, the upper gradually longer having three stamens within each. The female spikelets are sessile, imbricate with from four to six rigid smooth scales; of which the lower are less, and the two uppermost very large, ovate-acuminate, hemispherical-concave when ripe. Corolla at the bottom of the calyx three-petalled: petals rounded, concave, membranaceous, very thin white and small. Nut coriaceous-crustaceous, globular

depressed a little, produced below into an umbilical tubercle, smooth, shining, white or tinged with violet, one-celled, valveless. Seed or kernel one, of the same form with the nut, bay with branched vessels.—Gærtner does not seem to have distinguished this species from the *lithosperma*.

Though Linneus placed it first in *Schoenus* and afterwards in *Carex*, he seems to have been well aware of its difference from both.

Sloane says it runs fifteen feet high among bushes, supported by them; that there is a hollow between the angles of the culm, as in a sword-blade; that the culm and leaves are of a very dark green; and that the seed which comes out between two black glumes, is roundish, large, whitish like that of Gromwell or pearl Barley.

Native of Jamaica, Surinam, and Africa.

2. Culm erect, scandent, without knots, smooth, with the angles even. Leaves lanceolate-linear, slightly keeled, widish, striated, paler, smooth on both sides. Sheaths long, close, smooth; with a lanceolate blunt ligule. Panicles from the sheaths of the upper leaves, elongated, contracted; with the branches simple, alternate, three-sided, smooth. Flowers smaller on very short pedicels. Glumes of the calyx and corolla in the males a little more ovate than in the preceding. Filaments three. In the females, glumes one-flowered; the inner ones larger. Nut placed on the calyx, globular, snow-white, black and tubercled at the top, girt at the base by a little ciliate membrane.—Native of Jamaica and Surinam\*.

Swartz suspects it may possibly be the climbing *Carex* of Browne; the stalk of which he says is slender, and rises to a considerable height, when supported by bushes.

Native of the East Indies, Africa near the Cape of Good Hope, and the Isle of Tanna in the Pacific Ocean. It approaches to the *latifolia*, but the culm is rugged, and the leaves are linear with the edges rugged.

4. This is a tufted grass. Culm from one to two feet high, erect, loose, sharply three-sided, smooth. Leaves linear, keeled, acute, alternate, sessile not sheathing, hispid at the edge, and (when examined with a magnifier) cartilaginous-ferrate, smooth. Spikes terminating, simple; or peduncles from two to four, alternate, few-flowered; on which are floscules from three to six, male and female mixed, sessile, approximating with a capillary leaflet under them at the base. Under the valves are a few very small scales. In the males, glume of the calyx four-valved: outer valves smaller, keeled, acute, often purplish at the tip, closed. Glumes of the corolla many interior, small, linear, acute, imbricate, whitish. Filaments one between the valves, length of the glumes of the males, by the side of the corolline glumes. Germ roundish, whitish. Style filiform, length of the glumes, three-parted to the middle. Stigmas capillary, reflexed. Nut ossified, oblong or roundish bluntly three-cornered, white, very hard, inclosing the seed. It approaches to *lithosperma*, but the culm is simple and short, and the flowers not panicled but in a sort of spike.

Native of Jamaica and Hispaniola, in very dry rocky places.

5. This grass is scarcely a foot high. Roots small, filiform, black. Culm erect, three-sided, striated, loose. Leaves slightly sheathing at the base, distant, very narrow, slightly keeled, rough-haired. Spike terminating, composed of three or four clustered floscules, which are sessile, alternate, rough-haired. In the males, the glumes of the calyx are from two to four-valved, two-flowered, awnless: valves lanceolate, acute, ciliate at the edge with ferruginous hairs: one or two glumes, interior, more tender, smaller, corolline. Filaments solitary.—Females in the same bundle, solitary. Glume two-valved, one-flowered: valves broad-lanceolate, ciliate. Style bifid or trifid. Stigmas villose, reflexed. Nut ossified, globular, shining, white. Very different from *filiformis* at first sight.

Native of Jamaica.

\* Swartz.

† Idem.



# S C L

6. This grass is a fathom in height. Culm undivided. Leaves from one to two feet in length, sheathing at the base, often an inch wide, folding longitudinally, rigid. Sheaths acuminate in front. Panicles terminating, or from the axils of the upper leaves erect, strict, somewhat branched; branchlets alternate, with male and female flowers scattered, distinct, sessile or pedicelled, having a small leaf always under the floscules. Males terminating: glume of the calyx three or four-valved, two or three-flowered: valves ovate, acute, keeled, permanent, smooth. Inner corolline glumes smaller, narrower. Filaments three, very minute.—Females more numerous, below the others. Glume four-valved, one-flowered: the two outer valves lanceolate, the two inner broad-ovate, acuminate, permanent. Germ roundish. Style trifid at the top and permanent. Stigmas reflexed, villose, whitish. Seed globular, somewhat bony, marked with a whitish point standing out.

Native of Jamaica, especially in the western parts, in dry mountain woods<sup>2</sup>.

7. Culm three-cornered, with flat sides. Common peduncle of the panicle multangular; the others triangular. Male spikelets cylindrical, alternate. Under each branch of the panicle a capillary leaflet. It has almost the appearance of a Poa.

Native probably of the East Indies, since it was sent by Koenig.

8. This has the appearance of a slender rush. Leaves filiform. Panicle small, little divided. All the flowers, except those which are at the end of the branches, sessile within the common scales, one male exterior and one female interior.—Koenig communicated it from Ceylon.

9. This has many things in common with *S. mitis* of Bergius. Male spikelets sessile and peduncled; all the females sessile. Under each branchlet of the panicle a leaflet or filiform involucre. Leaves and culm narrower.

Native of the East Indies<sup>2</sup>.

**SCLEROCARPUS.** (From *σκληρος* hard, and *καρπος*, fruit.)

*Lin. gen. Schreb. n. 1327. Jacqu. fil. art. belv. 9.*

*34. t. 2. Gært. 2. 428. Juss. 186.*

*Class. 19. 3. Syngenesia Polygamia Frustranea.*

*Nat. order of Discoideæ. Corymbifera, Juss.*

## GENERIC CHARACTER.

**CAL.** Common of six leaflets, of which three are exterior, three interior, alternately: exterior biggish, of the same structure and appearance with the leaves, spreading; two large, the third less: interior linear, channelled, acute, erect with a spreading tip, length of the floscules.

**COR.** Compound, radiate: Corollets hermaphrodite ten in the disk: Female three in the ray, each within one of the interior calycine leaflets.

Proper of the Hermaphrodites tubular, five-cleft:—  
of the Female ligulate, roundish.

**STAM.** in the Hermaphrodites Filaments five capillary. Anthers five, small, united, each awned at the tip.

**PIST.** in the Hermaphrodites: Germ oblong, compressed, outwardly gibbous. Style filiform, length of the corollet. Stigma deeply bifid, revolute. In the Females, Germ slender. Style none. Stigma none.

**PER.** none, except the chaffs involving the seeds.

**SEEDS** in the Hermaphrodites solitary, oblong, compressed, with the outer margin gibbous, the inner straight. Pappus none. The Females have no seed.

**REC.** convex, small. Chaffs of the hermaphrodites cartilaginous, compressed, gibbous at the back, striated and tubercled, opening at the inner straight side, the margins converging inwards flat and even, the apex terminated by a short almost upright neck: mouth oblique, acuminate outwards; each inclosing a single seed. Chaffs of the Females straightish, cylindrical, slender, shorter.

## ESSENTIAL CHARACTER.

*Cal.* six-leaved, three exterior larger, like the leaves, three interior smaller, like scales, alternate. Pappus none. Recept. chaffy.

<sup>2</sup> Swartz.

<sup>2</sup> Retzius.

# S C O

## SPECIES.

1. *Sclerocarpus africanus.*

*Jacqu. nov. art. belv. 1. 34. t. 2. icon. rar. Lin. syst. 783. Gært. fruct. 2. 428.*

## DESCRIPTION, &c.

1. Herbaceous but somewhat woody, with alternate three-nerved leaves, and terminating solitary flowers. Florets in the disk about eight fertile; in the ray from one to four, neuter. Chaffs permanent, hardening, acuminate. Seeds ovate, subcompressed, (or dimidiate obovate) remarkably narrowed downwards, black and shining, each wrapped up in the chaff<sup>b</sup>.—Native of the Cape of Good Hope.

**SCLOPENDRA.** See *Ophioglossum*.

**SCOLOPENDRIA.** See *Asplenium*.

**SCOLOPENDRIÆ FACIE.** See *Arnica*.

**SCOLOPENDRIUM.** See *Asplenium*.

**SCOLOPIA.** (*Σκολοπία* from *σκολοψ*, a sharp stake or thorn; the same with *σκολοπενδρα* or *σκολοπενδριον*, the name of a plant in Theophrastus; &c.)

*Lin. gen. Schreb. n. 846. Limonia. Gært. t. 58.*

*Class. 12. 1. Icosandria Monogynia.*

## GENERIC CHARACTER.

**CAL.** Perianth one-leaved, three or four-parted, permanent: segments ovate, obtuse, concave, spreading.

**COR.** Petals three or four, oblong, subcoriaceous, obtuse, spreading, permanent, twice the length of the corolla.

**STAM.** Filaments numerous, filiform, flattish below, villose at the base, spreading, permanent, length of the corolla, inserted into the calyx. Anthers linear.

**PIST.** Germ roundish, superior. Style cylindrical, straight, longer than the stamens. Stigma thickened, three-lobed, impressed above with three little pits.

**PER.** Berry roundish, crowned with the permanent style, one-celled.

**SEEDS** six, rounded-four-sided, arilled. Arils membranaceous, thin, pulpy, angular, two fastened to three ribs, glued to the inner wall of the berry.

**OBS.** The ribs easily separate from the berry, and are resolved into six unequal threads, from the apex of which the arils hang down.

## ESSENTIAL CHARACTER.

*Cal.* inferior, three or four-parted. *Cor.* three or four-petalled. Berry crowned with the style, one-celled, six-seeded. Seeds arilled.

## SPECIES.

1. *Scolopia pusilla.*

*Lin. spec. ed. Willd. 2. 981.*

*Limonia pusilla. Gært. fruct. 1. 279.*

*Malus limonia lentisci folio zeylanica, fructu minimo uvaria magnitudine. Pluk. alm. 239.*

## DESCRIPTION, &c.

Berry elliptic-sphæroidal, crowned with a short style, fleshy-coriaceous, divided within into three incomplete cells by three prominencies. Pulp separated every way from the cells by a very thin membrane, and formed into three soft oblong bags, in which the seeds are lodged. There are generally two seeds in each bag, seldom three, placed on each other, obliquely and irregularly truncate at the point of contact, in other parts subovate, convex on one side, angular on the other, black and somewhat shining.

Native of Ceylon, where it is called *Khatu-Kurundu*, or thorny Cinnamon; whence we may conjecture that it resembles the Cinnamon in leaves and outward appearance, but differs from it in having thorns<sup>c</sup>.

**SCOLOSANTHUS.** (From *σκολος* a thorn, and *ανθος* a flower.)

*Vahl ecl. 1. 11. t. 10.*

*Class. 4. 1. Tetrandria Monogynia.*

*Nat. order of Luridæ. Rubiaceæ, Juss.*

## GENERIC CHARACTER.

**CAL.** Perianth one-leaved, superior, small, four-cleft: segments linear-lanceolate, four times shorter than the corolla, acute, spreading.

**COR.** one-petalled with claws, tubular, before it opens exactly four-cornered, the angles acute, a little curved in, gradually widening upwards; when opened bluntly

<sup>b</sup> Juss. and Gartner.

<sup>c</sup> Gartner.



four-cornered. *Border* four-cleft: *segments* ovate, acute, revolute.

STAM. *Filaments* four, erect, scarcely placed at the bottom of the corolla, cohering a little at the base in a four-cornered smooth tube, a little hairy below. *Anthers* linear, erect, the length of the tube.

PIST. *Germ* inferior, small. *Style* capillary, a little longer than the corolla. *Stigmas* two, small, obtuse, a little thicker than the style.

PER. *Drupe* subglobular, size of black pepper, smooth, succulent, mucronate with the permanent calycine segments.

SEED one, in an oblong, somewhat stony, one-celled shell.

#### ESSENTIAL CHARACTER.

*Cal.* four-cleft. *Cor.* tubular with a revolute border. *Drupe* one-seeded.

#### SPECIES.

##### 1. *Scolosanthus versicolor.*

*Lin. spec. ed. Willd.* 1. 607. *Vahl ecl.* 1. 11.

*Catebæa parviflora.* *Lamarck encycl. & meth. bot.* t. 67.

#### DESCRIPTION, &c.

This is a small shrub, approaching in habit to *Justicia spinosa*. Branches round, alternately compressed at top, remote, commonly opposite, rarely alternate, sometimes bifid, the thickness of a packthread, green with a tinge of ash-colour, appearing pubescent when examined by a magnifier, jointed, the internodes about half an inch in length; the joints surrounded by a sort of ring formed by the short evanescent membrane of the stipules. Leaves subsessile, opposite, from two to five on each side, more seldom solitary, scarcely half an inch long; others a little smaller, obovate, quite entire, subcoriaceous, veinless, nerveless, shining. Spines commonly in pairs, from each alternate axil, connate at the base, divaricating, for the most part a little longer than the leaf, rigid, purplish, often-floriferous at one of the tips. They are the younger spines that commonly bear the flowers, and they keep growing on after the flowers are fallen. Flowers on very short peduncles: those from the apex of a spine solitary, a little smaller, mostly drooping, purple, abortive: others axillary, solitary or more rarely two or four together, erect, saffron-coloured, fertile. Fruit snow-white. Discovered in the island of Santa Cruz by Ryan<sup>d</sup>.

SCOLYMOCEPHALA, SCOLYMOCEPHALUM. See *Protea*.]

SCOLYMUS (of *Pliny*, Σκολυμος of *Dioscorides*, and *Hesiod*. *Theophrastus* has σκολυμωδες φυλλον.)

*Lin. gen. n.* 922. *Reich. n.* 1001. *Schreb. n.* 1252.

*Tournef. t.* 273. *Vaill. æt. gall.* 1721. 41, 42.

*Juss. 171.* *Gærtn. t.* 157. *Desfont. t.* 218.

*Class.* 19. 1. Syngenesia Polygamia Æqualis.

*Nat. order of Composite Semiscolosae. Cichoraceæ, Juss.*

#### GENERIC CHARACTER.

*CAL.* Common imbricate, ovate: *scales* numerous, lanceolate, spiny, loose.

*COR.* Compound imbricate, uniform: *corollets* hermaphrodite, numerous, equal.

*Proper* one-petalled, ligulate, linear, truncate, very finely five-toothed.

STAM. *Filaments* five, capillary, very short. *Anther* cylindrical, tubular.

PIST. *Germ* oblong. *Style* filiform, longer than the stamens. *Stigmas* two, reflexed.

PER. none. *Calyx* unchanged.

SEEDS solitary, somewhat oblong, triangular, acuminate at the base. *Pappus* none.

REC. chaffy, convex: *chaffs* roundish, flat, three-toothed at the tip, longer than the seeds and separating them.

#### ESSENTIAL CHARACTER.

*Cal.* imbricate, spiny. *Pappus* none. *Recept.* chaffy.

#### SPECIES.

##### 1. *Scolymus maculatus.* *Annual Golden Thistle.*

*Lin. spec.* 1143. *syst.* 722. *Reich.* 3. 666. *Scop.*

*carn. n.* 992. *Gouan monsp.* 419. *Allion. pedem.*

*n.* 755. *Kniph. cent.* 9. n. 85. *Desfont. atlant.*

242.

<sup>d</sup> Vahl.

*Scolymus.* *Lin. hort. cliff.* 388.—annuus. *hort. upf.*

244. *Ger. prov.* 175. 1. *Villars dauph.* 3. 57.

*S. gymnospermus.* *Gærtn. fruct.* 2. 355.

*S. chrysanthemus annuus.* *Dodart. mem.* 111. *acad.* 1666. 4. 303. *Tournef. inst.* 480. *Vaill. acad.* 1721. p. 219.

*S. Theophrasti.* *Lob. ic.* 2. 6.—narbonensis. *Clus. hist.* 2. 153.

*Spina lutea.* *Baub. hist.* 3. 84.

*Carduus chrysanthemus narbonensis.* *Ger. emac.* 1155. 2. *Raii hist.* 258.

*Cardui chrysanthemi altera icon.* *Dod. pempt.* 725.

*Flowers* solitary, leaves cartilaginous at the edge, involucre pectinate-multifid.

##### 2. *Scolymus hispanicus.* *Perennial Golden Thistle.*

*Lin. spec.* 1143. *syst.* 722. *Reich.* 3. 666. *Gouan*

*monsp.* 419. *Mill. fig. t.* 229. *Forsk. ægypt.*

*cent.* 5. 145. *Allion. pedem. n.* 756. *Desfont.*

*atlant.* 241.

*S. vivax.* *Sauv. monsp.* 294.

*S. perennis.* *Ger. prov.* 175. 2. *Villars dauph.* 3. 57.

*S. angiospermus.* *Gærtn. fruct.* 2. 356.

*S. chrysanthemos.* *Baub. pin.* 384. *Tournef. inst.* 480. *Garid.* 434. *Vaill. acad.* 1721. p. 219. *Zanich. ist. t.* 175.

*S. Theophrasti hispanicus.* *Clus. hist.* 2. 153. *Tabern. ic.* 694.

*Carduus Chrysanthemos.* *Dod. pempt.* 725. *Ger.* 993. 1. *Raii hist.* 257.—hispanicus. *Ger. emac.* 1155. 1.

*Flowers* heaped; involucre leafy tooth-spiny.

##### [3. *Scolymus grandiflorus.* *Great-flowered Golden Thistle.*

*Desfont. atlant.* 240. t. 218.

*S. chrysanthemos ægyptiacus perennis ferocior.* *Vaill. acad.* 1721. p. 219.

*Flowers* solitary, the upper ones approximating, involucre coriaceous nerved lanceolate acute.]

#### DESCRIPTIONS, &c.

1. This is an annual plant, which rises with a branching stalk four or five feet high, having leafy wings running along the sides from joint to joint, scalloped and indented; the borders of these are thinner than the other parts, and are armed all the way with very sharp spines; at each joint are stiff leaves, which are jagged and armed with strong spines; they are pale green and sessile. The flowers are produced at the top of the stalks inclosed in leafy involucre, longer than the flowers, and armed with very strong spines: within these the calyxes are armed with short spines. The flowers are composed of many golden florets.

[It is an annual herb, with a slender root. Stem more branched below. Leaves smooth, shining, with a cartilaginous border, decurrent almost to the base of the stem. Flowers solitary from the divarications. Corolla smaller with brown anthers.]

According to Gærtner, the flowers of this are larger and mostly solitary, and the leaves are thickened at the edge. But these marks are by no means certain or constant, the true specific difference therefore ought to be taken from the chaffs of the receptacle not involving the seeds. Hence he has named it *gymnospermus*.

Root fusiform, often branched. Stems subvillous, with the wings unequally toothed and spiny. Branches numerous, spreading. Stem-leaves rigid, spiny, variegated with white spots, sinuate-lobed, with cartilaginous edges, unequally toothed, the teeth spiny. Flowers solitary or aggregate on a common peduncle along the branches and from the point of division. Bractes four or five, coriaceous, pectinate, cartilaginous at the edge, longer than the corolla: teeth long, almost equal, awl-shaped, ending in a prickle. Corollets linear, toothed at the end, yellow. Anthers brown. Seeds even, convex on one side, nestling in the chaffs of the receptacle (which is contrary to Gærtner's opinion.) Receptacle conical. Chaffs short, blunt. It differs from the others in having an annual root, the upper leaves cartilaginous at the edge, the bractes pectinate, the flowers smaller, the anthers brown, and

<sup>e</sup> Linn. syst.



the seeds being destitute of a pappus or down. There is a great confusion of synonyms in Gærtner<sup>f</sup>.

Native of the South of Europe, and of Barbary.—This, says Johnson, (in Ger. emac.) I saw this year (1633,) growing in the garden of Mr. John Tradescant, senior, at South Lambeth.]

2. Root perennial (biennial,) from which spring up many thick stalks, that rise about three feet high, branching out on the sides the whole length, and having stiff jagged leaves, the borders of which are thicker than the other part, and armed with spines as in the preceding: the stalks also have leafy borders as the other, strongly armed with spines. The flowers are produced at the top of the stalks, and are shaped like those of the former sort. They sit close, and are so closely guarded by long leaves armed with strong spines, that it is very troublesome to reach the flower.

[This flowers the second year, and has a fusiform root. Stem less branched below. Leaves somewhat rugged, ash-coloured, not cartilaginous at the edge, decurrent, but ending before the next leaf. Flowers commonly four, heaped or aggregate. Corolla double the size of the other with anthers of the same colour<sup>g</sup>.

According to Gærtner, the calyx when mature is smaller than that of the preceding, and fenced with narrower leaves: the receptacle very convex and almost globular: the chaffs membranaceous, obovate, folded together by the edges bending inwards, and thus almost concealing each seed as in a sheath, (whence he improperly names this species *angiospermus*.) Seeds obovate, remarkably acuminate downwards, a little convex on one side and marked with a double longitudinal line, on the other flattish with a single line along the middle. Integument single, membranaceous, snow-white but not shining. The preceding, besides this membranaceous coat, has an exterior one, that is coriaceous, thickish and hard. In that also the receptacle is almost flat; the chaffs oblong, keeled, ciliate, narrower than the seeds, which are naked, ovate, smooth, shining, pale straw-coloured or rufescent.

Allioni ascribes a pappus, of two or three awns readily falling off, to this species, which Gærtner has never seen in cultivated plants. He adds that Ehrhart affirms of the seed of *Scolymus* that it is two-awned, but he does not mention the species.

Desfontaines describes the root as fusiform, often branched; the branches of the stem spreading, villose, winged; the wings spiny, unequally toothed, the teeth ending in a prickle; the flowers sessile, solitary or aggregate; the bractes (involucre) torn, rigid, lanceolate, leafy, channelled, a little longer than the flower, unequally tooth-spiny at the edge, acute; scales of the calyx linear-lanceolate, often ending in a prickle; corollets yellow, linear, attenuated upwards, toothed at the end; anthers yellow; seeds even, obovate, convex on one side, nestling in the chaffs of the receptacle, having two or three deciduous awns; receptacle hemispherical, with short blunt chaffs. It differs from the next species, to which it is allied in having a branched, loftier stem, the leaves semidecurrent, the bractes leafy, the flowers numerous sometimes aggregate, and the corollas smaller by half.

Desfontaines considers it as biennial. Miller says it will continue several years.

Villars is disposed to make one species of these. The first, he says, is annual; the leaves smooth, spotted with white like our Lady's Thistle, and a cartilaginous border; the stems are more branched, less straight, as are also the roots, and the flowers are at the ends of the branches, commonly by threes, and somewhat smaller.

The second has the leaves more cut, not so thick, larger, and a little pubescent; the stem straight, commonly simple, with axillary flowers having the calyx a little villose; the root is perennial, simple and fusiform; soft and sweet like *Scorzonera*, and as good to eat as that.]

Mr. Miller says, that the leaves, stalks and root

<sup>f</sup> Desfontaines.

<sup>g</sup> Linn. syst.

abound with a milky juice; that the people of Salamanca eat it in the same manner as Chardon, and that the Spaniards sophisticate their Saffron with the flowers:

[Native of the South of Europe, and of Barbary: Cultivated in the botanic garden at Oxford; in 1658: It flowers from July to September. The preceding in July and August<sup>h</sup>.

3. Root perennial, fusiform, white, the thickness of a finger. The whole plant milky: Stem simple or very sparingly branched, erect, villose; winged: wings unequally tooth-sinuate: teeth spiny at the end. Leaves alternate, rigid, decurrent, long, variegated with white veins, sinuate-lobed; lobes ovate and lanceolate, acute, unequally toothed; teeth ending in a prickle. Flowers axillary, solitary, sessile, three four or five from the top of the stem; the lower for the most part more remote. Bractes (involucre) three, involving the calyx, (in the terminating flower six,) thick, coriaceous, lanceolate, channelled, acute, painted longitudinally with white and green nerves; toothed at the edge with rigid, uniform, remote, horizontal teeth, spiny at the end. Scales of the calyx linear-lanceolate, smooth, frequently terminated by a spinule, membranaceous at the edge; the outer scales shorter, blunt; the inner acute. Corollets yellow, lanceolate, narrower at top, toothletted at the end. Anthers yellow. Seeds even, smooth, obovate, convex on one side, nestling in the chaffs of the receptacle. Pappus has two or three deciduous brittle awns. Receptacle hemispherical, chaffy: the chaffs compressed and obtuse.—This is a very beautiful species, flowering early in spring, and now cultivated in the European gardens.

Native of Egypt, and very common in the fallows of Barbary. The Arabs eat the stalks both raw and boiled<sup>i</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds in March or April, on a bed of fresh undunged earth, in an open situation; when the plants come up keep them clear from weeds, and thin them so as to leave them about two feet asunder. As they send forth tap-roots, they do not bear transplanting well. If the season should prove warm and dry, they will perfect their seeds in autumn; but in wet seasons they rarely perfect their seeds in England. In that case fresh seeds must be procured from abroad: or the second and third may be increased by offsets.

SCOLYMUS. See *Cynara*.

SCOPARIA. (From *Scopa*, a besom; to which use it is adapted.)

Lin. gen. n. 143. Reich. n. 149. Schreb. n. 187. Gærtner. t. 53. Juss. 118.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Personate*. *Scrophularia*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, four-parted, concave: segments slender, rugged.

COR. one-petalled, wheel-shaped, spreading, concave, four-parted: segments tongue-shaped, obtuse, equal; throat bearded.

STAM. Filaments four, equal, awl-shaped, shorter than the corolla. Anthers simple.

PIST. Germ conical. Style awl-shaped, length of the corolla, permanent. Stigma acute.

PER. Capsule oblong-conical, acuminate, one-celled, two-valved.

SEEDS very many, oblong.

#### ESSENTIAL CHARACTER.

Cal. four-parted. Cor. four-parted, wheel-shaped. Caps. one-celled, two-valved, many-seeded.

#### SPECIES.

1. *Scoparia dulcis*. Sweet *Scoparia*.

Lin. spec. 168. syst. 157.. Reich. 1. 326. Willd.

1. 652. Jacqu. amer. 17. pict. 14. Brown.

jam. 145. Vahl symb. 1. 12. Lour. cochinch. 1.

71. ed. Willd. 1. 89. Gærtner. fruct. 1. 251.

Pluk. phyt. t. 215. f. 1. (Phytanoides.)

*Scoparia ternata*. Forsk. descr. 31. n. 7.

<sup>h</sup> Hort. kew.

<sup>i</sup> Desfontaines.



- Capraria. *Lin. hort. cliff.* 320.  
 Samoloides. *Boerb. lugdb.* 2. 265.  
 Veronica americana erecta frutescens & ramosa.  
*Herm. parad.* 241. t. 241.  
 V. fruticosa erecta dulcis, hexangulari caule. *Sloan. jam.* 1. 195. t. 108. f. 2.  
 3. Tupeicava. *Pif. bras.* 246.  
*Leaves in threes, flowers peduncled.*  
 [2. Scoparia procumbens.  
*Lin. spec.* 168. *fyst.* 157. *Reich.* 1. 326. *Willd.* 1. 632. *Jacqu. amer.* 18. *piet.* 14.  
*Leaves in fours, flowers sessile.*  
 3. Scoparia arborea.  
*Lin. fyst.* 157. *Willd.* 1. 653. *suppl.* 125. *Thunb. prodr.* 29.  
*Leaves lanceolate alternate quite entire, corymb superdecompound trichotomous.*

## DESCRIPTIONS, &amp;c.

1. Root annual. Stalk hexangular, rising near two feet high, and sending out many branches, which have three leaves placed round at each joint; these are about an inch long, and a quarter of an inch broad, ferrate, and of a deep-green colour: the flowers come out from the side of the stalks, at each joint on peduncles: they are small, white, and their petals have bearded threads on their edges.

[It is upright, and attains the height of three feet. Leaves oblong, acute, attenuated into the petiole. Peduncles one-flowered, axillary. The segments of the corolla have many hairs at the base equalling the stamens.\*]

The branches, as well as the leaves, are in threes; the leaves sessile and smooth<sup>1</sup>.

Capsule small, spherical, with a groove on each side, thin, two-celled and two-valved. (Loureiro says it is ovate and four-valved.) Partition membranaceous, very thin, diaphanous, parallel to the valves and fastened to their suture. Receptacle orbicular, depressed a little, spongy, fastened along the partition on each side. Seeds numerous, small, ovate-globular, obscurely angular, having very minute holes in rows, somewhat of a rust colour<sup>m</sup>.

Native of Jamaica and all the Caribbee islands and the neighbouring continent; also in Cochinchina.—The French call it *Balai doux* or Sweet Beesom; the Spaniards *Escobilla menuda* or Little Beesom. An infusion of it is used by both in disorders of the breast<sup>n</sup>. According to Browne, it may deservedly be considered as an excellent vulnerary.

It was cultivated in 1730 by Mr. Miller; and flowers from June to September<sup>o</sup>.

3. Pifo's plant, in his herbarium, was subvillose<sup>p</sup>.

2. This plant is scarcely half a foot high, with nearly the same habit as the preceding; but with the stems dichotomous, procumbent at bottom and then upright. Leaves awl-shaped, acuminate, small, stiffish, in fours with the two interior opposite ones a little shorter. Flowers white, sessile, small, in the forkings of the branchlets, and in some of the axils. The tube of the corolla is fringed at top, but there are no hairs at the base of the segments. In other respects it agrees with the preceding.

Native of Carthage in New Spain, on the sandy coast about Boca Chica<sup>q</sup>.

3. This is a tree, having the habit of the Olive or of Phillyrea. The inflorescence is very large and extremely compounded. The flowers are small.

Native of the Cape of Good Hope, where it was found by Thunberg<sup>r</sup>.]

## PROPAGATION AND CULTURE.

1. Sow the seeds upon a hot-bed in the spring; and when the plants are fit to remove, plant them upon a fresh hot-bed, shading and watering them, until they have taken new root; after which admit air to them daily according to the warmth of the season; and refresh them frequently with water. In June they may be taken up with balls of earth to their roots, and planted into open borders, where they will flower,

\* Jacquin. <sup>1</sup> Loureiro. <sup>m</sup> Gartner. <sup>n</sup> Jacquin.  
 • Hort. kew. <sup>p</sup> Linn. spec. <sup>q</sup> Jacquin.  
<sup>r</sup> Linn. suppl.

perfect their seeds in the autumn, and soon after perish.

[SCOPARIA. See *Chenopodium*, and *Lechea*.

SCOPOLIA. (So named by Dr. Smith, in honour of Giovanni Antonio Scopoli, Professor of Chemistry and Botany at Pavia, author of *Flora & Entomologia Carniolica*, *Deliciae Florae Faunaeque Insubricae*, and many other works in Metallurgy, Zoology and Botany. He died on the 8th of May 1788.)

*Smith, ic. ined.* 2. post. 34. *Cranzia*. *Schreb. gen.* n. 362. & *Dist. nostr.*

Class. 5. 1. Pentandria Monogynia.

## ESSENTIAL CHARACTER.

Cal. five-cleft. *Nect.* none. *Stigma* capitate. *Caps.* berried, five-celled. *Seeds* solitary.

## SPECIES.

1. *Scopolia aculeata*.

*Smith, ic. ined.* 2. post. 34. *Willd. spec.* 1. 1115.

*Paullinia asiatica*. *Lin. spec.* 524. & *Dist. nostr.*

*Cranzia aculeata*. *Dist. nostr.*

*Toddalia*. *Juss. gen.* 371. *Lamarck encycl.* t. 139. f. 1.

*Chamaelea trifoliata aculeata*. *Burm. zeyl.* 58. t. 24. *Stem* prickly, *leaves* ovate acuminate.

2. *Scopolia inermis*.

*Willd. spec.* 1. 1116.

*Toddalia*. *Lamarck encycl.* t. 139. f. 2.

*Stem* unarmed, *leaflets* obovate obtuse.

## OBSERVATIONS.

This plant has already appeared twice in our Dictionary; first as the *Paullinia asiatica* of Linneus; secondly as the *Cranzia* of Schreber; and here thirdly as the *Scopolia* of Smith.—The *Scopolia* of the younger Linneus's Supplement, is referred by Dr. Smith to the genus *Daphne*. The *Scopolia* of Jacquin is considered by the elder Linneus as a species of *Hyoscyamus*. And the *Scopolia* of Forster, has obtained another name of *Grifelinia lucida* from the author himself. That so eminent, though unfortunate a naturalist, should not want a name, Dr. Smith has consecrated this plant to his memory, with an elegant and handsome testimonial to Scopoli's great merits.—Jussieu's and Lamarck's name *Toddalia*, from the Indian *Kakatoddali*, is barbarous. And another plant has received the name of *Cranzia*, from Swartz, in his *Prodromus*.

Willdenow remarks, that the leaves are ternate; the panicles racemed and axillary. For the rest see *Cranzia* and *Paullinia asiatica*.

2. This has the habit of the preceding, and also ternate leaves, but yet it is sufficiently distinct by the stem being unarmed, the leaflets obovate, obtuse, and the flowers in terminating corymbs. Supposed to be a native of the Isle of Bourbon.

SCORDIO AFFINIS. See *Rhinanthus*.

SCORDIUM. See *Moluccella*, *Nepeta*, *Stemodia*, *Teucrium*.

SCORDOTIS. See *Nepeta*.

SCORODONIA. See *Scrophularia*, *Teucrium*, *Verbena*.

SCORODOPRASUM. See *Allium*.

SCORODO-THLASPI. See *Thlaspi*.

SCORPII SPINA. See *Eryngium*.

SCORPIOIDES. See *Hedysarum*, *Myosotis*, *Ornithopus*, *Scorpiurus*.

SCORPION-GRASS. See *Myosotis*.

—SENNA. See *Coronilla Emerus*.]

SCORPIURUS (of Pliny. *Σκορπιος ουρα*, *Scorpion's-tail*; from the twisting of the pod.)

*Lin. gen.* n. 886. *Reich. n.* 959. *Schreb. n.* 1201.

*Gartn. t.* 155. *Juss.* 361. *Scorpioides*. *Tournef. t.* 226.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceae* or *Leguminosae*.

## GENERIC CHARACTER.

CAL. *Umbel* simple.

*Perianth* one-leaved, erect, inflated, very slightly compressed, half-five-cleft, acute: teeth almost equal: the upper ones less divided.

COR. papilionaceous. Banner roundish, emarginate; reflexed, spreading. Wings subovate, loose, with a blunt



appendix. Keel half-mooned, with the belly gibbous, acuminate, erect, two-parted below.

STAM. Filaments diadelphous, (simple and nine-cleft,) ascending. Anthers small.

PIST. Germ oblong, cylindrical, a little reflexed. Style bent in upwards. Stigma a terminating point.

PER. Legume oblong, subcylindrical, coriaceous, striated, rugged, revolute, divided internally into several transverse cells, obscurely knobbed externally by the contraction of the joints.

SEEDS solitary. roundish.

#### ESSENTIAL CHARACTER.

Legume divided by isthmuses or transverse partitions, revolute cylindrical.

#### SPECIES.

1. *Scorpiurus vermiculata*. Common Caterpillar.  
Lin. spec. 1050. fyst. 671. Reich. 3. 497. Scop. carn. n. 916. Allion. pedem. n. 1247. Rivin. tetr. 210. Gærtner. fruct. 2. 345. Mor. hist. 2. 127. f. 2. t. 11. f. 3. (Scorpioides.)

*Scorpioides filiqua crassa* Boelii. Tournef. inst. 402. Ger. emac. 1627. Raii hist. 931.

Peduncles one-flowered, legumes covered all over with blunt scales.

2. *Scorpiurus muricata*. Two-flowered Caterpillar.  
Lin. spec. 1150. Reich. 3. 497. Scop. carn. n. 917. Villars dauph. 3. 398. Allion. pedem. n. 1248. Kniph. cent. 8. n. 82. Mor. hist. f. 2. t. 11. f. 4. (Scorpioides.)

*Scorpioides bupleuri folio pluribus corniculis asperis*. Park. theat. 1117. 1.

Peduncles two-flowered, legumes bluntly prickly outwards.

3. *Scorpiurus fulcata*. Furrowed Caterpillar.  
Lin. spec. 1050. Reich. 3. 497. hort. cliff. 364. upf. 233. Gærtner. fruct. 2. 346. Villars dauph. 3. 399. Desfont. atlant. 174. Mill. fig. t. 230.

*Scorpioides Bupleuri folio*. Baub. pin. 287. Tournef. inst. 402. Mor. hist. f. 2. t. 11. f. 1.

- S. *Bupleuri folio*. Lob. ic. 457. Ger. 267. emac. 337. 1.

S. prius. Dod. pempt. 71.

- Campoides *hispida*. Rivin. tetr. t. 96.

Peduncles subtriflorous, legumes with distinct acute spines on the outside.

4. *Scorpiurus subvillosa*.  
Lin. spec. 1050. Reich. 3. 498. Allion. pedem. n. 1249. Desfont. atlant. 173. Kniph. cent. 9. n. 96. Mor. hist. f. 2. t. 11. f. 11. (Scorpioides.)

Peduncles mostly four-flowered, legumes with acute spines in clusters outwardly.

#### DESCRIPTIONS, &c.

1. Stalks herbaceous, trailing, above a foot long, lying on the ground, and having at each joint a spatulate leaf on a long foot-stalk. Peduncles axillary, sustaining at the top one yellow flower, which is succeeded, by a thick twisted pod, the size and appearance of a large green caterpillar.

[Stem half a foot high. Leaves lanceolate, decurrent into the petiole, having flaccid villose hairs scattered over them above, acuminate, quite entire. Bractes in pairs, erect, narrow, attenuated, longer than the banner of the corolla. Peduncles near two inches in length, shorter than the leaf. Banner striated with eight reddish lines at the base. Wings placed at the apex of the keel. Filaments widening at the top. Stigma ovate. Legume marked with ten raised warted streaks.

Legume round, thick, rolled into a close spiral, swelling a little where the seeds are; covered all over on the outside with headed scalelets in longitudinal rows; divided within into six or nine cells, valveless and not separating at the joints. Seeds ovate-globular, smooth, straw-coloured or rufescent, fastened to the outer side of the cells. Navel in the middle of the back.

Native of the South of Europe. Cultivated in 1621, by Mr. John Goodyer.

2. This has stronger stalks than the first; the leaves are much broader; the peduncles support two smaller

flowers; the pods are slender, longer and more twisted, and are armed with blunt spines on their outside.

[Scopoli remarks, that it has the appearance, duration, stature, &c. of the preceding; differing only in having the peduncles two-flowered, longer than the leaf; and the pod rough with angular ciliate lines.]

Native of the South of Europe.

It was cultivated here in 1640, as appears from Parkinson.

3. This has slenderer stalks than either of the former; the leaves stand upon shorter footstalks, but are shaped like those of the first sort; the peduncles are slender, and frequently support three flowers; the pods are slender, not so much twisted as the former, and armed on their outside with sharp distinct spines.

[The pods are channelled more visibly than those of the preceding; and the bristles are distinct and stiffer.—According to Gærtner, the legume is roundish, slender, rolled into a loose waved spiral, jointed, grooved, four of the dorsal grooves spiny, the others, as also the ventral ones unarmed. Joints seven to ten, curved, valveless, not separating. Seeds roundish, curved a little, ferruginous.]

Native of the South of Europe, and Barbary about Algiers. Cultivated by Gerarde, in 1596.

4. Stems striated, subvillose, procumbent. Leaves wide-lanceolate, quite entire, petioled, subvillose, acute. Stipules narrow-lanceolate, acute. Peduncles axillary, naked, striated, twice or thrice the length of the leaf. Flowers small, in fours, terminating. Calyx half-five-cleft, with awl-shaped segments. Corolla yellow. Keel acute. Legume twisted, echinate with numerous little bristles.

The stalks and leaves of this are very like those of the first, but the peduncles are longer, and each has three or four small yellow flowers at the top: the pods are very slender, greatly contorted, and armed with short spines in clusters on their outside.

[Native of the South of Europe, and Barbary about Algiers.]

Linneus says there is no doubt but that all these are originally derived from one species; that soil and situation are not adequate to their generation, for then, on changing these again, they would return to their former sameness. What mixture then, he asks, can have produced these constant plants? Whoever would either unite or distinguish them, might have arguments on his side.

Desfontaines has another species, which he names *Scorpiurus purpurea*. It is allied to the first species, and has one flower on a long peduncle, as that has: but the stems and leaves are hirsute: the corolla purple: the legume grooved and very shortly mucate, not scaly, as in *S. vermiculata*.

Native of Algiers.]

Mr. Miller has also another species with pinnate leaves, which he therefore names *Sc. pinnata*.—It has very short stalks: the leaves have four or five pairs of small leaflets, terminated by an odd one: the flowers are small, as are also the pods, which are less twisted than in the others.

[Gærtner remarks, that in this whole family or natural order, the embryo is not long and round, or shaped like the shaft of a column, (teres) except in *Hippocrepis* and this genus.]

#### PROPAGATION AND CULTURE.

These plants are preserved in several curious gardens, for their oddness more than for any great beauty: they are all of them annual plants, which are propagated by sowing their seeds upon a bed of light fresh earth; and when the plants are come up they should be thinned, so as to leave them about ten inches or a foot asunder; because their branches trail upon the ground; and if they have not room, they are apt to overbear each other, and thereby are very often rotted, especially in moist seasons. The weeds should also be diligently cleared from them, otherwise they will grow over and destroy them. In June these plants will produce small, yellow flowers, which are succeeded by

<sup>a</sup> Scopoli.

<sup>x</sup> Gærtner.

<sup>y</sup> Hort. kew.

<sup>z</sup> Hort. kew.

<sup>a</sup> Villars and Desfontaines.

<sup>b</sup> Hort. kew.

<sup>c</sup> Desfontaines.



Pods so much like caterpillars, that a person at a small distance would imagine they were real caterpillars feeding on the plants; and it is for this oddness of their pods, that these plants are chiefly preserved.

These plants seldom thrive well if they are transplanted; therefore the best method is, to put in three or four good seeds in each place where you would have the plants remain; which may be in the middle of large borders in the pleasure-garden, where, being intermixed with other plants, they will afford a pleasing variety. When their pods are ripe, they should be gathered and preserved in a dry place till the following spring, in order to be sown.

The first sort is the best worth cultivating, the pods being large and more visible than the others, and more in form of a caterpillar.

[SCORPIURUS. See *Ellisia* and *Myosotis*.

SCORPIUS. See *Genista*.

SCORTEA. See *Coccoloba*.]

SCORZONERA, (*quasi Viperaria*, from the Catalonian *Escorfo*, a *Viper*. Tournefort.)

Lin. gen. n. 906. Reich. n. 985. Schreb. n. 1230. Tournef. t. 169. Vaill. act. gall. 1721. 53. 13. 16. 14. Juss. 170. Gært. t. 159. Scorzoneroide. Vaill. act. gall. 1721. fig. iisdem.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of Compositæ Semiflosculosæ. Cichoraceæ, Juss.

#### GENERIC CHARACTER.

CAL. common imbricate, long, subcylindrical: scales about fifteen, scariose at the edge.

COR. compound imbricate, reniform: corollæ hermaphrodite numerous, the outer a little longer.

Proper one-petalled, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ oblong. Style filiform, length of the stamens. Stigmas two, reflexed.

PER. none. Calyx ovate-oblong, converging and finally spreading and reflexed.

SEEDS solitary, oblong, cylindrical, striated, shorter by half than the calyx. Pappus feathered, (sessile, with chaffy and bristly rays mixed. Gært.)

REC. naked.

OBS. Scorzonera of Vaillant has entire leaves.

Scorzoneroide, V. has divided and lacinated leaves.

#### ESSENTIAL CHARACTER.

Cal. imbricate with scales scariose at the edge. Pappus feathered, sessile. Recept. naked.

#### SPECIES.

- [1. Scorzonera tomentosa. White Viper's-grass. Lin. spec. 1112. Reich. 3. 615. Pallas it. 3. 682. S. orientalis latifolia nervosa candidissima & tomentosa. Tournef. cor. 36.

Leaves ovate nerved tomentose quite entire sessile.]

2. Scorzonera humilis. Dwarf Viper's-grass. Lin. spec. 1112. syst. 710. Reich. 3. 615. hort. cliff. 382. Fl. jucc. n. 685. mat. med. 178. Fl. dan. t. 816. Hall. helv. n. 10. Pollich pal. n. 723. Scop. carn. n. 948. Jacqu. austr. 1. 24. t. 36. Villars dauph. 3. 74. Allion. pedem. n. 837.

S. humilis latifolia nervosa. Baub. pin. 275. Tourn. inst. 476. Garid. 434. Mor. hist. f. 7. t. 9. f. 4. v. n. 8.

S. hum. latif. pannonica. Clus. hist. 2. 138. Park. theat. 409. n. 2. Raii hist. 249.

Viperaria pannonica. Ger. emac. 737. f. 3.

Tragopogonis species, f. Sc. humilis latifolia. Baub. hist. 2. 138.

Stem almost naked one-flowered, leaves broad-lanceolate nerved flat.

- [3. Scorzonera parviflora. Small-flowered Viper's-grass. Lin. syst. 710. Jacqu. austr. 4. t. 305.

Stems branched, leaves linear-ensiform entire, ray of the corolla very short.]

4. Scorzonera hispanica. Garden Viper's-grass or Spanish Scorzonera.

Lin. spec. 1112. Reich. 3. 615. hort. cliff. 383. upf. 242. Scop. carn. n. 951. Allion. pedem.

n. 838. Villars dauph. 3. 75. Gmel. fib. 2. 6.

Gron. orient. 244. Blackw. t. 406. Kniph. cent. 7.

n. 83. D'Affo arag. n. 746. Gært. fruct. 2. 367.

S. latifolia sinuata. Baub. pin. 275. Tournef. inst. 476.

S. hisp. major. Park. parad. 301. 1. t. 297. f. 6. Raii hist. 248.

S. major hisp. 1. Clus. hist. 2. 137.

Viperaria, f. Sc. hisp. Ger. emac. 736. f. 1.

Tragopogon hispanicus f. Scorzonera. Baub. hist. 2. 1061.

Stem branched, leaves embracing entire serrulate.

- [5. Scorzonera undulata. Wave-leaved Viper's-grass.

Vahl symb. 2. 86. Desfont. atlant. 219.

S. græca saxatilis foliis angustis undulatis tomentosis. Tournef. cor. 39.

Stems linear-lanceolate attenuated tomentose waved, stem somewhat branched.]

6. Scorzonera graminifolia. Grass-leaved Viper's-grass.

Lin. spec. 1112. Reich. 3. 616. Jacqu. obs. 4. 13.

t. 100. Allion. pedem. n. 839. Buxb. cent. 2. 26.

t. 21? Gmel. fib. 2. 4. Tournef. inst. 477.

Leaves linear-ensiform entire keeled.

7. Scorzonera purpurea. Purple-flowered Viper's-grass.

Lin. spec. 1113. syst. 711. Reich. 3. 616. Jacqu.

austr. 1. t. 35. Scop. carn. n. 949. t. 46. Gmel.

fib. 2. 7. t. 2. Desfont. atlant. 219. Poiret

itin. 2.

S. angustifolia subcærulea. Baub. pin. 275. Raii hist.

249. Tournef. inst. 476. Vaill. acad. 1721. p. 209.

S. elatior angustifolia Pannonica. Park. theat. 410.

n. 4.

S. angustif. elatior. Ger. emac. 737. f. 4.

S. sylvestris foliis angustis flore cæruleo. Mentz. pug.

t. 1. f. 1. Raii hist. 250. 12.

Leaves linear-subulate entire channel-three-sided, peduncles cylindrical.

8. Scorzonera angustifolia. Narrow-leaved Viper's-grass.

Lin. spec. 1113. Reich. 3. 616. mant. 457. Hall.

helv. n. 11. Scop. carn. n. 950. Jacqu. vind.

140. Gouan monsp. 406. Villars dauph. 3. 75.

Ger. prov. 159. 3. Gmel. fib. 2. 2. t. 1.

S. angustif. prima. Baub. pin. 275. Tournef. inst. 476.

Garid. 434.

S. pannonica angustifolia. Ger. 598. f. 6. emac. 737.

f. 5. Raii hist. 249.

S. humilis angustif. pannonica 3. Clus. hist. 2. 137.

t. 138.

Tragopogon pinifolium hispanicum. Barr. ic. 496?

Tragopogonis species f. Sc. humilis angustifolia. Baub. hist. 2. 1061.

Leaves subulate entire, peduncles thickened, stem villose at the base.

- [9. Scorzonera hirsuta. Hairy Viper's-grass.

Lin. syst. 711. Reich. 3. 617. mant. 278.

Tragopogon hirsutum. Baub. pin. 274. Raii hist.

251. Tournef. inst. 477. Garid. 469. t. 95. Ger.

prov. 157. 2.—humile. Park. theat. 412. n. 6.

T. alter luteus. Col. ecphr. 1. 234. t. 233.

T. apulum humile hirsutum luteum. Col. ecphr. 1. 233. t. 232. Ger.

Leaves linear hirsute, stem one-flowered hirsute.]

10. Scorzonera refedifolia. Spreading Viper's-grass.

Lin. spec. 1113. syst. 711. Reich. 3. 617. Gouan

illustr. 53. Vahl symb. 2. 87. D'Affo arag. n. 749.

Villars dauph. 3. 76. Barr. ic. t. 800.

Leontodon mucronatum. Forsk. descr. 144.

Chondrilla sicula Tragopogonoides maritima. Bocc. sic. 13. t. 7. f. A & C.

Leaves linear tooth-pinnatifid smooth, calyxes cartilaginous with a whitish tip, stem erect.

- [11. Scorzonera calcitrapifolia.

Vahl symb. 2. 87.

S. orientalis foliis calcitrapæ flore flavescente. Tournef. cor. 36.

S. pratensis, foliis laciniatis glabris. Buxb. cent. 2. 27. t. 22.

S. refedifolia. Retz. obs. 3. 42.

Tragopogon refedæ minoris folio, supinum. Barr. ic. t. 800.

Lower leaves lyrate with the segments oblong and mucronate, the upper pinnatifid.]



12. *Scorzonera laciniata*. *Cut-leaved Viper's-grass*.  
*Lin. spec.* 1114. *fst.* 711. *Reich.* 3. 617. *hort.*  
*ups.* 242. *Hall. herb. n.* 12. *Pollich pal. n.* 734.  
*Jacq. austr.* 4. 29. *t.* 356. *Gouan monsp.* 406.  
*Ger. prov.* 159. 4. *Villars dauph.* 3. 76. *Allion.*  
*pedem. n.* 840. *D'Asso arag. n.* 750. *Gartn.*  
*fruct.* 2. 367.  
*S. foliis laciniatis*. *Tournef. inst.* 477. *Sauv. monsp.*  
692. *Garid.* 434.  
*Tragopogon laciniatum luteum*. *Baub. pin.* 274.  
*Raii hist.* 251.  
*T. lacin. majus*. *Park. theat.* 411. *f.* 3.  
*T. lacin. fol.* *Col. phyt.* 116. *t.* 32.  
*T. refedæ minoris folio erectum*. *Barr. ic. t.* 799.  
*Leaves linear toothed acute, stem erect, scales of the ca-*  
*lyxes from spreading mucronate.*  
13. *Scorzonera coronopifolia*. *Buckhorn - Plantain-*  
*leaved Viper's-grass*.  
*Desfont. atlant.* 220. *t.* 212.  
*S. brevicaulis*. *Vahl symb.* 2. 88. *t.* 44.  
*Leaves pinnatifid-lacinate pubescent, stem almost naked*  
*simple one-flowered.*  
14. *Scorzonera orientalis*. *Levant Viper's-grass*.  
*Lin. spec.* 1113. *Reich.* 3. 618.  
*Leaves sinuate toothletted acute, stems one or two-flow-*  
*ered.*  
15. *Scorzonera taraxacifolia*. *Dandelion-leaved Viper's-*  
*grass*.  
*Lin. fst.* 711. *Jacqu. misc.* 3. *icon. rar.*  
*Leaves runcinate petioled, scape branched leafless.*  
16. *Scorzonera tingitana*. *Poppy-leaved Viper's-grass*.  
*Lin. spec.* 1114. *Reich.* 3. 618. *hort. ups.* 282.  
*hort. cliff.* 385. (*Sonchus*.) *Forsk. ægypt.* 5. 143.  
*Curt. magaz.* *t.* 142.  
*Picridium tingitanum*. *Desfont. atlant.* 220.  
*Sonchus tingitanus papaveris folio*. *Raii suppl.* 137.  
*Tournef. inst.* 475.  
*Chondrilla tingitana, floribus luteis, papaveris hortensis*  
*folio*. *Herm. lugdb.* 657. *t.* 659.  
*Crepis ting. papaveris folio*. *Vaill. acad.* 1721. *p.* 196.  
*All the leaves runcinate and embracing.*  
17. *Scorzonera dichotoma*. *Dichotomous Viper's-grass*.  
*Vahl symb.* 2. 89.  
*Lactuca flava*. *Forsk. descr.* 143.  
*Root-leaves runcinate, stem branched dichotomous almost*  
*leafless.*  
18. *Scorzonera picroides*. *Various-leaved Viper's-grass*.  
*Lin. spec.* 1114. *fst.* 711. *Reich.* 3. 618. *Gouan*  
*monsp.* 406. *Ger. prov.* 160. 5. *Pluk. phyt. t.* 61.  
*f.* 5.  
*Picridium vulgare*. *Desfont. atlant.* 221.  
*Sonchus lævis angustifolius*. *Baub. pin.* 124? *Tournef.*  
*inst.* 475. *Garid.* 447.  
*Crepis*. *Dalech. hist.* 562.  
*Sonchis affinis terracrepola*. *Baub. hist.* 2. 1018.—  
*item Chondrillis affinis laciniata, an trincatella, ejusd.*  
*2. 1021.*  
*Upper leaves embracing quite entire, lower runcinate, pe-*  
*duncles scaly.*  
19. *Scorzonera pinnatifida*.  
*Lour. cochinch.* 479. *ed. Willd.* 584.  
*Leaves pinnatifid half-embracing, panicle diffused termi-*  
*nating.*

## DESCRIPTIONS, &amp;c.

1. Stem straight, simple, tomentose. Leaves alter-  
 nate, scarcely half-embracing, sharpish. Branches flo-  
 riferous, axillary, solitary, one or two-flowered, scarcely  
 longer than the leaf. One or two lanceolate bractes.  
 Native of the Levant<sup>d</sup>.]

2. This is shorter than *hispanica*; the leaves are  
 broader; the stalk is almost naked, and has one yellow  
 flower at the top.

[Root thick, striking deep, having a thick tuft of  
 bristles at the top. Leaves smooth, firm, resembling  
 those of Plantain or garden Tulip. Stem simple, six  
 inches high, having two or three leaves. Scales of  
 the calyx membranous at the edge, pointed, smooth  
 and lanceolate at the end.

Others describe the stem as a foot or eighteen inches  
 in height. The root-leaves are many and form a tuft;

<sup>d</sup> Linn. spec.

they are four inches long, and three quarters of an  
 inch wide. The pappus is sessile<sup>e</sup>.

Native of Europe.

3. Native of Austria.]

4. Root carrot-shaped, about the thickness of a  
 finger, and covered with a dark-brown skin; it is  
 white within, and has a milky juice. Lower leaves  
 nine or ten inches long, and an inch and half broad in  
 the middle, ending with a long acute point. Stalk  
 three feet high, smooth, branching at top, and having  
 on it a few narrow embracing leaves. Flowers bright  
 yellow.

[Leaves scarcely wider than a finger, appearing to  
 be very finely serrate, when examined by a mag-  
 nifier<sup>f</sup>.

Its branched stem; says Villars, and waved embracing  
 leaves, distinguish this from the first species.

*Sc. latifolia altera*. *Baub. pin.* 275. appears to be  
 different from this. The leaves do not embrace the  
 stalk, but are attenuated at their base; they are entire,  
 not toothed, and more of an ash-colour than in the  
 Garden Viper's-grass. Annemann seems to have it in  
 his *Stirpes ruthenica*, p. 151. n. 213. Matthioli has  
 figured it under the name of *Sc. boemica*, and Came-  
 rarius (epit. 314.) under that of *Sc. hispanica*. Caspar  
 Bauhin, in his edition of Matthioli, has repeated it;  
 as has also Clusius, *hist.* 138<sup>g</sup>. Miller made a distinct  
 species of it in the 7th edition of his Dictionary.

Native of Spain, the South of France, Italy, Car-  
 niola, Siberia, and the Levant.—Cultivated by Ge-  
 rarde, in 1596<sup>h</sup>.

5. Root perennial, the thickness of the thumb,  
 brittle at the top with the dry fragments of the leaves  
 of the former year. Stem herbaceous, erect, half a  
 foot high, quite simple except that it has often a  
 branch or two at the base almost as high as the stem,  
 round, mealy-tomentose at top and bottom, leaved be-  
 low. Leaves sessile, linear-ensiform, often three inches  
 long, obscurely nerved, mealy-tomentose on both sides,  
 keeled, the lowest narrowing to both ends, the upper  
 ones widening at the base. Flower terminating, soli-  
 tary, the same size as in *Sc. humilis*. The peduncle is  
 scarcely thickened under the flower. Calyx only half  
 the length of the ray: outer leaflets ovate, acuminate;  
 inner ovate-lanceolate, all membranaceous at the edge.  
 Corolla pale red. Anthers brown, with a saffron-  
 coloured pollen. Stigmas ferruginous.—Common in  
 parched-ground in the kingdom of Tunis<sup>i</sup>.]

6. Stalks slender, about two feet high, branching  
 towards the top, and sustaining pale-yellow flowers,  
 smaller than in *hispanica* and *humilis*.

[Root perennial, brown on the outside. Stem round,  
 striated, erect, the whole always leafy, sometimes quite  
 simple and one-flowered, sometimes having a branch  
 or two, slightly woolly in the lower part especially at  
 the axils of the leaves, otherwise smooth. Leaves  
 scattered alternately, smooth, quite entire, acute, under  
 the very flowers. Calyx smooth. Corollas pale yel-  
 low. The flower resembles that of *Sc. humilis*, from  
 which however it certainly differs very much in having  
 always the stem full of leaves. It agrees more nearly  
 with *Sc. purpurea*, but the flowers are very different.  
 Buxbaum's figure, cited by Linneus, appears to agree  
 better with *Sc. humilis*<sup>k</sup>.

Native of Portugal, Italy and Siberia.—Cultivated  
 by Mr. Miller in 1759<sup>l</sup>.]

7. Leaves shorter than those of the preceding. Stalk  
 taper, and branching at the top. Flowers pale purple.  
 [Described of blue flesh-colour by Linneus, and red  
 flesh-colour by Scopoli. The whole plant is smooth.  
 Stem simple or branched, striated. Leaves almost half  
 a foot in length, grass-like, but three-sided and keeled.  
 Scales of the calyx as many as twenty, reddish at the  
 tip. Cylinder of anthers pale. Seed smooth with the  
 rays of the down of a pale rufous colour<sup>m</sup>.

Native of the March of Brandenburg, Austria,  
 Carniola, Barbary and Siberia. Cultivated by Mr.  
 Miller in 1759.]

<sup>e</sup> Haller and Pollich.<sup>f</sup> Scopoli.<sup>g</sup> Villars.<sup>h</sup> Hort. kew.<sup>i</sup> Vahl.<sup>k</sup> Jacqu. n.<sup>l</sup> Hort. kew.<sup>m</sup> Scopoli.



8. This grows a foot and half high. The peduncle immediately under the flower is thicker than it is below, and the lower part of the stalk is hairy. The flower is yellow.

[Stem scarcely a span high, branched at the base and villose. Leaves clustered, almost the length of the stem. Flower large. Corolla yellow, purplish underneath, the length of the calyx<sup>a</sup>. Down ferruginous, three times as long as the seed.—The stem is sometimes simple and one-flowered, with the leaves only half its length<sup>c</sup>.

Villars distinguishes it by its being a lower plant than the *hispanica*; the leaves ash-coloured, a little villose, and very narrow; the stem naked and villose at the base. It cannot therefore be Barrelier's plant, which is figured leafy from top to bottom<sup>p</sup>. Morison has figured this under the name of the *humilis*; and Haller has not well distinguished these two species<sup>q</sup>.

Native of the South of Europe and Siberia. Cultivated by Mr. Miller in 1759.

9. Leaves channelled. Seeds hairy, white, pappose<sup>r</sup>. Leaves entire, strict, ciliate; stem rough-haired; peduncles thickened under the flower; calyxes shorter than the corolla. Biennial<sup>s</sup>.

Native of Apulia and Provence.]

10. This is very like the *laciniata*, except that the stalks spread on the ground; the indentures on the leaves are more obtuse, and the tops of the calyxes are woolly.

[Miller has copied these characters from Linneus. Vahl informs us, that he has never found the tops of the calyxes to be tomentose, but constantly whitish with a cartilaginous tip, as are the teeth of the leaves. He thus describes the species.—Root fusiform. Stem simple or branched, a foot high or more, round, smooth as is the whole plant, striated, purplish. Root-leaves numerous, stem-leaves few, alternately unequally toothed; the lower ones towards the middle of the leaf tooth-pinnatifid, all the teeth terminated by a whitish cartilaginous point. Peduncles sometimes branched, few, having at the base and in the middle a sagittate entire leaf. Pedicels scaly one-flowered. Flowers small. Calyx-leaves smooth; the outer ovate, the inner lanceolate: all obtuse, terminated by a cartilaginous scale.

According to Villars, the stem is commonly spread on the ground, or only rising a little at the end, not upright as Vahl describes it; the lower leaves wider, the upper lyrate or pinnatifid, with the divisions lanceolate; peduncles axillary, terminated by a small yellow flower; scales of the calyx a little hooked or ending in a spinule, as in the *laciniata*; but this character is inconstant. The procumbency or inclination of the stems is the only sensible character in Dauphiné.

D'Affo says, it is scarcely a distinct species from the *laciniata*, unless the nap of the calyx be a sufficient mark; for it has the same appearance, and the division of the leaves is the same.

Villars remarks, that Boccone's figure, cited by Linneus (Vahl, and D'Affo) does not represent this plant.—Here therefore is some confusion, and perhaps two species confounded, or a variety of *laciniata* mixed with this species.

Native of Spain and the South of France. Vahl found it on the coast of Africa. Cultivated by Mr. Miller before 1729. It is a biennial plant, and flowers in June and July<sup>t</sup>.

11. Stem upright, herbaceous, a foot high, the thickness of a goose quill, striated, rugged, somewhat branched: branches of the same structure with the stem, spreading. Leaves smooth, next the root abundant, ending in the petiole, lyrate-pinnatifid; segments alternate, roundish or oblong, often irregular, the end one thrice or four times as large as the rest: those at the top of the stem remote, few, pinnatifid; segments linear-lanceolate, rugged at the edge. Peduncles terminating, solitary, three or four inches long, somewhat grooved, one-flowered, having a small awl-shaped

entire leaf at top. Calyx the same size as in *Sc. humilis*: the leaflets ovate attenuated, keeled, mostly smooth, very tomentose and whitish at the tip, sometimes naked. Corolla sulphur-coloured. Down feathered<sup>u</sup>.

Vahl remarks, that this species agrees with Barrelier's figure, cited under *resedifolia*, but by no means with Boccone's, which agrees with that, except in being too small, and in the tips of the calyx leaves. Both seem to be different from Gouan's *resedifolia*.

*S. calcitrapifolia* is not a variety of *laciniata*; for the segments of the leaves are always linear, not oblong, and the whole habit of the plant is different.

Native of the kingdom of Tunis in Africa<sup>x</sup>.]

12. This rises with a smooth branching stalk two feet high, and has leaves like those of Buck's-horn Plantain, but larger. Flowers yellow, upon long naked peduncles, at the end of the branches.

[Root biennial. Primary root-leaves entire, spatulate, on long membranaceous petioles: the other leaves sinuate, pinnatifid, with three or four lanceolate-linear segments on each side; the end one longer. Stem-leaves smaller, sinuate or entire, sessile. Stem striated, branched at the base; branches naked, longer than the leaves, one-flowered. Scales of the calyx lanceolate, acute, membranaceous, the outer ones having a toothlet at the end, the lower ones bent back. Corollas longer than the calyx, yellow<sup>y</sup>.

Receptacle, according to Gærtner, slightly convex, papillose with minute tubercles. Seeds long, from an ovate striated peduncle hollow within and containing a filiform umbilical cord, lengthened out into a straight, compressed-four-cornered, striated column, narrower than its peduncle but twice its length, and filled with the nucleus.

According to Monf. Villars, it resembles the *resedifolia*, but the stem is upright straight and branched; the leaves are also narrower, and the divisions are not quite so wide; the flowers are small, in an angular calyx, the scales of which are terminated by a cottony button. After all, it seems doubtful whether this and the *resedifolia* be really different; they appear at first view to be very distinct, but they are both subject to vary. They have each the character of the other in the scales of the calyx. The width and form of the leaves vary also. The stems seem to be more constant; but the disposition to procumbency in the *resedifolia* sometimes changes a little, and the stems are raised enough to approach to this species. Haller, Gouan, Gerard, &c. do not appear to have distinguished them<sup>z</sup>.

Native of Germany, Switzerland, Austria, the South of France, Italy and Spain. Mr. Miller cultivated it before 1729; but Parkinson had it in 1640<sup>a</sup>.

13. Root perennial, fusiform, in thickness from that of the little finger to the thumb. Stem a finger or hand high, upright, striated, tomentose hoary, naked or having a few (one to three) leaves at bottom, a little thickened under the flower. Root-leaves abundant, pubescent, (but with age becoming naked above,) acute, pinnatifid, wider in the middle; segments linear, acute, unequal, rather remote, quite entire or lacinated. Petioles channelled, striated, widening at the base. Flower terminating, solitary, the same size as in *Sc. hispanica*. Calyx ovate-oblong, with the scales often tomentose at the edge; the outer ovate, the inner lanceolate, longer, membranaceous. Corolla longer by half than the calyx, sulphur-coloured. Anthers brown or dusky purple. Seeds columnar, rugged with raised muricated lines. Down sessile, feathered, or composed of many, unequal, cobwebbed bristles. Receptacle naked, convex.—Native of the mountains of Barbary<sup>b</sup>.

14. Leaves deeply toothed, almost like those of Dandelion, with the edge toothletted, smooth. Stems short, leafy. Lower calyx-scales, especially at the sides, widely membranaceous along the edge. Corolla yellow, the same size as in *Sc. humilis*.—Found in the East by Hasselquist<sup>c</sup>.

<sup>a</sup> Linn. spec. <sup>o</sup> Scopoli. <sup>p</sup> Haller. <sup>q</sup> Villars.  
<sup>r</sup> Linn. mant. <sup>s</sup> Gerard. <sup>t</sup> Hort. kew.

<sup>u</sup> Vahl. <sup>x</sup> Idem. <sup>y</sup> Gerard. <sup>z</sup> Villars.  
<sup>a</sup> Hort. kew. <sup>b</sup> Desfont. and Vahl. <sup>c</sup> Linn. spec.



15. The root of this is perennial, fusiform, and white, and scarcely the thickness of one's little finger: the radical leaves are numerous, subruncinate, and scattered in a circular direction: they are obtuse, lacinated, and edged with fine hairs: stalk smooth, striated, leafless, branched, fistulous, and about a foot and half high: peduncles elongated, one-flowered: calycine scales greenish, and edged with a whitish membranaceous margin: flowers deep yellow<sup>d</sup>.

Native of Bohemia; flowering from July to the end of August.

16. Stem upright, smooth, branched. Leaves glaucous, smooth, somewhat fleshy, unequally toothed and runcinate, rounded on both sides at the base. Peduncles inflated at top, one-flowered, clothed with little ovate scales. Calyx ventricose; scales ovoid, loofish, acuminate, membranaceous at the edge. Corollets villose at bottom. Seeds truncate, four-cornered. Down villose, whitish, simple<sup>e</sup>. Hence Desfontaines makes this and the *picroides* of another genus, *picridium*. According to Hermann it is a *Chondrilla*; in Tournefort it is a *Sonchus*; in Vaillant a *Crepis*.—Linneus remarks, that though the pappus be simple, yet the calyx-scales are scarious at the edge.

It is an annual plant, native of Tangier on the Barbary coast; in clefts of rocks. Cultivated in the Chelsea garden in 1713<sup>f</sup>: but not mentioned by Mr. Miller<sup>g</sup>.

Mr. Curtis observes, that in the middle of summer, a hot unclouded sun, which is favourable to the expansion of most flowers in the class Syngenesia, is too powerful for these, which appear to the greatest advantage in warm hazy weather.

17. Stems several erect, round, smooth, striated below, branched from the base: branches dichotomous, rigid. Most of the leaves radical, petioled, a long span in length, smooth: segments lanceolate, tooth-angular, outwardly larger, subciliate with minute whitish toothlets. Stem-leaves under the two first ramifications, sessile, of the same structure with the others: then small lanceolate leaves, gradually smaller, ovate, quite entire, under each branch. Flowers terminating, solitary, on scaly peduncles not thickened under the flower: scales a little under the flowers crowded, ovate, membranaceous at the edge, ending in the calyx. Calyx cylindrical, very smooth: outer leaflets ovate, with a wide membranaceous margin, loose; inner leaflets or scales linear. Corolla yellow, longer than the calyx. Pappus hairy or simple, sessile. Allied to *Sc. picroides*, yet different.—Found by Vahl in the kingdom of Tunis<sup>h</sup>.

18. The outer seeds are curved in and crenulate; the pappus is simple and sessile: this plant therefore is intermediate between *Scorzonera* and *Sonchus*<sup>i</sup>. Hence it is a *Sonchus* in most of the old authors; and Desfontaines forms a new genus for this and other species resembling it. He says, that it varies with entire, lacinate, and runcinate leaves.

It is an annual plant, native of the South of France, and of Barbary.

Monf. Richard introduced it here, in 1773. It flowers from June to August<sup>k</sup>.

John Bauhin has it twice; the description in p. 1018, but the true figure in p. 1021<sup>l</sup>.

19. Stem suffruticose, erect, weak, three feet high, branched. Leaves toothletted, thick, smooth. Flowers pale yellow, on subumbelled peduncles. Calyx oblong. Receptacle naked. Down feathered.

Native of the continent of eastern Africa, near Mozambique<sup>m</sup>.]

#### PROPAGATION AND CULTURE.

The first sort only is cultivated for the use of its roots, the others are preserved in botanic gardens for variety, but are seldom admitted into other gardens.

These plants may be propagated by sowing their seeds in the beginning of April, upon a spot of light fresh soil. The best method of sowing them is, to draw shallow furrows by a line about a foot asunder,

into which you should scatter the seeds, thinly covering them over about half an inch thick with the same light earth; and when the plants are come up, they should be thinned where they are too close in the rows, leaving them at least six inches asunder; and at the same time, you should hoe down all the weeds to destroy them; and this must be repeated as often as is necessary, for if the weeds are permitted to grow among the plants, they will draw them up weak.

There are many people who sow their seeds promiscuously in a bed, and afterwards transplant them out the distance they would have them grow; but this is not so well as the former method, because their roots commonly shoot downright, which in being transplanted, are often broken, so that they never will make such fair roots as those which remain in the same place where they are sown; for when the extreme part of the root is broken, it never extends itself in length afterwards, but only shoots into many forked small roots, which are not near so valuable as those which are large and straight. These roots may be taken up when the leaves begin to decay, at which time they have done growing, though they may remain in the ground until spring, and may be taken up as they are used; but those which remain in the ground till March, will shoot up their flower-stems, after which they are not so good, being sticky and strong.

If you intend to save seeds of these plants, you should let a parcel of the best remain in the places where they grew; and when their stems are grown to their height, they should be supported with stakes, to prevent their falling to the ground, or breaking. In June they will flower, and about the beginning of August their seeds will ripen, when they should be gathered, and preserved dry till the spring following for use.

[SCORZONERA. See *Catananche*.

SCORZONEROIDES. See *Scorzonera*.

SCOTCH FIR. See *Pinus*.

GRASS. See *Panicum*.

SCREW-PINE. See *Pandanus*.

SCREW-TREE. See *Helicteres*.]

SCROPHULARIA. (From its supposed use in the cure of the Scrofula.)

Lin. gen. n. 756. Reich. n. 814. Schreb. n. 1014.

Tournef. t. 74. Juss. 119. Gært. t. 53.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Scrophularia*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, permanent: segments shorter than the corolla, rounded.

COR. one-petalled, unequal: tube globular, larger, inflated: border five-parted, very small: segments the two upper larger, erect; two lateral, spreading a little; one lowest, bent back.

STAM. Filaments four, linear, declining, length of the corolla; of which two are later. Anthers twin.

PIST. Germ ovate. Style simple, situation and length of the stamens. Stigma simple.

PER. Capsule roundish, acuminate, two-celled, two-valved: partition folded, constructed of the margins of the valves bent in; opening at the top.

SEEDS very many, small. Receptacle roundish, insinuating itself into each cell.

OBS. In the throat of the corolla under the upper segment of the border is found a small segment, resembling a little lip, which is not common to all the species.

The corolla in this genus should be considered as resupine or turned upside down: the upper lip smaller recurved, to which the stamens are bent down, rounded; the lateral segments crenate, rounded, equal to the upper one; lower lip larger, patulous, two-parted; the middle one very small in front.

The partition, when the capsule is ripe, has an oval hole through it. G.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. subglobular, resupine. Caps. two-celled.

SPECIES.

<sup>d</sup> Jacquin. <sup>e</sup> Desfontaines. <sup>f</sup> Hort. kew. <sup>g</sup> Curtis.

<sup>h</sup> Vahl symb. <sup>i</sup> Linn. spec. <sup>k</sup> Hort. kew.

<sup>l</sup> Desfont. <sup>m</sup> Loureire.



## SPECIES.

1. *Scrophularia marilandica*. Maryland Figwort.  
*Lin. spec.* 863. *Reich.* 3. 145. *hort. upf.* 177.  
*Gron. virg.* 71. *Raii suppl.* 396. 14. *Kniph.*  
*cent.* 2. n. 80.  
*Leaves cordate ferrate acute rounded at the base, stem obtuse angular.*
2. *Scrophularia nodosa*. Knobby-rooted Figwort.  
*Lin. spec.* 863. *Reich.* 3. 145. *hort. cliff.* 322.  
*f. suec. n.* 560. *mat. med.* 156. *Huds. angl.* 274.  
*Wither. arr. ed.* 3. 553. *Smith brit.* 663. *Relb.*  
*cant. n.* 467. *Sibth. oxon. n.* 556. *Abbot bedf.*  
*n.* 461. *Hall. belv. n.* 326. *Pollich pal. n.* 596.  
*Neck. gallob.* 270. *Scop. carn. n.* 775. *Gunn.*  
*norv. n.* 732. *t. 4. f.* 1—3. *Krock. files. n.* 996.  
*Villars dauph. 2.* 417. *Allion. pedem. n.* 248.  
*Crantz austr.* 325. *Gron. virg.* 71. *Ludw. est.*  
*t. 72. Kniph. cent.* 2. n. 81.  
*Scrophularia. Camer. epit.* 866. *Dod. pempt.* 50. 1.  
*Matth.* 1130. *valgr.* 2. 474. *Riv. mon. t.* 107.  
*f. 1. Blackw. t.* 87.  
*S. nodosa fœtida. Bauh. pin.* 235.  
*S. radice nodosa. Mor. hist. f. 5. t. 8. f. 3. ord.* 3.  
*S. major. Ger.* 579. 2. *emac.* 716. 1. *Raii hist.*  
*764. syn. \*283. Pet. brit. t. 35. f. 9.—vulgaris.*  
*Park. theat.* 610. *f. 1.—et major. Bauh. hist.* 3.  
*421.*  
*β. S. major, caulibus foliis & floribus viridibus. Bobart*  
*in Raii syn. \*283. 4.*  
*Leaves cordate acute three-nerved at the base, stem acute-*  
*angled.*
3. *Scrophularia aquatica*. Water Figwort.  
*Lin. spec.* 864. *syn.* 560. *Reich.* 3. 145. *hort. upf.*  
*177. mat. med.* 156. *Gærtn. fruct.* 1. 250.  
*Huds. angl.* 275. *Wither. arr. ed.* 3. 554. *Smith*  
*brit.* 663. *engl. bot. t.* 854. *Curt. lond.* 5. *t. 44.*  
*Relb. cant. n.* 468. *Sibth. oxon. n.* 557. *Abbot*  
*bedf. n.* 462. *Fl. dan. t.* 507. *Hall. belv. n.* 325.  
*Pollich pal. n.* 597. *Neck. gallob.* 270. *Scop.*  
*carn. n.* 776. *Crantz austr.* 326. *Guett. stamp.*  
*2. 201. Krock. files. n.* 997. *Villars dauph. 2.*  
*417. Allion. pedem. n.* 249. *D'Affo arag. n.* 568.  
*Blackw. t.* 56. *Kniph. cent.* 11. *n.* 92. *Sabb.*  
*hort. 2. t.* 89. *Regnault bot.*  
*S. radice fibrosa Betonicæ foliis. Mor. hist. f. 5. t. 8.*  
*f. 4. ord.* 3.  
*S. aquatica major. Bauh. pin.* 235. *Raii hist.* 764.  
*syn. \*283.—caule fimbriato. Loef. pruss.* 248. *t.* 75.  
*S. femina. Camer. epit.* 867.  
*S. maxima radice fibrosa. Bauh. hist.* 3. 421.  
*Betonica aquatica. Ger.* 579. 1. *emac.* 715.—major.  
*Park. theat.* 613. 1.  
*B. aquatilis. Dod. pempt.* 50. 2.  
*Leaves cordate petioled decurrent blunt, stem winged.*
4. *Scrophularia auriculata*. Ear-leaved Figwort.  
*Lin. spec.* 864. *syn.* 560. *Reich.* 3. 146. *Desfont.*  
*atlant.* 2. 56. *Allion. pedem. n.* 250.  
*Betonica aquatica septentrionalium. Lob. ic.* 533.  
*Leaves cordate tomentose beneath appendicled at the base,*  
*racemes terminating.*
5. *Scrophularia lævigata*. Smooth Figwort.  
*Vahl symb.* 2. 67. *v. n.* 15.  
*Smooth, leaves cordate obtusely tooth-gashed, raceme ter-*  
*minating compound leaflets.]*
6. *Scrophularia Scorodonia*. Balm-leaved Figwort.  
*Lin. spec.* 864. *syn.* 560. *Reich.* 3. 146. *mant.* 418.  
*Huds. angl.* 275. *Wither. arr. ed.* 3. 553. *Smith*  
*brit.* 664. *Dicks. hort. succ.* 15. 9. *Gmel. fib.* 3.  
*195. n.* 5. *Desfont. atlant.* 2. 55. *Allion. pedem.*  
*n.* 251.  
*S. meliffæ folio. Tournef. inst.* 166.  
*S. scorodoniæ folio. Raii hist.* 766. *\*syn.* 283. *Petiv*  
*brit. t.* 35. *f.* 11. *Mor. hist.* 2. *f.* 5. *t.* 35. *f.* 6.  
*Pluk. phyt. t.* 59. *f.* 5.  
*Leaves cordate doubly ferrate tomentose beneath, raceme*  
*leafy.*
7. *Scrophularia altaica*.  
*Lin. spec.* 860. *Murr. in comm. gott.* 1781. *p.* 35. *t.* 2.  
*Leaves cordate ovate doubly tooth-ferrate, teeth tending*  
*towards the base, raceme compound leaflets.*
8. *Scrophularia glabrata*. Spear-leaved Figwort.  
*Ait. hort. kew.* 2. 341.

- Leaves oblong-lanceolate cordate doubly ferrate smooth,*  
*panicles racemed terminating trichotomous, stem suffru-*  
*ticose.]*
9. *Scrophularia betonicifolia*. Betony-leaved Figwort.  
*Lin. spec.* 860. *Reich.* 3. 147. *mant.* 87. *Alli n.*  
*pedem. n.* 252.  
*S. betonicæ folio. Tournef. inst.* 166.  
*S. aquatica montana n. olior. Barrcl. ic.* 274.  
*Leaves cordate oblong toothed, teeth quite entire those of*  
*the base deeper.*
  10. *Scrophularia meridionalis*.  
*Lin. spec.* 860. *suppl.* 280.  
*Leaves oblong-ovate ferrate smooth, peduncles one-flow-*  
*ered.]*
  11. *Scrophularia orientalis*. Hemp-leaved Figwort.  
*Lin. spec.* 864. *syn.* 560. *Reich.* 3. 147. *Pallas*  
*it.* 3. 655. *Kniph. cent.* 5. n. 80.  
*S. orientalis foliis cannabinis. Tournef. cor.* 9.  
*Leaves lanceolate ferrate petioled, stem-leaves in threes,*  
*branch-leaves opposite.*
  12. *Scrophularia frutescens*. Shrubby Figwort.  
*Lin. spec.* 866. *syn.* 560. *Reich.* 3. 147. *mant.* 418.  
*Desfont. atlant.* 2. 56.  
*S. lusitanica frutescens, verbenacæ foliis. Tournef. inst.*  
*167. Raii suppl.* 396.  
*S. peregrina frut. foliis Teucrii crassiusculis. Herm.*  
*lugdb.* 545. *t.* 547.  
*Leaves somewhat fleshy sessile even recurved at the end.*
  13. *Scrophularia vernalis*. Yellow Figwort.  
*Lin. spec.* 864. *syn.* 560. *Reich.* 3. 148. *hort. cliff.*  
*322. upf.* 177. *mant.* 418. *Huds. angl.* 275.  
*Wither. arr. ed.* 3. 554. *Smith brit.* 664. *engl.*  
*bot. t.* 567. *Fl. dan. t.* 411. *Hall. belv. n.* 327.  
*Villars dauph. 2.* 418. *Allion. pedem. n.* 253.  
*S. flore luteo. Bauh. pin.* 236. *prodr.* 112. *ic. Ger.*  
*emac.* 717. *Park. theat.* 611. *n.* 6. *Raii hist.*  
*765. Riv. mon. t.* 107. *f.* 2. *Mor. hist. f.* 5.  
*t. 8. f.* 2. *ord.* 3.  
*S. lutea magna, amplis foliis. Bauh. hist.* 3. 422.  
*S. montana maxima latifolia. Barrcl. ic.* 273.  
*Lamium pannonic. 2. exoticum. Clus. hist.* 2. 38.  
*Galeopsis altera luteo pallida. Park. theat.* 608. *f.* 4.  
*Leaves cordate doubly ferrate pubescent, peduncles axillary*  
*solitary dichotomous having small leaves on them.*
  14. *Scrophularia arguta*. Slender upright Figwort.  
*Ait. hort. kew.* 2. 342.  
*Leaves cordate smooth doubly ferrate, panicles axillary*  
*dichotomous, capsules acuminate.]*
  15. *Scrophularia trifoliata*. Three-leaved Figwort.  
*Lin. spec.* 865. *Reich.* 3. 148. *Desfont. atlant.* 54.  
*Pluk. phyt. t.* 313. *f.* 6. *Bocc. mus.* 2. 65. *t.* 60.  
*S. lævigata. Vahl symb.* 2. 67. *sec. Desfont. v. n.* 5.  
*Leaves smooth, lower ternate-pinnate obtuse, upper simple,*  
*peduncles subtriflorous axillary.*
  16. *Scrophularia sambucifolia*. Elder-leaved Figwort.  
*Lin. spec.* 865. *Reich.* 3. 148. *D'Affo arag. n.* 570.  
*Griff. lusit.* 75. *Munting, phyt.* 45. *f.* 238. *Alp.*  
*exot.* 203. *t.* 202. *Kniph. cent.* 7. *n.* 84. *Mill.*  
*fig. t.* 231. *Park. theat.* 611. *f.* 8. *Mor. hist.*  
*f.* 5. *t.* 8. *f.* 6. *ord.* 3. *Raii hist.* 767. 12.  
*S. foliis laciniatis. Bauh. pin.* 236. *prodr.* 112.  
*Raii hist.* 766.  
*β. S. lusitanica magno flore foliis dissectis. Raii suppl.*  
*396. 16.*  
*Leaves interruptedly pinnate cordate unequal, raceme ter-*  
*minating, peduncles axillary in pairs dichotomous.*
  17. *Scrophularia canina*. Cut-leaved Figwort.  
*Lin. spec.* 865. *Reich.* 3. 149. *vir. cliff.* 6. *hort.*  
*cliff.* 322. *Hall. belv. n.* 328. *Scop. carn. n.* 778.  
*Sauv. monsp.* 247. *Villars dauph. 2.* 418. *Allion.*  
*pedem. n.* 255. *Kniph. cent.* 4. *n.* 75. *Sabb.*  
*hort. 2. t.* 90. *D'Affo arag. n.* 571. *Desfont.*  
*atlant.* 2. 53.  
*S. Ruta canina dicta. Bauh. pin.* 236. *Park. theat.*  
*609. 2. t.* 610. *f.* 2. *Raii hist.* 766. 9. *Mor. hist.*  
*f.* 5. *t.* 9. *f.* 8.  
*S. tertia Doctonæa tenuifolia, Ruta canina quibusdam*  
*vocata. Bauh. hist.* 3. 423.  
*Ruta canina. Clus. hist.* 2. 209. *Lob. ic.* 2. 55. *Ger.*  
*emac.* 1256. *Tabern. ic.* 136. *Dalech. hist.* 973.  
*Leaves pinnatifid, raceme terminating naked, peduncles*  
*bifid.*



- [18. *Scrophularia mellifera*. *Barbary Figwort*.  
*L'Herit. stirp. nov.* 2. t. 31. *Ait. kew.* 2. 343.  
*Vahl symb.* 2. 68. *Desfont. atlant.* 2. 53. t. 143.  
*Smooth, lower leaves pinnate, leaflets ovate tooth-ferrate, flowers axillary, bottom of the corolla nectariferous.*]
19. *Scrophularia lucida*. *Shining-leaved Figwort*.  
*Lin. spec.* 865. *fl.* 561. *Reich.* 3. 149. *Allion. pedem.* n. 256. *Desfont. atlant.* 2. 54.  
*S. foliis filicis modo, laciniatis. f. Ruta canina latifolia.*  
*Baub. pin.* 236. *Mor. hist.* 2. 483. f. 5. t. 9. f. 7.  
*Tournef. inst.* 167.  
*S. saxatilis lucida, laserpitii massiliensis folio.* *Bosc. mus.* 2. 166. t. 117.  
*S. glauco folio in amplis laciniis diviso.* *Tournef. cor.* 9. *itin.* 1. 84. t. 85. (i. 221.)  
*S. cretica* 1. *Clus. hist.* 2. 209. *Raii hist.* 766.  
*S. cret. latifolia.* *Park. theat.* 610.  
*S. indica.* *Ger. emac.* 716.  
*Lower leaves bipinnate somewhat fleshy very smooth, racemes two-parted.*
20. *Scrophularia coccinea*. *Scarlet-flowered Figwort*.  
*Lin. spec.* 866. *Reich.* 3. 150.  
*S. flore coccineo, foliis urticae quaternis caulem ambientibus.* *Houst. mss.*  
*Leaves in fours ovate, flowers whorled spiked.*
21. *Scrophularia peregrina*. *Nettle-leaved Figwort*.  
*Lin. spec.* 866. *fl.* 561. *Reich.* 3. 150. *mant.* 418. *hort. cliff.* 322. *Gouan monsp.* 304. *Allion. pedem.* n. 254. *Cam. hort.* 157. t. 43. *Park. theat.* 611.  
*S. folio urticae.* *Baub. pin.* 236. *Raii hist.* 765.  
*Leaves cordate marked with lines shining, peduncles axillary two-flowered, stem hexangular.*
- [22. *Scrophularia hispida*.  
*Desfont. atlant.* 55.  
*Stem four-cornered erect hispid, leaves pinnate doubly-crenate, terminating lobe cordate very large, raceme compound leaflets.]*

## DESCRIPTIONS, &amp;c.

1. Root perennial, fibrous. Stalks four-cornered. Flowers in bunches on the upper part of the stalk, like those of the next species; but of an herbaceous colour.

[It very much resembles our common knobby-rooted Figwort, but is double the height. Leaves cordate at the base, but not three-nerved or cut out to the very nerves. Petioles connected on each side by a very small beard\*. The flowers are disposed more thinly and scatteringly than in our common sort\*.

Native of North America: Miller says Maryland; Linneus Virginia. Ray names it *marilandica*; and says it was found, and brought from America by Krieg a German. Cultivated in 1759, by Mr. Miller; who having omitted in his eighth edition, n. 16. of his seventh; has numbered this 16, and described it as the 17th species in his eighth folio edition. This mistake is rectified in his sixth quarto edition.

2. Root tuberous, granulate, (or composed of many whitish knobs.) Stem three feet high, erect, simple, acutely quadrangular, smooth, leafy. Leaves opposite, petioled, smooth, acutely ferrate, veined and at the base by the lateral veins cut out and as it were three-nerved. Raceme terminating, erect, with the peduncles opposite, dichotomous, having a pair of lanceolate acuminate little bractes. Flowers dark blood-red. Capsules ovate, acute\*.—To this Dr. Withering adds, the upper leaves are nearly sessile and lanceolate; the peduncles cylindrical, with short pellucid hairs terminated by globules; calyx toothed and membranaceous at the end; base of the corolla filled with a honey-like liquor; upper segments purple, the rest pale green: the little heart-shaped segment within the base of the two upper segments seems to deserve the name of nectary. The capsule sometimes has three or four cells.

Native of Europe, in woods and hedges; flowering in July.

It has the name *Figwort*, and formerly *Kernelwort*,

from its knobbed roots: *Brownwort*, from the brown tinge of the leaves, &c.

This plant is hardly known in modern practice; but the rank smell, like Elder; and bitter taste of the leaves, seem to indicate some active properties. Swine that have the scab are cured by washing them with a decoction of the leaves. Wasps resort greatly to the flowers. Goats eat the plant; but cows, horses, sheep and swine refuse it\*.

There are some varieties. Pontedera mentions one with the leaves in threes, instead of two opposite in pairs. Ray has it without any of the brown colour usual in this plant; but with the stems, leaves and flowers all green: found near Cumner by Bobart.—Parkinson figures a third, under the name of *S. major altera elegans*, which, like the first, has sometimes more than two leaves at a joint, especially the lowermost.

3. Root perennial, fibrous. Stem from three to five feet in height, upright, branched, smooth, winged at the corners: branches leafy, like the stem. Leaves opposite, petioled; cordate-ovate, obtuse, ferrate, smooth, veined, running down at the base into the petiole.

Mr. Curtis remarks that they have sometimes little appendages: and Dr. Withering, that the upper leaves are ovate. Flowers in an erect terminating raceme, commonly solitary: or, according to Mr. Curtis, in a panicle-like spike, with the branches opposite, trichotomous, supported by a pointed bracte; the lateral peduncles have often several flowers with a little bracte to each, and are somewhat viscid; the middle one is solitary. Corolla of a deep blood-red colour. Capsule roundish, acuminate\*; two-grooved, smooth, bipartite: receptacle ovate-oblong, spongy, fastened to the partition on each side, when ripe contracted into a thick tubercle, fastened to the base of the oval hole. Seeds ovate-globular, becoming by age grooved and transversely wrinkled so as to appear latticed, dark brown\*.

Native of Europe, by the sides of rivers, ponds and wet ditches; flowering from June to September.

The name of *Water Betony* has been given to this plant, from the similitude of its leaves to those of Wood Betony. It was formerly known by the name of *Brown-wort*, as well as the preceding; and in Yorkshire, says Gerard, it is called *Bishop leaves*.

The leaves of this species are recommended medicinally for the same purposes as those of the preceding; in taste and smell they are similar, but weaker. Mons. Marchant having reported, in the Memoires of the French Academy, that this plant is the same with the *Iquetaia* of the Brasilians, celebrated as a corrector of the ill flavour of Sena, the Edinburgh College, in their common infusion of that drug, directed two thirds of its weight of Water-Figwort leaves to be joined; but as they have since discarded this ingredient, we may presume that it was not found to be of much use.

The disagreeable smell which attends this plant when bruised, makes it rejected by cattle in general; nevertheless both leaves and flowers are much resorted to by different kinds of insects. Bees and wasps collect much honey from the flowers, which continue a long time\*.]

There is a variety of this with variegated leaves.

4. [This has the stature of *S. nodosa*. Stem four-cornered, by no means hairy, brachiate. Leaves doubly-ferrate, obtuse every where, opaque, naked, having two ovate accessory leaflets at the base, so that they are in a manner ternate; on the smaller branches the leaves are simple. Corollas of a more dusky purple colour, with the lip which is rolled back of a greenish livid colour\*. The synonyms of Barrelier and Tournefort, given in the Species Plantarum, do not belong to this plant, but to *betonicefolia*, n. 9.

It has the appearance of *S. nodosa*. Stem upright, seldom divided, smooth. Leaves petioled, wrinkled, oblong; teeth unequal, ovate, bluntish; the lower

\* Withering.

\* Smith

\* Gartner.

\* Curtis.

\* Linn. spec.

\* Linn. spec.

\* Ray.

\* Smith.



ones pinnate at the base, with two or four pinnules, the extreme lobe larger, cordate or ovate; the upper ones cordate, simple. Flowers in leafless racemes, whorled as it were. Peduncles in pairs, opposite, short, dichotomous. Bractes small, linear, shorter than the calyx, from the base of each pedicel. Segments of the calyx rounded, pressed close, membranaceous at the edge. Corolla purple, spreading, very like that of *S. nodosa*, but a little less: lamella of the palate orbicular. Capsule pear-shaped, acute, smooth, with a longitudinal furrow on each side. Seeds, black, oblong; dotted and wrinkled, fastened to the central receptacle<sup>x</sup>.

It seems to be the *sulphurea* of Miller, n. 3. which he describes as having] stronger, taller and greener stalks than the *aquatica*; the leaves generally with small appendages at their base; the flowers greener, and growing thinner upon the stalks. [He supposes it to be the *Sc. aquatica flore sulphureo* of Micheli, and hence names it *sulphurea*.

Native of Spain, Italy and Algiers. Introduced in 1772, by Mons. Richard<sup>y</sup>: unless it is Miller's *sulphurea*, which he cultivated in 1759.

5. Stem upright, quite simple, a cubit high, four-cornered from four decurrent lines. Leaves two inches long, very smooth, shining, veined, on a petiole shorter than the leaf. Raceme erect, strict, a span long: peduncles alternate, distant, twice or thrice dichotomous; pedicels divaricating, one-flowered, solitary in the forkings. Bractes at the base of the peduncles and pedicels, linear, short. Segments of the calyx rounded, membranaceous with a white edge, shorter by half than the corolla; which is of the same size as that of *S. nodosa*; with the upper lip purplish, and the lower greenish yellow. Capsule longer than the calyx.

Native of Barbary, in the mountains near Zowan in Tunis<sup>z</sup>.

According to Desfontaines, this is the same with the *trifoliata* of Linneus; which see under n. 15.

6. Stem four-cornered, hairy. Leaves cordate-oblong, acute, veined, very soft beneath, cut out and three-nerved at the base. Peduncles of the raceme decompounded, the upper ones alternate. Flowers paler. Calyx pubescent. Capsule smooth, roundish, acuminate<sup>a</sup>.

Desfontaines distinguishes it from *auriculata*, by the flowers being panicled; the peduncles filiform, longer, patulous; the leaves not pinnate at the base, scarcely pubescent, with the teeth sharper.

Native of Portugal, Italy, Tunis in Africa, Siberia, and Britain. Discovered in the Island of Jersey, between the Port and St. Hilary, by Sherard; and since by Mr. Edward Lhwyd and others, near the sea shore about St. Ives in Cornwall<sup>b</sup>.]

Mr. Miller says, the stalks rise near four feet high, branching out on every side; that the leaves on the upper part of the stalks are alternate; that the flowers are produced in bunches at the axils, each pedicel supporting two flowers, which are small, of a brown colour, and appear in June.

He has another species, (n. 6.) which he names *italica*, and is a native of Sicily. The flowers are disposed in compound spikes, upon long foot-stalks from the axils, having generally two narrow leaves at the base; but the flowers terminate the stalks, as in *nodosa* and *aquatica*. [He quotes the same specific character as in the *Scorodonia* from Linneus, with a synonym from *Hort. Cathol.*—*Sc. nemorensis folio urticæ rugoso, flore atro-punicante.*—It is probably a variety of the *Scorodonia*.

7. Root consisting of thick fibres of about a finger's length: stem sometimes single, and sometimes multiple; upright, and about a quill's thickness at the base: branches spreading, about a span long, leaves ovate-oblong, doubly ferrate, cordate, veiny, rather wrinkled, opposite, and horizontal: flowers collected in a terminal raceme on the stem and branches: corolla whitish externally, and of a deep green internally: border larger than usual in this genus, and with

a very long obcordate upper segment.—Native of the Altaic mountains<sup>c</sup>.

8. This is a biennial plant, native of the Canary Islands, where it was found by Masson, and introduced in 1779. It flowers in April and May<sup>d</sup>.

9. Stem two feet high, erect, four-cornered, subpubescent, purplish at the base. Leaves opposite, petioled, subcordate, oblong, being three times as long as they are wide; wrinkled, subpubescent beneath, sharply toothed, with the teeth acuminate and quite entire, (therefore very like those of *Ebulus* or dwarf Elder,) deeper at the base. Petioles shorter than the leaves. Panicle terminating somewhat leafy. Corollas of a dull purple colour, with a greenish lip. Anthers very yellow.

Native of Portugal<sup>e</sup>: of Spain, according to the Kew catalogue; of Sicily, as Miller affirms; and Allione had it from the county of Nice. It was cultivated by Miller so far back as the year 1739<sup>f</sup>.]

He names it *cordata*, and says that the stalks rise near four feet high and have sharp angles; that the leaves are arrow-pointed, heart-shaped, and sharply ferrate; that the flowers grow in loose terminating bunches, are in shape like those of *auriculata*, but of a dark-red colour.

[10. Stem quadrangular, herbaceous; with opposite branches. Leaves opposite, petioled, ovate or a little oblong, even, equally ferrate, longer than the petioles. Racemes terminating, solitary. Bractes leafy, but smaller, commonly quite entire, remote; the lower opposite; the upper alternate. Peduncles leafless, longer than the flower. Corollas ovate, of the same size as in *S. sambucina*.—Found in New Granada, by Mutis<sup>g</sup>.]

11. Root perennial, creeping. The stalks rise two feet and a half high; their lower parts are closely set with lanceolate leaves, which are sharply ferrate, and cut at bottom. At the upper part are compound bunches of small brown flowers, which appear in May; and are succeeded by small roundish capsules.—Native of the Levant.

[Linneus remarks, that the stem-leaves are sometimes in fours as well as threes; and that the raceme is composed of three or four dichotomous peduncles.—It was cultivated in the Chelsea garden in 1712; and flowers in July and August, according to the Kew catalogue.

12. Stem perennial, (or becoming woody,) four-cornered, acute-angled, brachiate below. Leaves ovate, toothed, shining, smooth, small, opposite: the lower obovate; the upper oblong. Raceme terminating, leafy, with quite entire bractes, and opposite trifid peduncles, the length of the bractes. Corollas small, very dark purple, with the lateral segments white, and the lowest segment very small<sup>h</sup>.

Native of Portugal; and also, as Mons. Desfontaines informs us, of the kingdom of Tunis, near Elhammah.—It was cultivated in 1768, by Mr. Miller<sup>i</sup>: and is the 17th species of his Dictionary, but described as the 16th.

13. Root fibrous, biennial. Stem hairy, about two feet high, square or five-cornered; and in the latter case the leaves grow three together, as Linneus in his manuscripts defines them; but they are full as often opposite: they are pointed, sharply and doubly ferrate, veined, most hairy beneath, and petioled. Peduncle the length of the leaves, bearing many flowers, in clusters. Calyx hairy. Corolla inflated, yellow, contracted at the mouth. Capsule ovate, acute<sup>k</sup>.

Dr. Smith has a curious remark on the affinity between this plant and the pretty Peruvian genus of *Calceolaria*, one species of which, the *pinnata*, is now frequent in our gardens; the fruit and seeds, the calyx, the habit and hue of the whole plant strikingly agree: and there is another species, *Calc. ovata*, between which and this *Scrophularia* the conformity is still greater; so that a somewhat different form of corolla, and having only two stamens, are

<sup>x</sup> Desfontaines.

<sup>y</sup> Hort. kew.

<sup>z</sup> Vahl.

<sup>a</sup> Smith.

<sup>b</sup> Ray syn.

<sup>c</sup> Murray.

<sup>d</sup> Hort. kew.

<sup>e</sup> Linn. mant.

<sup>f</sup> Hort. kew.

<sup>g</sup> Mutis.

<sup>h</sup> Linn. mant.

<sup>i</sup> Hort. kew.

<sup>k</sup> Smith.



the only generic distinctions of that *Calceolaria* from this *Scrophularia*. In every thing else they are much nearer akin than this plant and the other species of the same genus<sup>1</sup>.

Native of Italy, the South of France, Switzerland, Austria, Denmark, England, and Wales. About Bury in Suffolk by Sir Thomas Gery Cullum, Bart. who assures me that it grows also at Hemsted in Essex, where our famous physician Harvey lies buried. Mr. Woodward has also observed it at Fornham near Bury: Archdeacon Peirson about Newburgh in Yorkshire. Dr. Withering likewise mentions that it grows at Gloddaeth in Caernarvonshire. But it was first discovered by Mr. Alexander Smith, surgeon at Croydon, in April 1759, near Mitcham in Surry, by the common field in the way to Merton<sup>m</sup>. There Mr. Hudson afterwards, and Mr. Lysons lately have found it.

Our four British species are thus well distinguished by Mr. Woodward:—*Scrophularia nodosa* has the leaves cordate, acute, and acutely ferrate: the flowers on dichotomous branches, with a pair of lanceolate, acuminate bractes.—*Scroph. aquatica* has the leaves cordate-ovate and crenate: the flowers in a naked branched panicle, with the lower branches opposite, the upper alternate, dichotomous; and a pair of subulate bractes at the base of each branch.—*Scr. Scorodonia* has the leaves downy; the upper ones terminating in an awn, as do the ferratures; and beneath each branching of the peduncles a pair of awl-shaped bractes.—*Sc. vernalis* has the stem, leaves and peduncles hairy; the leaves doubly ferrate; the primary peduncles longer than the leaves, the secondary short; and beneath these a pair of lanceolate hairy bractes<sup>n</sup>.

14. This differs from the preceding in having the stem and leaves smooth, with the flowers smaller and red. It was found in the islands of Madeira and Teneriffe, by Mr. Fr. Masson, and was introduced in 1778. It flowers in May and June; and is an annual plant<sup>o</sup>.

15. Stem simple or sparingly branched; erect, smooth, four-cornered, striated. Leaves cordate, smooth and even, shining, veined, obtuse, unequally and obtusely double toothed, petioled; the lower ones often eared at the base. Raceme interrupted. Peduncles alternate. Flowers pedicelled, in racemelets. Bractes linear, some longer, some shorter than the pedicels. Segments of the calyx ovate, obtuse, membranaceous at the edge. Corolla as in *aquatica*, purple. Capsule pear-shaped, longer than the calyx, even, mucronate<sup>p</sup>. According to Plukenet, the flower is beautifully variegated with red and yellow. Boccone says it is pale yellow; and Miller, that it is bright red with a greenish bottom.

Native of Corsica and Africa, on the borders of fields, and on the sea-coast. Linneus marks it as biennial; Miller and Desfontaines as perennial.

16. Stem erect, four-cornered from the decurrent petioles. Leaves pinnate, with five or seven leaflets, (besides the smaller ones placed between them) cordate, wrinkled, smooth above, ferrate, with the end one larger. Raceme terminating, composed of very short, subdichotomous, axillary peduncles in pairs. Flowers large, purple with the lower lip greenish<sup>q</sup>.

This resembles the preceding, but the stalks are larger, rise higher, and are hairy. The leaves are much longer, and have four appendages, are irregularly ferrate, and run out into longer points. The flowers, which are in compound axillary bunches, are larger, and have a greater mixture of green.

Native of Portugal, [and Spain. Cultivated before 1629, by Parkinson. It flowers from July to September; and is perennial<sup>r</sup>.

17. Root annual. Stem four-cornered. Branches numerous, panicked, dichotomous. Leaves smooth; the lower gashed, the upper pinnate or pinnatifid, with the divisions remote, widish, linear, simple or sublobed, acute. Flowers in panicles. Corolla small, deep purple; without any lamella in the palate<sup>s</sup>.

Linneus remarks, that the peduncles are bifid; and the flowers sessile, the first being axillary, the rest alternate.]

Root composed of a few thick fleshy fibres. Stalks slender, two feet high. Lower leaves composed of several pinnæ or lobes which are sharply ferrate; but those on the stalks are entire: on the lower part of the stalk they are opposite, but towards the top alternate and small. Flowers in axillary bunches, small, and of a dark purple colour with a mixture of green. Seed-vessels small and roundish.

Native of the South of Europe; and of Barbary. Cultivated in 1683; by Mr. James Sutherland. It flowers from June to August.—Linneus and Desfontaines mark it as annual; the Kew catalogue as perennial.

18. Stem herbaceous, erect, from two to three feet in height, simple, four-cornered, with four decurrent lines, smooth, as is the whole plant. Leaves petioled, opposite, a hand in length; the lower pinnate; the upper ternate-pinnate. Leaflets petioled, alternate; distant, about five, the lower one smaller, the end one three-parted, all the parts sessile, oblong or lanceolate, unequally tooth-gashed, with the teeth blunt. Peduncles axillary, opposite, four-cornered, three-flowered. Flowers pedicelled. Bractes three or four, linear-lanceolate, length of the pedicels. Segments of the calyx roundish, membranaceous at the edge. Corolla nearly of the same size as in *S. sambucifolia*, purplish green. Capsule ovate, bigger than a pea<sup>t</sup>.

Native of Barbary. Introduced in 1786, by Mons. Thouin. It flowers in July and August, and is perennial<sup>u</sup>.

19. Stem round, straight, green. Leaves resembling those of *S. canina*, but somewhat fleshy. Raceme rigid, erect. Corollas pale, with the upper lip red<sup>v</sup>. Leaflets thickish, gashed, shining. Palate of the corolla furnished with a little orbicular lamella<sup>w</sup>.

Miller, following Tournefort, makes the *Scr. foliis filicis*, &c. of Casp. Bauhin, a distinct species, under the name of *filicifolia*. This he describes as having] a root composed of fleshy fibres; the lower leaves broad and jagged, not much unlike those of the Indian Scabious; the stalk near three feet high, four-cornered, green and smooth, with pinnate leaves on very long foot-stalks; they are composed of two or three pairs of small leaflets, terminated by a large one, acutely indented, and ending in sharp points. Flowers in terminating slender bunches, placed scatteringly, small, of a purplish colour at their rims and edged with white. Seed-vessels small and roundish.—Native of Crete.

He describes the *lucida* as a biennial plant, with stalks fifteen inches high, thick, smooth, and having scarcely any corners; leaves pinnate, narrow, of a lucid green, thick, succulent, and divided into many leaflets, which are again divided (bipinnate;) flowers in loose bunches on the sides and at the top of the stalk, of a dark brown colour with a mixture of green; capsules roundish, pretty large, filled with angular dark-coloured seeds.—Native of the kingdom of Naples, where it is frequent upon rocks and old stone walls.

[Native of the Levant, the county of Nice, and Barbary. Cultivated before 1680, by Robert Morison, M.D.<sup>x</sup>]

20. Root biennial. Stalk two feet high. Leaves ovate, acute, ferrate, sessile; at the bottom and top of the stalk placed by pairs, but in the middle there are three or four at each joint; all of a pale green colour. The flowers are produced at the top of the stalk in roundish bunches; they are about the same size with those of the *nodosa*, but of a fine scarlet colour.—Discovered by Dr. Houstoun, at La Vera Cruz in New Spain.

21. Leaves ending in acute points, ferrate, of a lucid green, and on the upper part of the stalk alternate. The peduncles each sustain two or three flowers, which are of a dark-red or purple colour. They appear in May and June, and the seeds ripen in July and

<sup>1</sup> Engl. bot.

<sup>m</sup> Plantæ Cantabr. app.

<sup>n</sup> Mss.

<sup>o</sup> Hort. kew.

<sup>p</sup> Desfontaines.

<sup>q</sup> Linn. spec.

<sup>r</sup> Hort. kew.

<sup>s</sup> Desfontaines.

<sup>t</sup> Hort. kew.

<sup>u</sup> Vahl.

<sup>v</sup> Hort. kew.

<sup>w</sup> Linn.

<sup>x</sup> Desfontaines.

<sup>y</sup> Hort. kew.



August, after which the plants die. [According to Linneus and the Kew catalogue, the root is annual.— Native of Italy. Cultivated in 1683, by Mr. James Sutherland<sup>b</sup>.

Linneus remarks, that the stem is dark-purple, and has four, five or six acute angles; that the peduncles have from two to five flowers; and that the corolla is purple<sup>c</sup>.

22. Stem simple or but sparingly branched, firm, hispid with short and very numerous hairs. Leaves opposite, on short petioles, villose, soft, ash-coloured: pinnules ovate, few, often cut out in front, subpetioled, with the terminating leaflets sometimes sublobed. Raceme interrupted: racemelets opposite or alternate, hirsute, branched. Flowers pedicelled, Bractes linear, longer or shorter than the pedicel. Calyx permanent, smooth, five-parted: segments roundish, pressed close, surrounded by a membranaceous margin. Corolla spreading, the same size as in *S. nodosa*: tube short, globular; upper lip longer, horizontal, two-lobed, with the lobes rounded, the lower three-lobed; lamella of the palate orbicular. Capsule even, very smooth, pear-shaped, mucronate. Seeds brown, oblong, obtuse, dotted and wrinkled, fastened to a central fleshy receptacle.

Native of mount Atlas near Tlemcen, in the clefts of the rocks<sup>d</sup>.]

#### PROPAGATION AND CULTURE.

These plants are propagated by seeds, which if sown in the spring, the plants seldom rise the same season. Some of them may come up in autumn, and others the spring following; but if they are sown in autumn, soon after they are ripe, the plants will come up the spring following. These seeds may be most of them sown in the place where the plants are to remain, for the plants are in general all of them hardy enough to bear the cold of our ordinary winters in the open air (except the last sort, which is tender;) therefore when the plants come up, they will require no other care but to thin them where they are too close, and keep them clear from weeds. The second year the plants will flower and produce ripe seeds; after which those sorts which are biennial will die, but the others will continue some years.

The 15th and 16th sorts being ornamental plants, may be allowed a place in the pleasure-garden, where, when the plants are strong, they will make a good appearance during their continuance in flower, which is generally two months, unless the season prove very hot and dry. The roots of these sorts will abide many years, unless by a very severe winter they are destroyed; therefore it will be proper to put some of these plants in pots, which may be sheltered under a common frame in winter; but, as young plants flower stronger than the old ones, there should be a succession of them annually propagated by seeds.

The other sorts are proper furniture for botanic gardens, but are seldom cultivated in any other. The 17th and 19th sorts should have a dry soil, for as they naturally grow upon rocks and old walls, if they are in good ground, the plants will grow vigorous in summer, and thereby will be so replete with moisture, as that they are often killed by ordinary frosts, or rot with wet in winter; whereas in a poor dry soil, they are seldom injured by the cold in England.

The 20th is too tender to live through the winter in the open air in this country, but the seeds should be sown in pots in autumn, which may be sheltered under a common frame in winter, and in the spring plunged into a moderate hot-bed, which will bring them up. When these are fit to remove, as many of them as are required should be planted into separate small pots, and plunged into a very moderate hot-bed, shading them from the sun till they have taken new root; after which they must be gradually hardened to bear the open air whereinto they may be removed at the end of June, placing them in a sheltered situation, where they may remain till September, when they should be removed into shelter before any morning frosts come on, and in winter they must be placed in a stove, kept

moderately warm, where they will thrive and produce flowers the following summer.

[SCULL-CAP. See *Scutellaria*.

SCUNKWEED. See *Dracontium* and *Pothos*.

SCURRULA. See *Loranthus*.

SCURVY-GRASS. See *Cochlearia*.]

SCUTELLARIA. (From the form of the calyx, like a scutellum, a little dish or saucer.)

Lin. gen. n. 734. Reich. n. 792. Schreb. n. 989.

Juss. 117. Cassida. Tournef. t. 84.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillata*. *Labiata*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, very short, tubular: mouth almost entire; after flowering closed with a lid.

COR. one-petalled, ringent: tube very short, bent backwards: throat long, compressed: upper lip concave, trifid; middle little segment concave, emarginate; side ones flat, sharpish, lying under the middle one: lower lip wider, emarginate.

STAM. Filaments four, concealed beneath the upper lip, of which two are longer. Anthers small.

PIST. Germ four-parted. Style filiform, situation and length of the stamens. Stigma simple, curved in, acuminate.

PER. none. Calyx closed by a lid, helmet-shaped, doing the office of a capsule, three-sided, opening by the lower margin.

SEEDS four, roundish.

OBS. It is clearly distinguished from all others by the fruit alone; for the calyx resembles a helmet both in the lid and crest. Hence Columna's and Tournefort's name of *Cassida*.

#### ESSENTIAL CHARACTER.

Calyx with an entire mouth, after flowering closed by a lid.

#### SPECIES.

1. *Scutellaria orientalis*. Yellow-flowered Skull-cap.

Lin. spec. 834. Juss. 546. Reich. 3. 97. hort. upf. 173. cliff. 316. Kniph. cent. 5. n. 82.

*Cassida orientalis*, folio chamædryos, flore luteo. Tournef. cor. 11. itin. 3. 306. ic. 3. 159. ed. lugd. lett. 18. Comm. rar. 30. ic. Mart. cent. t. 18.

β. *C. orient. incana*, foliis laciniatis, flore luteo. Tournef. cor. 11.

Leaves gasped tomentose beneath, spikes rounded-four-cornered.

[2. *Scutellaria albida*. Hairy Skull-cap.

Lin. Juss. 546. Reich. 3. 97. mant. 248. Sabb. hort. rom. 3. t. 29. Lour. cochinch. 367. ed. Willd. 445.

*S. teucrii* facie, flore albo. Baub. hist. 3. 291.

*Cassida* flore ex albo pallente. Col. ecphr. 1. 196. var.

*C. flore exalbido*. Tournef. inst. 182.

Leaves subcordate serrate wrinkled opaque, spikes directed one way, bractes ovate.

3. *Scutellaria alpina*. Alpine Skull-cap.

Lin. spec. 834. Juss. 546. Reich. 3. 97. hort. cliff. 317. upf. 173. Krock. fles. n. 963. Villars dauph. 2. 399. Allion. pedem. n. 142. t. 26. f. 3. Kniph. cent. 9. n. 87. Lour. cochinch. 367. ed. Willd. 446.

*Cassida procumbens*, foliis ovatis crenatis, spicis raris foliosis. Hall. helv. n. 281.

*Teucrium alpinum* inodorum, magno flore. Baub. pin. 247. prodr. 116. Rati hist. 526. 4.

Leaves cordate gasp-serrate crenate, spikes imbricate rounded-four-cornered.]

4. *Scutellaria lupulina*. Great-flowered Skull-cap.

Lin. spec. 835. Juss. 546. Reich. 3. 98. hort. upf. 173. Pallas it. 2. 29. Willch in nov. act. nat. cur. 4. 117.

*Cassida alpina lupina*, magno flore. Tournef. inst. 182.

Leaves cordate gasp-serrate acute smooth, spikes imbricate rounded-four-cornered.

[5. *Scutellaria lateriflora*. Virginian Skull-cap.

Lin. spec. 835. Reich. 3. 98. Gron. virg. 91. Mor. hist. 3. 416. n. 7.

Flowers smooth with a rugged keel, racemes lateral leafy.

6. *Scutellaria*



6. *Scutellaria galericulata*. *Common Skull-cap*.  
*Lin. spec.* 835. *fyst.* 546. *Reich.* 3. 98. *fl. lapp.*  
*n.* 239. *succ. n.* 538. *hort. cliff.* 316. *Huds. angl.*  
265. *Wither. arr. ed.* 540. *Smith brit.* 645.  
*engl. bot. t.* 523. *Curt. lond.* 3. *t.* 36. *Relb.*  
*cant. n.* 451. *Sibth. oxon. n.* 541. *Fl. dan. t.* 637.  
*Pellich pal. n.* 576. *Krock. files. n.* 961. *Neck.*  
*gallob.* 262. *Crantz austr.* 275. *Villars dauph.*  
2. 399. *Allion. pedem. n.* 143. *Gmel. sib.* 3. 227.  
*Riv. mon. t.* 77. *f.* 1. *Blackw. t.* 516. *Kniph.*  
*cent.* 8. *n.* 83. *Sabb. hort.* 3. *t.* 30.  
*S. palustris repens cærulea*. *Mer. bist. f.* 11. *t.* 20.  
*f.* 6. *ord.* 3.  
*Cassida galericulata*. *Scop. carn. n.* 741. *Hall. belv.*  
*n.* 280.  
*C. palustris vulgarior flore cæruleo*. *Tournef. inst.*  
182. *Vaill. bot.* 31. *Raii syn.* 244. *Petiv. brit.*  
*t.* 34. *f.* 10.  
*Lyfimachia cærulea galericulata*. *f. Gratiola cærulea*.  
*Baub. pin.* 246. *Raii bist.* 572.  
*L. galericulata*. *Dalech. bist.* 1060. *Lob. obs.* 186. 3.  
*ic.* 1. 344. 2. *Ger.* 387. *n.* 6. *emac.* 477. *f.* 10.  
*L. gal. cærulea f. latifolia major*. *Park. theat.* 221.  
*Judaica herbæ altera species*. *Dod. pempt.* 93. *f.* 2.  
*Tertianaria*, aliis *Lyfimachia cærulea*. *Baub. bist.* 3.  
435.  
*Leaves cordate-lanceolate crenate wrinkled, flowers axil-*  
*lary.*
7. *Scutellaria hastifolia*. *Hastate-leaved Skull-cap*.  
*Lin. spec.* 835. *Reich.* 3. 98. *fl. succ. n.* 539.  
*Crantz austr.* 276. *Krock. files. n.* 962.  
*S. folio non ferrato*. *Riv. mon. t.* 77. *f.* 2.  
*Cassida hastifolia*. *Scop. carn. n.* 742.  
*Leaves quite entire, the lower hastate, the upper sagit-*  
*late.*
8. *Scutellaria minor*. *Small Skull-cap*.  
*Lin. spec.* 835. *Reich.* 3. 99. *Allion. pedem. n.* 144.  
*Huds. angl.* 265. *Wither. arr. ed.* 3. 540. *Smith*  
*brit.* 645. *engl. bot. t.* 524. *Curt. lond.* 4. *t.* 43.  
*Dicks. hort. succ.* 5. 6.  
*S. minor repens flore rubente*. *Mer. bist. f.* 11. *t.* 20.  
*f.* 8.  
*Cassida palustris minima flore purpurascens*. *Tournef.*  
*inst.* 182. *Raii syn.* 244. *Petiv. brit. t.* 34. *f.* 11.  
*Lind. alsat.* 216. *t.* 9.  
*Lyfimachia galericulata minor*. *Raii bist.* 572. 2.  
*Gratiola latifolia*. *Ger.* 466. 2. *emac.* 581. 3.—  
*f. nostras minor*. *Park. theat.* 221.  
*Leaves cordate-ovate almost quite entire, flowers axil-*  
*lary.]*
9. *Scutellaria integrifolia*. *Entire-leaved Skull-cap*.  
*Lin. spec.* 836. *Reich.* 3. 99. *Gron. virg.* 91.  
*Pluk. phyt. t.* 313. *f.* 4.  
*S. Teucrii folio Marilandica*. *Raii suppl.* 310.  
*Leaves sessile ovate, lower indistinctly serrate, upper quite*  
*entire.*
- [10. *Scutellaria havanensis*.  
*Lin. fyst.* 547. *Reich.* 3. 99. *Jacqu. obs.* 2. *t.* 29.  
*amer. pict.* 85. *t.* 165.  
*Leaves cordate-ovate crenate, flowers solitary axillary,*  
*both lips of the corolla trifid.*
11. *Scutellaria hyssopifolia*. *Hyssop-leaved Skull-cap*.  
*Lin. spec.* 836. *fyst.* 547. *Reich.* 3. 99. *mant.* 414.  
*Gron. virg.* 91.  
*Cassida marina hyssopifolia*. *Petiv. in act. angl.*  
*Leaves lanceolate.*
12. *Scutellaria purpurascens*. *Purple Skull-cap*.  
*Swartz prodr.* 89. *Vahl symb.* 2. 66.  
*Leaves petioled cordate-ovate toothed, racemes naked ter-*  
*minating, both lips of the corolla trifid, (bifid, Vahl.)]*
13. *Scutellaria peregrina*. *Florentine Skull-cap*.  
*Lin. spec.* 836. *fyst.* 547. *Reich.* 3. 99. *hort. cliff.*  
317. *ups.* 172. *Gmel. sib.* 3. 228. *Kniph. cent.* 5.  
*n.* 83.  
*S. Columnæ*. *Allion. pedem. n.* 145. *t.* 84. *f.* 2.  
*Cassida latifolia, menthæ facie, semine flavicante*. *Amm.*  
*ruth. n.* 52.  
*Cassida*. *Column. ecphr.* 1. 187. *t.* 189.  
*Lamium peregrinum, f. Scutellaria*. *Baub. pin.* 231.  
*Raii bist.* 572. *Park. theat.* 606. *n.* 8.  
*Leaves subcordate serrate, spikes elongated, directed one*  
*way.*

- [14. *Scutellaria indica*.  
*Lin. spec.* 836. *Reich.* 3. 100. *Osborn. it.* 244. *edit.*  
*angl.* 2. 3. *Thunb. jap.* 250. *Pluk. amalib.*  
*t.* 441. *f.* 1.  
*Serratula amara*. *Rumph. amb.* 5. 459 *t.* 170. *f.* 1, 2.  
*Leaves subovate crenate petioled, racemes almost naked.]*
15. *Scutellaria altissima*. *Tall Skull-cap*.  
*Lin. spec.* 836. *Reich.* 3. 100. *Lour. cochinch.*  
*ed. Willd.* 445.  
*Cassida orientalis altissima, urticæ folio*. *Tournef. cor.*  
11.  
*Leaves cordate-oblong acuminate serrate, spikes almost*  
*naked.*
16. *Scutellaria cretica*.  
*Lin. spec.* 836. *Reich.* 3. 100.  
*Cassida cretica fruticosa, Cataractæ folio, flore albo*.  
*Tournef. cor.* 11.  
*Villose: leaves cordate obtuse and obtusely serrate, spikes*  
*imbricate, bractes setaceous.*

## DESCRIPTIONS, &amp;c.

[These are all perennial plants, mostly herbaceous, with square stalks and opposite leaves: the flowers either solitary, axillary and naked, or else in terminating bracted spikes, with one bracte or floral leaf to each flower. Chiefly natives of the South of Europe and the Levant; two only indigenous of Britain. They flower in July and August; some from June to October.]

1. Stems shrubby, spreading on the ground, and dividing into small branches. Leaves cut, almost triangular, light green on the upper side, and downy on the under, standing upon slender foot-stalks. Spikes short. Corollas of a bright yellow colour. Seeds gray. It begins to flower at the end of May, and there is commonly a succession of flowers for two months, and upwards.

[Stems about eight inches high, branched from the bottom, a line thick, hard, putting out fibres at the joint in that part which lies on the ground. Leaves eight or nine lines in length, and four or five in width, brownish green but white beneath, cut like those of Germander, on a petiole three or four lines long. Spike an inch and half in length, with pale-green bractes, seven or eight lines long; a yellow flower springing from the axil of each. The whole plant is bitter.

In the *Systema Vegetabilium* it is said that the corollas are purple with a white lip.

Tournefort has a variety, which is hoary, with the leaves more cut.

Native of the Levant and Barbary. Tournefort first introduced it into the Paris garden, and those of Holland. Whence Mr. Miller had it in 1729<sup>f</sup>.

2. Very nearly allied to the preceding, but the corollas are white and larger<sup>g</sup>. In the *Mantissa* it is said, that it very much resembles the *peregrina*; but the leaves are more hairy, wrinkled and blunt, by no means shining; the bractes more ovate, pubescent, and softer; the corollas white, more clustered, and larger.

According to Loureiro, the stem is perennial, a foot high, tomentose, reddish, almost upright, but sometimes creeping. Leaves blunt, petioled. Flowers pale, in short leafy spikes.

Native of the Levant and CochinChina. Introduced in 1780, by Mons. Thouin<sup>h</sup>.

3. This is very like the next species, but the corolla is violet-coloured with a whitish lip, and not yellow; the bractes are ovate, acute but not acuminate, shorter than the corolla, not equal to it. Leaves less oblong<sup>i</sup>.

Stem procumbent and then erect, very much branched, from six inches to a foot in height. Leaves on short petioles. Corolla pale violet, with the upper lip wholly white and somewhat hirsute<sup>k</sup>. According to Villars, it is of a fine blue, or whitish.

According to Loureiro, the stem is perennial, erect, a foot and half high. Leaves obtuse, deeply crenate, tomentose. Corolla violet. Calyx entire, rounded, hairy.

<sup>c</sup> Tournef. voy.<sup>h</sup> Hort. kew.<sup>f</sup> Hort. kew.<sup>i</sup> Linn. spec.<sup>g</sup> Linn. fyst.<sup>k</sup> Krock.



Native of Switzerland, Silesia, Dauphiné, Piedmont, Cochinchina. Cultivated by Mr. Miller in 1752<sup>1</sup>: but omitted in the seventh and eighth editions of his Dictionary.]

4. Stems shrubby and trailing. Leaves cut on their edges, and smooth on both sides. Corollas white or blue, larger than in any of the other species. [In *Système Vegetabilium* it is said that they are yellowish-white.

Native of Siberia. Cultivated by Mr. Miller in 1739<sup>m</sup>.

5. Racemes lateral, with smaller, lanceolate, serrate leaves, and besides these each pedicel has a bristle on each side, as in *galericulata* and *peregrina*<sup>n</sup>.

It has very much the air of the common sort, but is higher and larger, with wider leaves more deeply toothed, and smaller flowers<sup>o</sup>.

Native of Canada and Virginia. Cultivated in 1752, by Mr. Miller<sup>p</sup>: but discarded, with other species of little beauty, in the two last editions of his Dictionary.

6. Root slender, jointed, white and creeping. Stems from one to two feet high, upright, acutely quadrangular, with the sides a little hollowed, and marked with two lines, jointed, stiffish, leafy, somewhat rugged, branched in the middle; the branches opposite and nearly upright. Leaves on very short petioles, spreading, crenate almost equally from the base to the end, wrinkled, veined, pubescent with very short hairs, paler beneath. The lower leaves are rather blunt, and the upper ones more pointed. According to Mr. Woodward, the stem and leaves are both nearly smooth; and the latter crenate at the base, but entire upwards. Mr. Curtis says that they are unequally crenate. Bractes two, very small, bristle-shaped, at the base of the peduncle. Flowers one on each side, subsessile, in pairs directed one way, nodding a little, blue and whitish underneath, hairy on the outside. Calyx hairy, emarginate, fenced above with an arched scale, closing when the corolla falls off, and covered by the scale, which then increases in size, as with a lid. Seeds from one to four, of a pale brown colour, with a rugged surface<sup>q</sup>.

The singular construction of the calyx, says Mr. Curtis, is very deserving of a minute attention. Accordingly it is remarked in Dr. Withering's arrangements, that when the blossom falls off the cup closes upon the seeds, which, when ripe, being still smaller than the cup, could not possibly open its mouth, or overcome its elastic force, as the down of the seeds does in the compound flowers, and must consequently remain without a possibility of escaping. But nature, ever full of resources, finds a method to discharge them. The cup grows dry, and then divides into two distinct parts; and thus the seeds, already detached from the receptacle, fall to the ground.

Native of Europe, by the sides of ditches, ponds and rivers. By our old authors called *Hooded Willow-herb* or *Loose-strife*.

It is singular that Ray, who seems to have enquired much after the medical qualities of plants, should say, "de hujus viribus nihil invenimus a Botanicis traditum." When John Bauhin, whom he copies so frequently, calls it *Tertianaria*, from its supposed efficacy in curing intermittents. Haller says it is bitter, smells like Garlick, and has the same qualities with Scordium, but in a less degree. Curtis says it has scarcely any smell of Garlick; and Krockner that it has not either the smell or taste of Scordium. Allione on the contrary affirms, that the smell is weaker than that of Scordium, but that it is more bitter; and that it has abstergent qualities useful in correcting the bile, not without some degree of antiseptic power. He adds, that it is not adequate to the removal of a violent Tertian, but that it is of service where the fits are less violent, but more obstinate. In such cases the expressed juice is given from one ounce to two ounces, or an infusion of a handful or two of the herb.—With us it has never been received into practice.

<sup>1</sup> Hort. kew.    <sup>m</sup> Idem.    <sup>n</sup> Linn. spec.    <sup>o</sup> Morison.  
<sup>p</sup> Hort. kew.    <sup>q</sup> Smith and Curtis.

7. Root creeping. Stem quite simple, scarcely the length of the finger, with about seven joints. Spike almost as long as the stem, directed one way, loose, spreading, blue. Flowers solitary from each axil of the leaves, which being opposite, the flowers are in pairs. Leaves hastate or sagittate and eared together, especially the lower ones, which are on longer petioles; whereas the upper ones are subsessile and sagittate, but by no means eared; the floral-leaves are ovate-lanceolate; all are quite entire. The lower lip of the corolla is flexuose and quite entire. Branches seldom break out near the ground<sup>r</sup>.

Stem striated, villose at the joints, seldom branched at the axils. Leaves blunter than in the preceding, petioled, little or not at all notched, eared at the base. Flowers commonly in pairs: calyx hirsute, coloured, corolla blue; tube very long, angular, hirsute, erect, recurved at a right angle, white at the extremity; upper lip deep blue, trifid, with the middle segment arched; lower lip entire, convex in the middle, depressed at the sides, having a groove along the middle and two risings, emarginate in front, all blue; throat wide, having two cavities<sup>s</sup>.

Scopoli remarks, that it is like the preceding, but the leaves are obtuse, and the flowers larger. Linneus, in his *Species Plantarum*, doubts whether it may not be a variety of that; it being certainly very nearly allied to it.

Native of Sweden, on the coast, Austria, Goritia, Silesia.

8. This is only one fourth of the size of the common sort. The stem is branched at the base; the leaves are wider, less wrinkled, commonly quite entire, but sometimes toothed at the base, and now and then hastate. Flowers red or purple-flesh-coloured, with a white lip, and blood-red dots<sup>t</sup>.

Height four or six inches, sometimes eight; often little or not at all branched in a wild state, but in a garden becoming much branched, somewhat rigid and hirsute, purplish at the base. Leaves sometimes ovate-lanceolate, having only a notch or two near the base, on very short petioles, in shady situations smooth, in exposed ones hirsute, sometimes reddish. Flowers small, pale red, or reddish-purple, the lateral segments of the upper lip somewhat distant, not under the middle one, the lower lip mottled within with deeper-coloured lines and dots. (Mr. Curtis found a single plant with blue flowers.) Calyx with two lips, but very slightly cloven: upper lip with a flat ridge running across it, which, when the blossom falls, enlarges, and pressing down the upper lip, closes the mouth of the calyx, giving it the appearance of a helmet; middle segment rather shorter, nearly flat; lower lip broad, rather reflected, but neither notched at the end nor keeled beneath. Anthers white, slightly hirsute. Stigma a little hooked and pointed, slightly cloven<sup>u</sup>.

Native of England, France, Alsace and Piedmont; on wet heaths and commons, in boggy ground, and at the edges of ponds, in a gravelly soil.

Gerarde first discovered this plant, "upon the bog (as he tells us) at the further end of Hampstead-heath, and upon the same heath towards London, neer unto the head of the springs that were digged for water to be conveyed to London 1590, attempted by that careful citizen Sir John Hart, Knight, Lord Maior of the city of London: at which time myself was in his Lordship's company, and viewing for my pleasure the same goodly springs, I found the said plant, not heretofore remembred." It is said still to exist on Hampstead-heath, but has been found more plentifully on Putney, Shirley, Streatham and other commons in Surry<sup>x</sup>; on Lewesdon-hill, by Mr. Baker; in Goldmire near Dalton, by Mr. Atkinson; on Seaman's Moss, next to Altringham, Cheshire, by Mr. Caley<sup>y</sup>. On Wareham-heath and in Purbeck, Dorsetshire, by Dr. Pulteney.

Linneus insists that this is too nearly allied to the two preceding species; which, says Mr. Curtis, he

<sup>r</sup> Linn. suec.    <sup>s</sup> Krockner.    <sup>t</sup> Smith.  
<sup>u</sup> Curtis, Withering.    <sup>x</sup> Curtis.    <sup>y</sup> Withering.



would not have done, if he had possessed the opportunity of seeing it frequently and cultivating it.

Allione, who as well as Ray has described the plant accurately, remarks that the seeds, which are kidney shaped and black, when they are ripe remove the lip and spring out with an elastic force. This is a different process from that which was related from Withering, in treating of the common fort.]

9. Stems two feet high, sending out many side branches. Lower leaves heart-shaped and ferrate, standing upon pretty long foot-stalks; upper leaves ovate and entire. Flowers in very long loose spikes at the end of the branches; they are of a purple colour, and appear at the end of June: the seeds ripen in September.

Native of North America. [Cultivated by Mr. Miller in 1759.]

10. This is a little tender herbaceous branching plant, procumbent with the branches rising. Leaves blunt, smoothish, petioled, scarcely half an inch in length. Peduncles one-flowered. Flowers inodorous, blue: segments of the calyx roundish, quite entire and almost equal: lower lip of the corolla semitrifid and a little longer than the upper lip, the segments roundish, the middle emarginate and wider, the side ones quite entire.

Native of the Havannah, on maritime rocks; flowering in December<sup>2</sup>.

11. Stem erect. Leaves sessile, quite entire, rugged. Upper lip of the corolla with a hairy keel.—Native of Virginia<sup>3</sup>.

12. Stems herbaceous, prostrate, a span high, simple, obscurely four-angled, smooth. Leaves an inch long, smooth on both sides, paler beneath, almost veinless, remotely and bluntly toothed. Raceme flexuose, an inch and half long. Common peduncle pubescent. Flowers distant, alternate. A small bracte on the pedicel, but none on the common peduncle. Calyx obliquely truncate, quite entire. Corolla pubescent, twice as long as the calyx<sup>4</sup>.—Native of the West Indies, Guadaloupe, &c.]

13. Stem hairy, two feet high. Flowers purple or white.

[According to Allione, the *Sc. peregrina* of Linneus is not the *Cassida* of Columna, but the *Cassida caule quadrangulo rubente, Teucris serrato folio, flore caeruleo, labro albo*, of Tilli, in *hort. pisan.* He thus distinguishes them. Tilli's plant has the leaves smooth, veined beneath, dark green, firm, ovate, crenate-toothed, first with four teeth on each side, then three, and afterwards two. The floral leaves or bractes are entire and elliptic. The flowers are purple-violet with a white lip, five lines in length, not exceeding the internodes. The stems are brownish-red, shining, smooth, bearing very long flowering-branches, which are scarcely erect. The flowering branchlets are somewhat hairy. The calyx is a little hirsute. The upper lip of the corolla somewhat hairy. But in the rest of the flower there are scarcely any visible hairs. Columna's *Cassida* is only half the height of the other, and brachiate with the branches erect. The whole plant is hirsute, but extremely so next the flowers, and viscid. The stems are green; the leaves also are green, soft, cordate, bluntly toothed, on longer petioles, and much bigger. Flowers large, blue, with the lower lip blue-purple not white, but spotted with white. The flowers also are longer than the internodes, and are about nine lines in length. The bractes are acuminate, awned, smaller than in Tilli's plant, but very hirsute.

Linneus says, there is another very like this, with the calyxes woolly, with gray hairs; the upper lip of the corolla hairy at the tip; the bractes short and ovate<sup>5</sup>. And that there is a variety with white flowers, which is thicker, and has the leaves somewhat hairy<sup>6</sup>.

Allione says, that the *Cassida flore ex albo pallente* of Columna, which Linneus refers to his *albida*, is only a variety of his *Scutellaria Columnæ*.

Native of Italy and Siberia. Cultivated in 1683, by Mr. James Sutherland<sup>7</sup>.

14. The plant lies on the ground and has the appearance of Ground Ivy (*Glechoma hederacea*). Stem somewhat rough, compoundly branched at top: Leaves suborbiculate, subovate (except the final leaves coming from the corners of the greater ones, which are kidney-shaped :) obscurely ferrate, petioled, hairy. Flowers on short pedicels, commonly by pairs, in terminating racemes. Bractes linear, very short: Calyxes very short without the tube of the mouth: Corollas narrow, longish<sup>8</sup>.

Stem weak but upright, villose, a span high: Branches few; opposite, like the stem. Leaves ovate, cordate, bluntly ferrate, very finely villose, spreading, an inch long. Petiole the length of the leaf. Racemes directed one way, a finger's length. Corollas white<sup>9</sup>.

Native of China, where it is called *Tim-gam-fa*, and Japan.]

15. Stems three or four feet high, sending out a few slender branches. Flowers purple, with longer tubes than any of the other forts.

Native of the Levant. [Cultivated in 1731, by Mr. Miller<sup>10</sup>.]

16. Stature of *Nepeta*; wholly hirsute. Calyxes of *Scutellaria*. Corollas almost of *Teucrium*, minute, rough-haired on the outside: the upper lip seems to be very small and emarginate. It may be doubted therefore whether it be a true species of *Scutellaria* or of *Teucrium*<sup>11</sup>.]

Stalk woody; about two feet high, sending out slender side-branches. Leaves hoary on their under sides, and of a light green above. Flowers in pretty long terminating spikes, white, with small bractes.

Native of Crete or Candia. Cultivated by Mr. Miller in 1759.

#### PROPAGATION AND CULTURE.

These plants are all propagated by seeds. If these are sown in autumn soon after they are ripe, they will more certainly succeed than when they are sown in the spring, for sometimes these miscarry, and, if they succeed, the plants seldom come up the same season. The seeds may either be sown where the plants are to remain, or in a border to be afterwards removed; but as the first sort does not bear transplanting well, unless removed young, the seeds of that had better be sown where the plants are to stand. This should be on a dry warm border of poor earth, where the plants will live much longer, and make a better appearance than on a rich soil, though they seldom continue more than two or three years. When the plants come up, they will require no other care but to thin them, and keep them clean from weeds.

When the other sorts come up, and are fit to remove, they may be transplanted into a nursery-bed at five or six inches distance, where they may stand till autumn, keeping them clean from weeds; then they may be transplanted into the borders of the flower-garden, where they are to remain.

[SCUTELLARIA. See *Panax* and *Trichostema*.

SCYTALIA. See *Sapindus edulis*.

SCYTHIAN LAMB. See *Polypodium*.

SEA BINDWEED. See *Convolvulus*.

— BUCKTHORN. See *Hippophae*.

— CABBAGE. See *Brassica* and *Crambe*.

— CHAMOMILE. See *Anthemis*.

— CHICKWEED. See *Glaux*.

— COLEWORT. See *Bunias*.

— DAFFODIL. See *Pancratium*.

— GRAPE. See *Coccoloba*.

— HEATH. See *Frankenia*.

— HOLLY. See *Eryngium*.

— LAVENDER. See *Statice Limonium*.

— LAUREL. See *Phyllanthus*.

— MEDICK. See *Medicago*.

— MILKWORT. See *Glaux*.

— ONION. See *Scilla*.

— PEA. See *Pisum*.

<sup>2</sup> Jacq. amer. pict.

<sup>3</sup> Linn. mant.

<sup>4</sup> Vahl.

<sup>5</sup> Hort. kew.

<sup>6</sup> Linn. spec. and Olf. it.

<sup>7</sup> Thunberg.

<sup>8</sup> Spec.

<sup>9</sup> Syst.

<sup>10</sup> Hort. kew.

<sup>11</sup> Linn. spec.



SEA PINK. See *Cerastium* and *Statice*.  
 — PURSLANE. See *Atriplex*.  
 SEA-SIDE GRAPE. See *Coccoloba*.  
 — LAUREL. See *Xylophylla*.  
 — PIGEON-PEA. See *Sophora*.  
 SEAL, SOLOMON'S. See *Corvallis*.  
 SEBESTENA. See *Cordia*.]  
 SECALE (of Pliny. *A secundo. Frumenta secantur*;  
*Legumina leguntur*. Vossius. Others derive it from the  
 Celtic Segal.)  
*Lin. gen. n. 97. Reich. n. 103. Schreb. n. 127.*  
*Gertn. t. 81. Juss. 32.*  
 Class. 3. 2. Triandria Digynia.  
 Nat. order of Gramina or Grasses. *Gramineæ*, Juss.

## GENERIC CHARACTER.

CAL. the common Receptacle lengthened out into a spike.  
*Glume* two-flowered, two-leaved: *leaflets* opposite,  
 distant, erect, linear, acuminate, less than the co-  
 rolla. *Florets* sessile.  
 COR. two-valved: *outer valve* more rigid, ventricose,  
 acuminate, compressed, keel ciliate, ending in a long  
*awn*; *inner valve* flat, lanceolate.  
*Nectary* two-leaved: *leaflets* lanceolate, sharpish, ci-  
 liate, gibbous on one side at the base.  
 STAM. *Filaments* three, capillary, hanging out of the  
 flower. *Anthers* oblong, forked.  
 PIST. *Germ* turbinate. *Styles* two, reflexed, villose.  
*Stigma* simple.  
 PER. none. Corolla embraces the seed, gapes and  
 drops it.  
 SEED one, oblong, femicylindrical, naked, pointed at  
 one end.  
 OBS. There is frequently a third flower which is pe-  
 duncled between the two larger sessile ones.

## ESSENTIAL CHARACTER.

Cal. opposite, two-valved, two-flowered, solitary.

## SPECIES.

1. *Secale cereale. Rie.*  
*Lin. spec. 124. Juss. 125. Reich. 1. 234. Willd. 1.*  
*471. hort. ups. 22. Gertn. fruct. 2. 9. Hall.*  
*helv. n. 1421. comm. nov. gott. 6. 12. Villars*  
*dauph. 2. 168.*  
*Secale. Fuchs. ic. 439. Dod. cereal. 50. pempt.*  
*499. Matth. 402. Camer. epit. 190. Ger. 61.*  
*emac. 68. Raii hist. 1241. Mor. hist. 3. f. 8.*  
*t. 2. f. 1. Blackw. t. 424. Plenck, ic. 46.*  
*α. S. hybernium vel majus. Bauh. pin. 22. theat. 425.*  
*S. vulgatius. Park. theat. 1128.*  
*Common or winter Rie.*  
*β. S. vernum vel minus. Bauh. pin. 23.*  
*S. æstivum f. minus. Park. theat. 1129. n. 2.*  
*Spring or Summer Rie.*  
*γ. S. latifolia peregrina. C. Bauhini. Bauh. hist. Raii*  
*hist. 1241. 2.*  
*S. latifolium. Park. theat. 1129. n. 3.*  
*Cilia of the glumes rugged.*  
 [2. *Secale villosium. Villose Rie-grass.*  
*Lin. spec. 124. Reich. 1. 235. Willd. 1. 471.*  
*Gramen spicatum secalinum, glumis villosis in aristis*  
*longissimas desinentibus. Tournef. inst. 518.*  
*Gr. fecal. maximum. Park. theat. 1144.*  
*β. Gr. creticum spic. fecal. glumis ciliaribus. Tournef.*  
*cor. 39. Buxb. cent. 5. 21. t. 41.*  
*Cilia of the glumes villose, calycine scales wedge-*  
*shaped.*  
 3. *Secale orientale. Oriental Rie-grass.*  
*Lin. spec. 124. Reich. 1. 235. Willd. 1. 471.*  
*Gramen orientale secalinum spica brevi & lata. Tourn.*  
*cor. 39.*  
*Glumes hirsute, calycine scales awl-shaped.*  
 4. *Secale creticum. Cretan Rie-grass.*  
*Lin. spec. 125. Reich. 1. 235. Willd. 1. 472.*  
*Gramen creticum spicatum secalinum altissimum, tu-*  
*berosa radice. Tournef. cor. 39. Scheuch. gram.*  
*22.*  
*Glumes ciliate on the outside.*

## DESCRIPTIONS, &amp;c.

1. Root annual. Stem higher and weaker than  
 Wheat, sometimes attaining the height of six feet.  
 Leaves a quarter or a third of an inch in breadth,  
 rough to the touch, if the finger be drawn from point

to base, but not hairy; they are wider, and form a  
 more considerable tuft than Wheat commonly does.  
 Spike very close, of a gray colour from its pubescence,  
 in a good soil and situation having four rows, con-  
 taining from sixty to eighty or even 120 grains, which  
 are smaller and more slender than in Wheat. Haller  
 mentions a variety with fourteen spikes, some of which  
 were branched.

Gærtner describes the seed as oblong, at top pu-  
 bescent and as it were truncated, narrowed below and  
 much acuminate, convex three-sided on one side, and  
 having a deep groove on the other: coat very thin  
 membranaceous: albumen or body of the seed fari-  
 naceous, hardish, white: scutellum ovate-oblong, equal  
 to about a third part of the seed, milky: embryo ob-  
 long, yellowish; plume oblong, compressed; radicles  
 three, subcylindrical.

Some say that Rie is a native of Crete, and others  
 of Siberia; but there is no reason to think that there  
 is any country in which it is found wild. It flowers in  
 June, and the grain is ripe in England about the middle  
 of July.

Rie is esteemed less nourishing than the other com-  
 mon grains, more susceptible of fermentation, and in  
 a small degree laxative. It is used principally for  
 making bread in northern countries, either alone or  
 mixed with Wheat; and for extracting an ardent  
 spirit.

2. This is an annual grass, native of the South of  
 Europe and the Levant.

3. Native of the Archipelago.

4. Native of Candia or Crete.]

## PROPAGATION AND CULTURE.

The farmers distinguish the two varieties by the  
 titles of Winter and Spring Rie, but when these are  
 sown three or four years, at the same season, and on the  
 same soil, it will be difficult to know them asunder;  
 but, where Rie is sown upon a warm land, it will  
 ripen much earlier than on cold stiff ground, and by  
 continuing it two or three years, it will be forwarded  
 so much, as to ripen a month earlier than the seeds  
 which have long grown upon a strong cold soil; so  
 those who are obliged to sow Rie toward spring, gene-  
 rally provide themselves with this early seed.

The Winter Rie is what the generality of farmers  
 propagate; it is usually sown in autumn at the same  
 season with Wheat, and in many of the northern coun-  
 ties, as also in Wales, they are often mixed together,  
 though I think it must be very bad husbandry, for the  
 Rie will always ripen sooner than Wheat; so that if  
 the latter is permitted to be fully ripe, the former will  
 shatter.

It is generally sown two bushels and a half to the  
 acre, upon poor, dry, gravelly, or sandy land, where  
 Wheat will not thrive, and in such places may answer  
 very well; but on such land as will bear Wheat it is  
 not proper to sow Rie, as the value of it is greatly in-  
 ferior to that of Wheat.

When Rie is sown, the ground should not be too  
 wet; and if it should happen that much rain falls be-  
 fore the Rie is come up, it often rots in the ground;  
 but it is not long in coming up, it being much sooner  
 out of the ground than Wheat.

The small Rie may be sown in the spring about the  
 same time with Oats, and is usually ripe as soon as  
 the other sort; but if the season proves wet, it is apt  
 to run much to straw, and then the grain is generally  
 lighter than the other; so the only use of this sort, is  
 to sow upon such lands where the autumnal crop may  
 have miscarried.

The general use of Rie is for bread, either alone, or  
 mixed with Wheat.

Rie is also sown in autumn to afford green feed  
 for ewes and lambs in the spring, before there is plenty  
 of Grass. When this is intended, the Rie should be  
 sown early in autumn that it may have strength to  
 furnish early feed. The great use of this is to supply  
 the want of Turneps in those places where they have  
 failed, as also, after the Turneps are over, and before  
 the Grass is grown enough, to supply green feed for  
 the ewes; so that in those seasons, when the Turneps  
 in general fail, it is very good husbandry to sow the  
 land



land with Rie, especially where there are stocks of sheep, which cannot be well supported, where green feed is wanting early in the spring; therefore those farmers who have live large stocks, should have several methods of supplying themselves with sufficient feed, lest some should fail; for as Turneps are a very precarious crop, some land should be sown with Cole-feed, which will supply the want of Turneps in winter; and if some of the ground, which was sown late with Turneps which had failed, was sown in autumn with Rie, that would be fit to supply the want of Cole-feed afterward.

[Rie is also used for foiling great cattle and horses. A good acre will keep six horses a fortnight<sup>k</sup>.

As a grain for making bread, &c. Rie is sown to a much greater extent in Germany, Switzerland, and the northern and alpine countries, than in England. In cold and moist vallies among the mountains it is their most useful crop, and in many places the chief resource of the hardy inhabitants.

In Le Devoluy, a district of Dauphiné, elevated from twelve to eighteen hundred yards above the level of the sea, they grow abundance of this grain, which they keep two or three years in the straw, in round stacks set up in the field, containing from four or six hundred to a thousand sheaves; the ears being all turned into the middle, the grain thus keeps extremely well, provided it is dry before it is put off, and that there be no grass or weeds among the straw: the grain is fine, well fed, and fit for seed after three or four years; it has not that pale colour which is usual in Rie, but acquires a yellow hue approaching to that of Wheat. Hardened by the climate, like the men and animals of the same country, it carries better, and furnishes feed for those milder situations, where the crop is apt to be choked by weeds, and weakened by the stifled air of the close vallies.

Spring Rie produces a less crop of smaller, lighter grain than Winter Rie; it is esteemed less nourishing, and bread made of it is of a darker colour<sup>l</sup>.

Rie-flour is used in the Limosin, a province of France, with great success, for fattening of oxen; after they have had a summer's grass, and have been put to Turneps the beginning of november, or end of october. When these fail, they mix the flour with water to the consistency of a paste, and leave it three, four or five days to ferment and become sour; when they dilute it with water, and thicken this water with hay cut. Some add leaven to the paste, to secure a fermentation, but none give it, till it is four: it is given thrice a day, and a large ox will eat a boisseau, weighing twenty-two pounds. The most approved method is to give the sour regimen for the last three weeks<sup>m</sup>.

SECALE. See *Elymus*.

SECAMONE. See *Periploca*.

SECHIUM. (So named by Browne; perhaps from σῆχος or σκηζω, sagino. The fruit being used to fat hogs: but then it should have been Secium.)

Lin. gen. Schreb. n. 1482. Juss. 391. Chayota. Jacqu. amer. 2.

Class. 21. 9. Monoecia Syngenesia.

Nat. order of *Euphorbia*, Juss.

GENERIC CHARACTER.

\* Male Flowers.

CAL. Perianth one-leaved, half-five-cleft: tube bell shaped, spreading: segments of the border lanceolate, flat, acuminate, spreading very much.

COR. one-petalled: tube size and figure of the calyx, and fastened to it: border five-cleft; segments ovate, flat, acute, almost double the length of the calyx, spreading very much.

Nectary, ten hollows in the upper part of the tube of the corolla.

STAM. Filaments five, connected into an upright cylinder, five-cleft at top, and spreading very much. Anther on the top of each filament a line creeping twice downwards and once upwards, fariniferous.

\* Females in the same plant.

CAL. as in the Male, placed on the germ by a pedicel, deciduous.

COR. as in the Male; but the hollows or pits bigger.

PIST. Germ obovate, tomentose, five-grooved, interior. Style cylindrical, erect, length of the calyx. Stigma very large, peltate-reflexed, with the margin five-cleft.

PER. very large, ovate-turbinate, five-grooved, fleshy, unequally gibbous at the top, muricated with harmless prickles, one-celled above.

SEED one, subovate, plano-compressed, fleshy, bilamellate, blunt at each end.

ESSENTIAL CHARACTER.

Cal. half-five-cleft. Cor. five-cleft; with ten hollows in the upper part of the tube. Nectary.

MALE. Filam. five connected.

FEM. Stigma very large, peltate-reflexed, five-cleft. Per. large, ovate-turbinate, one-seeded.

SPECIES.

1. *Sechium edule*. The Chocho Vine.

Brown. jam. 355.

Chayota edulis. Jacqu. amer. pist. t. 245.

DESCRIPTION, &c.

This plant has the habit of the Cucurbitaceæ or Cucumber and Melon tribe, and climbs like them by tendrils. Leaves cordate-angular, rugged on the upper surface, with the angles toothed and acute, alternate, on a smooth petiole. Flowers small, without scent. Corollas yellow. The males on many-flowered axillary peduncles; the females one or two only on a peduncle from the same axil. Fruit green and shining on the outside; whitish and fleshy within; differing in size and singular in structure. The seed is green and naked, and in larger fruits an inch long; it is placed at the very apex of the fruit. When it is ripe, it protrudes itself a little, and puts forth many fibres at its extremity, which it lets drop into the earth. In the opposite part, between the lamellæ, it puts forth a leafy stem, and then the fruit gradually putrefies. Although the moisture of the fruit itself be sufficient to make the seed vegetate, and to afford it nutriment; until the fibres reach the soil and imbibe nutriment from thence; yet the people of the country bury it in the ground, probably to accelerate the growth, or to insure it with more certainty: it will however grow, if it fall on the ground, or even if it be preserved any where. In the island of Cuba they eat it in their soup, or pudding, or boiled with their meat constantly<sup>n</sup>. Browne says, that the fruit is sometimes boiled in Jamaica, and served up at table by way of green, in which state it is generally looked upon as wholesome and refreshing; but it is too insipid to be much liked. The apples serve to fatten the hogs in the mountains and inland parts, where the plant is mostly cultivated.

Native of the West Indies. Flowering and fruiting there in december.

The natives of Cuba notice two varieties: one, which is most common, they call simply *Chayote*; it is beset with harmless prickles, sometimes in great abundance, and sometimes with very few; it is about four inches in length: the other, less frequent, called *Chayote francés*, is for the most entirely destitute of prickles, and is the size of a hen's egg<sup>o</sup>.

SECURIDACA. (So named from the pod being in the shape of a securis, ax or bill-hook.)

Lin. gen. n. 852. Reich. n. 922. Schreb. n. 1156.

Jacqu. amer. 197. Juss. 366.

Class. 17. 3. Diadelphia Octandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth three-leaved, small, deciduous; leaflets ovate, coloured; the uppermost respecting the standard, and two the keel.

COR. papilionaceous, five-petalled.

Wings spreading wide and very blunt.

Standard two-leaved, oblong, straight, connate with the keel at the base, reflexed at the tip.

Keel length of the wings, subcylindrical, with the limb or border wider, augmented by a plaited blunt appendicle.

STAM. Filaments eight, connate at bottom. Anthers oblong, erect.

<sup>k</sup> Young's Ann. 7. 71. <sup>l</sup> Villars. <sup>m</sup> Young's Ann.



# S E D

**PIST.** Germ ovate, ending in an awl-shaped Style. Stigma flat, widening, toothed at the tip.  
**PER.** Legume ovate, one-celled, ending in a ligulate wing.  
**SEED** one, oblong.

**OBS.** The affinity of this to *Polygala* hence appears.

## ESSENTIAL CHARACTER.

**Cal.** three-leaved. **Cor.** papilionaceous, with the standard two leaved within the wings. Legume ovate, one-celled, one-seeded, ending in a ligulate wing.

## SPECIES.

1. *Securidaca erecta*. Upright *Securidaca*.  
*Lin. spec.* 992. *syst.* 640. *Reich.* 3. 392. *Jacqu. amer.* 197. *t.* 183. *f.* 93. *piet.* 97. *t.* 261. *f.* 56. *quoad fructif.*  
*Stem upright, leaves oblong.*
2. *Securidaca scandens* Climbing *Securidaca*.  
*Lin. spec.* 992. *syst.* 640. *Reich.* 3. 392. *Brown. jam.* 288. 2. *Jacqu. amer.* 197. *t.* 183. *f.* 38. *t.* 186. *Murr.—Plum. spec. ic.* 247. *f.* 1.  
*Stem climbing, leaves oblong-ovate.*
3. *Securidaca virgata*.  
*Swartz prodr.* 104. *Brown. jam.* 287. 1. *Plum. ic.* 144. *f.* 1.  
*Stem climbing, branches rod-like, leaves roundish.*

## DESCRIPTIONS, &c.

1. This is an upright tree twelve feet in height, with few long slender weak branches. Flowers in racemes, purple: standard obtuse, wings roundish, appendix of the keel compressed and reflexed.

Native of Martinico, flowering there in april<sup>p</sup>.

2. This is a shrubby, scandent plant: the younger leafy branchlets are changed into very strong tendrils. Leaves oblong-ovate, obtuse, quite entire, smooth, alternate, petioled. Racemes loose, lateral, opposite to the leaves. Flowers without scent, red; with the standard acute, the wings oblong and attenuated at the base, and a wide appendix to the keel<sup>a</sup>.—Native of South America and the West Indies. Found in Jamaica by Browne, and at Carthage by Jacquin. Introduced in 1786, by Mr. Alexander Anderson<sup>a</sup>.

3. Native of Jamaica and Hispaniola. Browne's first species belongs to this, and not to the *erecta*, where Linneus had placed it. In that the leaves are oblong, and the branches thicker, more straight, stiff and upright<sup>a</sup>.

**SECURIDACA** of Tournefort, Miller and Gartner. See *Coronilla*.

See *Astragalus*, *Biserrula*, *Galega*.

**SEDGE.** See *Carex* and *Schoenus*.

**SEDO AFFINIS.** See *Butomus*.

**SEDOIDES.** See *Crassula*.]

**SEDUM** (of Pliny; a sedendo in rupibus; from its sitting or growing close to rocks, or from the leaves sitting close to the roots.)

*Lin. gen.* n. 579. *Reich.* n. 629. *Schreb.* n. 789.

*Tournef. t.* 140. A. B. G. H. K. M. *Juss.* 307.

*Gertn. t.* 65. *Anacampseros. Tournef.*

*Class.* 10. 4. *Decandria Pentagynia.*

*Nat. order of Succulentæ. Sempervivæ, Juss.*

## GENERIC CHARACTER.

**CAL.** Perianth five-cleft, acute, erect, permanent.

**COR.** Petals five, lanceolate, acuminate, flat, spreading. Nectaries five: each a very small emarginate scale: inserted into each germ at the base on the outside.

**STAM.** Filaments ten, awl-shaped, length of the corolla. Anthers roundish.

**PIST.** Germs five, oblong, ending in more slender Styles. Stigmas obtuse.

**PER.** Capsules five, spreading, acuminate, compressed, emarginate towards the base, opening on the inside longitudinally by a future.

**SEEDS** numerous, very small.

## ESSENTIAL CHARACTER.

**Cal.** five-cleft. **Cor.** five-petalled. Scales nectariferous five, at the base of the germ. **Caps.** five.

## SPECIES.

\* With flat leaves.

- [1. *Sedum verticillatum*. Whorled Stonecrop.  
*Lin. spec.* 616. *Reich.* 2. 379. *Willd.* 2. 760. *amen.* 2. 252. *t.* 4. *f.* 14.

<sup>a</sup> Jacquin. <sup>a</sup> Idem. <sup>a</sup> Hort. kew. <sup>a</sup> Swartz.

# S E D

*S. aparinis facie, tauro-montanum. Raii hist.* 233. *Mor. hist.* 3. 473.

*Leaves in fours.]*

2. *Sedum Telephium*. Orpine Stonecrop.

*Lin. spec.* 616. *syst.* 429. *Reich.* 2. 380. *Willd.*

2. 760. *hort. cliff.* 176. *fl. succ. n.* 400. *mat.*

*med.* 111. *Gertn. fruct.* 1. 313. *Huds. angl.* 197.

*Wither. arr. ed.* 3. 426. *Smith brit.* 485. *Lignif.*

*scot.* 234. *Curt. lond.* 3. *t.* 25. 210. *Relb. cant.*

*n.* 328. *Sibth. oxon. n.* 417. *Abbot bedf. n.* 329.

*Fl. dan. t.* 686. *Hall. belv. n.* 954. *Hoffm. germ.*

155. *Roth. germ.* 1. 194. 2. 497. *Pellich pal.*

*n.* 428. *Krock. fles. n.* 684. *Neck. gallob.* 199.

*Scop. carn. n.* 553. *Villars dauph.* 3. 677. *Allion.*

*pedem. n.* 1737. *Gmel. sib.* 4. 171. *Thunb. jap.*

186. *Blackw. t.* 191. *Ludw. est. t.* 200. *Kniph.*

*cent.* 4. *n.* 76. *Knerr. del.* 1. *t.* F. 5. *Plenck, ic.*

*t.* 350.

- a. *Telephium vulgare*. *Baub. pin.* 287. *Raii hist.*

689. *Mor. hist. f.* 12. *t.* 10. *f.* 1.

*T. 2. vulgare. Clus. hist.* 2. 66. *f.* 2.

*T. album. Fuchs. hist.* 800.

*T. alterum f. Crassula. Dod. pempt.* 130. *f.* 2.

*T. f. Crassula major vulgaris. Park. theat.* 726. 2.

*Crassula f. Faba inversa. Ger.* 416. 2. *emac.* 518. 2.

*Anacampseros vulgo Faba crassa. Baub. hist.* 3. 681.

*Raii syn.* 269.

*Fabaria. Matth.* 636.

*Small common white Orpine.*

- β. *Telephium purpureum majus. Baub. pin.* 287.

*Kniph. cent.* 4. *n.* 77. *Mor. f.* 2.

*T. floribus purpureis. Park. theat.* 726. 3. *t.* 727.

*f.* 3. *Ger.* 417. 1. *emac.* 520. 1.

*T. purpurascens. Fuchs. hist.* 801. *Dalech. hist.*

1315.

*Anacampseros purpurea. Baub. hist.* 3. 682. *Raii*

*hist.* 689.

*Great purple Orpine.*

- γ. *Telephium purpureum minus. Baub. pin.* 287.

*prodr.* 133. *Raii hist.* 689.

*T. minus flore purpureo. Park. theat.* 726.

*Small purple Orpine.*

- δ. *Telephium latifolium peregrinum. Baub. pin.* 287.

*Mor. f.* 6.

- ε. *Sedum Telephium maximum. Krock. fles. n.* 685.

*Hall. belv. n.* 955.

*Telephium i. hispanicum. Clus. hist.* 2. 66.

*T. f. Crassula major hispanica. Park. theat.* 726. *f.* 1.

*Anacampseros maxima. Baub. hist.* 3. 682. *Blackw.*

*t.* 191.

*Crassula major hispanica. Ger.* 416. *f.* 1. *emac.*

518. 1.

*Sedum hæmatodes. Mill. dict. n.* 15.

*Greatest white (and purple) Orpine.*

*Leaves flattish serrate, corymb leafy, stem erect.*

3. *Sedum Anacampseros. Evergreen Orpine.*

*Lin. spec.* 616. *syst.* 430. *Reich.* 2. 380. *Willd.*

2. 761. *Hoffm. germ.* 156. *Hall. belv. n.* 956.

*Sauv. monsp.* 77. *Villars dauph.* 3. 677. *Allion.*

*pedem. n.* 1738. *Thunb. jap.* 186. *Lour. cochinch.*

287. *ed. Willd.* 353. *Curt. magaz.* 118. *Plenck,*

*ic.* 353.

*Telephium repens folio deciduo. Baub. pin.* 287.

*T. 6. Cepæa Pancii. Clus. hist.* 2. 67.

*T. minus repens f. Cepæa Pancii. Park. theat.* 726.

4. *t.* 727. *f.* 4.

*T. minus sempervirens. Lob.* 340. *Dalech. hist.* 1316.

*T. tertium. Dod. pempt.* 130. *f.* 3.

*T. sempervirens. Ger.* 417. 2. *emac.* 520. 2. *Raii*

*hist.* 689.

*Anacampseros minor, rotundiore folio, sempervirens.*

*Baub. hist.* 3. 682. *Tournef. inst.* 264.

*Leaves wedge-shaped attenuated at the base subsessile, stems*

*decumbent, flowers in corymbs.*

- [4. *Sedum divaricatum. Spreading Stonecrop.*

*Ait. kew.* 2. 108. *Willd. spec.* 2. 761.

*Leaves wedge-rhomboid emarginate petioled, stems branch-*

*ed, panicles terminating spreading.]*

5. *Sedum Aizoon. Yellow Stonecrop.*

*Lin. spec.* 617. *syst.* 430. *Reich.* 2. 381. *Willd.*

2. 761. *hort. upf.* 116. *Gertn. fruct.* 1. 314.

*Gmel. sib.* 4. 173.

*Anacampseros*



## S E D

- Anacampseros flore flavo. *Amm. ruth.* 96. t. 11.  
Leaves lanceolate serrate flat, stem erect, cyme sessile terminating.
- [6. *Sedum hybridum*. *Germander-leaved Stonecrop*.  
*Lin. spec.* 617. *syft.* 430. *Reich.* 2. 381. *Willd.* 2. 761. *hort. upf.* 116. *Gmel. fib.* 4. 171. n. 85. t. 67. f. 1. *Murr. in comm. nov. gott.* 6. 35. t. 5.  
*S. minus repens*, *chamædryos foliis*, e singulis foliorum alis radices agens. *Amm. ruth.* 93.  
Leaves wedge-shaped concave somewhat toothed aggregate, branches creeping, cyme terminating.
7. *Sedum populifolium*. *Poplar-leaved Stonecrop*.  
*Lin. syft.* 430. *Willd.* 2. 762. *suppl.* 242. *Pallas it.* 3. 730. t. O. f. 2. *Ait. kew.* 2. 109. *Curt. magaz.* t. 211.  
Leaves flat cordate toothed petioled, corymbs terminating.]
8. *Sedum stellatum*. *Starry Stonecrop*.  
*Lin. spec.* 617. *Reich.* 2. 381. *Willd.* 2. 762. *hort. cliff.* 176. *Hall. belv. n.* 957. *Hoffm. germ.* 156. *Roth. germ.* 1. 194. 2. 498. *Allion. pedem.* n. 1739. *Retz. obs.* 5. 25. *Lour. cochinch.* 287. *ed. Willd.* 353.  
*S. echinatum vel stellatum*, flore albo. *Bauh. hist.* 3. 680. *Raii hist.* 691.  
*Sempervivum tertium*. *Col. phyt.* 32. t. 11.  
*Cotyledon stellata*. *Bauh. pin.* 295.  
*Aizoon peregrinum*. *Camer. hort.* 7. ic. 2.  
Leaves flattish angular, flowers lateral sessile solitary.
- [9. *Sedum alpinefolium*. *Chickweed-leaved Stonecrop*.  
*Lin. spec. ed. Willd.* 2. 762. *Allion. pedem. n.* 1740. t. 22. f. 2.  
Leaves flat ovate, stem panicled, petals obtuse.]
10. *Sedum Cepæa*. *Purslane-leaved Stonecrop*.  
*Lin. spec.* 617. *syft.* 430. *Reich.* 2. 381. *Willd.* 2. 763. *hort. cliff.* 176. *Hoffm. germ.* 156. *Roth. germ.* 1. 194. 2. 499. *Hall. belv. n.* 958. *Sauv. monsp.* 76. *Villars dauph.* 3. 678. *Allion. pedem.* n. 1741. *Berg. phyt.* 2. 239.  
*S. annuum album*, oblongo portulacæ minoris folio. *Mor. hist.* 3. 473. f. 12. t. 7. f. 37.  
*Cepæa*. *Bauh. pin.* 288. *Clus. hist.* 2. 68. *Camer. epit.* 673. *Matth.* 933. *Ger. emac.* 621. f. 5. *Park. theat.* 728. f. 6. *Raii hist.* 690.
- β. *Sedum gallioides*. *Allion. pedem. n.* 1742. t. 65. f. 3.  
Leaves flat lanceolate, stem branched, flowers panicled, petals acute awned.
- [11. *Sedum libanoticum*.  
*Lin. spec.* 617. *Reich.* 2. 382. *Willd.* 2. 763.  
Root-leaves in bundles spatulate lanceolate, stem almost naked quite simple.]  
\*\* With round leaves.
12. *Sedum dasphyllum*. *Thick-leaved Stonecrop*.  
*Lin. spec.* 618. *syft.* 430. *Reich.* 2. 382. *Willd.* 2. 763. *Huds. angl.* 197. *Wither. arr. ed.* 3. 428. *Smith brit.* 486. *engl. bot.* t. 656. *Curt. lond.* 3. t. 26. 147. *Relb. cant. n.* 333. *Sibth. oxon.* n. 418. *Abbot bedf. n.* 330. *Hall. belv. n.* 961. *Scop. carn. n.* 555. *Jacqu. hort.* 2. 71. t. 153. *Sauv. monsp.* 8. *Villars dauph.* 3. 678. *Allion. pedem. n.* 1743. *Desfont. atlant.* 361. *Bulliard herb. t.* 11. *Berg. phyt.* 2. 117.  
*S. parvum*, folio circinato, flore albo. *Bauh. hist.* 3. 691. *Raii hist.* 1040.  
*S. minus folio circinato*. *Bauh. pin.* 283. *Mor. hist.* 3. 473. f. 12. t. 7. f. 35. *Dill. in Raii syn.* 271. *Tournef. inst.* 263.  
*Aizoon dasphyllum*. *Dalech. hist.* 1133.  
Leaves opposite ovate obtuse fleshy, stem weak, panicle glutinose.
13. *Sedum reflexum*. *Yellow Stonecrop*.  
*Lin. spec.* 618. *syft.* 430. *Reich.* 2. 382. *Willd.* 2. 764. *fl. suec. app. n.* 1296. p. 463. *Huds. angl.* 195. *Wither. arr. ed.* 3. 429. *Smith brit.* 490. *Lightf. scot.* 234. *Relb. cant. n.* 329. *Sibth. oxon. n.* 419. *Hall. belv. n.* 967. *Hoffm. germ.* 156. *Roth. germ.* 1. 195. 2. 499. *Pollich pal.* n. 429. *Leers herb. n.* 335. *Krock. files.* n. 686. *Villars dauph.* 3. 679. *Allion. pedem.* n. 1744. *Berg. phyt.* 2. 119.  
*S. minus* 5. *Clus. hist.* 2. 60.

## S E D

- S. minus luteum folio acuto*. *Bauh. pin.* 283. *Mor. hist.* f. 12. t. 6. f. 6.  
*S. minus flore luteo*. *Bauh. hist.* 3. 692.  
*S. minus mas.* *Fuchf. hist.* 33.  
*S. minus hæmatoides*. *Ger.* 413. *emac.* 512. f. 1. *Raii hist.* 691. *syn.* 269.  
*Vermicularis & Crassula minor vulgaris*, f. *Illecebra major*. *Park. theat.* 733. 1. t. 734. f. 1.  
*Sempervivum minus primum*. *Dod. pempt.* 129. f. 1.  
Common Yellow Sengreen. *Petiv. brit.* t. 42. f. 5.
- β. *Sedum minus luteum ramulis reflexis*. *Bauh. pin.* 283. *Raii hist.* 691. *syn.* 270. *Mor. f.* 7.  
*S. minus luteum flore se circumflectente*. *Bauh. hist.* 3. 693.  
*Aizoon scorpioides*. *Lob. ic.* 377. *Ger. emac.* 513. f. 6.  
*Vermicularis scorpioides*. *Park. theat.* 733. 2. t. 734. f. 2.  
Crooked Yellow Sengreen. *Petiv. brit.* t. 42. f. 6.
- γ. *Sedum crispum*. *Munting.* 561.  
Leaves awl-shaped scattered loose at the base, the lower ones recurved, flowers subcymose.
- [14. *Sedum hispidum*. *Hispid Stonecrop*.  
*Desfont. atlant.* 361.  
Branches filiform panicled villose, leaves half-round.]
15. *Sedum virens*. *Green Stonecrop*.  
*Ait. kew.* 2. 110. *Willd. spec.* 2. 764.  
Leaves awl-shaped scattered loose at the base, flowers in cymes, petals half as long again as the lanceolate calyx.]
16. *Sedum rupestre*. *Rock Stonecrop*.  
*Lin. spec.* 618. *Reich.* 2. 383. *Willd.* 2. 764. *hort. cliff.* 176. *fl. suec. n.* 401. *Huds. angl.* 195. *Wither. arr. ed.* 3. 429. *Smith brit.* 491. *engl. bot. t.* 170. *Hoffm. germ.* 156. *Roth. germ.* 1. 195. 2. 501. *Scop. carn. n.* 557. *Krock. files.* n. 687. *Villars dauph.* 3. 679. *Allion. pedem.* n. 1745.  
*S. rupestre repens foliis compressis*. *Dill. elib.* 343. t. 256. f. 333.  
*S. minus e. rupe Sancti Vincentii*. *Raii syn.* 270. *Petiv. brit.* t. 42. f. 8.  
Leaves awl-shaped erect clustered in five rows, loose at the base, flowers subcymed.
- [17. *Sedum saxatile*. *Mountain Stonecrop*.  
*Lin. spec. ed. Willd.* 2. 765. *Wiggers primit.* 35. *Roth. germ.* 2. 500. *Hoffm. germ.* 156. *Allion. pedem. n.* 1749. t. 65. f. 6. *Hall. belv. n.* 964.  
*S. rupestre*. *Fl. dan.* 59. *Meench. hass. n.* 370. *Gunn. norv. n.* 636.  
*S. Oederi*. *Retz. prodr. scand. ed.* 2. n. 562.  
*S. rubens*. *Haenke it. sudet.* p. 114.  
*S. alpestre*. *Villars prosp.* 49.  
*S. saxatile teretifolium*, hofculis luteis, conceptaculis feminum stellatis & viridantibus. *Scheuch. it.* 6. p. 462.  
*S. alpinum filesiacum*. *Schwenkf. files.* 195.  
*S. minimum luteum non acre*. *Bauh. hist.* 3. 695.  
Leaves scattered half-round obtuse loose at the base, stem branched decumbent.]
18. *Sedum quadrifidum*. *Four-petalled Stonecrop*.  
*Lin. spec. ed. Willd.* 2. 766. *Pallas it.* 3. app. n. 90. t. P. f. 1.  
Leaves scattered round obtuse, stem simple, flowers umbellated four-petalled.]
19. *Sedum hispanicum*. *Spanish Stonecrop*.  
*Lin. spec.* 618. *syft.* 430. *Reich.* 2. 383. *Willd.* 2. 766. *amoen.* 4. 273.  
*S. hisp. folio glauco acuto, flore albido*. *Dill. elib.* 342. t. 256. f. 332.  
Leaves linear round-depressed scattered, cymes patulous, flowers six-petalled.]
- [20. *Sedum lineare*. *Linear-leaved Stonecrop*.  
*Lin. syft.* 430. *Willd.* 2. 766. *Thunb. jap.* 187.  
Leaves round-linear opposite, cyme trifid.]
21. *Sedum cæruleum*. *Blue Stonecrop*.  
*Lin. spec. ed. Willd.* 2. 766. *Vahl symb.* 2. 51.  
*S. vermiculare pumilum glabrum*, floribus parvis cæruleis. *Shaw it.* 46. n. 550. ic.  
Leaves oblong alternate obtuse loose at the base, cyme bifid smooth.]
22. *Sedum album*. *White Stonecrop*.  
*Lin. spec.* 619. *syft.* 430. *Reich.* 2. 383. *Willd.* 2. 766. *hort. cliff.* 177. *fl. suec. n.* 402. *Retz. obs.* 6. 28.



6. 28. n. 45. *Huds. angl.* 196. *Wither. arr. ed.* 3. 427. *Smith brit.* 489. *Curt. lond.* 1. t. 31. *Relb. cant. n.* 330. *Abbot bedf. n.* 331. *Fl. dan.* 1. 66. *Hall. belv. n.* 959. *Scop. carn. n.* 556. *Hoffm. germ.* 156. *Roth. germ.* 1. 195. 2. 501. *Pollich pal. n.* 450. *Neck. gallob.* 199. *Krock. filef. n.* 689. *Villars dauph.* 3. 681. *Allion. pedem. n.* 1751. 1. 65. f. 2. *Blackw. t.* 428. *Berg. phyt.* 2. 121. *Plenck, ic.* 352.
- S. minus teretifolium album.* *Baub. pin.* 283. *Mor. hist. f.* 12. t. 7. f. 23. *Raii syn.* 271. *hist.* 1040.
- S. minus, folio longiusculo tereti, flore candido.* *Baub. hist.* 3. 690.
- S. minus 1.* *Clus. hist.* 2. 59.—*officinarum.* *Ger.* 413. 2. *emac.* 512. 2.
- S. minus foemina.* *Fuchf. hist.* 35.
- Vermicularis f. Illecebra major.* *Lob. obs.* 205. 2.
- V. flore albo.* *Park. theat.* 733. *descr.*—item. *V. f. Crassula minor vulgaris, ejusd.* 734. 1. *ic.*
- Sempervivum minus.* *Matth.* 1118.—*alterum.* *Dod. pempt.* 129. f. 2.
- Aizoon minus foemina.* *Dalech. hist.* 1129.
- Leaves oblong round blunt spreading smooth, panicle very much branched.*
23. *Sedum acre.* *Biting Stonecrop, or Wall Pepper.*  
*Lin. spec.* 619. *Reich.* 2. 384. *Willd.* 2. 767. *hort. cliff.* 177. *fl. suec. n.* 403. *mat. med.* 118. *Woodv. suppl.* 54. t. 231. *Huds. angl.* 196. *Wither. arr. ed.* 3. 427. *Smith brit.* 487. *Lightf. scot.* 235. *Curt. lond.* 1. t. 32. *Relb. cant. n.* 331. *Sibth. oxon. n.* 420. *Hall. belv. n.* 966. *Hoffm. germ.* 157. *Roth. germ.* 1. 195. 2. 502. *Pollich pal. n.* 431. *Neck. gallob.* 199. *Krock. filef. n.* 690. *Villars dauph.* 3. 683. *Allion. pedem. n.* 1748. *Knorr. del.* 2. t. S. 12. f. 1. *Berg. phyt.* 2. 123. *Plenck, ic.* 351.
- S. parvum acre flore luteo.* *Baub. hist.* 3. 694. 2. *Tournef. inst.* 263. *Raii hist.* 1041. *syn.* 270. *Petiv. brit. t.* 42. f. 9.
- S. minus 8. causticum.* *Clus. hist.* 2. 61. f. 1.
- S. minimum.* *Tabern.* 844. *Camer. epit.* 856. *Blackw. t.* 232.
- S. minus tertium & Vermicularis.* *Trag.* 379.
- Sedi tertium genus.* *Fuchf. hist.* 36.
- Sempervivum minus vermiculatum acre.* *Baub. pin.* 283. *Mor. hist. f.* 12. t. 6. f. 12. *ord.* 3.
- Semp. minimum.* *Matth.* 1119.
- Illecebra f. Sempervivum tertium.* *Dod. pempt.* 129. f. 3.
- I. minor, f. Sedum tertium Dioscoridis.* *Park. theat.* 735. 7.
- Vermicularis f. Illecebra minor acris.* *Ger.* 415. *emac.* 517. 2.
- Leaves alternate, subovate fleshy gibbous adnate-fessile, cyme trifid leafy.*
24. *Sedum sexangulare.* *Insipid Stonecrop.*  
*Lin. spec.* 620. *Reich.* 2. 384. *Willd.* 2. 767. *fl. suec. n.* 404. *Retz. obs.* 1. 18. n. 50. *Huds. angl. ed.* 1. 171. *Wither. arr. ed.* 3. 428. *Smith brit.* 488. *Curt. lond.* 4. t. 33. 225. *Relb. cant. n.* 332. *Hall. belv. n.* 965. *Scop. carn. n.* 558. *Hoffm. germ.* 157. *Roth. germ.* 1. 195. 2. 502. *Pollich pal. n.* 432. *Krock. filef. n.* 691. *Villars dauph.* 3. 683. *Allion. pedem. n.* 1747.
- S. acre 2.* *Huds. angl.* 196.
- Sempervivum minimum.* *Lob. ic.* 379?
- S. minus vermiculatum insipidum.* *Baub. pin.* 284.
- Leaves subtern roundish obtuse fleshy adnate-fessile spreading, cyme trifid, leafy.*
25. *Sedum anglicum.* *English or mild white Stonecrop.*  
*Lin. spec. ed.* *Willd.* 2. 768. *Huds. angl.* 196. *Wither. arr. ed.* 3. 428. *Smith brit.* 487. *engl. bot. t.* 171. *Retz. prodr. scand. ed.* 2. n. 567.
- S. annuum.* *Huds. angl. ed.* 1. 172. *Gunn. norv. n.* 331.
- S. rubens.* *Lightf. scot.* 235. *Fl. dan.* 1. 82.
- S. minimum non acre, flore albo.* *Raii syn.* 270. t. 12. f. 2.
- Leaves subalternate ovate fleshy gibbous adnate-fessile, cyme bifid even.]*
26. *Sedum annuum.* *Annual Stonecrop.*  
*Lin. spec.* 620. *Reich.* 2. 385. *Willd.* 2. 768.

- fl. suec. n.* 405. *Krock. filef. n.* 692. *Villars dauph.* 3. 684. *Allion. pedem. n.* 1753? *Retz. obs.* 1. 19. t. 51.
- S. montanum perpusillum luteum.* *Lob. illustr.* 100. *Raii suppl.* 364. *sec. Villars.*
- Stem erect solitary annual, leaves ovate sessile gibbous alternate, cyme recurved.*
- [27. *Sedum pubescens.* *Pubescent Stonecrop.*  
*Lin. spec. ed.* *Willd.* 2. 768. *Vahl symb.* 2. 52. *Desfont. atlant.* 360.
- Pubescent, leaves oblong obtuse flattish above, cyme bifid, petals lanceolate.]*
28. *Sedum villosum.* *Hairy Stonecrop.*  
*Lin. spec.* 620. *syft.* 431. *Reich.* 2. 385. *Willd.* 2. 768. *Vahl symb.* 2. 52. *Huds. angl.* 197. *Wither. arr. ed.* 3. 426. *Smith brit.* 488. *engl. bot. t.* 394. *Lightf. scot.* 237. *Fl. dan.* 1. 24. *Hall. belv. n.* 962. *Hoffm. germ.* 157. *Roth. germ.* 1. 196. 2. 503. *Pollich pal. n.* 433. *Leers herb. born. n.* 339. *Krock. filef. n.* 693. *Villars dauph.* 3. 684. *Allion. pedem. n.* 1755.
- S. palustre subhirsutum purpureum.* *Baub. pin.* 283. *Mor. hist. f.* 12. t. 8. f. 48.
- S. purpureum pratense.* *Baub. hist.* 3. 692. *Raii syn.* 270. *Petiv. brit. t.* 42. f. 7.
- S. minus 3. f. palustre.* *Clus. hist.* 2. 59. 3.
- S. minus palustre.* *Ger. emac.* 516. 1.
- S. arvense f. palustre flore rubente.* *Park. theat.* 734. f. 6.
- Leaves alternate linear flattish somewhat hairy as are also the peduncles, stem erect.*
- [29. *Sedum atratum.* *Red Sedum, or Stonecrop.*  
*Lin. spec.* 1673. *syft.* 431. *Reich.* 2. 386. *Willd.* 2. 769. *Jacqu. austr.* 1. t. 8. *Hoffm. germ.* 157. *Hall. belv. n.* 963.
- S. saxatile, atrorubentibus floribus.* *Baub. pin.* 238. *prodr.* 132. *Scheuch. it.* 1. 48. t. 6. f. 34. *Seguier veron.* 3. 207.
- S. saxat. variegato flore.* *Baub. prodr.* 132.
- Stem erect, flowers corymbes fastigiate.*
30. *Sedum nudum.* *Naked-branched Stonecrop.*  
*Willd. spec.* 769. *Ait. kew.* 2. 112.
- Leaves scattered oblong-cylindrical blunt, stems shrubby very much branched, branches twisted, cymes terminating.*

## DESCRIPTIONS, &amp;c.

1. Stem a foot high, erect, round. Leaves lanceolate, scarcely a finger's length, equally serrate, even, sharpish, not very fleshy. Racemes axillary, small, solitary. Flowers small, with a five-toothed calyx, five petals, ten stamens, and five pistils.

Native of the most southern parts of Europe and of Siberia<sup>1</sup>.

2. Root perennial, tuberous. Stems from one to two feet high and upwards, upright, simple or unbranched, leafy, round, smooth, solid, reddish and often dotted with red. Leaves almost covering the stem, sessile, ovate, fleshy, tooth-serrate, smooth and even, of a blueish green colour. Corymbs terminating, many-flowered, close or heaped together. Flowers deep purple, very rarely white in England<sup>2</sup>; though that seems to be the most common colour in some foreign countries.—Capsules leguminous, oblong, filiform-beaked, membranaceous. Seeds irregular, somewhat like sawdust, very finely striated longitudinally, pale, fastened in several rows to the margin of the gaping future<sup>3</sup>.

This is the only English *Sedum* with flat leaves. Being a handsome plant and easily cultivated, it is met with in most gardens, where it will sometimes grow a yard high. The leaves are sometimes found entire at the edge; the flowers vary in colour<sup>4</sup>; and the plant in size. Hence several varieties noticed by old authors, by Linneus, and by Aiton in the *Hortus Kewensis*. Haller considers the last variety as a distinct species. It has branches from all the axils, and is naked between the branches. The leaves are conjugate, patulous, ovate, toothed here and there. Flowers white, very slightly tinged with red, with a greenish

<sup>1</sup> Linn. amoen.<sup>2</sup> Smith and Curtis.<sup>3</sup> Gærtner.<sup>4</sup> Curtis.



line along the middle, in close umbels on the stem and branches. Anthers scarlet. Whereas in the common Orpine, the stem is quite simple, wholly covered with leaves, which are sharper, more sharply serrate, ascending, and disposed irregularly. Anthers ferruginous.

The *hematodes* of Miller seems to be the same with this large variety.] The stalks are thick, succulent, round, near three feet high; leaves ovate, entire, three inches long by two and a quarter wide, placed by pairs, of a pale herbaceous colour, the upper ones embracing. Flowers in large terminating bunches, white or purple.

Native of Portugal; [as is also variety  $\gamma$ . Spain and Switzerland. The common white and purple Orpine ( $\alpha$  and  $\beta$ ) are common in most parts of Europe, Japan and Siberia: on old walls, by the side of woods, in hedges, among bushes in pastures, in fields, in vineyards, chiefly in a chalky or sandy soil; flowering in July and August. The purple-flowering Orpine is most common in Britain. This name is from the French. It was also called *Live-long*, because a branch of it hung up will keep its verdure a long time.

Near London it occurs about Charlton, Shooter's-hill, Norwood, &c. Shelford and Burrough-green in Cambridgeshire: Aspley-wood in Bedfordshire: Headington-Wick copse, and Shotover-hill, Oxfordshire: in Suffolk frequent: near Ashburne in Derbyshire: Malvern Chase: about Manchester: near Shrewsbury: Tettenhall in Staffordshire. Castle Dikes, Preston woods, &c. in Northamptonshire. Between Glasgow and Dumbarton, and two miles eastward of the latter, Scotland.

A decoction of the leaves in milk is a forcible diuretic. It has been given with success to cure the piles. Kine, goats, sheep and swine eat it, but horses refuse it, according to the observations of Linneus<sup>2</sup>.]

3. Roots fibrous, perennial. Stems trailing. Leaves standing alternate round the stems, almost an inch long, and half an inch broad. Flowers in a compact corymb, sitting close on the top of the stem: they are star-shaped, of a purple colour, and appear in July. It is an evergreen. [Linneus says that the leaves fall in winter; so also says Caspar Bauhin: Loureiro agrees with Miller. But he attributes yellow flowers to his plant.—Mr. Curtis remarks, that the singular manner in which the leaves are attached to the flowering stem deserves to be noticed.

Native of Germany; Switzerland about Aigle and in the Valais; the South of France; Italy; China, Cochinchina and Japan, growing out of the crevices of rocks. Cultivated in 1596, by Gerarde<sup>2</sup>.

4. Native of Madeira; where it was found by Mafson, and introduced in 1777. It is shrubby, and flowers in June and July<sup>3</sup>.]

5. Root perennial, composed of many thick fleshy fibres, from which come out several stalks rising near a foot high. Leaves alternate on every side, thick, two inches and a half long, and three quarters of an inch broad, and slightly serrate. Flowers bright yellow; petals lanceolate, erect, spreading out at the top: stamens large, erect, with oval, sulphur-coloured anthers. [Capsules ovate-oblong, compressed, united at the base, from upright spreading, purplish, with the gaping future white and reflexed. Seeds oblong, sub-cylindrical, thicker outwards, obtuse, rugged-friated, ferruginous. Embryo the size of the seed<sup>4</sup>.

Native of Siberia. Cultivated by Mr. Miller in 1759. It flowers from July to September<sup>4</sup>.

6. This rises with very numerous slender stems of about two feet in height, and often of a red cast on the upper part: the leaves are cuneiform, sessile, fleshy, smooth, and either crenated or obtusely serrated; the serratures being generally three or four on each side: the leaves on the upper part of the stems are longer and narrower than on other parts: the terminal cyme is commonly three-parted, and sometimes, though rarely, many-parted: the peduncles flexuous, often dichotomous, and sometimes farther subdivided: the

bractes are double, one large and cuneiform, the other setaceous and very short: the flowers are sulphur-coloured, with carinated, sharp-pointed petals<sup>5</sup>.

Native of Tartary, at the foot of the Uralian mountains, about Trebitond. Cultivated in 1766, by Peter Collinson, Esq.<sup>6</sup>

7. This is extremely like *Saxifraga rotundifolia*, but the leaves are cordate, thick and fleshy, and the fructification is that of *Sedum*.—Stem herbaceous, branched, erect, patulous, even, a foot high. Leaves alternate, remote, only at the ramifications, blunt, fleshy, smooth. Panicles short, not longer than the leaves. Calyx small. Petals lanceolate, sessile, white, unspotted, spreading. Anthers red.

Native of Siberia<sup>7</sup>; where it was discovered by Professor Pallas, the celebrated Russian naturalist; and introduced by him, in the year 1780, into the royal garden at Kew<sup>8</sup>.

When the plant grows in an open situation, exposed to the sun, the leaves and stalks become of a bright red colour. It is the only hardy *Sedum* cultivated with us that has a shrubby stalk: the leaves are deciduous. It flowers in July and August, and is proper for a rock plant, with most of the other *Sedums*<sup>1</sup>.]

8. This is a low annual plant. The stalks rise three inches high, dividing at top into two or three parts. The flowers come out singly from the side of the stalk; they are white, star-pointed, and are succeeded by star-pointed rough capsules.

[Stem erect, angular. Lowest leaves commonly opposite, the rest scattered, wedge-shaped, angular seven-toothed, ciliate with pellucid scalelets, each surface very finely striated, and having very small shining dots. Cyme bifid, leafy. Flowers sessile in the axils of the floral leaves; which are obovate; the lower five or three-toothed, the upper entire. Calyx-leaves lanceolate, acute, erect. Petals narrower but scarcely shorter, lanceolate, acute, compressed, white with a red keel. Stamens and germs shorter than the petals, white. Stigmas purple. Capsules diverging. The five scales, which are the nectaries, in this species are lemon-coloured, somewhat oblong, under the germs. In the *populifolium* they are roundish, and white tending a very little towards yellowness. In the *Telephium*, they are truncate, linear, longer. In the *bispanicum* truncate, emarginate, reddish-yellow. In the *rupestre* truncate and yellow<sup>9</sup>.

Native of Germany, France, Switzerland, Italy; and, according to Loureiro, of China, about Canton. Cultivated in the botanic garden belonging to the Company of Apothecaries at Chelsea, in 1739<sup>1</sup>.

9. Root biennial. Stem erect, branched. Flowers white, on long peduncles.—Native of Piedmont, in shady stony places<sup>2</sup>.]

10. Root annual. Stalks six or seven inches high, dividing into smaller branches, which sustain small white flowers growing in large panicles.

[Lower leaves like those of wild Thyme, only succulent; upper alternate, from a thick petiole reflexed, wide, ovate. Flowers on tender peduncles. Calyx hirsute, not more than a third of the petals in length. Petals lanceolate, awned, white divided by a purple line<sup>3</sup>.

Native of Germany, France, Switzerland and Italy. Cultivated here in 1640, as appears from Parkinson<sup>4</sup>.

$\beta$ . Stem erect. Lower leaves in threes and fours, the next opposite, the uppermost alternate. Racemes axillary, but nearer. Petals purple.—Native of Piedmont<sup>5</sup>.

11. This has the appearance of *Sempervivum montanum*. Root-leaves acute, smooth, quite entire. Stem by the side of the root, ascending, half a foot high, having a few scattered linear sharp leaves at bottom. Raceme terminating, length of the stem; pedicels scattered, commonly two-flowered. Capsules not diverging, surrounded by the calyx. It is a perennial plant, found in Palestine, by Hasselquist<sup>6</sup>.

<sup>1</sup> Murray.

<sup>2</sup> Hort. kew.

<sup>3</sup> Allion.

<sup>4</sup> Hort. kew.

<sup>5</sup> Curtis.

<sup>6</sup> Haller.

<sup>7</sup> Retzius.

<sup>8</sup> Hort. kew.

<sup>9</sup> Linn. spec.

<sup>10</sup> Linn. suppl.

<sup>11</sup> Hort. kew.

<sup>12</sup> Allion.

<sup>13</sup> Withering.

<sup>14</sup> Hort. kew.

<sup>15</sup> Idem.

<sup>16</sup> Gærtner.

<sup>17</sup> Hort. kew.



12. Root perennial, composed of small white fibres. Stems numerous, weak, prostrate and creeping, about three inches long or somewhat more, branched, in tufts, round, weak, clammy, leafy. Flowering branches erect. Leaves mostly opposite, closely imbricate, sessile, very thick and fleshy, broader than long, convex on the lower, nearly plane on the upper surface, glaucous often with a tinge of purple; dotted and sometimes having a net of red veins: on the flowering-branches they are alternate. Panicle terminating, spreading, few-flowered. Calyx downy, clammy. Petals white, with a purple keel, three times the length of the calyx. Nectaries, small yellow glands, placed externally at the base of each germ. Anthers dark red. Capsules pale brown. Seeds yellowish. This species has generally one sixth part more through the whole of the fructification than the other Sedums: as six segments to the calyx; six petals to the corolla; six nectaries; twelve stamens; and six pistils<sup>a</sup>.

Linneus marks it as annual; Dr. Smith has sometimes thought it biennial, but he rests in supposing it to be perennial; frequently however disappearing in one spot, and re-appearing in another.

Native of many parts of Europe, as France, England, Switzerland, Austria, Spain, Portugal, Italy; also of Barbary; in the fissures of rocks and on walls: flowering in June. In England it is not uncommon on walls near London; as near Chelsea Hospital; between Kensington gravel-pits and Acton; Hammer-smith, Kew, &c.; at Fulbourn, in Cambridgeshire; Market-street, in Bedfordshire, and Market-Eit near that, where it seems to have been first found by Mr. Thomas Knowlton; at Bugden in Huntingdonshire, observed by Mr. Woodward; at Malton in Yorkshire, by Archdeacon Pierſon; at Clifton near Bristol, by Mr. T. W. Dyer.

This pretty little Sedum, introduced into a garden, propagates itself freely upon walls, in waste places, and about garden pots. No plant is better adapted to the purpose of decorating rock-work; where it grows without any trouble, in any aspect, multiplying very much by young shoots, and looking beautiful throughout the year<sup>b</sup>.

13. Root perennial. Stems round, leafy, branched at the base, often hanging down, erect at the top. Leaves scattered, alternate, adnate-sessile, loose at the base and produced, erect above, compressed, acuminate, extremely succulent, smooth, rather glaucous, frequently tinged with red; the lower ones turned back; when old they easily fall off. Flowers in a terminating subcymed panicle, with many-flowered branches, for the most part recurved. Flowers erect, bright yellow, with a fifth part added very frequently to the natural number in the fructification; as is common in this natural order. Calyx acute, divided almost to the base, smooth<sup>c</sup>.

Leers remarks, that it very frequently varies with six, seven, eight or nine petals, with as many germs, and double the number of stamens. Haller also says he has seen from five to eight petals; and that it has commonly six petals and as many capsules, with twice the number of stamens. And Villars, that it has seven petals and fourteen stamens in the first and principal flower; but six petals and twelve stamens in the others.

Native of Europe. Common in England on walls and thatched roofs; and on rocks in the northern counties: flowering in July. Haller says it is eaten in salads.

14. This is a villose plant, with an upright stem, branched at top. Branches filiform, paniced. Panicle patulous. Leaves scattered, fleshy, spreading, compressed above. Flowers numerous; each on a capillary pedicel. Calyx very small, five or six-parted. Corolla gold-coloured, five or six-petalled: petals lanceolate, acute. Stamens ten or twelve, shorter than the corolla.—It is allied to the preceding, but differs in the stem, leaves and branchlets being pubescent; the panicle patulous; the flowers on longer pedicels,

<sup>a</sup> Smith, Curtis, Woodw. Mss. <sup>b</sup> Engl. bot. and Curtis. <sup>c</sup> Smith.

and not all directed one way. Annual.—Native of Barbary<sup>d</sup>.

15. Native of Portugal. Perennial. Introduced in 1774, by Messrs. Kennedy and Lee. It flowers in June and July<sup>e</sup>.

16. This is a little smaller than the *reflexum*. Leaves closely imbricate (before flowering) in five or six rows, glaucous, flattened a little, acuminate; on the flowering stem somewhat remote; as in *S. reflexum*, all erect, not bent back at the point. Dr. Withering remarks, that the disposition of the leaves in five or six rows may be best observed by viewing the plant with the ends of the branches opposed to the eye. Panicle subcymed, many-flowered, with the branchlets scarcely reflexed. Flowers of a bright yellow or gold colour, often six-cleft. Calyx bluntish, glaucous, reddish, one-leafed at the base<sup>f</sup>.—According to Withering, the flowers have frequently six or seven parts.

Reichard distinguishes this from *Sempervivum sediforme*, by its having the leaves gradually narrowed into a sharp point: the petals yellow, and a great deal of the upper part of the stem always nodding, till it is in full-flower.

Native of England and Wales, Germany, Carniola, Silesia, Dauphiné, Piedmont, on rocks and walls: flowering in July. Perennial.

It was first observed by Merret, on St. Vincent's rocks near Bristol; next by Lhwyd and Richardson in Wales; thirdly by Dillenius, in 1726, on Cheddar rocks in Somersetshire; and fourthly by Robson, on walls about Darlington.—Both this and *reflexum* are cultivated in Holland and Germany, to mix with lettuces in salads; the taste is acrid<sup>g</sup>.

17. Root annual. Stems woody, half a foot high, branched, brachiate, diffused, procumbent. Leaves sessile, alternate, green never red, sparkling in the sun. Flowers sessile on one side of the branches, on hard pedicels a line or two in length. Calyx-leaves blunt, green. Petals yellow, lanceolate<sup>h</sup>.

Native of Norway, Germany, Switzerland, Dauphiné, Mont Cenis, &c. on rocks.

18. Flowers yellow, four-petalled.—Native of the most northern part of Asia, on rocks. Perennial<sup>i</sup>.

19. Root slender, fibrous, perennial. Stems several, a hand high, reclining at the base, and then erect, round, tinged with red. Leaves, on the flowering stems, pale green dotted with purple, oblong, thickish, round on one side and flat on the other; towards the top, under the flowers, more swelling and shorter: leaves on young plants or barren shoots, in bundles, glaucous without any purple dots, thinner, from a narrow base widening gradually, and ending in a blunt point. The stems divide at top into a few branchlets, forming a sort of umbel, (or rather cyme,) bearing sessile, star-like white flowers, stained with pale purple from a purple groove running along the petals: these are six, sometimes seven in number, keeled and cusped. Capsules as many; and stamens twice as many as the petals; with round brown anthers. Calyx short, having as many segments as there are petals in the corolla. The flowering branches lengthen out in time into a sort of spike moderately reflexed: and then they, with the leaves under the flowers, calyxes, capsules, and even the corollas on the outside, become covered with a fine pubescence. The leaves also on the stems and shoots are somewhat harsh to the touch<sup>j</sup>.

Native of Spain and Carinthia. Cultivated in 1732, by James Sherard, M. D. at Eltham. It flowers in July<sup>k</sup>.

20. Stem smooth, simple, seldom branched. Leaves embracing, acute, smooth, spreading, an inch long. Flowers yellow, in a compound cyme, which is trifid, with the middle flower sessile.—Native of Japan: flowering there in June<sup>l</sup>.

21. The whole plant smooth. Stem a finger's length, purplish, in a poor soil simple, but branched in a richer soil. Branches of the same height and structure with the stem, alternate or scattered, simple.

<sup>d</sup> Desfontaines. <sup>e</sup> Hort. kew. <sup>f</sup> Smith. <sup>g</sup> Withering. <sup>h</sup> Haller. <sup>i</sup> Pallas. <sup>j</sup> Dillenius. <sup>k</sup> Hort. kew. <sup>l</sup> Thunberg.



Leaves green tinged with purple, or wholly red. Peduncles divaricating, flexuose, sometimes bifid, having a single leaf under each ramification of the same structure with the others. Pedicels alternate, spreading very much. Flowers small. Calyx shorter than the petals; which are lanceolate, of a violet-purple colour. Nectareous scales truncate, mucronate, at the base of the germ. Filaments the length of the petals; sometimes, but rarely, there are twelve. Anthers globular, purple. Germs five, ovate, acuminate, white, length of the filaments.

Found by Vahl, in the clefts of rocks by Manub in Tunis<sup>f</sup>.

The above is different from the *Sedum caeruleum* of Linneus's mantissa, (p. 241.) which he took up on the authority of Willich. But Thunberg did not find any species of *Sedum* at the Cape of Good Hope<sup>g</sup>.

22. Root perennial, fibrous. Stems decumbent at bottom, and there throwing out fibres; flowering stems upright, from three inches to a span in height, round, leafy, branched, smooth. Leaves scattered thinly, spreading out horizontally, sessile, cylindrical, very blunt, smooth, fleshy, somewhat glaucous and generally reddish. Panicle terminating, alternately branched, subcymose, many-flowered, smooth. Calyx blunt, even. Petals white or red: generally white with a red streak, and a general tinge of red. The whole plant has sometimes a purplish hue. Anthers deep red. The cylindric oblong shape of the leaves readily distinguishes this from other English Stonecrops<sup>h</sup>.

Native of Europe, on rocks, walls and roofs, flowering in July. Near London, at Kentish-town, and between Bromley and Bromley-hall in Middlesex. At Peterborough, on walls. On rocks above Great Malvern. Wick Cliffs. At Chatteris in the Isle of Ely. At Stevington and Sharnbrook in Bedfordshire, by the Rev. Mr. Abbot.

Haller informs us, that it possesses all the virtues of the large Houseleek, and that he has used the juice of it in uterine hæmorrhages. By way of cataplasm it is applied to the piles when in a painful state. It is eaten by some as a pickle<sup>i</sup>.

23. Root perennial, fibrous. Stems numerous, growing in tufts, much branched, decumbent, and creeping at the base, then upright, three inches high, smooth, round, very leafy. Leaves closely imbricate, blunt, flatted a little, from upright spreading, loose at the base. Cymes terminating, solitary, few-flowered. Flowers erect, sessile. Calyx bluntish, even. Petals acute, yellow, twice the length of the calyx. Filaments the length of the corolla. Anthers and germs yellow. Seeds reddish brown. The whole plant is acrid<sup>k</sup>; and chewed in the mouth has a very hot biting taste; whence, and from its common place of growth, it has the name of *Wall-Pepper*. Applied to the skin it blisters; and taken inwardly it excites vomiting. In scorbutic cases, and quartan agues, it is an excellent medicine under proper management<sup>l</sup>.—For the former, a handful of the herb is directed to be boiled in eight pints of beer till they are reduced to four, of which three or four ounces are to be taken every morning. Milk has been found to answer this purpose better than beer. Not only ulcers simply scorbutic, but those of a scrophulous or even cancerous tendency, have been cured by the use of this plant. It is likewise useful as an external application, in destroying fungous flesh, and in promoting a discharge in gangrenes and carbuncles<sup>m</sup>.

Native of Europe, in dry sandy and gravelly pastures, on houses, walls, banks and rocks. Common in England; flowering in June. Planted in a pot, it will hang over the sides, and cover the pot completely. It will continue to grow, when hung up in the open air or in a room; which has been considered as a proof that it receives its nourishment principally from the air; but it is justly remarked by Dr. Withering, that though the life of the plant be thus re-

tained for some weeks, yet it is at the expense of the juices which its succulent leaves had previously imbibed. At the end of three weeks, a plant, suspended by Mr. Gough of Kendal before a window with a northern aspect, had lost about half its weight, though it had put out some fine fibres from the root, and had yet life enough to enable it to turn to the light, after having been purposely turned from it. After being kept in water for twenty-four hours, it regained more than half of what it had lost. Mr. Gough therefore justly considers the succulent leaves as reservoirs, which support the plant in dry weather, and are again replenished in rainy seasons; but does not admit that such plants attract nourishment from the air more than others<sup>n</sup>. It must be allowed however that they subsist much upon the humidity of the atmosphere, since their succulent stems and leaves cannot derive much nutriment from the arid soil in which they generally grow.

24. Insipid Stonecrop has the habit of the preceding or biting Stonecrop, but is somewhat larger. The leaves are subcylindrical; not ovate, and come out mostly by threes in a double row, and hence appear to be imbricate in six rows; this is most obvious in the young shoots: they are very spreading, loose at the base, and scarcely gibbous. The cyme is leafy. The flowers of a golden yellow colour. The herb not acrid<sup>o</sup>.

The leaves of the *acre* are short, broad at the base, and remote; but in this they are nearly of the same thickness throughout, longer and more numerous; they are also in general much redder. The *acre* flowers a fortnight sooner than the *sexangularis*<sup>p</sup>. Dr. Withering observes, that the number of stamens, &c. is uncertain, varying from eight to twelve.

Native of several parts of Europe, on walls, roofs and dry pastures; flowering at the end of June.—On Greenwich Park wall. Near Northfleet, Sheerness, and in the Isle of Shepey. Near Trinity Conduit head, between Cambridge and Madingley, and on Ely Minster.

25. Root annual, fibrous. Stems in tufts, decumbent at the base, smooth, red, leafy. Leaves mostly alternate or nearly opposite, bluntish, somewhat glaucous, produced and loose at the base. Cymes terminating, solitary, almost leafless, racemed. Flowers erect, five-cleft. Calyx blunt, even. Petals acuminate, white with a red keel, sometimes dotted with a red point. Capsules membranaceous, even<sup>q</sup>. It has been confounded with the next species.

Native of Britain and Norway: on rocks, sandy coasts, roofs and walls. On the sandy downs of the Norfolk and Suffolk coast plentifully; as well as in Devonshire, Dorsetshire, Cornwall, Wales and Scotland. On the mountains of Westmoreland and Lancashire.]

26. This is an annual plant, with an erect stalk, seldom rising above two or three inches high. The leaves are of a grayish colour. The flowers are small and white, and grow at the top of the stalk in a reflexed spike.

[It is thus described by Retzius.—Root annual, fibrous. Stem branched, smooth. Leaves scattered, ovate, gibbous, sessile, spotted with purple. Cyme properly none, but the branches recurved and flowering. Flowers on the interior or upper side of the branches, on short peduncles, alternate, having for the most part a leaf to each flower. Calyx-leaves ovate, gibbous, spotted. Petals ovate-lanceolate, concave, less than the calyx, yellow. Stamens a little shorter than the petals. Germs erect, compressed, lanceolate, with very short styles and stigmas. Capsules diverging, spotted with red, with a groove running along the upper part.

Native of the North of Europe. Cultivated in 1768, by Mr. Miller<sup>r</sup>: who mistook it for the preceding species.

27. Root annual. Stem a hand or more in height, upright, fleshy, very much branched, shrubby at

<sup>f</sup> Vahl. <sup>g</sup> Willdenow. <sup>h</sup> Smith, Curtis, Withering.

<sup>i</sup> Curtis. <sup>k</sup> Smith and Curtis. <sup>l</sup> Withering.

<sup>m</sup> Woodville.

<sup>n</sup> Wither. arr.

<sup>o</sup> Smith.

<sup>p</sup> Curtis.

<sup>q</sup> Smith.

<sup>r</sup> Hort. kew.



bottom. Branches frequent, scattered or alternate, but sometimes opposite, upright, round, frequently tinged with purple. Leaves adnate a little above the base, alternate, flattish above, channelled towards the base, convex beneath, glaucous, often purplish; the uppermost ovate. Cyme terminating, bifid, many-flowered. Peduncles scarcely branched: pedicels alternate, solitary, one-flowered; and sometimes a flowering branchlet or two below the cyme. Calyx-leaves ovate, obtuse, not fleshy. Petals channelled, villose on the outside, yellow, dotted with purple within, the same size as in *S. acre*; according to Desfontaines six in number. The whole plant is pubescent.

Found by Vahl in clefts of rocks in the kingdom of Tunis<sup>1</sup>.

28. Root perennial, small, fibrous. Stem from three to five inches high, upright, leafy, round, spotted; the lower part and the lower leaves smooth, the upper part viscid and hairy; branched at bottom. Leaves blunt, fleshy, convex at the back, flat above, often red, sometimes a little rough at the back with viscid-pointed hairs, especially the uppermost. Panicle cymed, terminating, pubescent, viscid. Calyx also hairy-viscid and blunt. Petals white or rose-coloured, with a red rib. Anthers red. Capsules acuminate, rugged, brown or purplish<sup>2</sup>.

Native of Britain, Germany, France, Italy, Switzerland, Denmark. In bogs and moist meadows in the northern counties of England, and in Scotland. It flowers in June and July.

29. Root annual. It is a very different plant from *Crassula rubens*. Stem an inch high, with two opposite branches next the root of the same height with the stem. Leaves oblong, loose at the base. Peduncles alternate, one-flowered, forming a fastigate corymb. Calyxes dark purple. Petals white, ovate, length of the calyx. Stamens ten. Germs dark-purple<sup>3</sup>.

30. Native of Madeira, where it was found by Mr. Francis Masson, and introduced in 1777. It flowers in July and August<sup>4</sup>.]

#### PROPAGATION AND CULTURE.

The Orpines may be easily increased by cuttings during the summer months, or by parting their roots either in spring or autumn; these thrive best in a dry soil and a shady situation, but may also be planted for the same purposes as the other sorts, especially the third sort, which is evergreen. The stalks of this kind hang down, and have a very good effect in rock-work, and the plants require no care; for when they are fixed in the place, they will spread and propagate fast enough.

All the sorts of Stonecrop are easily propagated, by planting their trailing stalks either in spring or summer, which soon put out roots; but, as these thrive much better upon rocks, old walls or buildings, than in the ground, they may be disposed upon rock-work in such a manner as to have a good effect; and where there are unsightly buildings, their tops may be covered with these plants so as to hide their deformity: in such places, these plants will appear to greater advantage than on the ground. If the cuttings or roots of the perennial sorts are planted in some soft mud laid upon the walls or buildings, they will soon take root, and then spread into every joint or crevice, and in a short time will cover the place; or if the seeds of those annual sorts which grow naturally in dry places are sown soon after they are ripe on the top of walls, the plants will come up, and maintain themselves without farther care.

[*SEDUM*. See *Androsace*, *Aretia*, *Bupleurum*, *Cherleria*, *Cotyledon*, *Chrysosplenium*, *Crassula*, *Draba*, *Portulaca*, *Reaumuria*, *Rhodiola*, *Saxifraga*, *Sempervivum*, *Tillaea*.

—— alpinum. See *Androsace*, *Aretia*, *Draba*.

—— montanum. See *Cherleria*.

—— palustre. See *Chrysosplenium*.

—— petraeum. See *Bupleurum*.

<sup>1</sup> Vahl. symb.

<sup>2</sup> Smith.

<sup>3</sup> Linn. spec.

<sup>4</sup> Hort. kew.

*SEDUM roseum*. See *Rhodiola*.

*SEGUASTER*. See *Caryota*.

*SEGUIERIA*. (So named in honour of Jean Francois Seguer, secretary to the academy of sciences at Nîmes in Languedoc: Author of *Bibliotheca Botanica*, 1740. 4°.—*Catalogus plantarum in agro Veronenli*, 1745, 8°.—*Plantæ Veronenses*, 1745, 8°. vol. 1. 2. and Supplementum, f. vol. 3. 1754.—He died in 1784.)

*Lin. gen. n.* 676. *Reich. n.* 731. *Schreb. n.* 918.

*Loefl. it.* 191. *Juss.* 440.

*Class.* 13. 1. Polyandria Monogynia.

#### GENERIC CHARACTER.

*CAL.* Perianth five-leaved, spreading: leaflets oblong, concave, coloured, permanent.

*COR.* none; unless the calyx be taken for it.

*STAM.* Filaments very many, capillary, spreading, longer than the calyx. Anthers oblong, flattish.

*PIST.* Germ oblong, compressed, at top membranaceous with one side thicker. Style very short, at the thicker side of the germ. Stigma simple.

*PER.* Capsule oblong, augmented by a very large wing, on the straighter side thicker, with three little wings on each side at the base, one-celled, not opening.

*SEED* one, oblong, smooth.

#### ESSENTIAL CHARACTER.

*Cal.* five-leaved. *Cor.* none. *Caps.* one-seeded, terminated by a large wing, and having small lateral ones.

#### SPECIES.

1. *Segueria americana*.

*Lin. spec.* 747. *Juss.* 501. *Reich.* 2. 608. *Willd.* 2. 1219.

*S. aculeata.* *Loefl. it.* 191. *Jacqu. amer.* 170. *piet.* 82.

*Stem climbing prickly, leaves lanceolate emarginate, racemes branched leafy.*

2. *Segueria asiatica*.

*Lour. cochinch.* 341. *ed. Willd.* 417.

*Stem scandent unarmed, leaves ovate quite entire, racemes long, axillary and terminating.*

#### DESCRIPTIONS, &c.

1. This is a shrub about twelve feet in height, with very long, round, green, shining branches, by which it supports itself. Prickles recurved, acuminate, very short, single on each side of the petiole; but sometimes wanting. Leaves lanceolate ovate or oval, emarginate with a point, entire, shining, petioled, alternate, two or three inches long. Racemes terminating, branched, leafy. Flowers numerous, whitish, ill-scented. The calyx with the increasing germ becomes green. The unripe fruit is like that of *Securidaca*.

Native of South America, about Carthagena in woods and coppices, especially by way-sides; flowering in September<sup>1</sup>.

2. Stem shrubby, climbing but without tendrils, branched, round, long, not thick, very tough and fit for binding. Leaves alternate, rough, on short petioles. Flowers greenish-white, void of scent. Calyx corolline, of five roundish concave spreading leaflets. Filaments shorter than the calyx. Style still shorter, with a thickish stigma. Capsule ovate, acuminate, red, two-valved. Seed roundish, pedicelled, connected by a large many-cleft wing, the segments of which are linear; but it has not any lateral little wings at the base. Native of Cochinchina, in woods<sup>2</sup>.

*SELAGINOIDES*. See *Lycopodium*.]

*SELAGO* (of Pliny. *Selego? quod certo ritu seligeretur; being gathered with ceremony for religious purposes.*)

*Lin. gen. n.* 769. *Reich. n.* 829. *Schreb. n.* 995. *Gertn. t.* 54. *Juss.* 110.

*Class.* 14. 1. Didynamia Gymnospermia.

*Nat. order of Aggregata.* *Vitices*, *Juss.*

#### GENERIC CHARACTER.

*CAL.* Perianth one-leaved, four-cleft (five-cleft,) small, permanent: lower segment larger.

*COR.* one-petalled: tube very small, filiform, scarcely perforated: border spreading, five-parted, almost equal; the two upper segments smaller; the lowest larger.

<sup>1</sup> Jacquin.

<sup>2</sup> Loureiro.



STAM. Filaments four, capillary; length of the corolla into which they are inserted; the two upper ones longer. Anthers simple.

PIST. Germ roundish. Style simple, length of the stamens. Stigma simple, acute.

PER. none. Corolla (Calyx, G.) involving the seed.

SEED one or two, roundish.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. tube capillary; border almost equal. Seed one or two.

#### SPECIES.

1. *Selago corymbosa*: *Fine-leaved Selago*.  
Lin. spec. 876. fyst. 568. Reich. 3. 170. hort. cliff. 321. Berg. cap. 156. Kniph. cent. 8. n. 84.  
*Camphorata africana umbellata frutescens*. Comm. hort. 2. 79. t. 40. Raii suppl. 130.  
*Millefolio affinis maderaspatana, camphoratae foliis, radiatum nascentibus*. Mor. hist. 3. 39. Raii suppl. 219.  
*Corymb manifold, flowers disjointed, leaves filiform fascicled*.
- [2. *Selago polystachya*. *Many-spiked Selago*.  
Lin. fyst. 568. Reich. 3. 171. mant. 250.  
*Valeriana africana fruticans, ericae folio*. Comm. hort. 2. 221. f. 111?  
*Corymb with spikes fascicled, leaves filiform aggregate*.
3. *Selago rapunculoides*. *Rampion-like Selago*.  
Lin. spec. 877. fyst. 568. Reich. 3. 171. amoen. 4. 319. & 6. afr. 20.  
*Rapunculus foliis angustissimis dentatis, floribus umbellatis*. Burm. afr. 113. t. 42. f. 1.  
*Spikes corymbed, leaves toothed*.
4. *Selago spuria*. *Linear-leaved Selago*.  
Lin. spec. 877. fyst. 568. Reich. 3. 171.  
*Melampyrum africanum spicatum, foliis angustissimis*. Burm. afr. 115. t. 42. f. 3.  
*Spike corymbed, leaves linear toothblotted*.
5. *Selago fasciculata*. *Cluster-flowered Selago*.  
Lin. fyst. 568. Reich. 3. 171. mant. 250. Gärtn. fruct. 1. 239.  
*Corymb manifold, leaves obovate smooth serrate*.
6. *Selago coccinea*. *Scarlet Selago*.  
Lin. spec. 877. Reich. 3. 172. amoen. 6. afr. 21.  
*Spikes corymbed, lower leaves linear quite entire, upper lanceolate-subulate somewhat toothed*.
7. *Selago capitata*. *Headed Selago*.  
Lin. fyst. 568. Reich. 3. 172. mant. 568. Berg. cap. 157.  
*Head terminating, leaves fascicled linear fleshy smooth*.
8. *Selago fruticosa*. *Shrubby Selago*.  
Lin. fyst. 568. Reich. 3. 172. mant. 87.  
*Heads roundish terminating, leaves scattered linear obtuse quite entire, stem shrubby*.
9. *Selago divaricata*. *Spreading Selago*.  
Lin. fyst. 568. suppl. 284.  
*Heads terminating, leaves filiform-linear fascicled smooth*.
10. *Selago canescens*. *Hoary Selago*.  
Lin. fyst. 568. suppl. 284.  
*Spikes terminating, leaves filiform fascicled smooth*.
11. *Selago geniculata*. *Jointed Selago*.  
Lin. fyst. 568. suppl. 284.  
*Spikes terminating, leaves linear fascicled smooth with the margin bent back*.
12. *Selago triquetra*. *Three-sided Selago*.  
Lin. fyst. 568. suppl. 284.  
*Spikes terminating, leaves three-sided imbricate recurve-reflex smooth*.
13. *Selago hispida*. *Hispid Selago*.  
Lin. fyst. 568. suppl. 284.  
*Spikes terminating, leaves linear scattered reflex hispid*.
14. *Selago Polygaloides*. *Milkwort-like Selago*.  
Lin. fyst. 568. suppl. 284.  
*Spikes terminating, bractes and calyxes keeled, laminae rugged, leaves linear smooth with a reflex margin*.
15. *Selago cinerea*. *Ash-coloured Selago*.  
Lin. fyst. 568. suppl. 285.  
*Corymb compound, leaves linear fascicled smooth reflex at the edge*.
16. *Selago rotundifolia*. *Round-leaved Selago*.  
Lin. fyst. 568. suppl. 285.  
*Corymb compound, leaves ovate smooth obtuse*.

17. *Selago ciliata*. *Fringed Selago*.

Lin. fyst. 568. suppl. 285.

*Flowers in spikes; leaves ovate ciliate acute*.

18. *Selago verbenacea*. *Vervain Selago*.

Lin. fyst. 569. suppl. 285.

*Spikes fascicled, leaves oblong smooth, stem four-cornered right-angled*.

19. *Selago hirta*. *Rough-haired Selago*.

Lin. fyst. 569. suppl. 285.

*Rough-haired, spikes very long, leaves obovate*.

20. *Selago ovata*. *Ovate-headed Selago*.

L'Herit. stirp. nov. tom. 2. t. 33. Ait. kew. 2. 355.

Curt. magaz. t. 186.

*Lippia ovata*: Lin. mant. 89: & Diet. nostr.

*Spikes strobiline ovate terminating, leaves scattered linear, stem shrubby*.

#### DESCRIPTIONS, &c.

These plants are herbaceous or shrubby; all natives of the Cape of Good Hope. Leaves alternate. Flowers in most of the species allied to those of *Eranthemum* and *Verbenæ*, irregular; tubular, in alternate terminating spikes, which are simple or manifold: in a few, the flowers are regular, with a short two-seeded tube, in a sort of terminating corymb<sup>a</sup>.]

1. Stems slender woody, rising seven or eight feet high; but so weak as to require support: they send out many slender branches. Leaves short, linear, hairy; coming out in clusters. Flowers small, and of a pure white; appearing in July and August; but not followed by seeds in England.

This plant is preserved in gardens more for the sake of variety than beauty: for the branches grow very irregular and hang down; and both leaves and flowers are small.

[The fruit is said to have two seeds in it<sup>b</sup>. It was cultivated in 1759, by Mr. Miller<sup>c</sup>.

2. Stem fruticose, erect, even, branched, half a foot high. Leaves in clusters at each germ, linear, somewhat rigid, naked, twice as thick as, and shorter by half than in the preceding. Corymb terminating, as in that: the spikes having a small hispid calyx; the corollas being white; and the fruits ovate, bipartite into two seeds<sup>d</sup>.

3. Border of the corolla four-parted, with the two outer segments larger<sup>e</sup>.

4. Stem suffruticose. Leaves like those of *Hebenstreitia dentata*, alternate, clustered. Spike ovate-oblong, blunt, closely imbricate; with oblong, membranaceous bractes. Corollas five-cleft, violet; with a long filiform tube. Capsule six-valved<sup>f</sup>. Introduced in 1786, by Mr. Francis Masson. It is biennial, and flowers in June<sup>g</sup>.

5. Stem quite simple, erect, even, two feet high. Leaves alternate, oblong, even, acutely serrate except at the base where they are quite entire and very slightly decurrent. Corymb terminating, close. Calyx with five awl-shaped teeth, length of half the tube of the corolla. Corolla purple. Stigma blunt<sup>h</sup>. Introduced in 1774, by Masson. It is biennial and flowers in June<sup>i</sup>. Seeds two, small, oblong; convex on one side, excavated with a groove on the other; brown, clothed by the calyx<sup>k</sup>.

6. This much resembles the *rapunculoides*, but the leaves are thicker and smooth; the lower ones not at all toothed. Stems from the root several, a foot high, quite simple. Corollas very deep purple, with the outer segment larger<sup>l</sup>.

7. Stem suffruticose, erect, pubescent. Leaves blunt, smooth, like those of *S. corymbosa*, but thicker. Spike subovate, close, solitary, imbricate with bractes and flowers. Bractes rhomboid, scarious, length of the flowers.

8. This is a lofty shrub with unequal branches. Leaves small, unequal, in clusters, naked. Heads sessile<sup>m</sup>.

9. 10. Found at the Cape by Chevalier Thunberg.

11. The branches in this are more spreading and divaricating.

<sup>a</sup> Jussieu.

<sup>d</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>k</sup> Gærtner.

<sup>b</sup> Linn. fyst.

<sup>c</sup> Linn. fyst.

<sup>h</sup> Linn. mant.

<sup>i</sup> Amoen.

<sup>g</sup> Hort. kew.

<sup>f</sup> Linn. spec.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. mant.



12. 13. These, with the eleventh, were also found at the Cape by Thunberg.

14. This has the habit of *Polygala*, with long linear leaves, and pendulous spikes.

15. Very like *S. corymbosa*, and perhaps a variety of it.

16. 17. 18. 19. All these were found at the Cape by Thunberg.

20. Flowers white, with a yellow spot on the two uppermost segments, and sometimes on all of them, and an orange spot at the mouth of the tube. It is valuable not so much on account of its beauty, as the curious structure of its spikes, and the fragrant of its flowers. Linneus described it from a dried specimen, which accounts for his saying that the flowers are of a dark violet-colour. The trivial name of *bracteata* would have been better than *ovata*; for though its ovate inflorescence may be peculiar to the species, its bractes are so very singular, that they constitute the most prominent feature of the plant.

Like all the rest it is a native of the Cape, whence it was introduced by Masson in 1774. It flowers in June and July.

Linneus thus describes his *Lippia ovata* in the Mantissa.—It is a prostrate shrub, a foot long, with pea-shaped knobs all over it, and round branches. Leaves somewhat succulent, even: from each axil are several smaller leaves, which are sometimes ternate. Strobiles terminating, ovate, imbricate; with scarious, ovate, smooth bractes, longer than the calyx, reflex at the tip; within each of these is a tubular, five-toothed calyx. Corolla funnel-form, five-cleft, dark-violet. Stamens twin, within the tube. Germ one. Style filiform. Stigma simple.]

#### PROPAGATION AND CULTURE.

Plant cuttings, during any of the summer months, in a bed of fresh earth, covering them close with a bell or hand-glass, shading them from the sun, and refreshing them now and then with water. Harden them gradually, and then transplant them into small pots, placing them in the shade till they have taken root. Place them with other hardy greenhouse plants; and about the end of October remove them into the dry stove. They only require protection from frost, and may be treated in the same manner with the hardier greenhouse plants.

[SELAGO. See *Camphorosma*, *Eranthemum*, *Lippia*, *Lycopodium*, *Manulea*, and *Stilbe*.

SELF-HEAL. See *Prunella*.]

SELINUM. (Σελινον of Theophrastus and Dioscorides. Some derive it from the εν ελει φρεσθαι, from its growing in mud. Whence Homer's ελεσθρεπτον σελινον.

Lin. gen. n. 337. Reich. n. 368. Schreb. n. 470.

Gertn. t. 21. Juss. 223. Thysselinum. Tournef.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatae or Umbelliferae.

#### GENERIC CHARACTER.

CAL. Umbel universal manifold, spreading, flat: partial similar.

Involucre universal many-leaved: leaflets lanceolate-linear, reflex: partial similar, spreading, length of the corollæ.

Perianth proper scarcely observable.

COR. universal uniform. Florets all fertile. Proper of five cordate equal petals.

STAM. Filaments five, capillary. Anthers roundish.

PIST. Germ inferior. Styles two, reflex. Stigmas simple.

PER. none. Fruit compressed-flat, oval-oblong, striated in the middle on both sides, bipartite.

SEEDS two, oval-oblong, flat on both sides, striated in the middle, with the sides membranaceous.

OBS. The seeds vary in form, and the involucre in number of leaflets.

#### ESSENTIAL CHARACTER.

Pet. cordate, equal. Invol. reflex. Fruit oval-oblong, compressed-flat, striated in the middle.

#### SPECIES.

1. *Selinum sylvestre*. Willd. *Selinum*.

Lin. spec. 350. syst. 278. Reich. 1. 673. Willd. 1. 1396. suppl. 180. mant. 353. hort. cliff. 93.

\* Curtis.

\* Hort. kew.

upf. 59. Fl. dan. t. 412. Roth. germ. 1. 132. 2. 352. Hall. herb. n. 800? Krock. files. n. 409. Allion. pedem. n. 1300.

*Apium sylvestre* Dodonæi, *Thysselinum quorundam*. Baub. hist. 3. 188.

A. sylv. lacteo succo turgens. Baub. pin. 153. Raii hist. 413.

*Thysselinum* Plinii. Lob. hist. 409. Mor. hist. 3. 319. f. 9. t. 17. f. 2.

Stem even, root fusiform manifold.

2. *Selinum palustre*. Marsh *Selinum*.

Lin. spec. 350. syst. 278. Reich. 1. 673. Willd.

1. 1397. Fl. lapp. n. 110. succ. n. 239. hort.

cliff. 92. Hudf. angl. 115. Wither arr. ed. 3.

293. Smith brit. 303. engl. bot. t. 229. Relb.

cant. suppl. 1. 11. n. 1002. Fl. dan. t. 257.

Jacqu. vind. 49. Hall. herb. n. 799? Pollich pal.

n. 276. Scop. carn. n. 232. Roth. germ. 1. 132.

2. 353. Hoffm. germ. 95. Krock. files. n. 410.

Villars dauph. 2. 632. Allion. pedem. n. 1303.

S. sylvestre. Jacqu. austr. t. 152. Host. synopsis 145.

Hoffm. germ. 95.

*Thysselinum angustifolium*. Riv. pent. t. 13.

T. f. *Apium sylvestre*. Park. theat. 928.

*Sefeli palustre lactescens*. Baub. pin. 162. prodr. 85.

Park. theat. 904. 6. Mor. hist. 3. 317.—acre foliis

ferulaceis, flore albo femine lato. Baub. hist. 3. 188.

Raii hist. 414.

*Apium filvestre* f. *Thysselinum*. Ded. pempt. 699.

Ger. emac. 1020.

Stem striated, root almost simple, rays of the umbel hispid.

[3. *Selinum austriacum*. Austrian *Selinum*.

Lin. syst. 278. Willd. 1. 1397. Jacqu. austr. 1.

t. 71. vind. 49. Scop. carn. n. 329. Host. synopsis

145. Crantz. fasc. 3. 43. t. 14. f. 2.

S. argenteum. Villars dauph. 2. 636. Allion. pedem.

n. 1304.

Stem grooved, universal involucre many-leaved, leaflets

wedge-form gashed.

4. *Selinum Sibiricum*. Siberian *Selinum*.

Lin. spec. ed. Willd. 1. 1398. Retz. obs. 2. 16.

Leaves tripinnate, universal and partial involucre co-

lourless nine-leaved.

5. *Selinum Caruifolia*. Caraway-leaved *Selinum*.

Lin. spec. 350. syst. 278. Reich. 1. 674. Willd.

1. 1398. suppl. 180. mant. 353. Retz. obs. 2. 16.

Gertn. fruct. 1. 89. Willich obs. n. 78. De la

Cbenal in act. herb. 7. 336. Host. synopsis 145.

Fl. dan. t. 667. Roth. germ. 1. 132. 2. 354.

Hoffm. germ. 95. Pollich pal. n. 277. Leers

herborn. n. 204. Hall. herb. n. 802. t. 20. Jacqu.

austr. 1. 13. t. 16. Gmel. fib. 1. 204. t. 48.

Krock. files. n. 411.

S. pseudo-caruifolia Crantz. Allion. pedem. n. 1306.

*Sefeli pratense tenuifolium* f. *Daucus*. Casp. Baub.

Burf. herb. 8. 74.

*Caruifolia*. Baub. pin. 158. Baub. hist. 3. 171. Raii

hist. 415. Villars dauph. 2. 629.

*Carum pratense*. Park. theat. 910. n. 3.

*Angelica tenuifolia*. Riv. pent. t. 18. Rupp. gen. 277.

Dill. giff. 137.

*Laserpitium selinoides*. Scop. carn. 325.

*Thysselinum palustre*. Vaill. bot. par. 191. t. 5. f. 2.

Stem grooved acute-angled, universal involucre none, leaf-

lets lanceolate gashed callose mucronate at the top.

6. *Selinum Chabrai*.

Lin. syst. 279. Willd. 1. 1399. Jacqu. austr. 1.

t. 72. Host. synopsis 146. Hoffm. germ. 95.

S. Caruifolia Chabrai. Crantz umb. 62. t. 3. fasc. 3.

162. t. 3. f. 2. Allion. pedem. n. 1305.

*Peucedanum Caruifolia*. Villars dauph. 2. 630.

*Caruifolia*. Chabr. stirp. 389.

Stem round striated, universal involucre none, sheaths of

the leaves loose, leaflets filiform-linear.

7. *Selinum Seguieri*. Fennel-leaved *Selinum*.

Lin. syst. 279. Reich. 1. 675. Willd. 1. 1399.

suppl. 179. Jacqu. hort. 1. 24. t. 61. Host.

synops. 146.

*Ligusticum alpinum perenne*, ferulae folio, floribus albis.

Seguier veron. 2. 41. t. 13. Till. pif. 98. t. 39. f. 2?

Stem roundish striated, universal involucre none, leaflets

trifid linear mucronate.

8. *Selinum*



8. *Selinum Monnieri.* Annual *Selinum*.  
*Lin. spec.* 351. *fl.* 279. *Reich.* 1. 675. *Willd.*  
 1. 279. *amoen.* 4. 269. *Jacqu. hort.* 1. 25. t. 62.  
*Gouan illustr.* 11.  
*Umbels clustered, universal involucre reflex, five membra-*  
*naceous ribs to the seed.*
9. *Selinum decipiens.*  
*Lin. spec. ed. Willd.* 1. 1400. *Schrad. & Wandl.*  
*fert. hannov.* 3. 23. t. 13.  
*Stem woody naked below, lower leaves bipinnate, pin-*  
*nules lanceolate entire and gasped serrate.*

## DESCRIPTIONS, &amp;c.

1. The herb is a little milky, with numerous even stems, not striated. Leaflets linear. Umbel patulous: Umbelllets remote. Seeds oval-oblong, with three raised obtuse approximating grooves. It has both involucre<sup>p</sup>.

Native of Denmark, Germany, Silesia, France and Piedmont.

2. Root subfusiform, thick, branching, yellowish without, white within. The whole plant, when wounded, pours forth a milky thick bitter fetid juice. Stem three or four feet high, single, erect, hollow, deeply grooved, smooth, leafy, purple at the bottom, branched at the top. Leaves of a pleasant green, triangular; in more luxuriant plants upwards of a foot and half in length, and as much or more in breadth, bipinnate or tripinnate; the leaflets opposite and pinnatifid; the clefts varying from linear to oval-lanceolate, very entire; reddish at the points. Umbels erect, flat, large and beautiful, with many (about thirty) rays. The umbelllets have upwards of forty. Involucre and involucret many-leaved, (nine and twelve,) shorter than the rays, bent down, membranaceous at the edge. Petals white, involute-cordate, equal: before flowering reddish on the outside. Fruit elliptical, ancipital. Seeds roundish, blunt, edged with a kind of border, scored in the centre<sup>q</sup>.

Native of the North of Europe, Germany, Austria, Dauphiné and Piedmont; in swamps and moors. Not known to be indigenous of England till very lately. Johnson (in Gerard) says expressly, "I have not as yet observed this plant growing wild with us."—Mr. Hudson, in the second edition of his *Flora Anglica* (1778) says, it was found near Doncaster by Mr. Tofield. According to Dr. Withering, it was found in 1779 or 1780, by Mr. Seale, at Cannon Winder, near Flookburgh in Lancashire; and since, round the sides of Ayside Tarn, three miles north of Cartmell, by Mr. Hall. Brought to Mr. Woodward and Mr. Crowe, when in Lancashire in 1781, by the Rev. Mr. Jackson. In great plenty, in low wet moors near Whitgift, Yorkshire, four miles from the confluence of the Ouse and Trent, by Mr. Wood. At Weel Carr, and other wet places near Beverley, by Sir Thomas Frankland. In Alder swamps near Yarmouth, by Mr. Wigg. Between Norwich and Heigham towards the river, by Mr. Pitchford. Near Prickwillow bank in the Isle of Ely, by Mr. Relhan and Dr. Goodenough.—It flowers in July<sup>r</sup>.

3. Root perennial, at the beginning of autumn pouring out a moderate quantity of yellowish white milk. Stem striated, smooth. The radical leaf is divided by a round petiole into three branches, which are again subdivided. Petioles striated with eight or ten whitish raised lines. The second branches bear pinnas that are sessile and divided almost to the base into lanceolate simple bifid and trifid segments. These leaves are flat, dark green above and paler beneath: the tips are whitish and ending as it were in a soft spinule. Involucre reflex, scarcely half an inch in length, with the leaflets white and as it were membranaceous at the edge. Rays of the umbel as far as twenty-two, somewhat villose. Involucres spreading. The umbelllets have forty rays and upwards. Petals white, equal, cordate. Styles erect, but finally divaricating. All the flowers are not fertile<sup>s</sup>.

Native of Austria, Idria, and perhaps of Dauphiné

and Piedmont. Villars suspects that his plant may be different.

4. Root biennial, fusiform. Stem erect, three feet high, hollow, striated, glaucous. Leaves tripinnate: pinnas lacinate; acute; white at the tip; petioles compressed, channelled above; sheaths of the upper ones white. Peduncles grooved. Involucre nine-leaved; pressed close to the rays; leaflets lanceolate, white-membranaceous and pellucid, about half the length of the rays, with a green rib. Involucres similar, nine-leaved, a little wider and overtopping the flowers. Umbel with from twenty to thirty rays: umbelllets with as many white flowers. Seeds with three dorsal ribs besides the marginal wings, oblong-rounded. It has the smell of a fresh Carrot-root; and carries a singular appearance on account of the white involucre entirely involving the umbelllets before they are completely unfolded<sup>t</sup>. Retzius received the seeds among others from Siberia.

5. Root perennial. Stems acutely striated. All the leaflets have a white apex or dagger-point. Petals converging, concealing the receptacle. Styles erect. Seeds ovate, with three compressed ridges, as in *Laserpitium*: the seeds gape from each other at the sides<sup>u</sup>.

Universal involucre none; partial many-leaved. Fruit compressed, rounded, membranaceous-winged; consisting of two small rounded seeds, emarginate at top and bottom, five-winged: the two marginal wings very wide and spreading; the three dorsal wings narrower by half than the others, approximating nearly upright: the ventral part flat or slightly concave<sup>v</sup>.

The above description by Gärtner is taken from Gmelin's plant. If we may depend upon Vaillant's (bot. par. t. 5. f. 2.) and Haller's figures, their plant is quite different from this. The figure of the seeds in Rivinus and Crantz agrees with that of Gmelin; but the habit of the plant is different: we are to consider however that most of Gmelin's figures are rather in a rough style<sup>w</sup>.

Retzius remarks, that Gmelin's *Selinum* has the leaves of Jacquin's, but smaller, and in the figure; the long wide sheaths, simply pinnate at the end, are wanting; it rather belongs however to this, than to the *caruifolia* of Linneus. In the *caruifolia* of Crantz, the conformation of the sheaths is the same as in Jacquin's; but the leaves are dissimilar.

Retzius affirms that three distinct plants have been confounded under the name of *caruifolia*.

1. *Selinum caruifolia* of Linneus, Haller and Flora Danica.

2. *Sel. Caruifolia* of Jacquin.

3. *S. Caruifolia* of Crantz. See the next species.

Native of Denmark, Germany, Switzerland, Austria and Siberia. Introduced in 1774, by Monf. Richard. It flowers in July and August<sup>x</sup>.

6. Height from eight inches to a foot. Stems smooth; channelled, supporting two or three umbels. Root-leaves very much resembling those of *Carui*, but not quite so fine: leaflets branched, unequal, and disposed so as to form several crosses round the common petiole: stem-leaves very different; being simply pinnate, with some forked leaflets at their base; rendering them bipinnate; the segments four or six times as long as in the root-leaves: thus approaching to *Peucedanum*, and destroying all resemblance between this plant and that figured by Vaillant in t. 5. f. 2. which Crantz has referred to this. The umbels have sometimes an involucre of several very narrow leaves, but frequently are without any: they have eight or ten unequal rays: the umbelllets have an involucre of several leaves. Seeds a little oblong, with a marginal wing, and three apparent ribs, but not rising much; on the back. This species is intermediate between *Peucedanum* and *Selinum*<sup>y</sup>.

Native of Germany, Austria, France and Italy.

7. Stem manifold, four feet high, even, not striated except at the top, where it is very obscurely so. Upper branches opposite, as are also the leaves. Leaves

<sup>p</sup> Linn. mant.

<sup>q</sup> Smith and Woodw. in Withering.

<sup>r</sup> Smith and Withering.

<sup>s</sup> Scopoli.

<sup>t</sup> Retzius

<sup>u</sup> Lin. syst. mant. suppl.

<sup>v</sup> Gärtner.

<sup>w</sup> Ident.

<sup>x</sup> Hort. kew.

<sup>y</sup> Villars.



# S E M

tripinnate, spreading; partial ones divaricate or spreading very much. Pinnas linear, acute, sessile, subdecurrent, with an unarmed point. Umbel compound, with rays as far as forty. Umbellet with many rays. Common peduncle indistinctly striated. Involucre none. Involucres bristle-shaped, many, shorter than the florets. Corollas expanded. Petals white. Styles of the fruit spreading horizontally. Perennial.

Native of Italy and Carniola<sup>b</sup>. Introduced in 1774, by Joseph Nicholas de Jacquin, M. D. It flowers in July<sup>c</sup>.

8. This has the same structure of the seeds as in *Laserpitium*; but the habit and every thing else of *Selinum*<sup>d</sup>. Stem sometimes purplish, with very numerous streaks. Peduncles opposite to the leaf, striated also, thicker at the top. Involucre of seven or nine unequal bristle-shaped leaflets, scarcely two lines long. Involucres of seven or nine bristle-shaped leaflets, the length of the pedicels or umbellets. Hairs on the branches and upper part of the stem few; towards the bottom and on younger plants more abundant. In a garden the plant becomes frequently quite smooth<sup>e</sup>.

Native of the South of France. Annual. Flowering in July and August. Introduced in 1771, by Mr. Richard<sup>f</sup>.

9. Stem the thickness of the thumb, below woody and naked. Leaves almost like those of *Angelica*, wide and bipinnate; leaflets lanceolate, serrate, the end one gashed; floral leaves pinnate, with the end and lower leaflets gashed. Sheaths widened, toothed. Involucre many-leaved; leaflets wide, lanceolate-cuneiform, trifid, membranaceous at the edge. Involucres many-leaved, lanceolate<sup>g</sup>.]

## PROPAGATION AND CULTURE.

These plants are easily propagated by seeds, sown in the autumn. The plants are to be treated in the same way as *Angelica*.

[*SELINUM*. See *Angelica*, *Athamanta*, *Imperatoria*, *Pastinaca*, *Peucedanum*, *Seseli*.

*SEMECARPUS*. (From *σημα* a mark, or *σημειον* to mark, and *καρπος* a fruit.)

*Lin. gen. Schreb. n. 501. suppl. 25. Roxb. corom. 1. t. 12. Anacardium. Gertn. t. 40. Juss. 368.*

*Class. 5. 3. Pentandria Trigynia.—Polygamia Dioecia. Roxb. corom.*

## GENERIC CHARACTER.

\* *Hermaphrodite*.

*CAL. Perianth* one-leaved, bell-shaped, inferior, half-five-cleft: *segments* cordate, acute.

*COR. Petals* five, lanceolate, margined, obtuse, larger than the calyx.

*STAM. Filaments* five, awl-shaped, shorter than the corolla, inserted into the receptacle. *Anthers* oblong, small.

*PIST. Germ* superior, globular-depressed. *Styles* three, recurved, incumbent on the germ, and shorter than it. *Stigmas* club-shaped, retuse.

*PER. none. Recept.* erect, fleshy, pear-shaped (or globular-depressed,) smooth.

*SEED* a single *Nut*, resting upon the receptacle, heart-shaped (ovate-acuminate. G.) flattened on both sides, smooth and shining.

\* *Male flowers* on a separate tree, smaller than the hermaphrodites.

*CAL. and COR.* as in the hermaphrodites.

*STAM. Filaments* five, length of the petals. *Anthers* much larger.

*PIST. none*: but in its place a semiglobular, hairy glandulous body.

*Obs.* In the younger *Linneus's* supplement, the fruit is considered as a drupe.

## ESSENTIAL CHARACTER.

*Cal.* inferior, five-cleft. *Cor.* five-petalled. *Nut* kidney-form, inserted into a large fleshy flattened receptacle.

<sup>b</sup> Linn. suppl.  
<sup>c</sup> Gouan.

<sup>d</sup> Hort. kew.  
<sup>e</sup> Hort. kew.

<sup>f</sup> Linn. spec.  
<sup>g</sup> Willdenow.

# S E M

## SPECIES.

1. *Semecarpus Anacardium*. *Marking-nut tree*.  
*Lin. syst. 292. Willd. 1. 1476. suppl. 182. Roxb. corom. 1. 13. t. 12.*  
*Anacardium. Baub. hist. 1. 334. Ger. 1360. emac. 1544. Park. theat. 1568. Jonst. dendr. t. 49. Raii hist. 1813. Best. mus. t. 4.*  
*A. officinarum. Gertn. fruct. 1. 192.*  
*A. primum. Baub. pin. 511.*  
*A. orientale officinarum.*

## DESCRIPTION, &c.

This is a large tree, with a great, straight, lofty trunk, covered with gray scabrous bark: the bark of the younger parts is smooth, and of a light ash-colour; its inner substance contains in crevices a quantity of a white, soft, almost insipid gum. Branches numerous, spreading. Leaves about the extremities of the branchlets, alternate, petioled, wedge-form, rounded at the apex, entire, firm, above pretty smooth, below whitish and scabrous, from nine to eighteen inches long, and from four to eight broad. Petiole an inch and half or two inches long, half-round. Panicle terminating, very large, composed of many simple spikes; that of the male tree much more slender, but as large or larger. Bractes many, small, falling. Flowers numerous, small, of a dirty-greenish yellow colour. Receptacle of the fruit, when ripe, yellow, about the size of the nut; which is black; the cover or shell composed of two laminae, the inner hard, the outer less so and leathery; between them are cells, which contain the black corrosive resinous juice, for which this nut has been long known; the juice is of a pale milk colour, till perfectly ripe, when it becomes black.

It is a native of all the mountainous parts of India; flowering in July and August. The seed is ripe in January and February.

The wood of this tree is reckoned of no use, not only on account of its softness, but also because it contains much acrid juice, which renders it dangerous to cut down and work upon. The fleshy receptacles on which the seed rests are roasted in the ashes, and eaten by the natives: their taste is exceedingly like that of roasted apples: unroasted they taste astringent and acrid, leaving a painful sensation on the tongue for some time. The kernels are rarely eaten.

The green fruit well pounded into a pulp makes good bird-lime. The pure black acrid juice of the shell is employed by the natives externally, to remove rheumatic pains, aches and sprains; in tender constitutions it often produces inflammation and swelling; but where it has not these effects, it is an efficacious remedy. It is employed by the Telinga physicians in the cure of almost every sort of venereal complaint.

It is in general use for marking cotton cloths; the colour is improved and prevented from running, by a little mixture of quick-lime and water. This juice is not soluble in water, and only diffusible in spirits of wine, for it soon falls to the bottom, unless the menstruum be previously alkalinized. The solution is then pretty complete, and of a deep black colour. It sinks in expressed oils, but soon unites perfectly with them: alkaline lixivium acts upon it with no better success than plain water<sup>a</sup>.

*SEMEN SANCTUM*. See *Artemisia santonica*.]

*SEMPERVIVUM* (of *Pliny*. *Ever-living*, *Evergreen*.)

*Lin. gen. n. 612. Reich. n. 667. Schreb. n. 837. Gertn. t. 65. Juss. 307. Sedi species. Tournef. t. 140. C. E. I.*

*Class. 11. 6. Dodecandria Polygynia. f. Dodecagynia. Nat. order of Succulentæ. Sempervivæ, Juss.*

## GENERIC CHARACTER.

*CAL. Perianth* six to twelve-parted, concave, acute, permanent.

*COR. Petals* six to twelve, oblong, lanceolate, acute, concave, a little bigger than the calyx.

*STAM. Filaments* six to twelve (or more,) subulate-slender. *Anthers* roundish.

*PIST. Germs* six to twelve, in a ring, erect; ending in as many spreading *Styles*. *Stigmas* acute.

<sup>a</sup> Roxburgh.



## S E M

PER. Capsules fix to twelve, oblong, compressed, short, in a ring, acuminate outwards, opening inwards.  
SEEDS many, roundish, small.

OBS. Being very frequently luxuriant, it becomes greater as to the number, especially as to the female parts of the flower. It is allied to *Sedum*, but differs in having more petals than five.

## ESSENTIAL CHARACTER.

Cal. twelve-parted. Pet. twelve. Caps. twelve, many-seeded.

## SPECIES.

1. *Sempervivum arboreum*. Tree Houseleek.  
Lin. spec. 664. syst. 455. Reich. 2. 459. Willd. 2. 930. hort. cliff. 179. upf. 118. Ait. kew. 2. 147. Desfont. atlant. 389.  
S. arborecens. Camer. epit. 857. Matth. 1120.  
S. f. *Sedum arb. majus*. Dod. pempt. 127. f. 1.  
*Sedum majus arborecens*. Bauh. hist. 3. 686. Ger. emac. 510. Raii hist. 687. Tournef. inst. 262.—  
flosculis candidis. Bauh. pin. 282. Bradl. succ. 4. 1. t. 31.  
S. majus arb. græcum. Lob. ic. 379.  
S. majus legitimum. Clus. hist. 2. 58. Park. theat. 730.  
Stem arborecens even branched, leaves wedge-form smoothish ciliate, ciliae patulous soft.
2. *Sempervivum canariense*. Canary Houseleek.  
Lin. spec. 664. syst. 455. Reich. 2. 459. Willd. 2. 931. hort. cliff. 179. Ait. kew. 2. 147.  
*Sedum canarium*, foliis omnium maximis. Comm. hort. 2. 189. t. 95.  
S. majus canarium acaulon pilis ad oras foliorum hispida. Pluk. phyt. t. 314. f. 1. Raii suppl. 362.  
Stem frutescent, leaves orbicular-spatulate-villose, nectaries subquadrate truncate.
- [3. *Sempervivum glutinosum*. Clammy Houseleek.  
Lin. spec. ed. Willd. 2. 931. Ait. kew. 2. 147.  
Stem frutescent, leaves wedge-form viscid ciliate, ciliae cartilaginous pressed close.
4. *Sempervivum glandulosum*. Glandulous-leaved Houseleek.  
Lin. spec. ed. Willd. 2. 931. Ait. kew. 2. 147.  
Stem frutescent, leaves orbicular-spatulate glandular at the edge, glands globular, nectaries wedge-form truncate.]
5. *Sempervivum tectorum*. Common Houseleek.  
Lin. spec. 664. syst. 455. Reich. 2. 459. Willd. 2. 932. mat. med. 121. hort. cliff. 179. fl. succ. n. 428. Hudf. angl. 211. Wither. arr. ed. 3. 452. Smith brit. 522. Curt. lond. 3. t. 29. Lightf. scot. 251. Relb. cant. n. 355. Sibth. oxon. n. 443. Abbot bedf. n. 357. Fl. dan. t. 601. Hoffm. germ. 168. Roth. germ. 1. 208. 2. 536. Pollich pal. n. 464. Krock. files. n. 742. Villars dauph. 3. 685. Allion. pedem. n. 1935. Mill. illustr. Blackw. t. 366. Regnault bot.  
S. majus. Matth. 1117. Camer. epit. 854. Ger. 411. emac. 510. 1. Raii syn. 269. Neck. gallob. 213.—  
alterum f. Jovis barba. Dod. pempt. 127. 2.  
*Sedum tectorum*. Scop. carn. n. 559. Hall. helv. n. 949.  
S. majus. Fuchs. hist. 32.—vulgare. Bauh. pin. 283. Bauh. hist. 3. 687. Park. theat. 731. 3. Raii hist. 687. Mor. hist. f. 12. t. 7. f. 41.  
Cotyledon altera 1. *Sedum vulgare*. Clus. hist. 2. 63. f. 2.  
Leaves ciliate, offsets spreading.
6. *Sempervivum globiferum*. Globular Houseleek.  
Lin. spec. 665. syst. 455. Reich. 2. 460. Willd. 2. 932. hort. cliff. 180. Hoffm. germ. 168. Roth. germ. 2. 536. Jacqu. austr. 5. 50. t. app. 40. Allion. pedem. n. 1939. Schmid. ic. 95. t. 26. Knorr. del. 2. t. S. 4.  
*Sedum n. 950*. Hall. helv.  
S. vulgari magno simile. Bauh. hist. 3. 688.  
S. majus vulgari simile, globulis decidentibus. Mor. hist. f. 12. t. 7. f. 18.  
Leaves ciliate, offsets globular.
- [7. *Sempervivum villosum*. Hairy Houseleek.  
Lin. spec. ed. Willd. 2. 933. Ait. kew. 2. 148.  
Leaves spatulate-wedge-form obtuse villose, nectaries palmate, segments subulate.

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8. *Sempervivum tortuosum*. Gouty Houseleek.  
Lin. spec. ed. Willd. 2. 933. Ait. kew. 2. 148. Curt. magaz. t. 296.  
Leaves obovate beneath gibbous villose, nectaries two-lobed.
9. *Sempervivum stellatum*. Starry Houseleek.  
Lin. spec. ed. Willd. 2. 933. Smith in Linn. trans. 1. 251.  
*Sedum petraeum rotundifolium*, flore luteo stellato montis Baldi. Segu veron. 2. 360. t. 17.  
Stem herbaceous pubescent, leaves spatulate scattered.]
10. *Sempervivum arachnoideum*. Cobweb Houseleek.  
Lin. spec. 665. syst. 456. Reich. 2. 460. Willd. 2. 933. hort. cliff. 180. Jacqu. austr. 5. 51. t. app. 42. Villars dauph. 3. 686. Allion. pedem. n. 1937. Schmid. ic. 149. t. 38. Knorr. del. 2. t. S. 8. Curt. magaz. t. 68.  
S. rubrum montanum gnaphaloides. Col. ecphr. 1. 292. t. 291. Raii hist. 688.  
*Sedum n. 952*. Hall. helv.  
S. montanum tomentosum. Bauh. pin. 294.  
S. rubrum tomentosum. Park. theat. 732. n. 5. t. 731. f. 5.  
Leaves interwoven with hairs, offsets globular.
- [11. *Sempervivum hirtum*. Rough Houseleek.  
Lin. spec. 665. syst. 456. Reich. 2. 460. Willd. 2. 934. amoen. 4. 273. Hoffm. germ. 168. Krock. files. n. 743. Allion. pedem. n. 1938. t. 65. f. 1.  
*Sedum majus montanum*, foliis dentatis. Bauh. pin. 283. Raii hist. 688.  
S. majus alterum flore Atlante. Park. theat. 730. n. 4. Cotyledon altera secunda Clusii. Ger. emac. 510. n. 4. C. altera montana. Clus. hist. 2. 63.  
Stem leaves and ends of the petals rough-haired.]
12. *Sempervivum montanum*. Mountain Houseleek.  
Lin. spec. 665. syst. 456. Reich. 2. 461. Willd. 2. 934. Hoffm. germ. 169. Jacqu. austr. 5. 50. t. app. 41. Krock. files. n. 744. Ger. prov. 429. 5. Villars dauph. 3. 685. Allion. pedem. n. 1936. Gært. fruct. 1. 314.  
*Sedum n. 951*. Hall. helv.  
S. alpinum rubro-magno flore. Bauh. pin. 284.  
S. majus montanum, foliis non dentatis, floribus rubentibus. Bauh. pin. 283. Raii hist. 688.  
S. montanum latifolium flore purpureo. Bauh. hist. 3. 688.  
S. majus angustifolium. Park. theat. 732. 6. t. 731. f. 6. Ger. emac. 511. f. 5.  
S. minus flore rubente. Bess. syst. vern. 6. t. 8. f. 2.  
Leaves quite entire, offsets spreading.
- [13. *Sempervivum sediforme*. Stonecrop-leaved Houseleek.  
Lin. syst. 456. Reich. 2. 461. Willd. 2. 934. Jacqu. hort. 1. 35. t. 81.  
β. *Monstrosum*. Jacqu. misc. 1. 133. t. 5.  
Leaves scattered, lower ones cylindrical, upper ones flattened.
14. *Sempervivum monanthos*. Clustered Houseleek.  
Lin. spec. ed. Willd. 2. 934. Ait. kew. 2. 149. Curt. magaz. t. 93.  
Leaves round-club-shaped clustered, peduncles naked mostly one-flowered, nectaries obcordate.]

## DESCRIPTIONS, &amp;c.

1. Tree Houseleek rises with a fleshy smooth stalk eight or ten feet high, dividing into many branches, which are terminated by round heads or clusters of leaves lying over each other like the petals of a double Rose, succulent, of a bright green, and having very small indentures on their edges. The stalks are marked with the vestiges of the fallen leaves, and have a light brown bark. The flower-stalks rise from the centre of these heads; and the numerous bright-yellow flowers form a large pyramidal spike, or thyrse.

[Each flower is pedicelled, and is accompanied by a lanceolate, acute bracte, which shrivels and falls off. Calyx ten-parted. Petals ten. Scales of the nectary as many at the base of the filaments. Stamens twenty. Germs ten, with a gland at the base of each<sup>1</sup>.

Native of Portugal, the Levant, and Barbary near Algiers:] the old walls about Lisbon are covered with it. It flowers through the winter, commonly from

<sup>1</sup> Linn. and Desfont.



december to march. [Cultivated here in 1727, as appears from Bradley's succulent plants<sup>k</sup>.]

A variety of this with variegated leaves was obtained from a branch accidentally broken from a plant of the plain fort, at Badmington, the seat of the Duke of Beaufort. [This plant therefore must have been cultivated here long before Bradley's time.]

2. This seldom rises above a foot and half high, unless the plants are drawn up by tender management. The stalk is thick and rugged, chiefly occasioned by the vestiges of decayed leaves. At the top is a very large crown of leaves, disposed circularly like a full blown Rose: they are large, succulent, soft to the touch, and pliable, ending in obtuse points which are a little incurved. The flower-stalk comes out from the centre, and rises near two feet high, branching out from the bottom, so as to form a regular pyramid of flowers, which are of an herbaceous colour.

[Petals nine. Stamens eighteen. Pistils nine.—Native of the Canary Islands. Cultivated in 1699, by the Dutchess of Beaufort. It flowers in june and july.

3. Petals yellow, eight or nine. Stamens sixteen or eighteen. Pistils eight or nine.—Native of Madeira; whence it was introduced by Masson in 1777. It flowers in july and august.

4. This also is native of Madeira; and was introduced at the same time with the former by Masson. It flowers from march to may<sup>l</sup>.

5. Common Houseleek has a perennial fibrous root. Root-leaves in form of a full-blown double Rose, sessile, wedge-shaped or obovate, somewhat more than an inch long, very fleshy, thick, flat above, a little convex beneath keeled and whitish, smooth on both sides, the edges fringed with hairs and generally tinged with red, pointed, upright, gradually smaller inwards. Offsets on long footstalks, globular, the size of a pigeon's egg or larger, composed of erect leaves lying over each other. Flowering-stem upright, from nine inches to a foot in height, round, fleshy, pubescent, having alternate, lanceolate, thinner leaves on it, of a reddish colour, at top branched and forming a sort of corymb; the branches spreading and bending back. Flowers numerous, clustered, upright, pubescent, flesh-coloured, all growing one way. Calyx twelve-parted (12 to 16. *H.*): segments lanceolate, hirsute, ciliate, clammy, purplish at top. Petals twelve or more, twice the length of the calyx, lanceolate, connate at the base. Stamens shorter than the petals, generally fourteen; (6 to 25. *W.* 24 to 32. *H.*) but varying in length and number, as indeed all the parts do. Germs twelve, upright<sup>m</sup>. Capsules twelve to sixteen<sup>n</sup>.

Haller, who has minutely described this plant, as he found it in its wild state on the Alps, remarks that the filaments are of two kinds, the one perfect and similar to the generality of filaments, the other even when young evidently enlarged towards the end, and throwing out from their substance little oblong white corpuscles, like the eggs of some insect. Mr. Curtis farther remarks, that the filaments thus enlarged are more glutinous than the others, and the anthers somewhat imperfect; as the fructification proceeded towards maturity, the filaments continued to enlarge about the middle, while the top was drawn out to a kind of beak, and in this state they seem to partake more of the nature of the pistil than the filaments: on cutting them through they appeared hollow, and contained some of the same corpuscles which were observable on the outsides of many of them<sup>o</sup>.

Native of some parts of Europe on rocks: it is common in most parts on the roofs of buildings, but there not properly indigenous, though inserted in all the Floras. It flowers in july.

The juice, either applied by itself, or mixed with cream, gives present relief in burns, and other external inflammations. With honey, it is a useful application in the thrush<sup>p</sup>.

Boerhaave found ten ounces of the juice beneficial in dysenteries, and others have found it useful in

gonorrhoeas<sup>q</sup>: but it is not admitted into our modern practice.

Linneus informs us, that Houseleek is a preservative to the coverings of houses in Simoland. It may easily be made to cover the whole roof of a building, whether of tiles, thatch or wood, by sticking the offsets on with a little earth or cow-dung<sup>r</sup>.

It had several names in English formerly, as Sengreen and Aygreen, both translations of *Sempervivum*; Jupiter's eye, Bullock's eye, and Jupiter's beard<sup>s</sup>. Withering gives it another name, *Cypsel*, which I never heard of.—In German it is *Haufwurcz*; in French, *la grande Joubarbe*; in Italian, *Sempervivo maggiore*.]

6. Leaves much narrower, and the heads furnished with a greater number of them than those of the preceding species, which grow more compact, and are closely set on their edges with hairs. The offsets of this are globular, their leaves turning inward at the top, and lying close over each other: these are thrown off from between the larger heads, and falling on the ground, take root, whereby it propagates very fast. The flower-stalks of this are smaller, and do not rise so high as those of the former; and the flowers are of a paler colour.

According to Jacquin, the flowers have six petals, six stamens, and six pistils. Haller says that the calyx is divided into twelve parts; that the corolla has twelve petals, which are united at the base, pale yellow, hairy, ciliate, long and slender; that the stamens are half the length of the petals; and that the capsules are smooth, and somewhat fewer in number than the petals.—Villars cannot distinguish the *globiferum* of Linneus from the *montanum* of the same author.

Native of Russia, Austria, Germany, Switzerland. Cultivated in 1731, by Mr. Miller. It flowers in june and july.

7. Petals eight, yellow; stamens from twelve to sixteen; pistils eight. It is an annual plant, native of Madeira, where it was found by Masson, and introduced in 1777. It flowers in june<sup>t</sup>.

8. This is a shrubby plant of low growth, producing numerous fleshy leaves, growing thickly together. It throws up its flowering-stems, supporting numerous yellow flowers, like those of *Stoncrop*, in july and august<sup>u</sup>. Petals eight. Stamens sixteen. Pistils eight.

Native of the Canary Islands, where it was discovered by Masson, and introduced in 1779. It flowers in july and august<sup>v</sup>.

9. This whole plant is, as it were, a representation in miniature of *Sempervivum arboreum*, but more lax and diffuse. It is abundantly distinguished from that species by its annual root, herbaceous pubescent stem, and spreading panicle. The flowers are yellow, and agree perfectly with the generic character of *Sempervivum*; not with that of *Sedum*.

If the synonym of Seguer be right, it is a native of Monte Baldo, where it was found on the rocks by Giovanni Battista Scarella. It has been long cultivated in the garden of the Company of Apothecaries at Chelsea, and flowers there every year, but whence it was brought is not known.

It is extremely different from the *Sedum alpinum* of Allioni; but may perhaps be the *Sempervivum alpinum Montis Baldi, foliis lenticulatis, floribus non punctatis*, of Mauritius Hoffman, mentioned by that author in his *Specimen pedemontanum*, p. 16<sup>v</sup>.]

10. This has much shorter and narrower leaves than the common Houseleek. The heads are small and very compact. Leaves gray, sharp-pointed, and have slender white threads crossing from one to the other, intersecting each other in various manners, so as in some measure to resemble a spider's web. Flower-stalks about six inches high, succulent and round, having awl-shaped succulent leaves placed on them alternately: the upper part divides into two or three branches, upon each of which is a single row of flowers ranged on one side; each composed of eight lanceolate petals, of a bright red colour, with a deep-red line running along

<sup>k</sup> Hort. kew. <sup>l</sup> Idem. <sup>m</sup> Curtis and Smith. <sup>n</sup> Haller.  
<sup>o</sup> Hall. helv. and Curt. lond. <sup>p</sup> Withering.

<sup>q</sup> Haller. <sup>r</sup> Curtis. <sup>s</sup> Gerarde. <sup>t</sup> Hort. kew.  
<sup>u</sup> Curtis. <sup>v</sup> Hort. kew. <sup>w</sup> Smith, in Linn. trans.



the middle: they spread open in form of a star, and in the centre are the germs of an herbaceous colour, surrounded by sixteen purple filaments, terminated by yellow anthers.

[Haller who regards this as very nearly allied to the *montanum*, attributes nine petals to the flowers.

Native of the mountains of Switzerland, Dauphiné and Italy. Cultivated in 1699 by the Dutchess of Beaufort. It flowers in June and July<sup>2</sup>; and is commonly known by the name of *Cobweb Sedum*, it is however clearly a *Sempervivum* in habit as well as fructification<sup>3</sup>.

11. Root hard, round, perennial; from which there are many rose-like tufts of leaves, as in the next species. Leaves finely hairy, especially about the edges. Stem round, hairy, with long sharp scales, thicker set towards the top; the upper part divided into several branches, bearing each two or three erect flowers, besides a single one sessile in the division of the branches. Petals six, twice as long as the calyx, keeled, whitish, entire, of a very long elliptic form, fringed at the edge, with the end still more deeply cut into fringes; the keel especially is very finely hairy. Stamens twelve, with awl-shaped hairy filaments, and four-grooved anthers. Pistils six, a little shorter than the petals<sup>4</sup>.—Native of Germany, Silesia, Piedmont.]

12. This greatly resembles the fifth or common Houseleek, but the leaves are smaller, and have no indentures on their edges. The offsets spread out from the side of the older heads, and their leaves are more open and expanded. Flower-stalk nine or ten inches high, having some narrow leaves below; the upper part is divided into three or four branches, closely set with deep-red flowers composed of twelve petals, and twenty-four stamens with purple anthers.

[Villars says the leaves are narrower and more pubescent beneath than in the common sort, and a little clammy; the whole plant has less consistence; the petals and filaments are rose-coloured.

Gerard distinguishes between this and the *arachnoides*, that in the latter the tufts of leaves are contracted and furnished with long hairs; whereas in the former (our *montanum*) the tufts of leaves are expanded, and have no hairs.

Calyx twelve-cleft. Petals connected at bottom. Stamens twelve. Capsules twelve to sixteen, membranaceous, disposed in a wide ring, curved like an S, beaked. Seeds very numerous and minute, oblong, roundish, smooth, rufescent, fastened in several rows to the margin of the future<sup>5</sup>.

Native of Germany, Silesia, Austria, Switzerland, the South of France, and Italy. Cultivated in 1759, by Mr. Miller. It flowers in June and July<sup>6</sup>.

13. All the stems are perpetually and constantly very stiff and standing upright. Petals whitish<sup>7</sup>.—Native of the South of Europe. Introduced in 1769, by Messrs. Kennedy and Lee. It flowers in July<sup>8</sup>.

β. Jacquin, in his miscellanea, describes a monstrous variety of this, with the stem terminating in three racemes, two of which are bifid a little above the base; and beyond the flowers they are produced into leafy branches which attain three inches in length: some of the flowers have fourteen petals.

Linneus had supposed that this *Sempervivum* of Jacquin was the same with his *Sedum rupestre*: but Jacquin had cultivated them during twenty years close together, and among others remarks three principal differences: 1. That in *Sedum rupestre* the leaves are gradually attenuated into a sharp point, which is not the case in this *Sempervivum*. 2. That the petals in that *Sedum* are yellow; but in this whitish. 3. That all the stems, as before observed, from first to last, are perfectly stiff and upright; whereas in *Sedum rupestre* the upper part of the stem, until it is quite in flower, is very much incurved and noded<sup>9</sup>.

Native of the South of Europe. Introduced in 1769, by Messrs. Kennedy and Lee. It flowers in July<sup>10</sup>.

<sup>2</sup> Hort. kew.

<sup>3</sup> Curtis.

<sup>4</sup> Allioni.

<sup>5</sup> Gartner.

<sup>6</sup> Hort. kew.

<sup>7</sup> Jacquin.

<sup>8</sup> Hort. kew.

<sup>9</sup> Jacq. misc.

<sup>10</sup> Hort. kew.

14. The number of the parts of fructification varies from five to eight<sup>1</sup>.—In the specimens which Mr. Curtis examined, rendered perhaps luxuriant by culture, the number of stamens were from twelve to sixteen; of styles, from six to eight; of flowers on the same stalk, from one to eight. The nectaries form a principal part of the fructification, and are usually seven in number, but vary from six to eight<sup>2</sup>.

Native of the Canary Islands: whence it was introduced by Masson in 1777. It flowers in July<sup>3</sup>, and during most of the summer months<sup>4</sup>.]

#### PROPAGATION AND CULTURE.

1. This is easily propagated by cutting off the branches, which, when planted, soon put out roots; these should be laid in a dry place for a week before they are planted, that the bottom may be healed over; otherwise they are apt to rot; especially if they have much wet. When the cuttings are planted in pots, they should be placed in a shady situation, and must have but little wet, and if they are planted in a shady border, they will require no water, for the moisture of the ground will be sufficient for them. Some years past these plants were tenderly treated; their cuttings were put into a hot-bed to forward their putting out roots, and in winter the plants were kept in stoves, but later experience has taught us that they will thrive better with hardier treatment; for, if they are protected from frost and wet in winter, and have a good share of air in mild weather, they will thrive better, and flower oftener than when they are tenderly nursed. I have frequently seen the branches of these plants, which have been accidentally broken off and fallen on the ground, put out roots as they have laid, and make good plants. The variety with striped leaves is more tender and impatient of wet in winter.

2. This is propagated by seeds, which should be sown soon after it is ripe in pots filled with light sandy earth, covering them over very lightly with the same earth. These pots should be placed under a common frame to keep out the frost, but should be exposed to the open air at all times in mild weather; here the pots may remain till the spring, when the danger of hard frosts is over, and then they should be removed to a situation where they may have only the morning sun, and in dry weather the earth should be watered gently. This will soon bring up the plants, which must be kept clean from weeds, and, when they are fit to remove, they should be planted in pots filled with light loamy earth, and placed in the shade till they have taken new root; then they may be placed with other hardy succulent plants in a sheltered situation for the summer, and if in winter they are placed in a frame where they may be protected from hard frost, and enjoy the free air in mild weather, they will thrive better than with tender treatment.

5. 6. 9. 10. 11. 12. 13. These sorts are hardy, and increase fast by offsets: they love a dry soil, and are proper to plant on rock-work, where they will thrive better than in the full ground: and when they are once fixed, will spread fast enough, inasmuch that the larger sorts require to be reduced annually, to keep them within proper compass. When any of the heads flower, they die soon after; but the offsets soon supply their place.—If the common sort, (n. 5.) be planted in mud, strong earth, or cow-dung, on a building or old wall, it will thrive without farther care.

[3. 4. 7. 8. 14. Require the protection of a dry stove or greenhouse in winter. N. 8. is readily propagated by cuttings. N. 3. and 4. may be increased the same way. N. 7. is propagated by seeds: and n. 14. by parting the roots. This, and n. 3, 4. will succeed with the common treatment of a greenhouse plant in the summer, but do best in a dry stove during the winter.

SENA. See *Cassia*, *Colutea*, *Coronilla*, *Poinciana*.

SENDERA CLANDI. See *Evolvulus*.]

SENECIO (of Pliny. From *Senex*, an old man; or *senescere*, to grow old; the flowers going off early, and producing their seeds crowned with a down, like gray hairs.)

<sup>1</sup> Idem.

<sup>2</sup> Curtis.

<sup>3</sup> Hort. kew.

<sup>4</sup> Curtis.



Lin. gen. n. 953. Reich. n. 1033. Schreb. n. 1290.  
Tournef. t. 260. Dill. elth. t. 258. Vaill. aët.  
gall. 1719. Juss. 181. Gartn. t. 166. Jacobæa.  
Tournef.

Class. 19. 2. Syngenesia Polygamia Superflua.  
Nat. order of *Compositæ Discoidææ*. *Corymbiferaæ*, Juss.

## GENERIC CHARACTER.

CAL. Common calyced, conical, truncate: scales awl-shaped, very many, parallel in a cylinder contracted above, contiguous, equal, fewer covering the base imbricatewise, the tops mortified.

COR. Compound, higher than the calyx. Corollets hermaphrodite, tubular, numerous in the disk. Females ligulate in the ray, if any present.

Proper in the hermaphrodites funnel-form: border reflex, five-cleft.

In the females, if any, oblong, obscurely three-toothed.

STAM. in the hermaphrodites, Filaments five, capillary, very small. Anther cylindric, tubular.

PIST. in both. Germ ovate. Style filiform, length of the stamens. Stigmas two, oblong, revolute.

PER. none. Calyx conical-converging.

SEEDS in the hermaphrodites solitary, ovate. Pappus capillary, long. In the females very like the hermaphrodites.

REC. naked, flat.

OBS. Senecio, Tournef. wants the common ray of the corolla.

Jacobæa, Tournef. is furnished with the common ray of the corolla.

## ESSENTIAL CHARACTER.

Cal. cylindrical, calyced, with the scales mortified at the tip. Down simple. Recept. naked.

## SPECIES.

\* With flosculous flowers.

1. Senecio hieracifolius. Hieracium-leaved Groundsel.  
Lin. spec. 1215. fyst. 756. Reich. 3. 788. hort. upf. 261. cliff. 406. mant. 469. Herm. par. t. 226. Pluk. phyt. t. 112. f. 1.  
Corollas naked, leaves embracing lacerate, stem herbaceous erect.

- [2. Senecio purpureus. Purple Groundsel.  
Lin. spec. 1215. fyst. 756. Reich. 3. 788. Berg. cap. 276. Breyn. cent. 139. t. 67.  
Corollas naked, leaves lyrate rough-haired, the upper ones lanceolate toothed.

3. Senecio erubescens. Blush-coloured Groundsel.  
Ait. kew. 3. 190.  
Corollas naked, leaves lyrate, on both sides hairy clammy, the upper ones oblong-lanceolate toothed, stems ascending.

4. Senecio cernuus. Drooping Groundsel.  
Lin. fyst. 756. suppl. 370.  
S. rubens. Jacqu. hort. 3. 50. t. 98.  
Corollas naked, leaves elliptic tooth-ferrate somewhat hairy, peduncles elongated one-flowered.

5. Senecio persicifolius. Peach-leaved Groundsel.  
Lin. spec. 1215. Reich. 3. 789. amoen. 6. afr. 62.  
Corollas naked, leaves lanceolate quite entire toothed at the base.

6. Senecio virgatus. Twiggy Groundsel.  
Lin. spec. 1215. Reich. 3. 789. amoen. 6. afr. 63.  
Corollas naked, leaves lyrate tomentose underneath, peduncles one-flowered, scales awl-shaped.

7. Senecio divaricatus. Straddling Groundsel.  
Lin. spec. 1215. Reich. 3. 789. Lour. cochinch. 502. ed. Willd. 613.  
Corollas naked, leaves lanceolate toothed rugged, flowering branchlets divaricating.]

8. Senecio Pseudo-China. Chinese Groundsel.  
Lin. spec. 1216. Reich. 3. 789. Dill. elth. 345. t. 258. f. 335.  
Corollas naked, scape almost naked very long.

- [9. Senecio reclinatus. Grass-leaved Groundsel.  
Lin. fyst. 756. suppl. 369. L'Herit. stirp. nov. 9. t. 5. Ait. kew. 3. 189.

S. Cleryfocoma. Meerb. ic. 39.

S. graminifolius. Jacqu. icon. rar. 3. t. 66. & misc. 2. 322.

Corollas naked, calyxes ventricose, subimbricate, leaves filiform-linear quite entire smooth.

10. Senecio vulgaris. Common Groundsel.

Lin. spec. 1216. fyst. 756. Reich. 3. 789. fl. suec. n. 747. lapp. n. 296. hort. cliff. 406. Gartn. fruct. 2. 401. Hudf. angl. 365. Wither. arr. ed. 3. 721. Hull, 186. Smith brit. 881. engl. bot. 747. Curt. lond. 1. t. 61. Lightf. scot. 478. Relb. cant. n. 610. Sibth. oxon. n. 701. Abbot bedf. n. 596. Fl. dan. t. 513. Hall. helv. n. 58. Pollich pal. n. 793. Scop. carn. n. 1063. Neck. gallob. 353. Krock. files. n. 1390. Villars dauph. 3. 226. Allion. pedem. n. 723. Gmel. fib. 3. 135. n. 117. Blackw. t. 132. Knorr. del. 2. t. S. 5. Kniph. cent. 6. n. 84. Berg. phyt. 2. 43. Park. theat. 671. Raii-hist. 290. fym. 178. Petiv. brit. t. 17. f. 5.

Senecio. Matth. 1132. valgr. 2. 476. Fuchf. hist. 276.

S. minor vulgaris. Bauh. pin. 131. Mor. hist. f. 7. t. 17. f. 1.

S. vulg. f. Erigeron. Bauh. hist. 2. 1041.

S. Erigeron. Tabern. 168.

Erigerum. Ger. 217. 1. emac. 278. 1.—minus. Död. pempt. 641. f. 2.

Verbena scemina. Brunf. herb. 1. 120.

Corollas naked, leaves pinnatifid sinuate embracing, flowers scattered.

11. Senecio biflorus. Two-flowered Groundsel.

Vahl symb. 1. 72.

S. linifolius. Forsk. arab. 119. n. 502.

Corollas naked, leaves linear flat somewhat toothed even, peduncles subbiflorous, stem shrubby.

12. Senecio arabicus. Arabian Groundsel.

Lin. fyst. 756. Reich. 3. 790. mant. 114. Vahl symb. 1. 72.

Corollas naked, leaves subbipinnate petioled even.

13. Senecio peucedanifolius.

Lin. fyst. 756. suppl. 372.

Corollas naked, leaves pinnate filiform.

14. Senecio japonicus. Jagged-leaved Groundsel.

Lin. fyst. 756. Thunb. jap. 315.

Corollas naked, leaves pinnatifid: segments lanceolate acute gashed, stipules leafy subpalmate.

\*\* Flowers radiate: ray revolute.

15. Senecio triflorus. Three-flowered Groundsel.

Lin. spec. 1216. Reich. 3. 790. hort. upf. 261. Willich obs. n. 130. Kniph. cent. 1. n. 80.

Jacobæa ægyptiaca, senecionis folio semiflosculis vix conspicuis. Vaill. aët. 1720. p. 298.

Corollas revolute, leaves sessile sinuate, calyxes conical, scales very small untouched.

16. Senecio ægyptius. Egyptian Groundsel.

Lin. spec. 1216. fyst. 756. Reich. 3. 790. hort. upf. 261. mant. 517.

Jacobæa ægyptiaca, senecionis folio, flore minore. Vaill. aët. 1720. p. 298.

Corollas revolute, leaves embracing sinuate, scales of the calyx shorter entire mortified.

17. Senecio cinerascens. Gray Groundsel.

Ait. kew. 3. 191.

Corollas revolute, leaves pinnatifid tomentose rolled back at the edge, panicle patulous, outer scales of the calyx spreading.

18. Senecio lividus. Livid Groundsel.

Lin. spec. 1216. Reich. 3. 791. hort. upf. 261. Kniph. cent. 10. n. 79.

Corollas revolute, leaves embracing lanceolate toothed, scales of the calyx very short untouched.

19. Senecio trilobus. Three-lobed Groundsel.

Lin. spec. 1217. Reich. 3. 791. hort. upf. 261.

Jacobæa hispanica minus laciniata, petalis brevissimis. Vaill. par. 21.

Corollas revolute, leaves embracing, scales of the calyx mortified lacerated.

20. Senecio viscosus. Stinking Groundsel.

Lin. spec. 1217. Reich. 3. 791. fl. suec. n. 749. Hudf. angl. 365. α. Wither. arr. ed. 2. 722.

Smith brit. 882. engl. bot. t. 32. Hull, 186. Lightf. scot. 479. Relb. cant. n. 611. Sibth. oxon. n. 702. Hall. helv. n. 60. Pollich pal. n. 794.

Neck. gallob. 353. Krock. files. n. 1392. Villars dauph. 3. 230. Allion. pedem. n. 724.

S. hirsutus



- S. hirsutus viscidus major odoratus.* *Baub. hist.* 2. 1042. *Raii hist.* 290. *syn.* 178.  
*S. incanus pinguis.* *Baub. pin.* 131.  
*S. fastidius.* *Park. theat.* 671.  
*S. hirsutus viscidus graveolens.* *Dill. elth.* 347. t. 258. f. 336.  
*Erigeron tomentosum.* *Ger.* 217. *emac.* 278.  
*Corollas revolute, calyces loose nearly equal to the perianth, leaves pinnatifid viscid, stem very much branched patulous.*
21. *Senecio sylvaticus.* *Mountain Groundsel.*  
*Lin. spec.* 1217. *syn.* 757. *Reich.* 3. 792. *fl. suec.* n. 748. *Wither. arr. ed.* 3. 722. *Smith brit.* 883. *engl. bot.* t. 748. *Lightf. scot.* 480. *Hull,* 186. *Sibth. oxon.* n. 703. *Abbot bedf.* n. 597. *Fl. dan.* t. 869. *Hall. helv.* n. 59. *Pollich pal.* n. 795. *Neck. gallob.* 354. *Krock. files.* n. 1391. *Villars dauph.* 3. 229. *Allion. pedem.* n. 725. *Gouan illustr.* 67.  
*S. viscosus* β. *Huds. angl.* 365.  
*S. minor latiore folio f. montanus.* *Baub. pin.* 131. *Raii syn.* 178. *Dill. elth.* 347. t. 258. f. 337. *Petiv. brit.* t. 17. f. 6.  
*S. viscidus major & odoratus foliis Jacobææ.* *Mor. hist.* f. 7. t. 17. f. 2.  
*Senecium montanum.* *Tabern.* 169.  
*Jacobæa Senecionis folio incano perennis.* *Rupp. jen. ed. Hall.* 177. t. 3.  
*Erigerum.* *Ger.* 217. 1. *emac.* 278. 2.—majus. *Dod. pempt.* 641. 1.  
*Corollas revolute, calycle very short, leaves pinnatifid lobed toothleted, stem erect strict corymbed.*
22. *Senecio nebrodenfis.*  
*Lin. spec.* 1217. *Reich.* 3. 792.  
*Jacobæa montana, senecionis pallido parvo flore.* *Barr. rar.* 1081. t. 401.  
*J. nebrodenfis altera, oblongo folio latiori minus incano lacerato.* *Raii suppl.* 179.  
*Corollas revolute; leaves lyrate sinuate obtuse petioled, stem hirsute.*
23. *Senecio glaucus.* *Sea-green Groundsel.*  
*Lin. spec.* 1217. *Reich.* 3. 792.  
*J. ægyptia annua, Coronopi folio glauco.* *Vaill. æt. par.* 1720. p. 297. *Boerb. lugdb.* 1. 99.  
*Corollas revolute, leaves embracing lanceolate obtuse toothed quite entire.*
24. *Senecio varicosus.* *Varicose Groundsel*  
*Lin. spec.* 1218. *Reich.* 3. 793. *Linn. spec.* 9. t. 5.  
*Corollas revolute, leaves ovate petioled toothed, with little varicose dots.*
25. *Senecio humilis.* *Dwarf Groundsel.*  
*Desfont. atlant.* 271. t. 233.  
*Corollas revolute, leaves subspatulate obtuse doubly-toothed, stem procumbent.*
26. *Senecio leucanthemifolius.*  
*Desfont. atlant.* 271. *Poiret. itin.* 2. 238.  
*Corollas revolute, leaves elliptic-spatulate smooth gash-toothed, corymb few-flowered.]*  
 \*\*\* *Flowers radiate, ray spreading, leaves pinnatifid.*
27. *Senecio hastatus.* *Spleenwort-leaved Groundsel.*  
*Lin. spec.* 1218. *Reich.* 3. 793.  
*Jacobæa afra perennis viscosa lutea, asplenii foliis.* *Vaill. æt.* 1720. p. 298. *Dill. elth.* 183. t. 152. f. 184.  
*Corollas radiant, petioles embracing, peduncles three times as long as the leaf, leaves pinnate-sinuate.*
- [28. *Senecio pubigerus.*  
*Lin. spec.* 1218. *Reich.* 3. 793. *amoen.* 6. *af.* 65.  
*Jacobæa spicata monomotapatenfis.* *Breyn. cent.* t. 65. *Mer. hist.* 3. f. 7. t. 18. f. 32.  
*Corollas radiant, radical petioles woolly, leaves runcinate, stems quite simple, lateral flowers sessile.*
29. *Senecio venustus.* *Wing-leaved Groundsel.*  
*Lit. kew.* 3. 192.  
*Corollas radiant. stem calyx and leaves smooth, leaves pinnatifid, segments linear acute toothed.]*
30. *Senecio elegans.* *Elegant Groundsel or Purple Jacobæa.*  
*Lin. spec.* 1218. *syn.* 757. *hort. cliff.* 406. *ups.* 260. *Kniph. cent.* 7. n. 85. *Curt. magaz.* t. 238.  
*After africanus annuus, senecionis foliis.* *Comm. hort.* 2. 59. t. 30.
- Jacobæa capensis flore purpureo, senecionis folio dentato.* *Seb. mus.* 1. 33. t. 22. f. 1.  
 β. *J. afr. frutescens, flore amplo purpureo elegantiflimo, senecionis folio.* *Volk. norib.* t. 225.  
*Corollas radiant, leaves hairy viscid pinnatifid equal spreading very much, rachis narrowed below, calyces rough-haired.*
- [31. *Senecio squalidus.* *Inelegant Ragwort.*  
*Lin. spec.* 1218. *Reich.* 3. 794. *hort. ups.* 260. *Smith brit.* 883. *engl. bot.* t. 600. *Krock. files.* n. 1393. t. 39.  
*Corollas radiant spreading, florets elliptic quite entire, leaves pinnatifid, segments sublinear distant.*
32. *Senecio erucifolius.* *Rocket-leaved Groundsel.*  
*Lin. spec.* 1218. *syn.* 757. *Reich.* 3. 794. *fl. suec.* n. 750. *Willich obs.* n. 131. *Pollich pal.* n. 796. *Krock. files.* n. 1394.  
*S. scanorensis.* *Lin. it. scan.* 225.  
*S. Jacobæa selandica incana.* *Lob. illustr.* 76.  
*Jacobæa incana altera.* *Baub. pin.* 131.  
*J. artemisiæ folio, radice repente.* *Vaill. æt.* 566.  
*J. altissima, foliis erucæ artemisiæve similibus & æmulis.* *Rupp. jen.* 164.  
*J. incana repens.* *Barr. rar.* 1075. t. 153.  
*Corollas radiant, leaves pinnatifid toothed somewhat rough-haired, stem erect.*
33. *Senecio tenuifolius.* *Hoary Groundsel or Ragwort.*  
*Lin. spec.* 758. *Jacqu. austr.* t. 278. *Wither. arr. ed.* 3. 723. *Smith brit.* 884. *engl. bot.* t. 574. *Sym. syn.* 181. *Hull,* 187. *Sibth. oxon.* n. 704.  
*S. erucifolius.* *Huds. angl.* 366. *Relb. cant.* n. 614. *Abbot bedf.* n. 598. *Curt. lond.* 5. t. 64. 294.  
*Jacobæa Senecionis folio incano perennis.* *Raii hist.* 285. *syn.* 177. *Petiv. brit.* t. 17. f. 3.  
*Corollas radiant spreading, leaves pinnatifid subrevolute, beneath paler and pubescent, stem erect villose.]*
34. *Senecio incanus.* *Downy Groundsel.*  
*Lin. spec.* 1219. *syn.* 757. *Reich.* 3. 794. *Hall. helv.* n. 61. *Scop. carn.* n. 1071. *Krock. files.* n. 1395. *Villars dauph.* 3. 231. *Allion. pedem.* n. 726. *Gouan hort.* 440. *illustr.* 67.  
*Jacobæa pumila, &c.* *Pluk. phyt.* t. 39. f. 6.  
*J. alpina incana minor.* *Barr. ic.* 262. *Bocc. mus.* 2. 20. t. 8.  
*Chrysanthemum alpinum incanum, foliis laciniatis.* *Baub. pin.* 134.  
*C. alpinum* 1. *Clus. hist.* 1. 333.  
*Abinthium alpinum umbelliferum tenuifolium & minus.* *Baub. pin.* 140.  
*Corollas radiant, leaves tomentose on both sides subpinnate obtuse, corymb roundish.*
35. *Senecio abrotanifolius.* *Southernwood-leaved Groundsel.*  
*Lin. spec.* 1219. *syn.* 757. *Reich.* 3. 795. *Scop. carn.* n. 1073. *Jacqu. vind.* 288. *austr.* 1. 50. t. 79. *Gouan hort.* 440. *Guctt. stamp.* 360. *Allion. pedem.* n. 729.  
*Solidago* n. 71. *Hall. helv.*  
*Achillea montana Artemisiæ tenuifoliæ facie.* *Lob. adv.* 333. *ic.* 746. *Hall.*  
*Ageratum ferulaceum.* *Munt. ic.* 87. *Baub. hist.* 3. 152. *Hall. Raii hist.* 286. 7.  
*Chrysanthemum alpinum, foliis abrotani multifidis.* *Baub. pin.* 134.  
*C. alp.* 2. *Clus. hist.* 1. 333. t. 334.  
*Corollas radiant, leaves pinnate-multifid linear naked acute, peduncles subbiflorous.*
- [36. *Senecio canadensis.* *Canadian Groundsel.*  
*Lin. spec.* 1219. *syn.* 758. *Reich.* 3. 795.  
*Jacobæa chærophylli foliis mariana.* *Pluk. mant.* 107.  
*Corollas radiant, all the leaves bipinnate linear, peduncles corymbed.*
37. *Senecio diffusus.* *Spreading Groundsel.*  
*Lin. spec.* 758. *suppl.* 371.  
*Corollas radiant, leaves bipinnate linear, stems diffused.*
38. *Senecio delphinifolius.* *Larkspur-leaved Groundsel.*  
*Vahl symb.* 2. 91. t. 45. *Desfont. atlant.* 272.  
*Jacobæa Adonidis foliis, floribus in umbellam dispositis.* *Shaw afr.* n. 347.  
*J. multifida umbellata annua.* *Bocc. sic.* 94. t. 51.  
*Corollas radiant spreading, leaves pinnate-multifid, leaflets linear revolute villose beneath, stem somewhat woolly.*



39. *Senecio auriculatus*. Earletted Groundsel.  
Desfont. atlant. 272.  
Corollas radiant with the corollets in the ray scarcely visible, leaves pinnatifid embracing, pinnules obtuse toothed somewhat remote.
40. *Senecio giganteus*. Giant Groundsel.  
Desfont. atlant. 273. t. 234.  
Corollas radiant revolute, flowers in corymbs, leaves pinnatifid-lobed unequally toothed, terminating lobe very large.
41. *Senecio coronopifolius*. Buck'shorn-Plantain-leaved Groundsel.  
Desfont. atlant. 273.  
Corollas radiant revolute, peduncles elongated one-flowered, leaves half-round somewhat fleshy embracing, pinnules linear-subulate unequal.
42. *Senecio Jacobæa*. Ragwort Groundsel or Common Ragwort.  
Lin. spec. 1219. Reich. 3. 796. hort. cliff. 406. fl. suec. n. 751. Hudf. angl. 365. Wither. arr. ed. 3. 724. Smith brit. 885. Hull, 187. Relb. cant. n. 612. Sibth. oxon. n. 705. Abbot bedf. n. 599. Hall. helv. n. 62. Scop. carn. n. 1072. Neck. gallob. 354. Pollich pal. n. 797. Krock. fles. n. 1396. Villars dauph. 3. 226. Allion. pedem. n. 730. Kniph. cent. 6. n. 83. Knorr. del. 1. t. 1. Regnault bot. Fl. rust. t. 85.  
S. major, f. Flos Sancti Jacobi. Matth. 1133. Valgr. 2. 477.  
Sancti Jacobi herba. Fuchs. hist. 742. Brunf. herb. 2. 56.  
Jacobæa. Dod. pempt. 642. Ger. 218. 1. emac. 280. 1.  
J. vulgaris. Clus. hist. 2. 22. 1. Bauh. hist. 2. 1057. 1. Raii hist. 284. syn. 177. Petiv. brit. t. 17. f. 1.  
J. vulg. laciniata. Bauh. pin. 131. Mor. hist. f. 7. t. 18. f. 1. Tournef. inst. 485.  
J. vulg. major. Park. theat. 668. 1.  
β. J. vulgaris flore nudo. Raii syn. 177. Mor. hist. 3. 108. Pollich.  
J. vulg. laciniata, flore discoide. Vaill. act. 1720. p. 383.  
Senecio Jacobææ folio. Mor. præl. 309.  
Corollas radiant spreading, leaves lyrate-bipinnatifid divaricate toothed smooth, stem erect.
43. *Senecio aquaticus*. Marsh Groundsel or Ragwort.  
Hudf. angl. 366. Wither. arr. ed. 3. 725. Smith brit. 885. Hull, 187. Relb. cant. n. 613. Sibth. oxon. n. 706. Abbot bedf. n. 600. Fl. dan. t. 784.  
Jacobæa latifolia. Bauh. hist. 2. 1057. 3.  
Marsh Ragwort. Petiv. brit. t. 17. f. 2.  
Corollas radiant spreading, florets elliptic, leaves lyrate serrate, the lower ones obovate entire, seeds smooth.]
44. *Senecio aureus*. Golden Groundsel.  
Lin. spec. 1220. Reich. 3. 796. Gron. virg. 126.  
Jacobæa virginiana, &c. Mor. hist. 3. 110. Raii suppl. 180.  
Corollas radiant, leaves crenate, the lower cordate petioled, the upper pinnatifid lyrate.
- [45. *Senecio lyratus*. Lyrate-leaved Groundsel.  
Lin. syst. 758. suppl. 369.  
Corollas radiant, lower leaves lyrate toothed, upper serrate embracing, lobes muricate at the edge.
46. *Senecio auritus*. Eared Groundsel.  
S. auriculatus. Vahl symb. 1. 72. t. 18.  
S. lyratus. Forsk. descr. 148.  
Corollas radiant, leaves lanceolate lyrate-pinnate toothed naked, petioles eared.
47. *Senecio alpinus*. Alpine Groundsel.  
Lin. syst. 758. suppl. 371. Hall helv. n. 67, 68.  
Cineraria alpina. Lin. syst. ed. 13. 636.  
Corollas radiant, leaves cordate lyrate grossly serrate, petioles eared.
48. *Senecio umbellatus*. Umbelled Groundsel.  
Lin. spec. 1220. syst. 758. Reich. 3. 796. mant. 470. amoën. 6. afr. 64.  
S. filifolius. Berg. cap. 278.  
Corollas radiant linear, leaves pinnate-toothletted, segments distant.

- \*\*\*\* Flowers radiate, ray spreading, leaves undivided.
49. *Senecio lanceus*. Spear-leaved Groundsel.  
Ait. kew. 3. 194.  
Corollas radiant, leaves lanceolate cordate at the base embracing even finely serrate, stem frutescent.
50. *Senecio linifolius*. Flax-leaved Groundsel.  
Lin. spec. 1220. Reich. 3. 797. Allion. pedem. n. 731. Forsk. ægypt. 5. 150. Pallas it. 1. 372.  
Lin. hort. cliff. 410. (Solidago.)  
Linariæ aureæ affinis. Bauh. pin. 213. prodr. 107.  
Jacobæa linifolia-hispanica & italica. Bocc. mus. 2. 60. t. 49. Barr. rar. 97. t. 802.  
Corollas radiant, leaves linear quite entire, corymb somewhat scaly, stem herbaceous.
51. *Senecio rosmarinifolius*. Rosemary-leaved Groundsel.  
Lin. syst. 758. suppl. 369.  
Corollas radiant, leaves linear revolute at the edge, stem shrubby.]
52. *Senecio paludosus*. Marsh Groundsel or Bird's-tongue.  
Lin. spec. 1220. syst. 758. Reich. 3. 797. fl. suec. n. 752. Hudf. angl. 366. Wither. arr. ed. 3. 725. Smith brit. 886. engl. bot. t. 650. Hull, 187. Relb. cant. n. 615. Fl. dan. t. 385. Hall. helv. n. 66. Pollich pal. n. 798. Neck. gallob. 353. Krock. fles. n. 1398. Villars dauph. 3. 232. Allion. pedem. n. 732.  
Jacobæa foliis longis integris & mucronatis. Mor. hist. 3. 110. f. 7. t. 19. f. 22.  
Conyza palustris ferratifolia. Bauh. pin. 266. Ger. 347. emac. 483. 6.  
C. palustris. Park. theat. 1232.  
Consolida palustris. Tabern. ic. 555.  
Lingua major. Dalech. hist. 1037.  
Virgæ aureæ, f. Solidagini angustifoliæ affinis, Lingua avis Dalechampii. Bauh. hist. 2. 1063. 3. Raii hist. 280. syn. 176. Petiv. brit. t. 16. f. 8.  
Corollas radiant spreading, flowers corymbed, leaves ensiform acutely serrate subvillose beneath, stem striat.
- [53. *Senecio nemorensis*. Branching Groundsel.  
Lin. spec. 1221. syst. 758. Reich. 3. 798. Hall. helv. n. 64. Pollich pal. n. 799. Jacqu. obs. 3. 15. t. 65, 66. & austr. 2. 50. t. 184. Krock. fles. n. 1399. Allion. pedem. n. 733. Gouan hort. 441.  
Virgaurea f. Solidago faracenicæ latifolia ferrata. Bauh. hist. 2. 1063. Pluk. phyt. t. 235. f. 1.  
Jacobæa nemorensis, latiore rigidior & hirsuto folio. Rupp. jen. 142.  
Corollas radiant eightfold, leaves lanceolate biserrate villose underneath, stem branched.]
54. *Senecio faracenicus*. Broad-leaved Groundsel.  
Lin. spec. 1221. syst. 758. Reich. 3. 798. hort. ups. 266. vir. cliff. 84. hort. cliff. 410. (Solidago.)  
Hudf. angl. 367. Wither. arr. ed. 3. 726. Smith brit. 887. Hull, 187. Hall. helv. n. 65. Scop. carn. n. 1070. Pollich pal. n. 800. Jacqu. austr. 2. 52. t. 186. Krock. fles. n. 1400. Villars dauph. 2. 233. Allion. pedem. n. 734. Gouan hort. 441. Murr. prodr. 71. Kniph. cent. 4. n. 78.  
Solidago faracenicæ. Fuchs. hist. 728. Trag. hist. 487. Lob. ic. 1. 299. 2. Dod. pempt. 141. 1. Raii hist. 279.  
Virga aurea angustifolia ferrata. Bauh. pin. 268.—  
1. Solidago faracenicæ. Bauh. hist. 2. 1063. 2.  
V. maxima radice repente. Raii syn. 177.  
Corollas radiant spreading, flowers corymbed, leaves lanceolate serrate smoothish.
55. *Senecio coriaceus*. Thick-leaved Groundsel.  
Ait. kew. 3. 195.  
S. orientalis. Mill. dict. n. 10.  
Doria, quæ Jacobæa orientalis Limonii folio. Tournef. cor. 36. Dill. elth. 125. t. 105. f. 125.  
Corollas radiant, scales of the calyx pressed close, leaves subdecurent somewhat villose underneath lanceolate serrate.
- [56. *Senecio sibiricus*. Siberian Groundsel.  
Lin. syst. 758. suppl. 370.  
Corollas radiant five-rayed, leaves elliptic even.
57. *Senecio Doria*. Broad-leaved Groundsel.  
Lin. spec. 1221. syst. 758. Reich. 3. 799. Jacqu. austr. 2. 51. t. 185. Pallas it. 1. 200. Krock. fles.



- filef. n. 1401. Villars dauph. 3. 232. Allion. pedem. n. 735. Kniph. cent. 10. n. 78.*  
*Solidago. Lin. hort. cliff. 410.*  
*Virga aurea major f. Doria. Baub. pin. 268.*  
*Alilina monspeliensis f. Doria. Baub. hist. 2. 1064.*  
*Corollas radiant, flowers corymbed, leaves subdecurent naked lanceolate toothletted, the upper ones gradually smaller.*
- 58 *Senecio Doronicum.*  
*Lin. spec. 1222. syst. 759. Reich. 3. 799. Hall. herb. n. 67. Scop. carn. n. 1067. Jacqu. austr. 5. 53. t. app. 45. Gouan hort. 441. Ger. prov. 196. t. 7. Villars dauph. 3. 233. Allion. pedem. n. 736.*  
*Solidago Doronicum. Lin. spec. ed. 1. 880.*  
*Doronicum longifolium hirsutic asperum. Baub. pin. 185.*  
*D. 2. austriacum 1. Clus. hist. 2. 17.*  
*β. D. foliis oblongo-lanceolatis ferratis. Monnier obs. 152.*  
*D. integro & crasso hieracii folio. Magn. monsp. 295. Segu. ver. suppl. 278.*  
*γ. D. fol. lanceolatis denticulatis subtus tomentosis caule unifloro. Roy. lugdb. 160.*  
*D. helveticum humile crassis foliis & incanum. Baub. pin. 185. prodr. 97.*  
*δ. Tussilago alpina, folio oblongo. Baub. pin. 197. prodr. 101.*  
*ε. Virga aurea montana ferrata, magno flore. Baub. pin. 268.*  
*Corollas radiant, stem undivided one or two-flowered, leaves undivided ferrate, root-leaves ovate villose underneath.*
- 59 *Senecio longifolius. Long-leaved Groundsel.*  
*Lin. spec. 1222. syst. 759. Reich. 3. 800. mant. 470. Berg. cap. 279.*  
*Jacobaea africana, folio capillaceo viridi. Herm. afr. 14.*  
*J. afr. fruticans, oblongis foliis angustis integris incanis. Volk. norib. 224.*  
*J. afr. frut. lavendulae folio latiore & angustiore. Comm. hort. 2. 141. t. 71.*  
*J. aethiopica lavend. folio. Breyn. cent. t. 63.*  
*J. aethiop. angustissimis & praelongis foliis rarius crenatis. Pluk. mant. 107. t. 421. f. 5.*  
*Corollas radiant, leaves linear scattered, stem shrubby.*
- 60 *Senecio cruciatus. Cross-leaved Groundsel.*  
*Lin. syst. 759. suppl. 371.*  
*Corollas radiant, leaves linear tomentose underneath, the lower cruciate, the upper entire.*
- 61 *Senecio juniperinus. Juniper Groundsel.*  
*Lin. syst. 759. suppl. 371.*  
*Corollas radiant, stem shrubby, leaves awl-shaped.*
- 62 *Senecio byzantinus.*  
*Lin. spec. 1223. syst. 759. Reich. 3. 800.*  
*Jacobaea Isatidis folio. Hort. cathol. Raii suppl. 177. n. 46. & n. (58.) 179. & J. ficula. n. 49. p. 178?*  
*Hieracium montanum Conyzæ f. Dentariae folio. Bocc. sic.*  
*Corollas radiant, leaves oblong remotely toothed, spiny-toothletted naked above, stem herbaceous.*
- 63 *Senecio hadiensis.*  
*Vahl symb. 1. 73. Forsk. descr. 149. ic. t. 19.*  
*Corollas radiant five-rayed, leaves elliptic petioled quite entire and toothletted, stem shrubby.]*
- 64 *Senecio halimifolius. Succulent-leaved Groundsel.*  
*Lin. spec. 1223. Reich. 3. 801. hort. cliff. 411. (Solidago.) Dill. elth. 124. t. 104. f. 124. (Doria.)*  
*Corollas radiant, leaves obovate fleshy toothed, stem shrubby.*
- 65 *Senecio ilicifolius. Ilex-leaved Groundsel.*  
*Lin. spec. 1223. syst. 759. Reich. 3. 801. vir. cliff. 84. hort. cliff. 406. Berg. cap. 281. Comm. rar. 1. 42. Seba mus. 1. t. 22. f. 4.*  
*Corollas radiant, leaves sagittate embracing toothed, stem herbaceous.*
- [66 *Senecio asper. Rough-leaved Groundsel.*  
*Ait. kew. 3. 196.*  
*Corollas radiant, leaves lanceolate-linear toothed rigid, calyxes somewhat lanuginous.]*

- 67 *Senecio rigidus. Hard-leaved Groundsel.*  
*Lin. spec. 1224. syst. 759. Reich. 3. 802. hort. cliff. 406. Comm. hort. 2. 149. t. 75. Seba mus. 1. t. 22. f. 5.*  
*Corollas radiant, leaves embracing spatulate repand erose rugged, stem shrubby.*
- [68 *Senecio populifolius. Poplar-leaved Groundsel.*  
*Lin. spec. 1224. Reich. 3. 802.*  
*S. solidaginoides. Berg. cap. 279?*  
*Jacobaea africana, populi albæ foliis. Raii suppl. 177.*  
*Corollas radiant, leaves ovate spatulate entire blunt, the more adult smooth above, stem shrubby.*
- 69 *Senecio angulatus. Angular-leaved Groundsel.*  
*Lin. syst. 759. suppl. 369.*  
*Corollas radiant, leaves petioled ovate tooth-angular smooth.*
- 70 *Senecio maritimus. Sea Groundsel.*  
*Lin. syst. 760. suppl. 369.*  
*Corollas radiant, leaves embracing ovate toothletted fleshy, stem herbaceous procumbent.*
- 71 *Senecio erosus.*  
*Lin. syst. 760. suppl. 370.*  
*Corollas radiant, leaves radical petioled oblong sinuate ferrate villose, stem one-flowered almost naked.*
- 72 *Senecio marginatus.*  
*Lin. syst. 760. suppl. 370.*  
*Corollas radiant, leaves embracing lanceolate smooth sub-articulate margined, corymb compound.*
- 73 *Senecio lanatus.*  
*Lin. syst. 760. suppl. 370.*  
*Corollas radiant, leaves sessile woolly on both sides, toothed, the lowest ovate, the upper lanceolate.*
- 74 *Senecio cordifolius.*  
*Lin. syst. 760. suppl. 372.*  
*Corollas radiant, leaves cordate toothed, calyxes quite simple.*
- 75 *Senecio glastifolius.*  
*Lin. syst. 760. suppl. 372.*  
*Corollas radiant, leaves embracing lanceolate somewhat toothed even.]*

## DESCRIPTIONS, &amp;c.

1. This is an annual plant, with a round, channelled, hairy stalk, rising three feet high. Flowers in a sort of terminating umbel, composed of dirty-white florets.

[Stem a foot and half high, thick, rigid, less panicled than the rest. Stem-leaves lanceolate, suberrate, nodding; branch-leaves quite entire. Calyx imbricate with erect leaflets, the length of the ray. Disk of the corolla ovate, with small pale florets, and a yellow style. Ray poor, white and very short.]

Native of North America. Cultivated by Mr. Miller in 1752. It flowers in august.

2. Native of the Cape of Good Hope. Perennial.

3. This also is a native of the Cape, where it was found by Maffon, and introduced with the preceding, in 1774. It is annual, and flowers from June to October.

4. Stem a foot high, upright, herbaceous. Leaves alternate, petioled, veined, rugged, erose, and as it were stipuled, with two angular earlets. Peduncles from the upper part of the stem, long, before the flower opens drooping and, as it were pendulous. Flowers violet-coloured, upright after flowering. Calyx cylindrical, swelling at the base, girt with awl-shaped leaflets.

Native of Madagascar:—of the East Indies. Introduced in 1780, by Mons. Thouin. It flowers in July and August, and is annual.

5. Stem simple, a little villose. Leaves sessile, acuminate, tomentose underneath. Flowers in terminating corymbs. Calyx calyced.

6. This is suffrutescent, with tomentose branches. Leaves petioled. Peduncles terminating, even, straight, long, having awl-shaped leaflets (or scales) scattered over them. Both are natives of the Cape of Good Hope.

7. Stem erect, angular, narrow, a foot and half high. Leaves alternate, remote, petioled, ferrate-toothed, to-

<sup>a</sup> Linn. mant.<sup>b</sup> Hort. kew.<sup>c</sup> Linn. suppl.<sup>d</sup> Hort. kew.<sup>e</sup> Linn. amœn.



mentose-rugged. Rudiments only of branches from the axils of the leaves. From the uppermost however of these are a few branchlets with flowers, very much divaricated at the base. Flowers terminating, few, peduncled, the same size as in the first species; the calyxes having a few loose awl-shaped scales scattered over them at the base.

Found in China by Osbeck<sup>†</sup>; and also by Loureiro near Canton.]

8. Root perennial, composed of some thick fleshy tubers, sending out many fibres on every side; from which come out some large cut leaves shaped like those of the Turnep, but smooth. Flower-stalk slender, a foot and half high, sustaining at the top a few yellow flowers.

[Native of the East Indies. Cultivated in 1732 by James Sherard, M.D.<sup>‡</sup>—In the *Hortus Elthamensis*, published in 1732, Dillenius says that this plant had then flowered many years in that garden; and that it was first sent over by Sam. Brown, with the country name of *Paring-Chekka*.

9. Stem woody, erect, three feet high, the thickness of the finger, warted from the fallen leaves. Branches few, scattered, erect, wand-like, round, smooth. Leaves scattered but close, patulous, sessile, acute, rolled back at the edge, one-nerved beneath, one-grooved above, somewhat rugged, reclining and hanging down. Panicle terminating, erect, loose, leafy at the base. Flowers pedicelled, yellow. Bractes at the top of the peduncle and pedicel, imbricate, similar to the scales of the calyx.—Native of the Cape of Good Hope. Shrubby<sup>§</sup>.

Introduced in 1774, by Mr. Francis Masson. It flowers from June to August<sup>¶</sup>.

10. Root annual, consisting of numerous white fibres. Stem single, upright, about a foot high, branched, leafy, slightly angular, smoothish; but in young plants thinly covered with down towards the top. Leaves alternate, pinnatifid-sinuate, obtuse, either altogether smooth or else loosely woolly beneath: the root-leaves petioled; the stem-leaves sessile, and embracing with ears. Flowers terminating, scattered or in a sort of panicle, on striated peduncles, at first upright, but pendulous after the flowering is over, and finally upright again; they have often a leaflet or bracte at the base. Calyx at first cylindrical, but becoming conical, smooth: scales linear, acute, equal, converging; those at the base many but fewer, short, lanceolate, pressed close; all very conspicuously black at the tip. Florets numerous, yellow, all uniform, hermaphrodite, fertile, length of the calyx. Stigma two-parted, finally standing out. Seeds grooved, pubescent, brown. Pappus sessile, rugged, white, almost three times as long as the seed. Receptacle torulose, dotted, smooth. This species, with a few others, having no ray, belongs to the first order of the class *Syngenesia*, in the artificial system; but naturally it is of this genus.

Native of Europe, Siberia, &c. and no weed is more common in all kinds of cultivated grounds; flowering nearly the whole year.—In the eastern counties it is called *Simson*, or as I have heard it pronounced *Sention* or *Senshon*, evidently from *Senecio* through the medium of the French *Senesson*<sup>‡</sup>.

The flower-buds and young tops are the food of many small birds, and are given to Canary-birds and others in cages<sup>¶</sup>. A strong infusion of the plant vomits. The bruised leaves are a good application to boils<sup>¶</sup>. Farriers give the juice to horses that are troubled with the botches, whence Mr. Ray conjectures it might be given with advantage to kill worms in the human body. According to Linneus, goats and swine eat it. Cows are not fond of it. Horses and sheep refuse it<sup>¶</sup>.

11. Branches striated. Leaves spreading, remote, often quite entire, smooth, thickish, a little widened at the base, embracing, ciliate. Peduncles at the top, few (two to four) one or two-flowered; with a setaceous leaflet at the base of each. Flowers of the

same size as in the preceding. Calyx untouched, with a few small leaflets at the base<sup>¶</sup>.

12. Stature of *S. vulgaris* or *Jacobaea*. Stem a foot and half high, even. Leaves as in *Sisymbrium ambrosium* or *Senecio triflorus*, pinnatifid or sinuate, toothed, thin. Peduncles many-flowered: pedicels lateral, subdivided. Flowers floscular, as in *S. vulgaris*, yellow, with the calyxes untouched or not mortified. Biennial. Native of Egypt<sup>¶</sup>. As is also the preceding.

13. Stems herbaceous, a foot and half high, striated. Leaves alternate, remote, linear or filiform, a finger's length: pinnae remote, nine or more. Panicle terminating, fastigate with the flowering branches. Flowers yellow.—Found at the Cape of Good Hope by Thunberg<sup>¶</sup>.

14. Stem fleshy, weak, grooved, villose, two feet high. Leaves petioled, alternate, sublyrate or gash-pinnatifid, loose, smooth, a span long, pale underneath: segments oblong, acute, unequally toothed. Stipules two, toothed, over against the petiole. Flowers terminating, paniced, floscular, large. Peduncles bifid or trifid, capillary, drooping, naked. Pedicels somewhat scaly. Calyx calyced, scarcely black at the tips.

Native of Japan, in the islands about the port of Nagasaki; flowering in July, August and September<sup>¶</sup>.

15. This is an annual plant. The leaves, according to Willich, vary much; sometimes they are ovate-lanceolate, the lower with small teeth, the upper with large: in other specimens all the leaves are half-pinnate, with toothed pinnae. The plants which he saw, had no rays to the corolla. Among the peduncles there were always some three-flowered, but all were not so.

Native of Egypt. Introduced in 1776, by Mons. Thouin. It flowers from July to September<sup>¶</sup>.

16. This also is an annual plant; native of Egypt. *Erigeron aegyptiacum*, mant. 517. (already described) is referred to this, in the 14th edit. of *Systema Vegetabilium*.

Introduced in 1771, by John Earl of Bute. It flowers in July and August.

17. This is shrubby, and native of the Cape of Good Hope; whence it was introduced by Mr. Fr. Masson in 1774. It flowers from May to July<sup>¶</sup>.

18. 19. These are annual plants, natives of Spain.

20. Root annual. Stem a foot high much branched and straggling, not simple and erect, as in *S. sylvaticus*. The whole plant is covered with a fetid clammy liquor secreted from the hairs, detaining small insects, dust and light substances. Leaves alternate, sessile, scarcely embracing, pinnatifid, erose, somewhat toothed. Peduncles one-flowered, terminating, subsolitary. Flowers in all their parts twice as large as in *sylvaticus*, but much more scattered and less numerous, as well as of a brighter gold colour. Calyx hairy, clammy, with a few, linear, loose, hairy scales at the base, almost as long as the perianth or only half the length. Florets of the disk numerous, of the ray fewer, five-toothed, immediately rolled back: all are fertile. Pappus appearing somewhat rugged when examined with a magnifier<sup>¶</sup>.

Compared with *S. vulgaris*, the stem is taller and stronger, the leaves more divided, the flowers larger, and on longer peduncles, the upper ones forming a sort of loose corymb, the seeds longer and more deeply furrowed, the pappus longer<sup>¶</sup>. The hairs on the calyx, and on every other part of the plant at once distinguish this from *vulgaris*, even though the ligulate florets of the ray should be wanting, as they sometimes are<sup>¶</sup>.

Native of Europe, in a calcareous or sandy soil: flowering from July to October. On the fen-banks of the Isle of Ely, as about Mepole and Chatterers: also on the sands of Gamlingay. Baldon, Oxfordshire. About the chalk-pits at Dartford, Kent. And in several places in Scotland.

21. Root annual. Stem about three feet high, straight, upright, wandlike, leafy, grooved, somewhat

<sup>†</sup> Linn. spec.

<sup>‡</sup> Hort. kew.

<sup>§</sup> L'Heritier.

<sup>¶</sup> Hort. kew.

<sup>‡</sup> Smith and Curtis.

<sup>¶</sup> Engl. bot.

<sup>¶</sup> Withering.

<sup>¶</sup> Idem.

<sup>¶</sup> Vahl.

<sup>¶</sup> Linn. mant.

<sup>¶</sup> Linn. supp.

<sup>¶</sup> Thunberg.

<sup>¶</sup> Hort. kew.

<sup>¶</sup> Idem.

<sup>¶</sup> Smith.

<sup>¶</sup> Woodw. Mss.

<sup>¶</sup> Withering.



hairy, corymbed at the top, many-flowered. Leaves numerous, scattered, lyrate-pinnatifid, somewhat hairy, though almost equally unpleasant in scent, less viscid. Flowers numerous, smaller by half than in the preceding, and of a paler yellow. Calyx slender, subpubescent, with the scales at the base small, short and pressed close. Corollets of the ray small and rolled back: those of the disk very slender and filiform. Pappus appearing rugged when examined with a magnifier. Receptacle small.

Mr. Hudson was almost singular in the opinion that this plant is a variety of the *viscosus*, from which it is certainly very distinct<sup>a</sup>. It has a taller and more firm, though slenderer stem; the leaves are narrower and more finely divided; the peduncles much more branched, bearing far more numerous flowers, the terminating ones forming a large broad-topped spike. The flowering heads are much smaller, the seeds shorter and broader, and the pappus shorter. The leaves, when in an hot and sunny situation, are frequently clammy, but not so much as in *viscosus*<sup>a</sup>.

Dr. Stokes remarks, that the stem has a fine wooliness on it, of short tapering zigzag hairs; that the upper branches rise nearly to the same height with the stem; that the leaves are somewhat woolly, with scattered short hairs, tapering but not tipped with glands; that the peduncles are somewhat cottony; that the calyx is conical and somewhat woolly, with the scales at the base awl-shaped, few, dead at the ends, thrice as small as those of the cup; and that the corollets are of a full yellow. Dr. Withering observes, that the edges of the leaves are rolled back, the scales of the calycle few, short, slender, scarce sensibly dead at the ends, and the florets of the ray rolled back close up to the cup.

Native of Europe, in a gravelly or sandy soil, in bushy spots upon heaths and commons, where trees or furze have been cut down, especially where fern or other plants have been burnt in the preceding autumn. It flowers in July<sup>b</sup>.

22. This is an annual plant, of the same stature with the common sort; but the leaves are larger, blunter, repand-sinuate, and quite entire. The stem is less divided and very hirsute. The peduncles solitary and viscid. The flowers solitary, the same size with those of *S. Jacobaea*, with the ray less revolute. The calyx is not mortified at the tips.—Native of Sicily, Spain and the Pyrenees<sup>c</sup>.

23. This also is an annual plant, pubescent and glaucous or ash-coloured.—Native of Egypt<sup>d</sup>.

24. Root annual. Stem a hand high, erect, roundish, thinly haired, purplish, shining, very simply branched. Branches alternate, short, spreading, three or four. Leaves alternate, ovate or oblong, bluntish, having few, remote, stout serratures, thickish, above dusky green, varicose and hairy, beneath blood-red: petioles shorter by half than the leaves, half-embracing, very smooth, shining, channelled, ciliate. Peduncles terminating, solitary, one or two-flowered, almost the length of the stem, filiform, erect, thinly haired, purplish. Calyx cylindrical, equal, with five acute remote short scales to the calycle. Ray of the corolla composed of from sixteen to twenty revolute florets, three-lobed at the tip, violet-coloured underneath. Florets in the disk pale purple. Seeds ovate, smooth. Pappus quite simple, white.

Native of Egypt; whence the seeds were sent to Sweden by Roque in 1761<sup>e</sup>.

25. Roots numerous, capillary, twisted, in bundles, annual. Stems several, decumbent at the base, subvillose, simple or little branched. Leaves decurrent, smooth or scarcely villose, unequally toothed, sometimes lacinate. Flowers few in terminating corymbs, on short peduncles. Calyx cylindrical, calyced, with the interior leaflets linear, almost equal, sharpish. Corollets yellow. Seed small, oblong. Pappus sessile, villose, whitish. Receptacle naked.—Native of all Barbary; flowering in winter.

26. This also is annual. Stem striated, smooth, simple, or little branched. Lower leaves decurrent,

elliptic; upper sessile, embracing. Calyx cylindrical, calyced; with the inner leaflets awl-shaped, not dead at the end. Corolla the same size as in *S. Jacobaea*, yellow. Seed small. Pappus villose, simple, whitish. Receptacle naked.—Native of Barbary, near La Calle<sup>f</sup>.]

27. This has an herbaceous perennial stalk, branching out at the bottom, and rising about two feet and a half high; having narrow leaves at bottom, seven or eight inches long. The upper leaves are smaller, and embracing; they are very clammy. The upper part of the stalk divides into several very long peduncles, each sustaining one yellow flower.

[Native of the Cape of Good Hope. Cultivated in 1732, by James Sherard, M. D. It flowers most part of the summer<sup>g</sup>.]

28. Root perennial. Root-leaves smooth, blunt, crenate, with the petioles woolly at the base. Stems a foot high, having three or four small leaves on them, which are half embracing and pinnatifid. There is one terminating flower, and frequently lateral ones that are sessile: they are yellow with a violet-coloured ray. Native of the Cape of Good Hope<sup>h</sup>.

29. The rib of the leaves, especially the lower ones, is often set with soft prickles.—Native of the Cape of Good Hope, where it was found by Masson, and introduced in 1774. It is biennial, and flowers from July to September<sup>i</sup>.—This, like the preceding and next species, has a yellow disk with a purple ray.]

30. This is an annual plant, having many herbaceous branching stalks, near three feet high. The flowers are produced in bunches on the top of the stalks; they are large, the ray of a beautiful purple colour, and the disk yellow.

Native of the Cape of Good Hope. Flowering from June or July till autumn frosts come on. [Cultivated in 1700, by Charles Dubois, Esq.<sup>k</sup>

Since his time a variety with very double purple, and another with white flowers, equally double, have been introduced, and the former of these is now chiefly cultivated, in preference to the single.

One year a hybrid or mule plant appeared plentifully in the botanic garden at Cambridge, evidently generated from a mixture of this *S. elegans* with the *vulgaris* or common Groundsel; it had entirely the herb of the latter, with a small ray of a pale purple colour. Being annual and barren it disappeared at the end of the season.

31. Root annual. Stem various in luxuriance, erect, branched, often a little hairy. Leaves sessile or embracing the stems with little ears, deeply pinnatifid; the segments narrow, almost linear, acute, remote, toothletted, flat, nearly smooth, even, often purplish beneath. Corymb terminating, loose, few-flowered, bracteate. Flowers of a bright golden yellow. Calyx almost hemispherical, smooth, with a few loose small scales at the base. Florets of the disk very numerous:—of the ray many, spreading, elliptic, broad, quite entire at the top, finally revolute. Seeds tomentose. Pappus rugged.

The whole habit, and a peculiar smell somewhat like Tansy or Mugwort, distinguish this plant sufficiently. It flowers from June to the very end of autumn.

Native of the South of France according to Linneus, who received it from Dillenius, under the name of *Jacobaea laciniatis foliis, tanacetii odore*. Probably Dillenius collected these seeds from the walls about Oxford, where it grows abundantly. Though long since noticed there by Sir Joseph Banks, it did not find its way into the *Flora Oxoniensis*, or any other, till Dr. Smith inserted it in his *Flora Britannica*. It is certainly the *squalidus* of Linneus. (Krocker has it in his *Flora Silesiaca*.) But whether it be the *S. gallicus* of Villars (3. 230.) we have not materials to determine<sup>l</sup>.

32. Stem upright, three or four feet high, hardish, tomentose. Leaves hard, hoary, subhirsute, divided into narrower linear pinnae, with sharper points, having parallel lines all over them. The scales of the

<sup>a</sup> Smith.<sup>a</sup> Woodw. Mfs.<sup>b</sup> Engl. bot.<sup>c</sup> Linn. spec.<sup>d</sup> Idem.<sup>e</sup> Linn. dec.<sup>f</sup> Desfontaines.<sup>g</sup> Hort. kew.<sup>h</sup> Linn. amoen.<sup>i</sup> Hort. kew.<sup>k</sup> Idem from Plukenet.<sup>l</sup> Smith.



calyx end in a reddish point, but by no means a black one. The scales of the calycle are pressed close and are hirsute at the base. The flower is of a paler yellow than in *S. Jacobaea*<sup>m</sup>; from which Haller does not distinguish it. Pollich keeps it separate, with Linneus and others; but seems inclined to think Haller in the right.

Willich remarks, that it puts off all pubescence, when transplanted into a garden; but that the other differences between this and *S. Jacobaea* continue.

Native of Sweden, Germany and Silesia; not of Britain.

It nearly resembles *S. sylvaticus*, of which perhaps it may be a variety<sup>n</sup>.

33. Root perennial, moderately creeping. Stem straight, grooved, leafy, woolly, one to three feet high, corymbed at the top. Leaves numerous, alternate, embracing, toothed here and there, more or less woolly, especially on the lower surface, which is often white. Flowers of a golden yellow colour, in a terminating bracted corymb. Calyx-scales broad, more or less woolly, with a white membranous border, a little brownish at the tip, though less so than in some other species: calycle small, loose. Florets of the ray linear-oblong, obtuse, three-toothed, spreading but soon revolute. Seeds hairy; with a rugged down or pappus.

No plant is more variable in the appearance of its foliage. On a calcareous soil the leaves are very much rolled back, and quite white beneath with a thick cottony web, of which the stem always more or less partakes: in damp shady places they are almost flat, and green, though always paler, and somewhat shaggy on the under side. Such are the extremes of the two varieties marked by Dr. Withering; but intermediate specimens are always to be found<sup>o</sup>.

Native of Austria and England. About London, near woods, under hedges, and among bushes: as about the Oak of Honour wood near Peckham. Holm, Norfolk. Bath hills, near Bungay, Suffolk. Baydales, Darlington, &c. It flowers in august.

The synonyms given by Linneus to the preceding species, probably belong to this, except that from the *Iter scanicum*.]

34. This is a perennial plant of low growth, the stalks seldom rising a foot high. The whole is covered with a very white hoary down. The leaves are winged and indented. The flowers are collected into a close round corymb on the top of the stalk, and are of a gold colour.

[Stems a finger's length, leafy. Leaves like those of *Achillea clavennæ* or *Othonna maritima*, but small, pinnatifid, obtuse, white and marked with lines<sup>p</sup>.

Native of the Alps, Austria and Carniola, Silesia, the South of France, and the Pyrenees. Cultivated in 1759 by Mr. Miller. It flowers in july and august<sup>q</sup>.]

35. Root perennial, composed of many long slender fibres, which strike deep into the ground, and spread on every side. Stems two feet high, becoming a little woody in autumn, leafy their whole length. Leaves resembling those of Hog's-fennel. Flowers in bunches on the top of the stalks, yellow.

[The root-leaves are bipinnatifid: the stem-leaves simply pinnatifid. Peduncles pubescent, three or four, commonly two-flowered<sup>r</sup>.

Native of the mountains of Stiria and Carinthia, Switzerland, the South of France and Piedmont.—Cultivated in 1759, by Mr. Miller. It flowers from july to october<sup>s</sup>.

36. Stem erect, even. Leaves smooth, bipinnate except the upper ones, which are simply pinnate. Corymb terminating, compound, fastigiate, yellow. Calyxes rufescent.—Native of Canada<sup>t</sup>.

37. Native of the Cape of Good Hope, where it was found by Thunberg<sup>u</sup>.

38. Stems purplish, branched, erect. Leaves pinnatifid, tomentose underneath. Flowers racemed, pa-

nicked, erect. Calyx cylindrical, tomentose. Receptacle conical, naked.—Native of Algiers. Perennial.

39. Stem herbaceous, erect, villose, subhirsute, striated, simple or little branched. Leaves subhirsute, two-eared at the base. Peduncles many-flowered. Flowers clustered, corymbed, on short pedicels, the same size as in the first species. Calyx cylindrical, simple; the leaflets awl-shaped, not dead at the end. Corollets of the ray yellow, fine as hairs, the length of the calyx. Seed slender, smooth. Pappus simple, snow-white, villose, sessile, longer than the calyx. Receptacle naked.—Native of the desert, Barbary. Annual<sup>x</sup>.

40. Stem erect, smooth, striated, branched, often the thickness of a finger. Leaves petioled, submentose but sometimes smooth. Lower stem-leaves pinnate-lobed, with the lobes ovate or ovate-oblong, blunt: the upper ones ovate-oblong or lanceolate. Flowers of the same size with those of *S. Jacobaea*, upon pedicels which have needle-shaped leaflets on them. Calyx cylindrical: leaflets linear-lanceolate, equal, subacute. Florets of the ray yellow, small, linear. Seed very small, smooth, crowned with a simple villose pappus. Receptacle naked, convex. Perennial.—Native of Africa, near Belide in Algiers.

41. Roots capillary, subvillose. Stem erect, striated, smooth. Peduncles erect, slender, leafy, one-flowered. Leaves subhirsute, awl-shaped, from the middle to the top pinnate: pinnules rather remote, linear-subulate, unequal; sometimes contorted, entire, and sometimes tooth-pinnate. Flowers few, corymbed, the same size as in *S. Jacobaea*. Calyx simple, cylindrical, smooth: leaflets linear, equal, untouched or not dead at the tip. Corollets of the ray yellow, linear. Seed very small, oblong. Pappus simple, villose, white, sessile. Receptacle convex, naked. Annual; flowering in winter.—Native of Barbary, in wet sands of the desert<sup>y</sup>.

42. Root perennial, fibrous creeping, truncated. Stem two, three or four feet high, streaked, upright, branched, generally smooth, often tinged with purple, leafy, corymbed, many-flowered. Leaves commonly dark-green without any down; but sometimes both these and the stem are tomentose or cottony: those next the root pinnatifid at the base only, with a large oval sinuated segment at the extremity; on the stem they are pinnatifid throughout, and their segments laciniated, the laciniae being more numerous and finer in proportion to the dryness of the soil. Corymbs terminating, many-flowered, bracted, smooth. Flowers deep yellow or gold-coloured. Calyx smooth, grooved, cylindrical, short; having few, loose, awl-shaped scales at the base. Florets of the ray linear-oblong, three-toothed, finally revolute, twelve or thirteen: in the disk about sixty. Seeds hairy. Pappus rugged<sup>z</sup>.

Dr. Stokes remarks, that the filaments towards the end thicken into flat ovate glands, disappearing as soon as, or soon after the pollen is shed, rendering it probable that they are intended for the nourishment of the pollen.

Ragwort is very common on the sand-hills of Holland, without any ray to the corolla. Sherard observed it thus on the sea-shore, three or four miles from Drogheda. Perhaps this is the effect of the sea air, which is well known to be destructive to the more tender parts of vegetables. In Marazion marsh, Cornwall, it has been found with rayless flowers, and the whole plant hoary with a dense cottony substance<sup>z</sup>. I have remarked the winter plants of the common Groundsel to be covered with a thick coat of cotton.

Ragwort is found in most parts of Europe, in England it is a common weed in grass grounds. It is called not only Ragwort or Ragweed, but St. James's wort, Canker-wort; and in the north Seggrum, Seggram or Seagrim.

If this plant be gathered before the flowers open, and used fresh, it dyes wool of a full green, but the colour is apt to fade. If woollen cloth be boiled in

<sup>a</sup> Pollich      <sup>b</sup> Engl. bot.      <sup>c</sup> Smith.      <sup>d</sup> Linn. spec.  
<sup>e</sup> Hort. kew.      <sup>f</sup> Linn. syst.      <sup>g</sup> Hort. kew.  
<sup>h</sup> Linn. spec.      <sup>i</sup> Linn. suppl.

<sup>x</sup> Desfontaines.

<sup>y</sup> Idem.

<sup>z</sup> Smith, Fl. rust.

<sup>z</sup> Withering.



alum water, and then in a decoction of the flowers, it takes a beautiful deep yellow. It is said that kine and horses will eat it when young<sup>a</sup>; but much of it escapes their bite, flowers and seeds, and fills the pastures with a large rank weed.

43. Root perennial. The herb commonly quite smooth, but in dry places sometimes a little woolly. Stem erect, branched, leafy, frequently purplish at the base like the preceding: it is also corymbed, but with larger and much fewer flowers. Leaves bright not dark green: the lower petioled, obovate or elliptic, undivided, and commonly quite entire; the upper ones sessile or embracing, lyrate-pinnatifid, serrate, quite entire at the end. Flowers gold-flowered, handsome. Calyx short and almost hemispherical, smooth, scarcely calyced. Florets of the ray spreading, elliptic, three or four-toothed, of various breadths, finally revolute. Seeds quite smooth, in which it undoubtedly differs from the preceding. Pappus rugged<sup>b</sup>.

Dr. Stokes remarks, that the stem and leaves are quite smooth, the root-leaves with the terminating leaflet oblong; the calyx-scales fifteen to twenty-one, dead as it were and brown at the points, florets of the ray about twenty-one, and the florets thickening towards the end into oblong glands, as in common Ragwort.

Mr. Woodward has observed that it is sometimes found without any ray to the flowers.

Native of Denmark and England, in marshes, ditches, wet meadows and watery places in general: flowering in July and August.]

44. Root perennial. Root-leaves many roundish, about an inch and half over each way, of a purplish colour on their under side, and crenate on their edges. Stems near two feet high, with a few lyrate leaves on them: the upper part divides into several long slender peduncles, each sustaining one erect flower, which is yellow, and has few florets in the ray.

[Native of Virginia and Canada. Cultivated in 1759 by Mr. Miller: it flowers in May and June<sup>c</sup>.] Mr. Miller says June and July; and that the seeds ripen in autumn.

[Linneus seems to think that it is scarcely distinct from *S. Jacobaea*.

45. This is one of the tallest growing species. The leaves are deeply sinuate, almost pinnate, with the lobes rounded, and mucronate at the edge.—Found at the Cape of Good Hope by Thunberg<sup>d</sup>.

46. Stem erect, branched at bottom: branches grooved, smooth. Leaves remote, smooth, even, acute, unequally toothed, an inch and half long; the last segment very large, cordate-lanceolate; side-ones one or two on each side, oblong, a little narrower at the base, remotely toothed. Petioles much shorter than the leaves, with a rounded toothed earlet at the base on each side. Corymb terminating; with an awl-shaped scale at the base of each peduncle, and two or three smaller on the pedicels. Peduncles smooth, mostly three-flowered, except the last which are one-flowered. Calyxes simple, untouched or not black at the point. Ray of the corolla eight or ten-flowered. It is distinguished from *alpinus* by its naked lanceolate leaves, and its simple untouched calyxes<sup>e</sup>.

47. Stem herbaceous, striated-angular or round, erect, simple, two feet high or more, branching at top into a corymbed panicle. Leaves alternate, remote, bluntish, beneath hoary and veined. Petioles the length of the leaves, having two or four leafy teeth in the middle, as in *Erysimum Barbarea*. One corymb terminating, and several axillary solitary, on longer peduncles. Pedicels with small awl-shaped scales scattered over them. Calyx calyced, equal, mortified at the points. Calycle small, pressed close. Corolla yellow, like that of *S. Jacobaea*. Transplanted into good ground in a garden, it has a very branching stem with lacinate leaves, and appears like a different plant.

Native of the mountains of Switzerland, Sweden and Germany<sup>f</sup>.

48. Stem two feet high, simple except at top, where it is branched. Leaves linear; subpinnate; the pinnae remote, linear, long. Flowers in umbels, with awl-shaped leaflets scattered over the pedicels. Calyxes even. Ray of the corolla purple. In the *Amoenitates* it is said to be yellow with red streaks beneath.—Native of the Cape of Good Hope<sup>g</sup>.

49. Found at the Cape by Masson, and introduced in 1774. It flowers from July to October<sup>h</sup>.

50. The peduncles have small acute scales scattered over them. It has the calyx of a *Senecio*, although the scales are not mortified at the point<sup>i</sup>.—Native of Spain, Italy and Russia.

51. This is a smooth plant, found at the Cape of Good Hope by Thunberg<sup>k</sup>.

52. Root of many long simple fibres, perennial, somewhat creeping. Stem from three to six feet or more in height, perfectly straight, upright and simple; leafy, round, hollow, striated, loosely clothed with deciduous cottony down, which likewise invests the young leaves and flower-stalks. Leaves scattered, numerous, sessile, lanceolate, acute, acutely serrate; narrow and entire at the base, smooth above, paler and generally downy beneath. Corymb terminating; few-flowered, the lower peduncles axillary. Bractes awl-shaped. Flowers above an inch in diameter, bright yellow. Calyx smoothish, with the scales at the base linear. Florets of the ray linear, five-toothed, spreading but little recurved. Seeds hairy. Pappus minutely rugged. Receptacle set with short hairs between the seeds, as is often the case in many plants in which that part is said to be naked, for these hairs are very different from the long chaffy scales to be found in some genera<sup>l</sup>.

Native of some parts of Europe, in fens and marsh ditches; flowering from June to August. It was not known to be indigenous of Britain in the time of Gerard, Parkinson and Johnson. Ray found it in marsh ditches and banks in the Isle of Ely, but rarely. Near Stretham-ferry, where he particularly remarked it, no one has found it lately. Mr. Relhan marks it at Littleport, Chatteris, and in Bardwell fens. Mr. Hemsted found it in Lakenheath fen near Wangford, Suffolk. And the Rev. H. J. Wollaston, on the banks of ditches near a piece of water called Braford, about half a mile from Lincoln. Ray also remarked it in his travels abroad near Nantua, in going from Geneva to Lyons.

53. Root perennial, fibrous, not creeping. Stem single or few, from a foot and half to three feet and half, erect, round, often very slightly angular, or sometimes grooved towards the top, the whole pale green or purplish here and there, smooth and shining or hairy, thickness of a little finger or goose quill, leafy up to the very peduncles. Leaves irregularly alternate, the upper ones gradually less and less, so as not to exceed the flowers in height, hence the uppermost are very small. They are acuminate, sessile, from three to six inches long, according to the size of the stem; the upper surface is smooth, the lower in some plants hirsute or villose, in others shining: serratures unequal, in some double but in the greater part not so. Branches fewer or more spring at an acute angle from the axils of the upper leaves, and collect the flowers into a compound corymb. Peduncles variously branched so as form a sort of umbel. Calyx-scales about ten, and commonly five in the calycle. Corollets in the ray five, very seldom four, in the wild plant, but more when cultivated, spreading very much, yellow, oval-oblong, emarginate: in the disk twelve or more<sup>m</sup>.

Native of Germany, Austria, Switzerland, Piedmont and Siberia. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in July<sup>n</sup>.

54. Root perennial, creeping, straight, from two or three to five feet in height, angular, leafy, smooth, corymbed at top. Leaves alternate, sessile, acute, smooth or minutely pubescent; the upper ones gra-

<sup>a</sup> Withering. <sup>b</sup> Smith. <sup>c</sup> Hort. kew. <sup>d</sup> Linn. suppl.

<sup>e</sup> Vahl. <sup>f</sup> Linn. succ.

<sup>g</sup> Linn. mant. & amoen.

<sup>h</sup> Hort. kew.

<sup>i</sup> Linn. suppl.

<sup>j</sup> Hort. kew.

<sup>k</sup> Smith.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. spec.

<sup>n</sup> Jacqu. obs.



dually less. Corymb many-flowered. Bractes linear-lanceolate, acuminate. Pedicels angular, pubescent. Flowers yellow. Calyx somewhat woolly, with the scales at the base lanceolate. Florets of the ray elliptic, long-clawed, scarcely toothed at the end. Seeds smooth. Pappus minutely rugged<sup>o</sup>.

It is easily distinguished, says Linneus by its appearance, size, wide leaves, and very creeping root.

Native of many parts of Europe. Found in Britain between Wells and Glastonbury, by Bobart; near Halifax, by Newton; at Salkeld in Cumberland, by Nicholson; about Clapham and Ingleton, by Hudson; near Longtown and on the side of the river below Carlisle, by Mr. Jackson; near Preston hall, between Kirkby Lonsdale and Kendal in Westmoreland, in 1782, also in the King's Park, Edinburgh, by Dr. Smith; but in the last-mentioned place, probably planted.]

55. Root perennial. Stem annual. Lower leaves a foot long, four inches broad in the middle, and somewhat shaped like a scymitar, the midrib being curved outwards towards the point; they are smooth, and slightly indented on their edges. Stem four feet high, with leaves growing smaller the whole length, and embracing it half round. Flowers terminating in a compact corymb, of a deep yellow colour.

[Stem the height of a man or even more, the thickness of a finger at bottom, streaked and a little hairy, towards the top smooth and somewhat angular. Root-leaves spreading in a ring, long, wide and thick, shaped like those of *Lepidium*, moderately and irregularly toothed, smooth above, paler and somewhat hoary beneath, with oblique slender veins from a whitish midrib. Leaves on the stem alternate, narrower, deeply toothed, thick like the others, smooth beneath, with veins so slender as to be scarcely visible. Bractes at the origin of the peduncles and pedicels. Flowers yellow. Calyx striated, calyced. Florets in the ray from two to five, notched at the end<sup>p</sup>.]

Discovered by Tournefort in the Levant, and the seeds sent by him to the royal garden at Paris. It was cultivated in 1732 by James Sherard, M. D. and flowers in July and August<sup>q</sup>.

56. Root perennial. Stem erect, two feet high, even. Leaves sessile, few, quite entire, with a whitish rib. Flowers in a sort of corymb, yellow, with about fifteen florets in the disk. Calyx mortified at the edge. Calycle composed of three or four scales.—Native of Siberia<sup>r</sup>.

57. Leaves smooth on both sides. Bractes setaceous under the calyx. The upper stem-leaves become small, so that the corymb appears as if it were on a very long peduncle; whereas in the *faracenicus* biggish leaves continue to the very corymb. It resembles *Cacalia faracenicus*<sup>s</sup>.

Native of the Levant, Germany, Austria, the South of France, and Piedmont. Cultivated in 1570 by Mr. Hugh Morgan, according to Lobel. It flowers from July to September<sup>t</sup>.

58. Stem quite simple, villose. Root-leaves ovate-oblong, petioled, ferrate, bluntish, thickish, villose beneath, glaucous above. Stem-leaves small, lanceolate, and almost awl-shaped. Flower terminating, often single, thickish. Calyx calyced.—Jacquin discerned the progressive varieties; but Haller will not allow that they all agree<sup>u</sup>.

Villars observes, that the fat thick leaves with unequal teeth are more or less smooth, they vary also in figure and size; but their down pressed close and unequal, like a spider's web, is never wanting when the plant is young; and their teeth a little bent down is a constant mark. The calyx is scaly and villose, the lower scales a little straddling, and they are all mortified at the end. The flower is large, deep yellow, and composed of more florets than in any other species. This plant partakes of *Senecio*, *Cineraria*, *Doronicum*, and *Solidago*. It agrees with the first of these in the calyx; but in habit and other characters it differs

from it.—Native of the South of Europe. Cultivated in 1705 by Dr. Uvedale, according to Plukenet. Flowers from July to September<sup>x</sup>.

59. Leaves linear, scattered, long, naked, rugged. Flowers corymb. Linneus doubts whether *S. grandiflorus* of Bergius, belongs to this species; the leaves being more toothed, and the flowers twice as big.—Native of the Cape of Good Hope<sup>y</sup>.

Introduced in 1775 by Mons. Thouin. It flowers from August to November<sup>z</sup>.

60. This is singular for its rigid mucronate leaves, half-toothed on each side towards the point.—Found at the Cape by Thunberg.

61. This is a little shrub, a foot and half high, determinately branched, roundish, even. Leaves scattered, resembling those of Juniper, but a little wider, half-embracing, an inch long, rolled back at the sides, even, mucronate. Peduncles terminating, elongated, with four or five flowers at the top on straddling pedicels. Flowers yellow, with the ray spreading.—Native of the Cape<sup>a</sup>.

62. Plant biennial. Stature of *S. rigidus*; but much narrower in all its parts. Stem four feet high, round, striated, green, having white hairs scattered over it. Branches on the lower part of the stem spreading very much. Leaves lanceolate, sessile, embracing, revolute, ferrate with sharp teeth, having obtuse sinuses; above green, shining; somewhat rugged, beneath veined, subvillose, green. Rudiments of the branches from each axil of the leaves. Scapes terminating, round, much narrower than the stem, filiform, very long, smoother, striated, having linear undivided leaves scattered over them below, not toothed but ferrate-spiny and almost naked. Corymbs terminating, alternate, subdivided. Calyxes mortified at the points. Corollas yellow, with eight ovate florets in the ray scarcely three-toothed. It has the appearance of *Serratula arvensis*.

Native of Constantinople<sup>b</sup>.

63. The whole plant very smooth. Leaves thickish, veinless, often having minute, few, remote teeth about the edge. Petiole shorter than the leaf. Corymbs terminating. Bractes two or three linear, at the base of the peduncles; smaller on the pedicels. Calyx cylindrical, brown, paler when riper: calycle eight-toothed; the teeth very small, and a few scalelets besides at the base of the calyx. Ray of the corolla five-flowered<sup>c</sup>.]

64. Stem seven or eight feet high, sending out branches on every side the whole length. Leaves about two inches and a half long, and almost two broad, hoary. Flowers in loose bunches at the extremity of the branches, almost in form of an umbel, of a pale yellow colour.

[Florets in the ray sometimes only four or five, sometimes six or seven and even more, short and entire. Seeds small, slender<sup>d</sup>.

Native of the Cape of Good Hope. Cultivated in 1732, by James Sherard, M. D. It flowers in July<sup>e</sup>.]

65. This has a very branching shrubby stalk, four or five feet high, sending out branches irregularly on every side. Leaves stiff, irregular, about three inches long, and three quarters of an inch broad, deeply cut on their edges, and of a gray colour on their under side. The flowers grow in loose bunches at the end of the branches, and are of a pale yellow colour.

[Native of the Cape of Good Hope. Cultivated in 1731, by Mr. Miller. It flowers in June and July.

66. This also is a native of the Cape, where it was found by Masson, and introduced in 1774. It flowers in July and August, and is shrubby<sup>f</sup>.]

67. This rises with a shrubby branching stalk six or seven feet high. It is closely set with rugged embracing leaves; those on the lower part four inches long, and an inch and half broad at the base, gradually diminishing in size to the top; they are stiff, hairy, dark green, oblong, heart-shaped, indented.

<sup>o</sup> Smith.

<sup>p</sup> Linn. suppl.

<sup>q</sup> Dillenius.

<sup>r</sup> Linn. spec. & syst.

<sup>s</sup> Linn. spec. & syst.

<sup>t</sup> Hort. kew.

<sup>u</sup> Hort. kew.

<sup>x</sup> Hort. kew.

<sup>y</sup> Linn. spec. & mant.

<sup>z</sup> Linn. suppl.

<sup>a</sup> Dillenius.

<sup>b</sup> Linn. spec. & mant.

<sup>c</sup> Linn. spec. & syst.

<sup>d</sup> Hort. kew.

<sup>e</sup> Hort. kew.

<sup>f</sup> Hort. kew.

<sup>g</sup> Vahl.

<sup>h</sup> Idem.



The flowers are produced at the end of the branches, and are of a bright yellow colour.

[Stem rigid, rugged, inelegant. Leaves rigid, appearing as if oiled on the upper surface, but not smooth; beneath they are hoary and somewhat villose. Flowers small, with five yellow florets in the ray, which are remote and entire<sup>a</sup>.

Native of the Cape of Good Hope. Cultivated in 1759 by Mr. Miller. It flowers from June to September<sup>b</sup>.

68. The plant is clothed all over with white wool. Leaves roundish-ovate, quite entire or having at most one or two apparent toothlets, woolly but finally becoming naked, on long petioles embracing the stem with their widened base.—Native of the Cape of Good Hope<sup>c</sup>.

69. This is one of the loftier species. Leaves somewhat fleshy, glaucous.

70. The whole is generally fleshy. It varies with lanceolate leaves.

71. Root-leaves elongated, sinuate, and with the lobes serrate, towards the root involved in cotton. Stem almost leafless, or leaves very few, partially embracing.

72. 73. These, with the three preceding, are natives of the Cape of Good Hope, and were found there by Chevalier Thunberg.

74. Stems almost prostrate, a foot long, the size of a coarse thread, somewhat branched at the base. Leaves alternate, petioled, bluntish, even on both sides. Peduncle terminating, elongated, few-flowered. Calyx simple, not calyced. Corolla yellow. Ray with a bitid fertile stigma.—Found at the Cape by Sparrmann.

75. Stems erect, two feet high, striated, herbaceous. Leaves alternate, distant, more dilated at the base, obscurely decurrent. Panicle terminating. Ray of the flower spreading, purple.—Found at the Cape by Thunberg<sup>k</sup>.]

#### PROPAGATION AND CULTURE.

1. Sow the seeds upon a hotbed in the spring, and when the plants are fit to remove, transplant them to another hotbed to bring them forward, and afterwards plant them in a warm border, where they will flower in July, and their seeds will ripen in autumn.

8. Part the roots in the spring. Plant the offsets in pots filled with light kitchen-garden earth, and plunge them in the tanbed in the stove, where they must remain.

27. Cut off the side shoots in any of the summer months, and plant them in a shady border, where in five or six weeks they will take root, and may then be taken up and planted in pots, placing them in the shade till they are well rooted: then remove them to an open situation, observing to water them duly in dry weather. In winter place them under a frame, [or in the dry stove. This management applies to the numerous species from the Cape of Good Hope.]

30. If the seeds, which ripen in autumn, be permitted to scatter, plenty of plants will rise the spring following. Or if sown upon a bed of common earth in the spring, the plants may be transplanted into the borders of the flower-garden. If some of the plants be put into pots, and housed in winter, they may be preserved till spring. [The varieties with double flowers are continued by cuttings.]

34. Slip off the heads in the spring, and plant them in a bed of loamy earth in a shady situation: when they have put out roots, transplant them into an east border, for they prefer a situation not too much exposed to the sun. Having fine hoary leaves, this species makes a pretty diversity, when intermixed with other plants. Requiring little culture and not taking up much room, it deserves a place in small gardens.

35. Sow the seeds upon a bed of loamy earth, exposed only to the morning sun. When the plants are fit to remove, transplant them to a shady border, where they may remain till autumn, observing to keep them

clear from weeds all the summer: then transplant them to the places where they are to remain. The following summer the plants will flower and produce seeds; and the roots will continue, if they are in a shady situation and a loamy soil.

[42. This rank weed, so troublesome in dry grass grounds, may be destroyed gradually by constant mowing; most effectually by pulling it up by hand after rain. Feeding the land with sheep is said to be an infallible cure for it; and it is affirmed that they eat it with so much greediness as very soon to destroy it<sup>l</sup>. This must be whilst it is yet very young.]

44. Plant the offsets in autumn in an east border of loamy earth, allowing each plant two feet room to spread.

52, 53, 54, 55. These are easily propagated by seeds or parting their roots: the latter mode is generally practised when the plants are once obtained, that being the most expeditious method, especially for the 54th sort, the roots of which spread and increase too fast where they are not confined. The time for dividing and transplanting these roots is in autumn, when the stalks decay. These plants are too large for small gardens, but are proper for large borders in extensive gardens, or for the sides of woods and plantations, where they may be allowed room; and in such places, intermixed with other tall-growing plants, they will add to the variety.

64, 65, 66, 67. These are too tender to live in the open air through the winter in England, but are so hardy as to only require protection from hard frosts; so if they are kept in pots and placed either under a frame in winter, or in a common green-house with other hardy kinds of plants, which require a large share of air in mild weather, and only require to be screened from hard frost, they may be preserved in England. They are all easily propagated by seeds or cuttings, but the latter being the most expeditious method is generally practised here. If the cuttings are planted in a shady border during any of the summer months, they will readily take root, and then they should be taken up with balls of earth to their roots, and each planted in a separate pot filled with good kitchen-garden earth, and placed in the shade till they have taken new root; then they may be removed to a more open situation, where they may remain till there is danger of sharp frost, when they should be removed into shelter, and treated in the same way as other hardy kinds of green-house plants.

If these plants are propagated by seeds, they should be sown on a bed of fresh earth, exposed only to the morning sun the beginning of April, observing in dry weather to moisten the ground now and then, which will forward the vegetation of the seeds. When the plants come up, they must be kept clear from weeds till they are fit to remove, when they should be planted in pots, and treated in the same way as those raised from cuttings.

[SENECIO. See *Baccharis*, *Cacalia*, *Cineraria*, *Conyza*, *Crepis*, *Erigeron*, *Inula*, *Othonna*, *Sphæranthus*, *Spiranthes*.

SENECIO-CARDUUS. See *Centaurea Crupina*.

SENECIOIDES. See *Conyza*.

SENECIUM. See *Senecio sylvaticus*.

SENEGA. See *Polygala*.

SENEGAL. See *Mimosa*.

SENGREEN. See *Saxifraga*.

SENNA. See *Arachis* and *Cassia*.]

——, Bladder. See *Colutea*.

——, Scorpion. See *Emerus*.

—— [spuria. See *Casalpinia* and *Poinciana*.

Sennæ affinis. See *Bauhinia*.

Sensitive Fern. See *Opoclea*.

—— Plant. See *Mimosa*.

SEPTAS. (From Septem: the number seven prevailing in the fructification.)

Lin. gen. n. 465. Reich. n. 501. Schreb. n. 633.

Juss. 308.

Class. 7. 4. Heptandria Heptagynia.

Nat. order of *Succulentæ*. *Sempervivæ*, Juss.

<sup>a</sup> Linn. syst.

<sup>b</sup> Hort. kew.

<sup>c</sup> Linn. spec.

<sup>k</sup> Linn. suppl.

<sup>l</sup> Young's Annals. 11. 290.



## S E R

## GENERIC CHARACTER.

- CAL. *Perianth* seven-parted, spreading, acute, permanent.  
 COR. *Petals* seven, oblong, equal, twice as long as the calyx.  
 STAM. *Filaments* seven, awl-shaped, length of the calyx. *Anthers* subovate, erect.  
 PIST. *Germ* seven, oblong, ending in awl-shaped *Styles*, the length of the stamens. *Stigmas* bluntish.  
 PER. *Capsules* seven, oblong, acute, parallel; one-valved.  
 SEEDS very many.

## ESSENTIAL CHARACTER.

Cal. seven-parted. Pet. seven. Germs seven. Caps. seven, many-seeded.

## SPECIES.

1. *Septas capensis*. Round-leaved *Septas*.  
*Lin. spec.* 489. *fyst.* 353. *Reich.* 2. 139. *amoen.* 6. *af.* 13. *Pluk. mant.* t. 340. f. 9.  
*Trientalis foliis subrotundis crenatis.* *Roy. lugdb.* 538.

## DESCRIPTION, &amp;c.

Leaves radical four, blunt, naked, crenate; the two lower opposite, larger, subpetioled, roundish; the two upper opposite, oval, sessile, narrower. Scape filiform, naked, terminated by a simple umbel, composed of seven or eight filiform, one-flowered, naked peduncles; with a very small involucre. In the natural orders it approaches to *Saxifraga* and *Sedum*.

Native of the Cape of Good Hope<sup>m</sup>. Introduced in 1774, by Mr. Francis Masson. It flowers in august and september, and is perennial<sup>n</sup>.

Loureiro has given the name of *Septas repens*, to a plant of the class *Didynamia* and the order *Angiospermia*, allied to *Thunbergia*.

SEPTFOIL. See *Tormentilla*.]

SERAPIAS. (From Serapis, one of the Egyptian idols.)

*Lin. gen. n.* 1012. *Reich. n.* 1097. *Schreb. n.* 1371. *Gartn. t.* 14. *Juss.* 65. *Helleborine.* *Tournef.* 2. 249.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Orchideae*.

## GENERIC CHARACTER.

- CAL. *Spathes* wandering. *Spadix* simple.  
*Perianth* none.  
 COR. *Petals* five, ovate-oblong, from erect patulous, converging upwards.  
*Nectary* length of the petals, excavated at the base, melliferous, ovate, gibbous below, trifid, acute: the middle segment cordate, obtuse, three-toothed at the base with a bifid scar.  
 STAM. *Filaments* two, very short, placed on the pistil. *Anthers* erect, under the upper lip of the nectary.  
 PIST. *Germ* oblong, contorted, inferior. *Style* growing to the upper lip of the nectary. *Stigma* obsolete.  
 PER. *Capsule* obovate, bluntly three-cornered, with three keels adjoined, three-valved, opening under the keels, one-celled.

SEEDS numerous, sawdust-form. *Receptacle* linear, adjoined to each valve of the pericarp.

## ESSENTIAL CHARACTER.

*Nectary* ovate, gibbous, with an ovate lip.

## SPECIES.

1. *Serapias latifolia*. Broad-leaved *Helleborine*.  
*Lin. fyst.* 814. *Reich.* 4. 28. *mant.* 490. *Huds. angl.* 393. *Wither. arr. ed.* 3. 40. *Smith engl. bot. t.* 269. *Lightf. scot.* 526. *Relb. cant. n.* 662. *Sibth. oxon. n.* 38. *Abbot bedf. n.* 642. *Fl. dan. t.* 811. *Gunn. norv. n.* 970. t. 5. f. 3-6. *Pollich pal. n.* 859. *Scop. carn. n.* 1128. *Villars dauph. 2.* 50.  
*S. Helleborine.* *Lin. spec.* 1344. 1. α. *act. upf.* 1740. 21. *f. suec. n.* 819. *hort. cliff.* 429. *Gartn. fruct.* 1. 46. *Mill. dict. n.* 1.  
*Helleborine latifolia montana.* *Baub. pin.* 186. *Raii hist.* 1230. *syn.* 383.  
*Epipactis f. Helleborine.* *Camer. epit.* 187.  
*E. latifolia.* *Allion. pedem. n.* 1855.  
*E. n.* 1297. t. 40. *Hall. belv.*  
*Roots* creeping, leaves ovate embracing, flowers drooping, lip entire pointed shorter than the petals.

## S E R

2. *Serapias palustris*. Marsh *Helleborine*.  
*Lightf. scot.* 527. *Smith engl. bot. t.* 270. *Scop. carn. n.* 1129. *Villars dauph. 2.* 51. *Mill. dict. n.* 3.  
*S. longifolia.* *Lin. fyst.* 815. *Reich.* 4. 29. *mant.* 490. *Wither. arr. ed.* 3. 41. *Relb. cant. n.* 663. *Sibth. oxon. n.* 39. *Abbot bedford. n.* 643. *Fl. dan. t.* 267. *Pollich pal. n.* 860. *Kniph. cent. 2. n.* 82.  
*S. latifolia γ, palustris.* *Huds. angl.* 393.  
*Helleborine palustris.* *Raii hist.* 1231. *syn.* 384.  
*Epipactis longifolia.* *Allion. pedem. n.* 1854.  
*E. n.* 1296. t. 39. *Hall. belv.*  
*Roots* creeping, leaves lanceolate embracing, flowers drooping, lip crenate obtuse equal to the petals.  
 3. *Serapias ensifolia*. Sword-leaved *Helleborine*.  
*Lin. fyst.* 815. *Wither. arr. ed.* 3. 42. *Engl. bot. t.* 494. *Fl. dan. t.* 506.  
*S. longifolia γ.* *Huds. angl.* 394.  
*S. Xiphophyllum.* *Linn. suppl.* 404.  
*Helleborine foliis prælongis angustis acutis.* *Raii syn.* 384.  
*Root* fibrous, leaves sword-shaped, bractes much shorter than the germ, flowers erect, lip obtuse half as long as the petals.  
 4. *Serapias grandiflora*. White *Helleborine*.  
*Lightf. scot.* 528. *Wither. arr. ed.* 3. 42. *Engl. bot. t.* 271. *Relb. cant. n.* 664. *Sibth. oxon. n.* 40.  
*S. lancifolia.* *Lin. fyst.* 815.  
*S. longifolia.* *Huds. angl.* 393.  
*S. Damasonium.* *Mill. dict. n.* 2.  
*Helleborine flore albo.* *Ger.* 358. 2. *Raii hist.* 1231. *syn.* 383. *Petiv. brit. t.* 70. f. 7.  
*Root* creeping, leaves elliptic-lanceolate, bractes longer than the germ, flowers erect, lip obtuse rather shorter than the petals.  
 5. *Serapias nivea*. Snowy *Helleborine*.  
*Desfont. atlant.* 321.  
*Leaves* lanceolate, flowers loosely racemed erect, bractes very small, lip obtuse twice as short as the petals.  
 6. *Serapias polystachya*. Many-spiked *Helleborine*.  
*Swartz prodr.* 119.  
*Roots* fibrous, stem subdivided jointed, leaves oblong-lanceolate, raceme compound terminating, lip of the nectary ovate recurved.  
 7. *Serapias flava*. Yellow *Helleborine*.  
*Swartz prodr.* 119.  
*Roots* fibrous, stem subdivided jointed, leaves oblong-lanceolate, racemes compound axillary, lip of the nectary erect acuminate.  
 8. *Serapias rubra*. Purple *Helleborine*.  
*Lin. fyst.* 816. *Reich.* 4. 30. *Wither. arr. ed.* 3. 42. *Engl. bot. t.* 437. *Fl. dan. t.* 345. *Pollich pal. n.* 862. *Leers herb. n.* 700. *Villars dauph. 2.* 53.  
*S. longifolia δ.* *Huds. angl.* 394.  
*S. grandiflora δ.* *Wither. arr. ed.* 2. 1001.  
*Helleborine montana angustifolia purpurascens.* *Baub. pin.* 187. *Raii hist.* 1231. *syn.* 384. *Mor. hist. f.* 12. t. 11. f. 5.  
*Elleborine recentior* 6. *Clus. hist.* 1. 273. 2. *Ger.* 358. 3. *emac.* 442.  
*E. angustifolia spicata varicolor.* *Park. theat.* 218. 8.  
*Epipactis. n.* 1299. t. 42. *Hall. belv.*  
*E. rubra.* *Allion. pedem. n.* 1857.  
*Damasonium purpureum dilutum, f. Elleborine* 6. *Clusii.* *Baub. hist.* 3. 517.  
*D. flore roseo.* *Riv. hex. t.* 6.  
*Root* creeping, leaves lanceolate, bractes longer than the germ, flowers erect, lip acute marked with waving lines.  
 9. *Serapias Lingua*. Narrow-leaved *Helleborine*.  
*Lin. spec.* 1344. *Reich.* 4. 31. *act. upf.* 1740. 23. *Desfont. atlant.* 322.  
*Orchis Lingua.* *Scop. carn. n.* 1104. *Hall. belv. n.* 1267. *Allion. pedem. n.* 1833.  
*O. montana italica flore ferruginea, lingua oblonga.* *Baub. pin.* 84. *prodr.* 29. *Raii hist.* 1221. *Mor. hist. f.* 12. t. 14. f. 21. *Tournef. inst.* 434. *Seguier suppl.* 249. t. 8. f. 4.  
 β. *O. mont. ital. lingua oblonga altera.* *Baub. pin.* 84.  
*O. macrophylla.* *Col. ecphr.* 2. 321. t. 322.

Bulbs

<sup>m</sup> Linn. amoen. <sup>n</sup> Hort. kew.



*Bulbs roundish, lip of the nectary trifid acuminate smooth longer than the petals.*

10. *Serapias cordigera*. Heart-lipped Helleborine.

*Lin. spec.* 1345. *fyst.* 816. *Reich.* 4. 31. *Desfont.* atlant. 321.

*Orchis montana italica lingua trifida.* *Rudb. elyf.* 2. 204. *f.* 20. *Shaw itin. n.* 441.

*Bulbs roundish, lip of the nectary trifid acuminate very large bearded at the base.*

11. *Serapias capensis*. Cape Helleborine.

*Lin. fyst.* 816. *Reich.* 4. 31. *mant.* 293.

*Leaves conduplicate-ensiform, stem almost naked above, sheaths spathaceous.*

12. *Serapias erecta*. Upright Helleborine.

*Lin. fyst.* 816. *Thunb. jap.* 27.

*Leaves ovate embracing, flowers erect.*

13. *Serapias falcata*. Sickle-leaved Helleborine.

*Lin. fyst.* 816. *Thunb. jap.* 28.

*Leaves ensiform convoluted sickle-form, flowers erect.*

14. *Serapias regularis*.

*Forst. prodr. n.* 312.

*Thelymitra longifolia.* *Forst. gen.* 49.

*Bulbs ovate fibrous, leaves sheathing ensiform keeled, scape erect spiked, corollas six-petalled.*

#### DESCRIPTIONS, &c.

1. Root perennial, creeping horizontally, throwing out many long fibres, fleshy but by no means bulbous, thriving in the moist black vegetable mould of damp woods. Stem simple, erect, near two feet high, clothed with several alternate, ovate or lanceolate leaves, the lower ones sheathing, the upper sessile, all strongly nerved, thin, rather rigid, not fleshy. Spike erect, many-flowered. Bractes lanceolate, the lower ones longest. Flowers more or less drooping, on short peduncles, of a brownish green colour, but sometimes dark purple (which is Mr. Hudson's variety  $\beta$ ;) petals ovate, pointed, concave. Nectary shorter than the petals, concave, with a projecting margin: lip heart-shaped, with a small recurved point, purplish but not streaked. The colour of the flowers is very variable: they have generally a faint, aromatic, orchis-like smell. The germ and stem are more or less downy.

Mr. Woodward remarks, that the lower leaves are ovate, two inches and a quarter broad, and not more than three or four inches long; the germ pear-shaped and short: and Dr. Withering—that the stem is more or less of a brownish purple; the spike from three to eight inches long, with from six to twenty flowers or more, much closer set than in the next species; calyx-leaves three, brownish green, broad spear-shaped, keeled; the two lateral petals resembling the leaves of the calyx, purplish green; the upper lip of the nectary glandular, white, fleshy, the lower distended at the bottom into a nearly globular hollow, purple within and of a brownish green without, towards the end flat purplish and somewhat scolloped: anthers yellowish white, connected to their case by a milk-white globular substance: pistils two white fleshy, fixed on the glandular receptacle: capsule obovate, bulging on the upper side, smooth or nearly so.

Native of Europe, in woods, groves and hedges; flowering in July and August. Not uncommon in Britain, especially in the mountainous parts: as in the north-riding of Yorkshire, about Matlock, &c. In Derbyshire, Buckham wood in Cumberland, in the red rock plantation, Edgbaston Park. In Scotland, at Chatelherault near Hamilton, and in the wood of Comrie in Strathcarr: but not very common. Also in the midland and other countries of England, as Kingston wood in Cambridgeshire, Thurlough and Sheerhatch in Bedfordshire, Northleigh and Stokenchurch woods in Oxfordshire, about Ospringe in Kent, Buddon wood and about Loughborough in Leicestershire, Broadly and Clenston woods in Dorsetshire, and Selborne in Hampshire, &c. In Ireland, in Lord Dungannon's plantations at Belvoir.

Mr. Hudson's variety  $\beta$ . Helleborine altera atrobubente flore. *Bauh. pin.* 186. *Ray syn.* 383: differs only in not being so tall, the fibres of the root very long and tough owing to its situation, the leaves

smaller; the lower ovate pointed not obtuse, and the outer appearance of the flower a darker colour. Mr. Ray says, the leaves are narrower and more frequent on the stem, and that the flowers, which are of a blackish red, come out later. He found it near Malham, four miles from Settle in Yorkshire, and in other mountainous situations. Mr. Woodward, who furnished the above observations, gathered it on Conzick Scar, four miles from Kendal, growing at the foot of the Scar itself among the loose stones and rubbish, in a situation not accessible without difficulty and danger.

2. Root creeping, fleshy, perennial. Stem erect, simple, from twelve to eighteen inches high. Lower leaves ovate, often purple at the back; upper lanceolate, erect; all embracing and ribbed. Spike erect. Bractes lanceolate, about equal to the germ. Flowers fewer and much larger than in the preceding species, drooping, with downy purple peduncles and germ. Petals rather obtuse, the three outer green, the two inner white, all streaked and stained with purple. Nectary about as long as the petals, white streaked with purple, and a yellow central line; lip heart-shaped, with a dilated waving crenate margin, and a notched protuberance above the base.

Germ, according to Mr. Woodward, long, narrow, and when full grown elliptical, eight lines long and four broad, with six prominent ridges. Lip of the nectary divided transversely almost through, the upper part fixed and boat-shaped, marked with red ribs, and at the bottom a yellow line with orange spots, the lower part hangs down and is white.

Mr. Wood remarks, that the outer half of the lip is so slightly attached as to be shaken off by a small motion, and is often blown off by the wind while the plant is growing:—Mr. Hollefer, that the leaves are sometimes ovate-lanceolate with seven ribs:—Dr. Stokes, that they are sometimes ovate-oblong and blunt; the peduncles downy and filiform; the germs downy, slightly scored, long, tapering down to the peduncle, and a little towards the point:—Dr. Withering, that the spike is about four inches long, with from six to twelve flowers, much wider set than in the preceding species; peduncle and germ woolly, the latter uniform, not bulging on the upper side.

The characters thus detailed leave no doubt of this being a distinct species from the preceding: the different lengths of the lip, and the shape of the germs will always discriminate them; and should the woolliness of the peduncle flower and germs be constant in this, and always wanting in that, their difference will be obvious at first sight.

Native of Europe, in swampy meadows, watery places, marshes, morasses and bogs. In England not very unfrequent; as on the bogs of Chiselhurst in Kent, in Essex, Norfolk, Cambridgeshire, Bedfordshire, Oxfordshire, Leicestershire, near Leeds in Yorkshire, on the borders of Malvern Chase, Worcestershire, near Sturminster Newton and between Wimbourne and Ringwood, Dorsetshire, and on Knutsford Moor, Cheshire. Near Duntulm castle, in the isle of Skye, in Scotland.—In Ray's synopsis it is said, on the authority of Mr. J. Sherard, to be very common in the old chalk-pits by the White-house, in the road from Eltham to North Cray; with the *Orchis myodes*, on chalky ground: but surely that must be a mistake, since it is not found any where else in such a situation.—Mr. Hudson's assertion, that this, if planted in a garden or dry soil, will the second year become *S. latifolia*, looks like another mistake.

3. This has most affinity with the *grandiflora*, and has often been confounded with that; the root however seems to be not so properly creeping, but consists of a bundle of long fleshy fibres. Leaves long and sword-shaped, standing almost in two ranks, the uppermost nearly linear, the lowest very blunt and even emarginate. Bractes extremely small, except the lowermost, scarcely a quarter so long as the germ, by which this species is essentially distinguished. Flowers white, upright. Germ slender, striated: the lip has white



elevated ribs running longitudinally, and in the front a yellow crescent-like spot<sup>a</sup>.

According to Ray, the root is composed of many thickish fibres; the stem a foot high or more, and upright. Root-leaves long, narrow, pointed, resembling those of reeds; stem-leaves very many, narrow. Flowers snow-white, eight or ten, in a loose spike.

Mr. Woodward describes the stem as a foot high, sometimes slightly twisted. Stem-leaves bright-green, smooth, shining, having five or seven principal ribs; the longest six inches long, and half an inch wide; the lower embracing, the upper sessile, alternate, and pointing from two opposite lines. Seed-vessels upright, elliptical, but from the projecting ribs appearing three-cornered, longer and narrower than those of *palustris*<sup>b</sup>.

Native of several parts of Europe. Found by Newton under Brackenbrow or Brackenwray, opposite Helk's wood a mile from Ingleton in Yorkshire. Dr. Richardson observed it there afterwards<sup>c</sup>:—by Mr. Woodward in Lord Lonsdale's woods at Lowther in Westmoreland:—by Walter Michael Mosely, Esq. of Glashampton, on the top of Aberly hill in Worcester-shire, and also in Wire forest in the same county<sup>d</sup>. Sherard found it in a rotten bog by a lough-side near the dairy-house in Crevetenau Ballinahinch, Ireland, and communicated it to Ray in 1694. Eales afterwards sent it to him from Hertfordshire<sup>e</sup>. But was not this rather the *grandiflora*?

4. Root long and creeping, perennial. Stem about a foot high. Leaves ribbed, various in breadth, but generally rather elliptical than lanceolate, their base half embracing the stem. Spike erect, with from three to eight large white nearly upright flowers. Lower bractes like the leaves in form and size, the others gradually less, but none shorter than the germ, which is slender and deeply furrowed. Petals but little expanded, and enclosing the lip of the nectary, which is heart-shaped, obtuse, entire, with three elevated longitudinal yellow ribs on the upper side<sup>f</sup>.

Native of Europe in woods and thickets. It occurs with us chiefly in the midland counties. In Stokenchurch woods, and Shotover plantations in Oxfordshire. About Marlow in Buckinghamshire. In Gloucestershire. In Mr. Knight's walks, Wolverley, Worcester-shire. In Purbeck, in the woods at Grange, and in the lane going up the hill above; in the grove at the Down-house near Blandford, and in Little wood at Chettle in Dorsetshire. Teversham and Quey in Cambridgeshire and the Isle of Ely. In Lord Lonsdale's wood, against Askham-hall, Westmoreland. In Scotland, but rarely: in a wood at Loch Ransa, in the Isle of Arran. It flowers in June.

5. Roots brown, flexuose, numerous. Leaves acute, nerved; embracing. Bractes small, awl-shaped. Corollas white: segments lanceolate, converging; lip shorter by half than the petals, channelled, blunt, striated.—It differs from *grandiflora*, in having a closer spike, smaller bractes, and flowers only half the size. Native of Algiers, on hills<sup>g</sup>.

6. Native of Jamaica and Hispaniola.

7. Native of Jamaica<sup>h</sup>.

8. Root creeping horizontally, and producing many long simple fibres. Stem perfectly erect, a foot high, leafy, downy, compressed, having fewer leaves on the upper part. Leaves a little spreading in various directions, pointed and ribbed. Spike of from three to six purple flowers; Bractes lanceolate; the lowest sometimes as long as its corresponding flower; the rest little longer than the germ, sometimes rather shorter. Germ slender, downy. Petals all directed upwards; ovate, very much pointed. Nectary with a short blunt projection behind; its lip about equal to the petals in length, white tipped with purple, lobed on each side at the base, marked with yellow elevated waving lines, and terminating in a sharp point.

Native of Europe. Plukenet received it from Ireland; and on his authority, Dillenius inserted it in his

edition of Ray's synopsis. Hudson says that it grows about Clapham and Ingleton in Yorkshire. Dr. Withering, in the third edition of his Arrangements, considers it as a doubtful native of our island. It was however gathered in June 1800 on a steep stony bank on Hampton common, Gloucestershire, by Mrs. Smith of Barnham House; and in the following month, by the Rev. Mr. Baker, in another part of the same county<sup>i</sup>.

Much confusion reigned among the four British species of *Serapias*, till Lightfoot, Withering, and Smith, ascertained and distinguished them satisfactorily.

9. Bulbs three, four or more, roundish, villose, hanging down from the ends of the fibres. Leaves narrow-lanceolate, acute, channelled. Stem clothed with sheaths of leaves. Flowers two to four, in a loose spike. Bractes lanceolate, acute, concave, erect, purplish, longer than the germ. Petals three, lanceolate, acute, converging, concolor, marked with lines. Lip standing out, three-lobed; the two side-lobes short and rounded; the middle-lobe smooth, lanceolate, acute, quite entire.—This is allied to the next species, but differs in having the flowers in spikes, and little more than half the size, with the lip lanceolate not cordate<sup>j</sup>.

Native of France, Switzerland, Carniola, Italy, and Africa near Algiers. Introduced in 1786, by Sir Francis Drake, Bart. It flowers in May<sup>k</sup>.

10. Bulbs commonly many, spherical, two of them approximating as in some of the *Orchides*; the rest hanging from the ends of the fibres. Leaves narrow-lanceolate, acute, channelled, involving the stem. Flowers three to six, loose, terminating, subpanicled. Bractes concave, lanceolate, acute, longer than the germ, purplish, with longitudinal veins of a deeper colour. Petals three, concolor, converging, lanceolate, acute. Lip excavated at the base, deep purple, three-lobed, the side-lobes short, rounded, the middle lobe very large, subcordate, acuminate, veined, quite entire, villose, but sometimes smooth<sup>l</sup>.

It resembles the preceding, but is larger. The lip of the nectary is subcordate, and bearded at the base in the middle, with an erect obtuse earlet on each side<sup>m</sup>.

Native of Spain, Italy, the Levant, and Africa about Algiers; flowering early in the spring.

11. Stem a foot high, erect, quite simple, even. Root-leaves sword-shaped, folded together, even, a finger's length, acute: stem-leaves alternate, remote, sheathing, oblong, acute, an inch in length. Raceme terminating, quite simple, directed one way: flowers eleven or twelve, each on a separate peduncle. Bractes lanceolate, membranaceous, shorter than the flower. Petals five, lanceolate, even, erect. Lip of the nectary bifid.—Native of the Cape of Good Hope<sup>n</sup>.

12. Stem erect, subflexuose, angular, smooth, a span high. Leaves about five, alternate, embracing: the two lower sheath-form; the two middle ovate, acute, entire, nerved, smooth, from upright spreading, an inch long; the uppermost lanceolate, nerved. Flowers terminating, in a spike, erect, white, small.—Native of Japan.

13. Stem covered with sheathing leaves, a span high. Leaves acute, nerved, entire, smooth, a finger's length, about five. Flowers terminating, in a spike erect.

Native of Japan, on the mountain Fakona; flowering in April<sup>o</sup>.

14. Spathes lanceolate, acute. Petals six, ovate-lanceolate, spreading, concave, the three outer larger. Nectary one-leafed, two-lipped: upper lip truncate, very short; lower erect, trifid, the middle segment cowed, the lateral ones slender with a radiant beard at the point.—Native of New Zealand<sup>p</sup>.

Forster first made this plant a distinct genus under the name of *Thelymitra*, the parts of fructification having a covering like a woman's hood or bonnet; but afterwards, by the persuasion of Solander, he reduced it to this genus.]

<sup>a</sup> Engl. bot.

<sup>b</sup> Engl. bot.

<sup>c</sup> Wither. arr.

<sup>d</sup> Ray syn.

<sup>e</sup> Ray syn.

<sup>f</sup> Engl. bot.

<sup>g</sup> Desfontaines.

<sup>h</sup> Swartz.

<sup>i</sup> Engl. bot.

<sup>j</sup> Desfontaines.

<sup>k</sup> Desfontaines.

<sup>l</sup> Linn. spec.

<sup>m</sup> Thunberg.

<sup>n</sup> Forster.

<sup>o</sup> Hort. kew.

<sup>p</sup> Linn. mant.



## PROPAGATION AND CULTURE.

These plants being difficult to preserve and propagate, few have attempted to keep them in gardens. They may be taken up from the places where they grow naturally when their leaves begin to decay, and planted in a shady moist place, where they will thrive and flower.

[See OPHRYS and ORCHIS.

SERAPIAS. See *Arethusa*, *Cypripedium*, *Ophrys*, and *Orchis*.

SERIANA or SERIANIA. See *Paullinia*.

SERIOLA. (*A little vessel, jar or pot.*)

*Lin. gen. n. 917. Reich. n. 996. Schreb. n. 1245.*

*Gärtn. t. 159. Juss. 171. Achyrophorus. Vaill.*

*act. gall. 1721. f. 28. 13. 21. 18.*

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semistyluloseæ. Cichoraceæ, Juss.*

## GENERIC CHARACTER.

CAL. Common simple: leaflets linear, almost equal, erect.

COR. Compound imbricate, uniform. Corollets hermaphrodite, equal, numerous.

Proper one-petalled, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubulous.

PIST. Germ ovate. Style filiform, length of the stamens. Stigmas two, reflex.

PER. none. Calyx unchanged.

SEEDS oblong, length of the calyx. Pappus capillary, stipitate; with ten rays, hairy at the sides.

REC. chaffy, length of the calyx, deciduous.

## ESSENTIAL CHARACTER.

Cal. simple. Pappus subplumose. Recept. chaffy.

## SPECIES.

1. *Seriola lævigata. Smooth Seriola.*

*Lin. spec. 1139. Reich. 3. 660. Vahl symb. 2. 90.*

*Desfont. atlant. 237. t. 216.*

*Achyrophorus fere glaber, bellidis glauco dentatoque folio. Vaill. act. 1721. p. 278.*

*Hieracium ramosum, &c. Raii suppl. 144.*

*Smoothish, leaves obovate toothed.*

2. *Seriola æthnensis. Rough Seriola.*

*Lin. spec. 1139. Reich. 3. 660. Jacqu. obs. 4.*

*p. 3. t. 79. Gärtn. fruct. 2. 370.*

*Hypochæris calycibus æqualibus hispida. Lin. hort. cliff. 385. hort. upf. 240.*

*Achyrophorus hirsutus, bellidis obtuso folio. Vaill. act. 1721. p. 739.*

*Hispid, leaves obovate somewhat toothed.*

3. *Seriola cretensis. Cretan Seriola.*

*Lin. spec. 1139. Reich. 3. 660.*

*Achyrophorus hirsutus, dentis leonis folio læviter dentato. Vaill. act. 1721. p. 740.*

*Rough-haired, with runcinate leaves.*

4. *Seriola urens. Stinging Seriola.*

*Lin. spec. 1139. Reich. 3. 660.*

*Hypochæris urens. Lin. spec. ed. 1. 810.*

*H. hieracii barbati folio, calyce hispido. Vaill. act. 1721. p. 215.*

*Hieracium alpinum, &c. Cup. cathol. 95. Raii suppl. 146. n. 89.*

*Stinging, leaves toothed, stem branched.*

## DESCRIPTIONS, &amp;c.

1. Roots perennial, long, twisted, the thickness of the little finger, covered at top with brown scales from the withered petioles. Leaves radical, smooth, remotely toothed, obovate or spatulate, decurrent. Scape erect, slender, smooth, very slightly streaked, sparingly branched and sometimes quite simple, almost leafless. At the base of each branch is an awl-shaped leaflet or scale. Peduncles almost filiform, few (three or four) unequal, one-flowered. Calyx smooth, cylindrical; with the outer leaflets few and shorter; the inner linear and equal. Petals yellow, linear, toothed at the end, twice as long as the calyx. Seed brown, smooth, slender, elongated. Pappus simple, rufescent, sessile in the ray, stiped in the disk<sup>k</sup>.

Vahl describes the root as woody, fusiform, divided at top; the leaves collected into a rose, wedge-form,

<sup>k</sup> Desfontaines.

ending in a channelled petiole, an inch and half long, mostly quite smooth, even, (sometimes, but very seldom, having a few hairs on the upper surface towards the point,) glaucous-green, veinless, sharpish, having three or four distant teeth on each side. Calyx subimbricate, with the outer leaflets short and unequal, the inner towards the point having a hispid line of hairs. Seeds awl-shaped, appearing to be transversely streaked when examined with a magnifier. Pappus eight or ten-rayed, subplumose. Chaffs membranaceous, linear, acuminate.

Native of the island of Candia, and of Barbary, in the clefts of rocks. Introduced in 1772, by Monf. Richard. It flowers in July and August<sup>l</sup>.

2. Root annual. Stems branched, erect, hirsute. Leaves villose, obtuse, remotely toothed: upper stem-leaves sessile, embracing. Peduncles long, erect, one-flowered, hispid, leafless above, unequal, panicle-corymbed. Calyx simple or scarcely imbricate, cylindrical, very hirsute, with linear leaflets. Corolla yellow. Seeds even, those of the ray naked. Pappus of the others feathered, stiped. Chaffs linear, acute, deciduous<sup>m</sup>.

Receptacle, according to Gärtner, convex, covered all over with membranaceous, linear-lanceolate, deciduous chaffs, nearly equal to the calyx. Seeds small, fusiform, striated, rugged with sharp points, of a red-rust colour. Pappus feathered, permanent, stiped, having about ten white rays between chaffy and bristly: stipe capillary, length of the seed.

Native of Italy, and of Barbary near Mascara.

3. Native of the island of Candia or Crete.

4. The scales of the calyx are sharp with pungent spinules<sup>n</sup>: which, says Ray, distinguishes this plant at first sight. He adds, that there is a long narrow leaf at the origin of each branch.

Native of Sicily and other parts of the South of Europe. This and the second species were introduced by John Earl of Bute, the former in 1771, the latter in 1773<sup>o</sup>.

SERIPHIMUM. (*Σερπίδιον* of Dioscorides.)

*Lin. gen. n. 1003. Reich. n. 1087. Schreb. n. 1358.*

*Gärtn. t. 167. Juss. 180. Helychrysoideæ. Vaill.*

*act. gall. 1719.*

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Compositæ Nucamentaceæ. Corymbiferae, Juss.*

## GENERIC CHARACTER.

CAL. Outer Perianth of five roundish imbricate, tomentose leaflets.—Inner of five erect acuminate awl-shaped very smooth scarious leaflets, twice as long as the others; one-flowered.

COR. one-petalled, funnel-form, shorter than the inner calyx: border five-toothed.

STAM. Filaments five, capillary. Anther cylindrical.

PIST. Germ inferior to the corollet, superior to the calyx. Style filiform. Stigma subbifid.

PER. none. Calyx unchanged, closed.

SEED solitary, oblong.

## ESSENTIAL CHARACTER.

Cal. imbricate. Cor. one-petalled, regular. Seed one, oblong, below the corolla.

## SPECIES.

1. *Seriphium cinereum. Heath-leaved Seriphium.*

*Lin. spec. 1316. Syst. 798. Reich. 3. 950. mant.*

*481. Berg. cap. 340. Gärtn. fruct. 2. 416.*

*Pluk. mant. t. 297. f. 1. (Tamariscus.) Pet. gaz. t. 3. f. 9. (Breynia.)*

*Artemisia floribus simplicibus. Lin. hort. cliff. 403.*

*Abrotanoides africanum, foliis minimis argenteis reflexis, floribus in fummis caulibus & ramulis in spicas oblongas digestis. Raii suppl. 233.*

*Flowers whorl-spiked one-flowered, leaves spreading.*

2. *Seriphium plumosum. Feathered Seriphium.*

*Lin. spec. 1316. Syst. 798. Reich. 3. 950. mant.*

*481. Pet. gaz. t. 5. f. 4. (Breynia.)*

*Abrotanoides africanum, foliis cineraceis muscosis, capitulis florum globosis magnis. Raii suppl. 233.*

*Flowers in spikes six-flowered, leaves granulate-ovate.*

<sup>l</sup> Hort. kew.

<sup>m</sup> Desfontaines.

<sup>n</sup> Linn. spec.

<sup>o</sup> Hort. kew.



3. *Seriphium fuscum*. *Brown Seriphium*.  
*Lin. spec.* 1317. *syft.* 799. *Reich.* 3. 950. *mant.*  
 481.

*Stoebe ericoides*. *Berg. cap.* 339.  
*Eupatorium ericoides capitis bonæ spei*. *Breyn. cent.*  
*t.* 69. *Mor. hist.* 3. 97. *f.* 7. *t.* 18. *f.* 10.  
*Abrotanoides capensis, ericæ folio*. *Pet. gaz.* 9. *t.* 5.  
*f.* 2.

*Flowers capitate one-flowered, leaves imbricate.*

4. *Seriphium ambiguum*. *Doubtful Seriphium*.  
*Lin. syft.* 799. *Reich.* 3. 951. *Comm. hort.* 2. 117.  
*t.* 59?

*Gnaphalium seriphoides*. *Berg. cap.* 267.  
*Artemisia ambigua*. *Lin. spec.* 1190. *mant.* 465.  
*Flowers in spikes three-flowered, leaves linear.*

#### DESCRIPTIONS, &c.

1. Branches in whorls. Leaves lanceolate, small, clustered, recurved, gibbous at the base, hoary. Spikes fox-tail like, pale red, interrupted. Scales of the calyx almost setaceous<sup>†</sup>.—General calyx none, or not distinct from the outer chaffs of the receptacle: partial one-flowered, double, each five-leaved: outer leaflets shorter, tomentose, obtuse, like the chaffs equal; inner longer, scariose, smooth, bristly-acuminate, unequal, prominent far beyond the chaffs, so as to form an echinated head. Florets cylindric-funnel-form, five-cleft. Common receptacle subglobular, covered all over with ovate-oblong, concave chaffs, tomentose on the outside. Seed ovate-globular, five-grooved, smooth, small, of a pale whitish colour. Pappus the length of the corollet, caducous, with about twelve rays, pencil-feathered at top, naked at bottom, setaceous, united in a ring<sup>‡</sup>. Introduced in 1774, by Mr. Francis Masson. It flowers from July to September<sup>§</sup>.

2. Flowers five or six-flowered. Leaves filiform. Flowers lateral, sessile, imbricate with granulate leaves<sup>¶</sup>.

3. Flowers one-flowered, terminating, sessile, in bundles. Stems distorted, branched, flexuose. Leaves cinereous, awnless<sup>†</sup>.

4. This is a procumbent, cinereous shrub. Leaves simple, linear, clustered. Spikes long, terminating the branches. Flowers roundish. Calyxes cinereous, but with the inner row of scales scariose or membranaceous, coloured, white as in the *Gnaphaliums*. Four or five capillary rays, the length of the florets, feathered at the point, stand round the florets. Seeds naked.

This species is intermediate between the *Seriphiums*, *Artemisias*, *Gnaphaliums* and *Stoebes*. It naturally appertains to this genus, though it is not without difficulty combined with it, except in the pappus feathered at the point<sup>¶</sup>.

All the species are natives of the Cape of Good Hope.

*Seriphium Absinthium*. See *Sisymbrium Sophia*.

— corymbiferum. See *Stoebe gnaphaloides*.

SERMOUNTAIN. See *Siler*.]

SERPENTARIA. See *Aristolochia*, [*Ophioglossum*, *Polygonum Bistorta* and *Saururus*.]

SERPENTINA. See *Plantago subulata*.

SERPICULA. (A serpendo, from creeping, a little creeping plant.)

*Lin. gen. Reich. n.* 1144. *Schreb. n.* 1413. *Juss.* 318.

*Laurembergia*. *Berg. c.* 350. *t.* 5?

*Class.* 21. 4. *Monoecia Tetrandria*.

*Nat. order of Inundatae. Onagrea, Juss.*

#### GENERIC CHARACTER.

\* *Male Flowers* solitary, peduncled.

*CAL. Perianth* very small, four-toothed, erect, acute, permanent.

*COR. Petals* four, oblong, obtuse, sessile.

*STAM. Filaments* four, very short. *Anthers* oblong, length of the petals.

\* *Female Flowers* on the same plant.

*CAL. Perianth* superior, four-parted, very small, permanent.

<sup>†</sup> Linn. <sup>‡</sup> Gærtner. <sup>§</sup> Hort. kew. <sup>¶</sup> Linn. mant.  
<sup>†</sup> Idem. <sup>‡</sup> Linn. spec. syft. and mant.

COR.

*PIST. Germ* inferior, ovate, grooved. *Style* — — —  
*Stigma* — — —

*PER. Nut* cylindrical, with eight cartilaginous swellings, one-celled, deciduous.

*SEED* single, oblong.

#### ESSENTIAL CHARACTER.

*MALE. Cal.* four-toothed. *Cor.* four-petalled.

*FEM. Cal.* four-parted. *Per. Nut* tomentose.

#### SPECIES.

1. *Serpicula verticillata*.

*Lin. syft.* 848. *suppl.* 416. *Roxb. corom. t.* 164.

*Leaves in whorls aculeate-serrate.*

2. *Serpicula repens*.

*Lin. syft. ed.* 13. 708. *ed.* 14. 848. *Reich.* 4. 124.  
*mant.* 124. *suppl.* 416.

*S. serpillifolia*. *Burm. prodr.* 26.

*Laurembergia capensis*. *Berg. cap.* 350. *t.* 5.

*Leaves alternate linear.*

#### DESCRIPTIONS, &c.

1. Native of the East Indies.

2. The herb has the appearance of *Veronica serpyllifolia*, but is smaller. Stem creeping. Leaves mostly alternate, linear, seldom serrate.—Native of the Cape of Good Hope<sup>\*</sup>.

Bergius named it *Laurembergia*, from William and Peter Laurembergius, of Rostock, brothers; the first a physician at Copenhagen, the second, professor of poetry at Rostock; both authors of botanical works. Bergius's description does not quite agree with Linnæus's.

SERPILLIFOLIA and SERPYLLIFOLIA. See *Linnæa*.]

SERPILLUM. See *Thymus*.

[SERRARIA. See *Plantago* and *Protea*.]

SERRATULA. (So named from the finely serrated leaves of the common sort. The name is found in *Pliny*.)

*Lin. gen. n.* 924. *Reich. n.* 1003. *Schreb. n.* 1264.

*Dill. giff.* 8. *Juss.* 174. *Gærtner. t.* 162.

*Class.* 19. 1. *Syngenesia Polygamia Æqualis*.

*Nat. order of Compositæ Capitatae. Cinarocephalæ, Juss.*

#### GENERIC CHARACTER.

*CAL. Common* oblong, subcylindrical, imbricate with lanceolate, acute or obtuse, awnless scales.

*COR. Compound* tubulous, uniform. *Corollets* hermaphrodite, equal.

*Proper* one-petalled, funnel-form; tube bent in; border ventricose, five-cleft.

*STAM. Filaments* five, capillary, very short. *Anther* cylindrical, tubulous.

*PIST. Germ* ovate. *Style* filiform, length of the stamens. *Stigmas* two, oblong, reflex.

*PER. none. Calyx* unchanged.

*SEEDS* solitary, obovate. *Pappus* sessile, feathered.

*REC.* chaffy, flat.

*OBS. The Pappus* in some is plumose, in others only subplumose.

*Carduus* is distinguished from *Serratula* by its hairy receptacle, ventricose calyx, prickly scales, stigma less bifid, and feathered pappus.

#### ESSENTIAL CHARACTER.

*Cal.* subcylindrical, imbricate, awnless.

#### SPECIES.

1. *Serratula tinctoria*. *Common Saw-wort*.

*Lin. spec.* 1144. *syft.* 723. *Reich.* 3. 668. *hort.*

*cliff.* 391. *upf.* 249. *f. succ. n.* 713. *Gærtner. fruct.*

*2.* 380. *Huds. angl.* 349. *Wither. arr. ed.* 3.

695. *Smith brit.* 845. *engl. bot. t.* 38. *Hull,* 180.

*Lightf. scot.* 447. *Relb. cant. n.* 584. *Sibth. oxon.*

*n.* 677. *Abbot bedf. n.* 571. *Fl. dan. t.* 281.

*Pollich pal. n.* 760. *Krock. files. n.* 1325. *Villars*

*dauph. 3.* 39. *Pallas it. 1.* 63. *Kniph. cent. 2.*

*n.* 83.

*Serratula. Baub. pin.* 235. *Dod. pempt. 42.* 3.

*Matth. 945. 1. valgr. 2.* 295. *Camer. epit.* 602.

*Baub. hist. 3.* 23. *2. Clus. hist. 2.* 8. *1. Raii hist.*

*331. syn. 196. Petiv. brit. t.* 22. *f.* 6.

*S. purpurea. Ger. 576. 1. emac. 713.*

*S. vulgaris flore purpureo. Park. theat. 475.*

<sup>\*</sup> Linn. mant. and syft.



- Carduus tinctorius*. Scop. carn. n. 1012. Hall. herb. n. 163. Allion. pedem. n. 538.  
Leaves ferrate subciliate lyrate-pinnatifid, terminating lobe very large, florets uniform, pappus somewhat rugged.
- [2. *Serratula coronata*. Siberian Saw-wort.  
Lin. spec. 1144. Reich. 3. 669. Krock. files. n. 1326. Bocc. mus. 2. 45. t. 37. Gmel. fib. 2. 49. t. 20. (Carduus.)  
*S. foliis laciniatis*. Amm. ruth. n. 181.  
Leaves lyrate-pinnatifid, terminating pinna very large, florets of the ray female longer.
3. *Serratula japonica*. Japanese Saw-wort.  
Lin. syst. 723. Thunb. jap. 305.  
Leaves lyrate-pinnatifid rugged, calyx-scales dilated at the point and membranaceous.]
4. *Serratula alpina*. Alpine Saw-wort.  
Lin. spec. 1145. syst. 723. Reich. 3. 669. fl. lapp. n. 291. suec. n. 714. hort. ups. 391. Hudf. angl. 349. Wither. arr. ed. 3. 696. Smith brit. 846. engl. bot. t. 599. Hull, 180. Lightf. scot. 448. t. 19. Gunn. norv. n. 48. Krock. files. n. 1327. Villars dauph. 3. 40.  
*Cirsium*. Hall. herb. n. 179. t. 6.  
*C. inerme*. Gmel. fib. 2. 67. t. 26.  
*Carduo-Cirsium minus britannicum*, floribus congestis. Pluk. phyt. t. 154. f. 3.  
β. *S. alpina cynoglossifolia*. Lin. spec. β.  
*Cirsium humile montanum* Cynoglossi folio, polyanthemum. Raii syn. 193. Mor. hist. 3. 148. Dill. elth. 82. t. 70. f. 81. v. Gmel. fib. 2. 76. t. 32.  
*Carduus mollis flore cæruleo*. Johnst. Merc. bot. 2. 18. Merr. pin.  
γ. *S. alpina lapathifolia*. Lin. spec. γ.  
*Cirsium polyanthemum molli hastato folio*. Mor. hist. 3. 148. f. 7. t. 29. f. 1.  
*Carduus mollis lapathi foliis*. Bauh. pin. 377.  
*C. mollior* 2. Clus. hist. 2. 151.  
δ. *S. alpina angustifolia*. Lin. spec. δ. Hall. herb. n. 179. β.  
*S. alpina*. Fl. dan. t. 37.  
*Cirsium montanum polyanthemum Salicis folio angusto denticulato*. Raii syn. 193.  
*C. inerme*, foliis linearibus utrinque viridibus calycibus hirsutis. Gmel. fib. 2. 78. t. 33. Hall. herb. γ.  
Calyxes somewhat hairy ovate, leaves undivided woolly beneath, pappus feathered.
- [5. *Serratula falicifolia*. Willow-leaved Saw-wort.  
Lin. spec. 1145. Reich. 3. 670.  
*Cirsium inerme*, &c. Gmel. fib. 2. 69. t. 27.  
Leaves linear-lanceolate alternate hoary beneath sessile quite entire.
6. *Serratula multiflora*. Many-flowered Saw-wort.  
Lin. spec. 1145. Reich. 3. 670. Gartn. fruct. 2. 380. Krock. files. n. 1328. Lour. cochinch. 483. ed. Willd. 589. Gerb. tan. 294.  
*Cirsium inerme*, &c. Gmel. fib. 2. 71. t. 28?  
Leaves lanceolate villose underneath subdecurent quite entire, stem corymbed, calyxes cylindrical.]
7. *Serratula noveboracensis*. Long-leaved Saw-wort.  
Lin. spec. 1146. Reich. 3. 671. hort. cliff. 392. Pallas it. 3. 321. Dill. elth. 355. t. 263. f. 342. Mor. hist. 3. 133. Raii suppl. 208. Pluk. phyt. t. 109. f. 3. (Centaurium.)  
*S. altissima*. Mill. dict. n. 2.  
Leaves lanceolate-oblong ferrate pendulous.
8. *Serratula præalta*. Tall Saw-wort.  
Lin. spec. 1146. Reich. 3. 671. Dill. elth. 356. t. 264. f. 343. Bocc. mus. 2. 45. t. 32. Mill. fig. t. 234. Pluk. phyt. t. 280. f. 6. (Eupatoria.)  
Leaves lanceolate-oblong ferrate spreading hirsute beneath.
9. *Serratula glauca*. Glauous-leaved Saw-wort.  
Lin. spec. 1146. Reich. 3. 671. Gron. virg. 116. Dill. elth. 354. t. 262. f. 341. Pluk. mant. 40. (Centaurium.)  
Leaves ovate-oblong acuminate ferrate, flowers corymbed, calyxes roundish.
10. *Serratula squarrosa*. Rough-headed Saw-wort.  
Lin. spec. 1146. Reich. 3. 671. hort. cliff. 392. Gron. virg. 116. Mor. hist. 3. 137. f. 7. t. 27. f. 10. (Stoebe.)

- Cirsium tuberosum*, capitulis squarrosis. Dill. elth. 83. t. 71. f. 82.  
Leaves linear, calyxes squarrose subsessile acuminate lateral.
11. *Serratula scariosa*. Ragged-cupped Saw-wort.  
Lin. spec. 1147. Reich. 3. 672. Gron. virg. 2. 116. 1. 92. (Cirsium.) Banist. virg. 1028. Pluk. mant. 105. (Jacea.) Pluk. phyt. t. 177. f. 4. (Eupatorio affinis.)  
Leaves lanceolate quite entire, calyxes squarrose peduncled obtuse.
- [12. *Serratula pilosa*. Hairy-leaved Saw-wort.  
Ait. kew. 3. 138.  
Leaves linear hairy, flowers axillary on long peduncles.
13. *Serratula speciosa*. Hairy-cupped Saw-wort.  
Ait. kew. 3. 138.  
*Stæhelina elegans*. Walt. carol. 202.  
Leaves linear-sickled, flowers sessile spiked, calycine leaflets rough-haired acute, the inner ones elongated coloured at the point.]
14. *Serratula spicata*. Spiked Saw-wort.  
Lin. spec. 1147. Reich. 3. 672. Gron. virg. 116. Banist. virg. 1927. Pluk. phyt. t. 424. f. 6. (Jacea.) Mor. hist. 3. 137. f. 7. t. 27. f. 10. (Stoebe.)  
*Cirsium tuberosum*, lactucæ capitulis spicatis. Dill. elth. 85. t. 72. f. 83.  
Leaves linear ciliate at the base, flowers in spikes sessile lateral, stem simple.
- [15. *Serratula amara*. Bitter Saw-wort.  
Lin. spec. 1148. Reich. 3. 672. Gmel. fib. 2. 72. t. 29. (Cirsium.)  
Leaves lanceolate, calycine scales scariosa at the point blunt patulous coloured, flowers terminating.
16. *Serratula centauroides*. Centaury-like Saw-wort.  
Lin. spec. 1148. syst. 724. Reich. 3. 673. Gmel. fib. 2. 44. n. 38. t. 17. Gartn. fruct. 2. 380.  
*Jacea serpens*, flore triplicato. Zanon. hist.  
Leaves pinnatifid oblique acute smooth unarmed, calycine scales mucronate, the inner ones scariosa.
17. *Serratula mucronata*. Pointed-cupped Saw-wort.  
Desfont. atlant. 243. t. 219.  
Smooth, leaves entire lanceolate, stem few-flowered, calycine scales scariosa at the point, acuminate, reflex.
18. *Serratula humilis*. Dwarf Saw-wort.  
Desfont. atlant. 244. t. 220.  
*S. mollis*. Cavan. ic. hisp. n. 98. t. 90. f. 1.  
*Jacea incana Chamæleonis capitulo*. Bocc. mus. t. 109.  
Leaves pinnatifid tomentose beneath, head simple one-flowered, calyx-leaves subulate loose.
19. *Serratula Scordium*.  
Lour. cochinch. 483. ed. Willd. 590.  
Leaves lanceolate ferrate half-embracing, flowers fastigate, root creeping.
20. *Serratula arvensis*. Corn Saw-wort or Way Thistle.  
Lin. spec. 1149. syst. 724. Reich. 3. 673. mant. 461. fl. suec. n. 715. Hudf. angl. 349. Wither. arr. ed. 3. 696. Hull, 180. Relb. cant. n. 585. Abbot bedf. n. 572. Fl. rust. t. 132. Fl. dan. t. 644. Pollich pal. n. 761. Leers herborn. n. 632. Krock. files. n. 1329. Kniph. cent. 6. n. 85. Regnault bot.  
*Carduus arvensis*. Curt. lond. 6. t. 57. Smith brit. 850. Sibth. oxon. n. 682. Linn. lapp. n. 293. Tabern. 700. Villars dauph. 3. 23.  
*C. ferratuloides*. Neck. gallob. 338. n. 9.  
*C. vulgarissimus viarum*. Ger. emac. 1173. 4. Raii hist. 310. syn. 194. Petiv. brit. t. 21. f. 5. Mor. hist. 3. 156. f. 7. t. 32. f. 14.  
*C. vinearum repens*, fonchi folio. Bauh. pin. 387. prodr. 156.—item, *C. in avena proveniens*. Bauh. pin. 377.  
*C. serpens levicaulis*. Bauh. hist. 3. 59. 2.  
*C. ceanothos*, f. viarum & vinearum repens. Park. theat. 959. 7.  
*Ceanothos Theophrasti*. Col. ecphr. 1. 46.  
*Cirsium arvense*. Scop. carn. n. 1001. Allion. pedem. n. 557. Hall. herb. n. 171.—fonchi folio, radice repente, flore purpurascens. Tournef. inst. 448.  
Leaves sessile pinnatifid spiny, stem panicled, calyxes ovate spinulose.



1. Root perennial, somewhat woody. Stem erect, stiff and straight, two or three feet high, leafy, angular, smooth. Leaves alternate, lyrate or variously pinnatifid, (sometimes undivided;) the root-leaves commonly entire; all acutely ferrate and minutely ciliate, rigid, smooth on both sides. The whole plant is firm, rigid and hard to the touch, but not prickly. Flowers corymbed, of a blood-red purple colour, sometimes varying to white. Scales of the calyx dusky purple, sometimes villose, the outer ones gradually smaller. Receptacle bristly. Seeds striated. Pappus unequal, yellow, rugged on one side, recurved at the point<sup>v</sup>: shining, says Gærtner, with gold colour and brown; the rays setaceous, stiffish, scarcely at all, or very minutely toothletted.

Native of Europe, in woods, thickets, hedges and bushy pastures; flowering in July and August. Linneus says, it is much used in Sweden as a yellow dye for coarse woollen cloths; whence he gave it the name of *tinctoria*. Materials for that colour are so abundant, and most of them so superior to this, that it is probably not used in England<sup>z</sup>.

2. This is so like the preceding as scarcely to be distinguished from it, except by its being three times the size, having a grooved stem, twice as many florets, and a declining leaf under the calyx; but especially in having a ray, with tubular, narrower, female, fertile florets.

The genus is doubtful: the female ray should indicate it to be a *Centaureum*, but the fertility of these florets, and the whole habit of the plant are repugnant. If several of the species were like this, it would be worth while to form a new genus for them, but this one scarcely merits it<sup>a</sup>.

Native of Italy, Silesia and Siberia. Cultivated in 1748, by Mr. Miller. It flowers in July and August<sup>b</sup>. This species is omitted in the later editions of Mr. Miller's dictionary.

3. Stem angular, grooved, rugged, erect, three feet high. Leaves scattered, petioled, acute, toothed, green above but ash-coloured beneath, mucronate-scarious on both sides, a finger's length, the upper ones gradually less. Flowers terminating, panicled. Panicle fastigiate, decompounded. The inner scales of the calyx are widened at the end, blunt and flesh-coloured.

Native of Japan<sup>c</sup>.

4. Roots slender, though tough and woody, perennial, black on the outside. Stems simple, upright, leafy, round, striated, cottony, various in height, generally ten or twelve inches, (about five inches, *With.*) Leaves scattered: the root-leaves and lower stem-leaves petioled, the upper ones sessile: various in form, but generally ovate, sometimes linear-lanceolate, sometimes almost hastate, always more or less toothed, smooth above, cottony and white beneath: six or seven in number, according to Dr. Withering. Flowers corymbed, (eight to twelve,) erect, purple with blue anthers, and handsome, terminate the stem. Scales of the calyx soft, blunt, purplish-brown, silky with white hairs. Seed-down equal, elegantly feathered<sup>d</sup>.

Native of the high mountains of Lapland, Norway, Austria, Switzerland, Silesia, Siberia, Wales and Scotland. Johnson, the editor of Gerard, seems first to have observed it in Britain; after him, Edward Lhwyd, on Snowdon and other high mountains in North Wales. (See Merret's Pinax, and Dill. elth.) J. W. Griffith, Esq. has lately found it on the highest rocks of Caernarvonshire; flowering in July and August. It appears from Lightfoot, that it is not very rare in Scotland. According to Merret, it grew on Brearcliff near Brunley, Lancashire.

Linneus remarks, that place does not suffice to produce all the constant varieties of the leaves. Dr. Smith, on the contrary, is persuaded, from observations made upon the spot, that they are mere varieties occasioned by local accidents.—The figures in *Hortus Elthamensis*

<sup>v</sup> Smith.

<sup>z</sup> Engl. bot.

<sup>a</sup> Linn. spec.

<sup>b</sup> Hort. kew.

<sup>c</sup> Thunberg.

<sup>d</sup> Smith.

and *Flora Danica*, represent the narrow-leaved taller variety<sup>\*</sup>.

5. Stem angular, branched at top as in its congeners. Leaves like those of the Willow, scarcely or at all decurrent at the base. Flowers red. Calyxes of the same appearance as in *S. alpina*, three or four on each branch.—Native of Siberia<sup>†</sup>.

6. Stem angular, corymbed, with the branches again corymbed, so that it is terminated by a prodigious close wood of flowers. Leaves like those of the Willow, clothed with a white nap beneath. Calyxes cylindrical, with smooth, acute, purplish scales. It is like the preceding, but the leaves are a little decurrent at the base and villose beneath, and the calyxes are more abundant, sharper, smoother and brighter coloured<sup>‡</sup>.

Stem, according to Loureiro, suffruticose, three feet high, erect. Leaves wide-lanceolate, ferrate-lyrate, smooth, scattered. Flowers many, small, red, on terminating, fastigiate peduncles. Calyx cylindrical; scales imbricate, short, close, awnless, converging at the point. Corollets very small. Receptacle lanuginose. Seed-down silky white, with rays in several rows linear-chaffy, ciliate, unequal<sup>§</sup>.

Found in Siberia by Gmelin, in Silesia by Krockner, in China near Canton by Loureiro.]

7. Root perennial. Stalks several, channelled, seven or eight feet high. Leaves from four to five inches long, and one inch broad in the middle, slightly serrate, downy on their under side, sessile. The upper part of the stalk divides into peduncles, sustaining purple flowers, which appear at the end of July.

Native of North America. [Cultivated by James Sherard, M. D. in 1732<sup>§</sup>.

Dillenius says that it grows ten or twelve feet high; that the umbel or corymb of flowers has fewer heads in it and is less scattered than in the *glauca*, small in comparison with the size of the plant; that the scales of the calyx are narrower, and end in slender oblong horns; and that by these marks, with its great height, and very long rough pendulous leaves, it is easily distinguished. It flowers very late also, namely about the end of October. In the Kew catalogue it is said to flower from September to November.]

8. Root large, perennial, fibrous. Stem branching, from four to seven or eight feet high. Leaves seven inches long, and an inch and half broad in the middle; ending in acute points, entire, hairy on their under side, sessile. Flowers in loose bunches at the end of the branches. Calyxes oval, composed of few scales terminating in bristles. Flowers pale purple.

[Stem straight, simple, deeply striated, tinged with red, smooth or scarce sensibly hairy. Leaves alternate, frequent, shorter and less wrinkled than in the preceding species, more widening in the middle, not pendulous, either spreading horizontally or obliquely upwards, less ferrate than in that, but minutely toothletted, yellowish green above, more lanuginous and hoary beneath than in *noveboracensis*. The flowers are like those of the preceding, and the heads are disposed in the same manner, but are somewhat rounder, and the cusps or points at the ends of the calyx-scales are not so long. The receptacle is naked. It flowers about the same time with the preceding species; and is a native of Virginia, Carolina<sup>h</sup>, Pennsylvania, and most other parts of North America. Cultivated in 1732, by James Sherard, M. D.<sup>i</sup>

The trivial names of these two species are by no means significant; the seventh being tall, and the eighth having long leaves; the latter is probably found in New York as well as the former, and trivials from place are at best bad ones, for the most part.]

9. Root perennial. Stalks six or seven feet high, purple and channelled. Leaves about three inches long, and an inch and half broad in the middle, ending in acute points, stiff, ferrate, and of a light green on both sides. Flowers in a loose terminating corymb, purple with roundish calyxes.

[Stems straight, striated, smooth, not so high as the *noveboracensis*, branched only at the top, but there

<sup>\*</sup> Engl. bot.

<sup>†</sup> Linn. spec.

<sup>‡</sup> Idem.

<sup>§</sup> Gærtner.

<sup>h</sup> Hort. kew.

<sup>i</sup> Dill. elth.

<sup>j</sup> Hort. kew.



putting forth flowering-branches a foot or eighteen inches in length, divided and subdivided into many branchlets and peduncles. Calyxes dusky purple. Corollets dark purple verging to violet. Seed-down brownish white, very prominent. Receptacle naked. Leaves dark glaucous green above, paler and glaucous beneath, with fine hairs along the midrib and veins, in other parts smooth.

Native of Maryland, Virginia and Carolina. It flowers in October. Cultivated at Eltham in Sherard's garden in 1732<sup>k</sup>.]

10. Root tuberous, from which comes out a single stalk, rising near three feet high. Leaves stiff, about three inches long, entire, rough to the touch, pale green on both sides. The upper part of the stalk is adorned with purple flowers, having oblong, rough, prickly calyxes, coming out from the side alternately; and the stalk is terminated by one head larger than the others.

[Root-leaves in a ring, a foot long, half an inch broad, rigid and nerved. Stems several, simple, from two to three feet high, thinly pubescent. Stem-leaves frequent, alternate, reflex, rigid, nerved, straight-veined, subhirsute, resembling those of *Tragopogon*, but neither so pointed nor embracing. Peduncles an inch long, alternate from the upper axils. Heads of flowers squarrose or composed of leafy scales standing out and bent back, keeled and somewhat hairy. Florets recurved, purple. Styles very long. Seeds oblong, striated, crowned with a feathered down. Receptacle naked<sup>l</sup>.

Native of Virginia, and most of the provinces of North America.—Cultivated in 1732, by James Sherard, M. D. It flowers in July and August<sup>m</sup>.]

11. This has a large tuberous root, from which comes out one strong channelled stalk, three or four feet high. Leaves frequent, about three inches long, and half an inch broad. Flowers purple, in a long loose spike, coming out from the side upon pretty long blunt peduncles; they have large rough calyxes composed of wedge-shaped scales. The upper flowers blow first, and appear in August.

[It is very distinct from the preceding, by its squarrose blunt calyxes; lateral, elongated, one-flowered peduncles, having a few leaflets on them; wide-lanceolate leaves, by no means nerved, sessile but not decurrent<sup>n</sup>.

Native of Virginia. Cultivated by Mr. Miller in 1759<sup>o</sup>.

12. Native of North America. Introduced in 1783 by Mr. William Young. It flowers in September and October.

13. Native of Carolina and Georgia. Introduced in 1787, by Mess. Watsons. It flowers in October<sup>p</sup>.]

14. This has a tuberous root, from which comes out a single stalk from two to three feet high. Leaves very narrow, smooth, at bottom more than three inches long, but gradually diminishing to the top, sessile, and placed round the stalk without any order. Flowers purple, smaller than in the tenth and eleventh sorts, sessile, and forming a long loose spike.

[Native of North America. Cultivated in 1732, by James Sherard, M. D. It flowers from August to October<sup>q</sup>. Banister first observed it in Virginia<sup>r</sup>.

15. This has the habit of *S. alpina*. Leaves somewhat decurrent, the upper ones quite entire, rugged, especially at the edge. Stems angular. Branches erect, each commonly terminated by three peduncles and flowers. Calyxes membranaceous, soft as in some *Centaureas*. Seed-down white.

Native of Siberia<sup>s</sup>.

16. Herb a foot high. Branches alternate, stiff, almost smooth, one-flowered. Leaves smooth on both sides, veined, lanceolate; with lanceolate teeth, vertical or turning their upper surface not towards the sky but sideways, as in *Lactuca Scariola*. Calyx ovate-oblong, imbricate with scales having a harmless point; those which are nearer to the florets larger and dried

up. Corolla purple, without any marginal florets. Style twice as long as the florets. It has the habit of *Centaurea moschata*, but has no neuter florets<sup>t</sup>. Seed-down of a whitish straw colour and shining, with very numerous unequal linear chaffy rays, very closely tooth-letted ciliate<sup>u</sup>.—Native of Siberia.

17. Plant very smooth. Stem erect, slender, deeply striated, naked at top, simple or sometimes but seldom divided into two or three unequal, one-flowered branches. Leaves quite entire or sometimes tooth-letted, above even and shining; the lower ones ovate-lanceolate, running along the petiole; the upper stem-leaves sessile, acuminate. Calyx ovate, closely imbricate, with lanceolate scales, having a rigid scariosc point, a little bent back. Corollets rose-coloured, or inclined to violet. Seed oblong, smooth, striated, with a simple, sessile down. Receptacle hairy.

Native of Barbary, near Mascar, flowering early in the spring.

18. Root twisted, brown without, the thickness of a goose quill. Pinnules of the leaves distinct, uniform, lanceolate, acute or obtuse, quite entire, but sometimes toothed at the base. Petiole winged. Stem erect, striated, tomentose, leafy but sometimes naked. Calyx cylindrical; leaflets almost equal, stiffish, in three or four rows. Florets rose-coloured. Seed smooth, striated, oblong; with a long, whitish, sessile, subplumose down. Chaffs of the receptacle acuminate, lacerated at the point. It is a very handsome species; and flowers in the summer.

Native of mount Atlas near Tlemsen<sup>v</sup>.—If this be the *mollis* of Cavanilles, it is also a native of Spain, in the kingdom of Valentia. His figure and description agree with those of Desfontaines, but he marks it as annual, whereas according to the latter it is perennial.

19. Stem herbaceous, perennial, a foot and half high, half procumbent, round, thickish, with few branches. Root creeping far and wide. Leaves sharply and deeply serrate, unarmed, tomentose beneath, shining above, juicy, strong-smelling, half embracing. Flowers terminating, purple: calyx subcylindrical, imbricate, even, few-flowered. Receptacle naked. Seeds oblong, surrounded by their proper involucre, and crowned with a hairy sessile down.—Native of China and Cochinchina<sup>w</sup>.

20. The common creeping Thistle or Way Thistle, which Linneus has placed in this genus, but Curtis and Dr. Smith, with more propriety, in that of *Carduus*, where from its habit most of the old authors had put it, is too well known by its perennial creeping root. Stems three feet high or more, upright, leafy, at the base round and somewhat woolly, above angular and smooth, paniced and many-flowered at top. Leaves alternate, scarcely decurrent; smoothish; lobes unequal, ciliate and spiny. Flowers single, sometimes two together on a leafy peduncle, which is somewhat woolly at top; they are pale purple, varying to white. Calyx ovate, with wide-lanceolate-scales, pressed close, woolly at the edge, pointed with short spreading spines. Seed-down feathered, deciduous, very long. Receptacle hairy<sup>x</sup>.

This Thistle is known every where by road sides, too frequently in corn-fields, especially in strong land, and in pastures, but not so common there; flowering from June to August. It has certainly the habit of the Thistles, though Linneus has made it a *Serratula*; and, as Mr. Curtis remarks, if the Marsh Thistle be a *Carduus*, this also must be one, the structure of the fructification being the same in both.

It is one of the worst pests of arable lands, having strong creeping roots, striking down to a great depth, and then branching out horizontally, so that it is very difficult to root it out where it has once got possession, and every small piece of it will grow. Some idea of its increase may be formed from the following experiment, which was made by Mr. Curtis. "I planted in a garden a piece of the root of this Thistle, about the size of a goose quill, and two

<sup>k</sup> Dill. elth. <sup>l</sup> Idem. <sup>m</sup> Hort. kew. <sup>n</sup> Linn. spec.  
<sup>o</sup> Hort. kew. <sup>p</sup> Idem. <sup>q</sup> Idem. <sup>r</sup> Hort. elth.  
<sup>s</sup> Linn. spec.

<sup>t</sup> Idem. <sup>u</sup> Gartner. <sup>v</sup> Desfontaines. <sup>w</sup> Loureiro.  
<sup>x</sup> Smith brit. and Fl. rust.



" inches long, with a small head of leaves, cut off  
 " from the main root, as it was springing out of the  
 " ground. This was done on the first of april: by  
 " the second of november following this small piece  
 " had thrown out shoots, several of which had ex-  
 " tended themselves to the distance of eight feet;  
 " some had even thrown up leaves five feet from the  
 " original root; most of the shoots were about six  
 " inches under ground; others had penetrated to the  
 " depth of two feet and a half: the whole together,  
 " when dug up and washed from the earth, weighed  
 " four pounds. In the spring following, it again made  
 " its appearance on or about the spot where the small  
 " piece was originally planted. There were between  
 " fifty and sixty young heads, which must have sprung  
 " from the roots that had eluded the gardener's search,  
 " though he was particularly careful in extracting  
 " them."

Frequent and deep ploughing in dry weather will destroy this thistle in arable land; but common ploughing is not deep enough to answer the purpose. In pastures it should be pulled or rather forked out, when the ground is well soaked with wet. Mr. Curtis affirms that repeated mowing or spudding, if they do not effectually overcome, will greatly enfeeble it: they seem however to make it run more at the root: but to prevent it from flowering is something. Some persons are persuaded that mowing it down when it is in full flower, is the most effectual way to destroy it: Mons. Villars recommends laying down land infested with this thistle, with artificial grasses. I have tried all these methods without complete success. A piece of land which I laid down with broad and dutch Clover, after Turneps well hoed, is now overrun in some parts with this cursed thistle, as Mr. Curtis names it. And after all our pains, the magazines which are left to feed by road sides, will always supply a fresh crop.

The goat and ass will eat it; horses will sometimes crop the heads, when young and tender; kine do not seem to touch it. It is said to yield a very pure vegetable alkali when burnt<sup>a</sup>.

A variety sometimes occurs, with few or no spines on the leaves, which are also not so deeply indented<sup>b</sup>. And the leaves are either green on both sides, or whitish underneath<sup>c</sup>.]

#### PROPAGATION AND CULTURE.

The Saw-worts are hardy perennial plants, and will thrive in the open air in England. The first is rarely admitted into gardens, but the other sorts are frequently preserved in the gardens of the curious. The 10th, 11th, and 14th sorts, have large knobbed roots; these are propagated only by seeds, which seldom ripen in England, so that the seeds must be procured from abroad. These should be sown on an east-aspected border, where the morning sun only comes; for if the seeds are exposed to the mid-day sun, they seldom succeed well. These seeds will often grow the first summer, if they are sown early in the spring, but sometimes they will remain in the ground a year before the plants appear; so that if they should not come up the first season, the ground should not be disturbed, and must be kept clean from weeds till the following spring, when, if the seeds were good, the plants will come up; when these appear they must be kept clean from weeds; and if they are too close, some of the plants should be carefully drawn out while they are young, and planted into another border of light loamy earth, four inches asunder; in this place they may remain till autumn, when these, and also those in the seed-beds, should be carefully removed to the places where they are designed to remain; the following summer these plants will flower, and the roots will abide several years, if they are planted in a light loamy soil not over wet.

The other perennial sorts may be propagated by parting of the roots; the best time for doing this is in autumn, when their stalks begin to decay; for when they are removed in the spring, if the season should prove dry, their roots will not be sufficiently established to flower well the same year. These plants should

not be removed or parted oftener than every third year, if they are expected to grow strong; nor should they be parted into small heads, for those will make no figure the first year. As these plants grow tall, so they should be planted in the middle of large borders, or with other tall plants; they may be planted in spaces between shrubs, or on the borders of woods, where they will have a good effect during their continuance in flower; and as they require no other culture than to dig the ground between them every spring, and keep them clean from weeds, so they are proper furniture for such places.

These sorts are also propagated by seeds, when they can be obtained good; these may be sown in the same way as the bulbous-rooted kinds, and when the plants come up, they must be treated in the same manner, only that these should be allowed more room, for the fibres of their roots spread out on every side to a great distance; for which reason these plants should not be planted in small gardens, where they will overbear the neighbouring plants.

[SERRATULA. See *Carduus*, *Centaurea*, *Cnicus*, *Conyza*, *Scutellaria*, *Stabelina*, *Vernonia*.

Serratulæ affinis. See *Centaurea*.

SERVICE TREE. See *Cratægus* and *Sorbus*.

SESAMOIDES. See *Cucubalus*, *Passerina*, *Refeda*, *Thestium*.]

SESAMUM (of Pliny. Σισαμὸν of Theophrastus and Dioscorides. Derived by some from σισάω, which is the same with σείω concutio, and ἀπαίω meto, quod subito ad messem propelleretur. But it was more probably taken by the Greeks from the Egyptian Sempsem.)

Lin. gen. n. 782. Reich. n. 845. Schreb. n. 1048.

Gertn. t. 110. Juss. 138.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Luridæ*. *Bignoniæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, erect, equal, very short, permanent: segments lanceolate, the upper one shorter.

COR. one-petalled, bell-shaped: tube roundish, almost the length of the calyx: throat inflated, spreading, bell-shaped, very large, declined: border five-cleft; segments four, patulous, almost equal; and a fifth, which is the lowest, a little longer, ovate, straight.

STAM. Filaments four, springing from the tube, shorter than the corolla, ascending, setaceous, the two inner shorter: with the rudiment of a fifth filament. Anthers oblong, acute, erect.

PIST. Germ ovate, hirsute. Style filiform, ascending, a little longer than the stamens. Stigma lanceolate, two-parted: lamellæ parallel.

PER. Capsule oblong, obscurely four-cornered, compressed, acuminate, four-celled.

SEEDS very many, subovate.

OBS. It has the flower of *Digitalis*, but the fruit is very different.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Cor. bell-shaped, five-cleft, the lower lobe larger. Rudiment of a fifth filament. Stigma lanceolate. Caps. four-celled.

#### SPECIES.

1. *Sesamum orientale*. Oriental Sesamum or Oily-grain. Lin. spec. 883. Reich. 3. 188. hort. cliff. 318. fl. zeyl. n. 318. mat. med. 157. Gron. orient. 76. Gertn. fruct. 2. 132. Thunb. jap. 254. Lour. cochinch. 382. ed. Willd. 464.

S. veterum. Baub. pin. 27. Raii hist. 1327. Riv. mon. t. 114.

*Digitalis orientalis Sesamum dicta*. Burm. zeyl. 87. t. 38. f. 1.

Schit-elu. Rheed. mal. 9. 105. t. 54.

Leaves ovate-oblong entire.

2. *Sesamum indicum*. Indian Sesamum or Oily-grain. Lin. spec. 884. Reich. 3. 188. Forsk. ægypt. cent. 4. 113. Brown. jam. 270. 1. Rumph. amb. 5. 204. t. 76. f. 1. Pluk. phyt. t. 109. f. 4.

β. S. trifoliatum. Mill. dict. n. 3.

Lower leaves trifid.

- [3. *Sesamum luteum*. Yellow Sesamum.

Retz. obs. 6. 31. n. 56.

Leaves lanceolate on long petioles, corollas hispid on the outside.]

<sup>a</sup> Curtis and fl. rust.

<sup>b</sup> Ray syn.

<sup>c</sup> Retzius, fasc. 1.



## DESCRIPTIONS, &amp;c.

1. This is an annual plant, rising with an herbaceous four-cornered stalk about two feet high, sending out a few short side-branches. Leaves opposite and a little hairy. Flowers in loose terminating spikes, small, of a dirty white colour, shaped somewhat like those of the Foxglove.

[Stem erect, round, hairy; with few branches, placed below. Leaves petioled, veined, having small hairs scattered over them. Flowers axillary, solitary; on a very short peduncle, at the base of which are two short linear bractes, and within each a yellow perforated gland. Calyx gaping, almost equal. Corolla obscurely five-lobed, blunt, the lower lobe more produced and rounded. Stamens four, two above the others, and between the latter the castrated rudiment of a fifth filament<sup>d</sup>. Capsule oblong, acuminate, rounded-quadrangular, with a groove on each side, four-celled, two-valved: partition double; one thicker, solid, from the dorsal groove of the valves; the other thinner, bilamellate, formed from the margins of the valves bent in. Seeds ovate-acuminate, compressed a little, smooth, whitish, marked on one side with a slender longitudinal streak, fastened along the central angle of the cells<sup>e</sup>.]

Native of the East Indies. Cultivated in 1731 by Mr. Miller. It flowers in July<sup>f</sup>.]

It is frequently cultivated in the Levant, and also in Africa, as a pulse; the seeds have been introduced in Carolina by the African negroes. An oil is extracted from the seeds, which will keep many years, and not acquire any rancid smell or taste, but in two years become quite mild, so that when the warm taste of the seed, which is in the oil when first drawn, is worn off, it is used as salad oil, and for all the purposes of sweet oil.

The seeds are also used by the negroes for food: they parch them over the fire, then mix them with water, and stew other ingredients with them. A pudding is made with them, in the same manner as with Millet or Rice; called Benny or Bonny in Carolina.

[In Japan, where they have no butter, they use the oil for frying fish, and in dressing other dishes; as a varnish; and medicinally as a resolvent and emollient<sup>g</sup>. In China and Cochinchina it is also used for the same purposes<sup>h</sup>.

Browne says that the Sefamum plant is cultivated in Carolina with great success, and it is computed there, that nine pounds of the seed yield upwards of two pounds of neat oil, which they find to grow more mellow and agreeable with age, and to continue without any rancid smell or taste for many years.]

2. The second sort grows naturally in India, and is also an annual plant. The stalk rises higher than that of the former: the lower leaves are cut into three parts: and these are the only differences between them.

[These plants were introduced into Jamaica by the Jews, and are now cultivated in most parts of the island. They are called Vanglo or Oil-plant. The seeds are frequently used in broths by many of the Europeans, but the Jews make them chiefly into cakes. Many of the oriental nations look upon the seeds as a hearty wholesome food, and express an oil from them, not unlike, or inferior to, the oil of Almonds. A decoction of the leaves and buds is looked upon as a good resolutive, and frequently ordered in inflammations of the eyes, where warm fomentations become requisite<sup>i</sup>. It was cultivated by Mr. Miller in 1731<sup>k</sup>.]

β. This grows naturally in Africa, and is also an annual plant, with a taller and more branched stalk than either of the former. All the leaves are cut into three parts.

Mr. Miller raised two other species (or perhaps varieties) from seeds which were brought from Africa. They grew near four feet high; the leaves of one were much longer than any of the other, and those towards

the top were divided into three and sometimes four parts. The seeds of this were black. The other had broader leaves, which were ferrate. The flowers were large and of a pale blue colour, and the seeds were of a pale yellow colour. Being sown late, no good seeds could be obtained from them.

## PROPAGATION AND CULTURE.

In England, these plants are preserved in botanic gardens as curiosities. Their seeds must be sown in the spring upon a hot-bed, and when the plants are come up, they must be transplanted into a fresh hot-bed to bring them forward. After they have acquired a tolerable degree of strength, they should be planted into pots filled with a rich, light, sandy soil, and plunged into another hot-bed, managing them as has been directed for *Amaranthus*: for if these plants are not thus brought forward in the former part of the summer, they will not produce good seeds in this country; though after they have flowered, if the season is favourable, they may be exposed in a warm situation with other annual plants. When these plants have perfected their seeds they decay, and never continue longer than one season.

[*SESAMUM*. See *Tripsacum*.

*SEBAN*. See *Æschynomene*.]

*SESELI* (of Pliny. *Σισελί* of Theophrastus and Dioscorides. Derivation unknown. See *Raii hist.* 453.)

*Lin. gen. n.* 360. *Reich. n.* 390. *Schreb. n.* 490.

*Boerb. l.* 50. *Juss.* 220.

*Class.* 5. 2. Pentandria Digynia.

*Nat. order of Umbellatæ or Umbelliferæ.*

## GENERIC CHARACTER.

*CAL.* Umbel universal rigid: partial very short, manifold, globular.

*Involucre* universal none:—partial of one or two leaflets, linear, acuminate, length of the umbellet.

*Proper perianth* scarcely observable.

*COR.* Universal uniform. Florets all fertile.

*Proper* of five inflex-cordate petals, flattish.

*STAM.* Filaments five, awl-shaped. Anthers simple.

*PIST.* Germ inferior. Styles two distant. Stigmas blunt.

*PER.* none. Fruit ovate, small, striated, bipartite.

*SEEDS* two, ovate, convex and striated on one side, flat on the other.

## ESSENTIAL CHARACTER.

*Umbels* globular. *Invol.* of one or two leaflets. *Fruit* ovate, striated.

## SPECIES.

[1. *Seseli filifolium*. Thread-leaved Meadow Saxifrage.

*Lin. spec. ed. Willd. l.* 1458. *Thunb. prodr.* 51.

*Leaves* filiform, *stem* flexuose erect.

2. *Seseli pimpinelloides*.

*Lin. spec.* 372. *Reich. l.* 713. *Willd. l.* 1459.

*Willch in nov. act. nat. cur.* 4. 109.

*Stem* declined, *umbels* before they flower nodding.]

3. *Seseli montanum*. Long-leaved Meadow Saxifrage.

*Lin. spec.* 372.  *Syst.* 289. *Reich. l.* 713. *Willd.*

1459. *hort. cliff.* 102. *Gouan illustr.* 17. *Krock.*

*filif. n.* 457. *Villars dauph.* 2. 583. *Blackw. t.* 426.

*S. montanum, n.* 1. & *pumilum, n.* 4. *Mill. dict.*

*Foeniculum filvestre elatius ferulæ folio longiori.*

*Tournef. par.* 2. 354. *Vaill. par.* 54.—*breviori.*

*Tournef. inst.* 311.

*Meum latifolium adulterinum.* *Baub. pin.* 148.

*M. alterum italicum.* *Baub. hist.* 3. 2. 15. *Raii*

*hist.* 433. *Ger. emac.* 1052. 2.

*M. spurium italicum.* *Park. theat.* 889. 4.

*Saxifraga montana minor italica, foliis in breviores*

*partes divisis.* *Mor. hist.* 3. 272.

β. *Seseli multicaule.* *Retz. obs.* 3. 27. *Jacqu. hort.*

2. 59. *t.* 129.

*Petioles* branch-bearing, *membranaceous* oblong entire, *stem-leaves* very narrow.

[4. *Seseli striatum*.

*Lin. spec. ed. Willd. l.* 1460. *Thunb. prodr.* 51.

*Petioles* branchy *membranaceous* emarginate, *stem* striated, *pinnae* awl-shaped grooved.]

5. *Seseli glaucum*. Glaucous Meadow Saxifrage.

*Lin. spec.* 372.  *Syst.* 289. *Reich. l.* 714. *Willd. l.*

1460.

<sup>d</sup> Linn. spec. <sup>e</sup> Gartner. <sup>f</sup> Hort. kew. <sup>g</sup> Thunberg.

<sup>h</sup> Loureiro. <sup>i</sup> Browne. <sup>k</sup> Hort. kew.



1460. *Jacqu. austr.* 2. 27. t. 144. *Gouan illustr.* 17. n. 7. *Scop. carn. n.* 357. *Hoffm. germ.* 105. *Krock. files. n.* 458. *Ger. prov.* 253. *Villars dauph.* 2. 582. *Allion. pedem. n.* 1338.
- S. offeum.* *Crantz. austr.* 207.
- Fœniculum filvestre glauco folio.* *Tournef. inst.* 311.
- Daucus glauco folio, similis fœniculo tortuoso.* *Baub. hist.* 3. 16. *Raii hist.* 460.
- Saxifraga montana minor glauca & rigidior.* *Mor. hist.* 3. 273.
- Petioles branch-bearing membranaceous oblong entire, leaflets single and in pairs channelled even longer than the petiole.*
6. *Sefeli aristatum.* *Bearded-leaved Meadow Saxifrage.* *Ait. kew.* 1. 359. *Lin. spec. ed. Willd.* 1. 1460.
- Ligusticum lucidum.* *Mill. dict.*
- Petioles branchy submembranaceous loose quite entire, leaves superdecompound, leaflets lanceolate awned, fruits ovate.*
- [7. *Sefeli annuum.* *Annual Meadow Saxifrage.* *Lin. spec.* 373. *synt.* 289. *Reich.* 1. 714. *Willd.* 1. 1460. *hort. cliff.* 103. *Jacqu. vind.* 225. *austr.* t. 55. *Scop. carn. n.* 356. *Gouan illustr.* 15. *Villars dauph.* 2. 585. *Allion. pedem. n.* 1337. *Krock. files. n.* 459. *Hall. belv. n.* 762. *Hoffm. germ.* 105.
- S. hienne.* *Crantz. austr.* 204.
- Sium annum.* *Roth. germ.* 1. 128. 2. 337.
- Fœniculum filvestre annuum, tragoselinii odore, umbella alba.* *Vaill. par.* 54. t. 9. f. 4.
- Libanotis tenuifolia germanica.* *Baub. pin.* 158.
- Petioles branchy membranaceous ventricose emarginate.*
8. *Sefeli chærophylloides.* *Chervil-leaved Meadow Saxifrage.* *Lin. spec. ed. Willd.* 1. 1461. *Thunb. prodr.* 51.
- Petioles branchy membranaceous ventricose entire, stem dichotomous paniced, leaves superdecompound smooth.]*
9. *Sefeli Ammoides.* *Milfoil-leaved Meadow Saxifrage.* *Lin. spec.* 373. *synt.* 289. *Reich.* 1. 715. *Willd.* 1. 1461. *Jacqu. hort.* 1. 20. t. 52. *Gouan illustr.* 16.
- Fœniculum lusitanicum minimum acre.* *Tournef. inst.* 312.
- Saxifraga annua acris millefolii terrestri folio tenuissimo.* *Mor. hist.* 3. 272.
- Amnis perenne pusillum.* *Mor. hist.* 3. 295.
- A. Matthioli.* *Dalech. hist.* 695.
- Ammoides.* *Baub. pin.* 159. *Raii hist.* 455.
- Root-leaves with the leaflets imbricate.*
10. *Sefeli tortuosum.* *Hard Meadow Saxifrage.* *Lin. spec.* 373. *Reich.* 1. 715. *Willd.* 1. 1461. *Gmel. fib.* 1. 206. *Pölich pal. n.* 302. *Hoffm. germ.* 105. *Krock. files. n.* 460. *Ger. prov.* 252. *Villars dauph.* 2. 581. *Allion. pedem. n.* 1340. *Plenck ic.* 212.
- S. massiliense fœniculi folio.* *Baub. pin.* 101.—*crassiore.* *Lob. ic.* 785.
- Oenanthe striata rigida.* *Lin. hort. cliff.* 99. *Sauv. monsp.* 257.
- Sium tortuosum.* *Roth. germ.* 1. 128. 2. 337.
- Fœniculum tortuosum.* *Baub. hist.* 3. 16. *Tournef. inst.* 311.
- Stem lofty rigid, leaflets linear in bundles.*
- [11. *Sefeli Turbith.* *Lin. spec.* 374. *Reich.* 1. 715. *Willd.* 1. 1462. *amoen.* 4. 310.
- S. tertium.* *Boerb. lugdb.* 1. 50.
- Thapsia fœniculi folio.* *Baub. pin.* 184.
- Universal involucre one-leaved, seeds striated villose styled.*
12. *Sefeli Hippomarathrum.* *Various-leaved Meadow Saxifrage.* *Lin. spec.* 374. *synt.* 289. *Reich.* 1. 715. *Willd.* 1. 1462. *Jacqu. austr.* 2. 26. t. 143. *Scop. carn. n.* 358. *Hoffm. germ.* 105. *Krock. files. n.* 461.
- S. articulatum.* *Crantz. austr.* 205. t. 5. f. 1, 2.
- Sium Hippomarathrum.* *Roth. germ.* 1. 128. 2. 338.
- Daucus montanus multifido brevique folio.* *Baub. pin.* 150.
- Hippomarathrum.* *Riv. pent.* 66. *Rupp. gen.* 3. 280. *Kram. austr.* 82.
- Involucres connate-one-leaved.*

13. *Sefeli pyrenæum.* *Pyrenean Meadow Saxifrage.* *Lin. spec.* 374. *Reich.* 1. 716. *Willd.* 1. 1462. *Gouan illustr.* 11. t. 5. *De la Chenal in act. belv.* 7. 332. t. 12. (*Selinum.*)
- Carui alpinum.* *Baub. pin.* 158. *prodr.* 84. *Mor. hist.* 3. 297. f. 9. t. 9. f. 2.
- Leaves doubly pinnate, leaflets gashed acute, involucrets bristle-shaped longer than the umbellet.*
14. *Sefeli saxifragum.* *Lin. spec.* 374. *Reich.* 1. 716. *Willd.* 1. 1463.
- Pimpinella saxifraga tenuifolia.* *Baub. pin.* 162. *prodr.* 84.
- Sium saxifragum.* *Roth. germ.* 1. 128. 2. 338.
- Pimpinella tenuifolia.* *Riv. pent.*
- Stem filiform divaricating, leaves doubly ternate linear, umbels subcespid.*
15. *Sefeli elatum.* *Lin. spec.* 375. *synt.* 290. *Reich.* 1. 317. *Willd.* 1. 1463. *mant.* 357. *Gouan illustr.* 16. t. 8. *Villars dauph.* 2. 580. *Allion. pedem. n.* 1341. *Krock. files. n.* 463.
- Fœniculum filvestre elatius ferulæ folio longiori.* *Tournef. inst.* 311.
- Daucus montanus, folio fœniculi, longiore.* *Magn. monsp.* 294.—*Sefeli folio tenuiori majus.* *Ejusd. hort.* 184.
- Saxifraga montana minor tenuissimis & longissimis foliis.* *Mor. hist.* 3. 273. 7.

## DESCRIPTIONS, &amp;c.

1. Native of the Cape of Good Hope. Found there by Thunberg.

2. Root perennial. Leaves pinnate, with the pinnae multifid, and the segments alternate: these also are cut alternately into linear flat segments turned outwards. Stem a foot high, round, before flowering-time decumbent, but about the season of flowering almost upright, with one or two leaflets: petiole membranaceous, like a sheath, oblong; whence a single peduncle. The umbels nod before flowering as in *Pimpinella Saxifraga*, without any universal involucre: partial involucre linear, narrow, almost the length of the umbellet. Seeds oval, with three raised streaks.—Native of the South of Europe<sup>1</sup>.

3. Stem erect, near two feet high, sending out branches from the side. Leaves short, divided into small segments like Hog's-Fennel: at the foot-stalk of each a bellied membrane embracing it. Flowers white.

[Stem a foot high, round, even. Root-leaves shorter, like those of Carrot, bipinnate, often cruciate at the rib, with the leaflets subtripartite. Stem-leaves with a petiolar sheath entire: pinnate: leaflets ternate: pinnae three-parted, linear, sharpish, somewhat remote, longer, channelled. Umbels with short pedicels. Seeds pubescent<sup>m</sup>.

It differs from *glaucum*, according to Villars, in having the leaves greener, more numerous, and narrower, the stems higher and more branched, and the seeds less ash-coloured. The stem is from a foot to a foot and half in height, purplish, and terminating in two or three branches, which are a little divaricating. Root-leaves green, bipinnate, with the leaflets linear, winged, in threes, an inch long, and a third of a line wide, smooth above, decurrent without articulation at the base. Stem-leaves triangular, with the segments more lengthened out. Rays of the umbel eighteen or twenty; of the umbellet twenty to twenty-five, with an involucre of five or seven leaves, shorter than the rays, linear, and united at the base. Seeds striated, often reddish at the end, a little ash-coloured, somewhat larger than those of *glaucum*.

Native of Italy and France.—Common on the dry hills of the latter, according to Morison. Ray found it on the hills and cliffs of the kingdom of Naples.—It was cultivated in the botanic garden at Oxford, in 1658<sup>n</sup>.

β. Root perennial. Stems patulous, round, striated, smooth. Leaves all bipinnate, with the leaflets linear entire and subtrifid; on the upper stem-leaves longer.

<sup>1</sup> Linn. spec.    <sup>m</sup> Idem.    <sup>n</sup> Hort. kew.



In the lower stem-leaves a short sheath terminates in a long petiole. The upper petioles sheathed almost embracing the stem are terminated by a compound sessile leaf. Rays of the umbel from eight to twelve. Umbellets compact with from six to eight flowers, and an involucre of several awl-shaped leaves the length of the germs. The styles and apex of the germ become red after the flower is past. According to the description of *Seseli Hippomarathrum* in Species plantarum, this resembles that plant so much, that except in the form of the involucrets they appear to be the same<sup>a</sup>.

4. Native of the Cape of Good Hope. Found there by Thunberg.]

5. Root perennial, running deep in the ground, and sending out slender smooth stalks near two feet high. Leaves long and narrow, composed of seven or eight pairs of pinnae, with leaflets either single or bifid; they have a membrane embracing the petiole, and are of a gray colour. The stalks are terminated by umbels of flowers, which are purple on their outside and white within; [and therefore appear purple before they open, but when open white with purple anthers<sup>a</sup>.

Stem about a foot high, straight and little branched, terminated by an umbel, and one or two lateral branches besides. Leaves glaucous: root-leaves bipinnate, with the leaflets in pairs or threes, with a nerve prominent on both sides, jointed at their base, five or six lines in length, and half a line in breadth. Those on the stem are smaller, with segments more lengthened out, and less compound. The umbel has only ten or twelve unequal rays; the umbellet twelve or fifteen, with an involucre of five leaflets shorter than the rays. Seeds small, whitish, striated, with little tubercles or hairs, visible with a magnifier<sup>a</sup>.

Native of France, Austria, Carniola, Silesia, Piedmont.—Cultivated in 1759, by Mr. Miller<sup>a</sup>.]

6. Root biennial. Leaves bipinnate, with the leaflets very narrow, and finely divided. Stems strong, a foot and half high, with shining pinnate leaves, and terminated by pretty large umbels of whitish flowers.

[Native of the Pyrenean mountains. Cultivated in 1759, by Mr. Miller<sup>a</sup>.

7. Stem stiff, a span high and more, striated. Leaves bipinnate, lacinate. Flowers whitish with a tinge of violet<sup>a</sup>. According to Haller and Gouan the involucrets are longer than the rays.

Leaves oblong, bipinnate, with linear leaflets, ash-coloured, a little decussated like those of *Carui*. Stems a foot high and more, stout, channelled, purplish, swelling a little under the joints, and branching at the end. Stem-leaves less compound, with their segments more lengthened out, but not so different as in some other species. The umbel has sometimes an involucre of five linear leaves, and is composed of from sixteen to twenty rays. Those of the umbellet are numerous and close. This has an involucre of several leaflets, the length of the rays or peduncles. Seeds smooth, striated, oblong, purplish at the end. It is not properly annual, but dies, as many other umbellate plants do, after flowering and fruiting<sup>a</sup>.

Native of France, Germany, Hungary, Austria, Switzerland and Piedmont.

8. Native of the Cape of Good Hope, where it was found by Thunberg.]

9. This is an annual plant. The leaves are like those of Spignel, (*Athamanta Meum*) but much smaller, and have a very acrid biting taste. The stalks rise four inches high, and sustain a small umbel of flowers.

[It is a small, very branching plant. The root-leaves much resemble those of Milfoil. Umbels many, with four or five divaricating rays in the circumference, and two or three small ones in the disk. Involucrets with two or three small rays. Petals white, retuse. Anthers violet. Seeds striated.

Native of Portugal and Italy<sup>a</sup>. Cultivated by Mr. Miller in 1759. It flowers in June and July<sup>a</sup>.]

<sup>a</sup> Retzius. <sup>b</sup> Linn. spec. <sup>c</sup> Villars. <sup>d</sup> Hort. kew.  
<sup>e</sup> Idem. <sup>f</sup> Linn. spec. <sup>g</sup> Villars. <sup>h</sup> Linn. spec.  
<sup>i</sup> Hort. kew.

10. This has a thick woody root, from which come out stiff stalks near four feet high, which are crooked at their joints, and have narrow leaves coming out in bunches. The stalks divide into slender branches, which have small umbels of flowers coming out of their sides, and are terminated by larger. The flowers are small and yellow.

Stem rigid, as it were woody. Partial leaflets not two only opposite, but commonly four, the inner ones smaller, whence they are bundled<sup>a</sup>.

Cultivated in 1656 by Mr. John Tradescant, jun. Biennial<sup>a</sup>.

11. Native of the South of Europe.

12. Leaves bipinnate; the first trifid and linear. Stem rushy, glaucous, as is the rest of the plant. The uppermost leaves consist of a sheath only. Involucrets of one leaf, like a basin, notched about the edge, or of leaflets united into one; in which this differs from all other umbellate plants. Germs sessile. Corollas white, often tinged with purple<sup>b</sup>. According to Scopoli and Gouan, the synonym from Caspar Bauhin belongs to *Pimpinella glauca*<sup>c</sup>.

Native of Austria, Carniola, Silesia, Germany.—Cultivated in 1656 by Mr. John Tradescant, jun.<sup>d</sup>

13. Stem a foot high, round, striated. Root-leaves doubly pinnate, loose, little divaricating: leaflets pinnate, longitudinally gashed, acuminate, wedge-shaped. Upon the stem there is often a single leaf, from the axil of which issues a branch: radical petioles simple; stem-petiole wide-membranaceous. Universal umbel naked, oblong, with about eight rays or peduncles: partial clustered, very short, uniform; with a many-leaved, bristle-shaped involucre, longer than the umbellets. The appearance of this species is different from the others of this genus.

Native of the Pyrenees<sup>e</sup>.

14. Plant a foot high. Stem branched, round, slender. Leaves small, doubly-ternate, linear, seldom lobed. Umbels naked, commonly with six peduncles or rays: umbellets involucred, with from six to eight florets; involucrets bristle-shaped.

Native of Germany, and the borders of the Lake of Geneva<sup>f</sup>.

15. Stem a foot and half high, the thickness of a pigeon's quill, subdichotomous, with the branches divaricating; the uppermost very narrow. Leaves superdeccompound; the upper ones only ternate. Leaflets linear, the thickness of a horse-hair, an inch long, round. Umbels trifid: Umbellets clustered, with about eight florets, which are white. Involucrets extremely minute. Seeds tubercled<sup>g</sup>.

This plant is easily distinguished by its cylindrical leaflets, coming out in threes, and from one to two inches in length. The stem rises from one to two feet in height, and has spreading branches. Umbels small. Involucre of several leaflets. Seeds rugged, small, notchletted, transversely wrinkled, crowned with the perianth, like the *Oenantes*. It is biennial. The membranous sheath of the leaves surrounds the stem, and is separated from the leaflets by a depression, and by the direction of the leaf, which from perpendicular, as it was when applied to the stem by the sheath, takes a horizontal position at that place<sup>h</sup>.

Native of France, Austria and Silesia. Crantz could not find it in Austria.]

#### PROPAGATION AND CULTURE.

Sow the seeds in autumn, and they will rise the following spring; whereas when they are sown in the spring, they frequently lie in the ground till the next year before they grow. Drill them eighteen inches asunder, in a bed of fresh earth, where they are designed to remain; thin the plants to the distance of six inches; keep them clear from weeds; and in the second season they will produce seeds. The perennial sorts should have the ground gently dug every spring between the rows, taking care not to injure their roots with the spade. These plants love a moist soil; and

<sup>a</sup> Linn. spec. <sup>b</sup> Hort. kew. <sup>c</sup> Linn. spec.  
<sup>d</sup> Reichard. <sup>e</sup> Hort. kew. <sup>f</sup> Linn. spec.  
<sup>g</sup> Idem. <sup>h</sup> Linn. mant. <sup>i</sup> Villars.



therefore in a dry soil must be duly watered, unless the season prove wet.

[SESELI. See *Egopodium*, *Aethusa*, *Apium*, *Athamanta*, *Bupleurum*, *Carum*, *Chærophyllum*, *Laserpitium*, *Ligusticum*, *Peucedanum*, *Phellandrium*, *Pimpinella*, *Selinum*, *Sium*, *Tordylium*.

SESLERIA. See *Cynofurus*.

#### SESUVIUM.

*Lin. gen. n. 624. Reich. n. 680. Schreb. n. 856.*

*Juss. 316. Halimum. Loeft. it. 191.*

Class. 12. 3. Icosandria Trigynia.

Nat. order of *Succulentæ*. *Ficoideæ*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, bell-shaped, five-parted: *segments* ovate, acute, coloured within, shrivelling.

COR. none.

STAM. *Filaments* very many, awl-shaped, inserted into the calyx below the segments, and shorter than the calyx. *Anthers* roundish.

PIST. *Germ* oblong, in the bottom of the calyx, three-cornered above. *Styles* often three, capillary, erect, length of the stamens. *Stigmas* simple.

PER. *Capsule* ovate, three-celled, cut round.

SEEDS roundish, flattish, having a beak at the margin.

#### ESSENTIAL CHARACTER.

Cal. five-parted, coloured. Pet. none. Caps. ovate, three-celled, cut round, many-seeded.

#### SPECIES.

##### 1. Sesuvium Portulacastrum.

*Lin. spec. 684. Syst. 465. Reich. 2. 496. Willd. 2. 1009. Jacqu. amer. 155. t. 95. pict. 77. t. 142. Swartz obs. 204.*

*Portulaca Portulacastrum. Lin. spec. ed. 1. 446. Loeft. it. 191. Pluk. phyt. t. 216. f. 1. Herm. par. t. 212. Plum. spec. 6. ic. 223. f. 2. Sloan. jam. 1. 204. Brown. jam. 241. (Aizoon.)*

*Halimus indicus. Rumph. amb. 5. 165. t. 72. f. 1.*

#### DESCRIPTION, &c.

Root perennial. Stems herbaceous, four or five inches long, decumbent, subdivided, round, succulent. Leaves wedge-shaped, on very short petioles, opposite, obtuse, fleshy, thick, smooth, bright green. Petioles sheathing, embracing, with membranaceous edges. Peduncles solitary, axillary, shorter than the leaves. Flowers green on the outside, white and blood-red within. Calyx corolline. Anthers small, blood-red. Germ acuminate. Styles three, sometimes but seldom four. Seeds black<sup>1</sup>.

Native of the West Indies. Very common in Jamaica, in all the low lands about the Ferry, growing in thick beds, on every spot of ground that rises above the level of the water. It is very succulent, and full of a neutral-alkalescent salt, which may be easily extracted, and would probably answer all the purposes for which the salts of the Kali are now used<sup>2</sup>.

SETTERWORT. See *Helleborus*.

SHADDOCK. See *Citrus*.

SHAKERS. See *Briza*.

SHALLOT. See *Allium*.

SHAWIA. (So named by Forster, in memory of Thomas Shaw, D. D. who published Travels into Barbary and the Levant, Oxf. 1738. fol.)

*Lin. gen. Schreb. n. 1359. Forst. gen. t. 48. Juss. 180.*

Class. 19. 5. Syngenesia Polygamia Segregata.—Monogamia. Forst.

#### GENERIC CHARACTER.

CAL. *Perianth* imbricate, cylindrical: *scales* five or six oblong; three inner longer, almost equal.

COR. one-petalled, funnel-form, short: *border* five-cleft, linear, spreading.

STAM. *Filaments* five, capillary. *Anther* cylindrical, tubular.

PIST. *Germ* oblong. *Style* filiform, longer than the corolla. *Stigma* bifid, spreading.

PER. none. *Calyx* unchanged, pervious.

SEED solitary, oblong. *Down* capillary, pubescent at the base.

REC. naked.

<sup>1</sup> Swartz.

<sup>2</sup> Browne.

#### ESSENTIAL CHARACTER.

Cal. imbricate, with five or six scales, three interior longer. Cor. five-cleft. Seed one, oblong.

#### SPECIES.

##### 1. Shawia paniculata.

*Forst. gen. 96. prodr. n. 307.*

Native of New Zealand<sup>1</sup>.

SHEEP'S SCABIOUS. See *Jasione*.

SHEFFIELDIA. (So named by Forster, in honour of Mr. Sheffield, an eminent botanist of the university of Oxford.)

*Lin. gen. Schreb. n. 278. suppl. 18. Forst. gen. t. 9.*

*Juss. 96.*

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Caryophyllei*. *Lyfimachia*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* five-cleft, turbinate, permanent: *segments* acute, erect.

COR. one-petalled, bell-shaped, longer than the calyx: *border* five-cleft; *segments* obovate, reflex.

STAM. *Filaments* ten, awl-shaped, inserted into the tube: of these, five, opposite to the segments of the corolla, fertile; and five, alternate with them, castrated. *Anthers* cordate, acuminate.

PIST. *Germ* oblong. *Style* filiform, length of the stamens. *Stigma* simple.

PER. *Capsule* conical, one-celled, five-valved.

SEEDS very many, globular, fastened to a columnar receptacle in the middle of the capsule.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. bell-shaped. Filam. ten, the alternate ones barren. Caps. one-celled, five-valved, many-seeded.

#### SPECIES.

##### 1. Sheffieldia repens.

*Lin. spec. ed. Willd. 1. 833. suppl. 135. Forst. gen. 18. prodr. n. 67.*

#### DESCRIPTION, &c.

This is a little, procumbent, creeping plant, so resembling *Peplis Portula*, that without the fructification it would seem to be the same.—Native of New Zealand and Easter Island<sup>m</sup>.

SHEPHERD'S NEEDLE. See *Scandix*.

PURSE OR POUCH. See *Thlaspi*.

STAFF. See *Dipsacus*.]

SHERARDIA. (So named by Dillenius, in honour of his patron William Sherard, L. L. D. Consul at Smyrna.)

*Lin. gen. n. 120. Reich. n. 127. Schreb. n. 156.*

*Dill. gen. 3. Gartn. t. 24. Juss. 196.*

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*. *Rubiaceæ*, Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* small, six-toothed, superior, permanent.

COR. one-petalled, funnel-form: *tube* cylindrical, long: *border* four-parted, flat, acute.

STAM. *Filaments* four, placed at the top of the tube. *Anthers* simple.

PIST. *Germ* twin, oblong, inferior. *Style* filiform, bifid at top. *Stigmas* headed.

PER. none. *Fruit* oblong, crowned, separable longitudinally into two seeds.

SEEDS two, oblong, marked at the apex with three points, convex on one side, flat on the other.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form, superior. Seeds two, three-toothed.

#### SPECIES.

##### 1. Sherardia arvensis. Field or blue Sherardia, or little field Madder.

*Lin. spec. 149. Syst. 148. Reich. 1. 292. Willd. 1. 574. hort. cliff. 33. fl. suec. n. 120. Dill. giff. app. 96. Gartn. fruct. t. 24. Hudf. angl. 66. Wither. arr. ed. 3. 185. Smith brit. 171. Curt. lond. 5. t. 13. Relb. cant. ed. 2. n. 124. Sibth. oxon. n. 179. Abbot bedf. n. 110. Fl. dan. t. 439. Hall. helv. n. 734. Hoffm. germ. 47. Roth. germ. 1. 68. 2. 191. Pellich pal. n. 144. Leers herb. n. 119. Neck. gallob. 83. Scop. carn. n. 143. Krock. siles. n. 209. Villars dauph. 2.*

<sup>1</sup> Forster.

<sup>m</sup> Linn. suppl. and Forster.



316. *Allion. pedem. n. 45. Desfont. atlant. 126. Sabb. hort. rom. 1. t. 80. Dickf. hort. ficc. 15. 1.*  
*Asperula flore carneo, acuto folio. Barr. ic. t. 541.*  
*Rubeola arvensis repens cærulea. Baub. pin. 334. prodr. 145. Raii hist. 483. syn. 225.*  
*Rubia parva, flore cæruleo se spargens. Baub. hist. 2. 719.*  
*R. pratensis minor cærulea. Park. theat. 276. 5.*  
*All the leaves in whorls, flowers terminating.*  
 [2. *Sherardia muralis. Wall Sherardia. Lin. spec. 149. syst. 148. Reich. 1. 293. Willd. 1. 574.*  
*Galium murale. Allion. pedem. n. 34. t. 77. f. 1. Ger. prov. 227.*  
*G. minimum, feminibus oblongis. Buxb. cent. 2. 31. t. 30. f. 2.*  
*Asperula verticillata luteola. Baub. pin. 334.*  
*A. vert. muralis minima. Col. ephr. 302. t. 300.*  
*A. mur. min. Park. theat. 562. n. 4. Raii hist. 484.*  
*Floral leaves two opposite to two flowers.*  
 3. *Sherardia fruticosa. Shrubby Sherardia. Lin. spec. 149. Reich. 1. 293. Willd. 1. 575.*  
*Swartz obs. 46.*  
*Leaves in fours equal, stem shrubby.*

## DESCRIPTIONS, &amp;c.

1. Root annual, with many reddish-brown fibres. The whole plant branched, diffused, rough and hairy, from four to seven inches high. Leaves five or six in a whorl, ovate, acuminate, rough along the edges and keel; the lower ones broader and fewer in a whorl. Umbel terminating, sessile, the uppermost whorl of eight leaves serving it for an involucre. Calyx superior, two-leaved; leaflets three-toothed, permanent, crowning the fruit. Corolla with a long slender tube; the border bright purple<sup>a</sup>. Seeds ovate, bay, having very minute bristles scattered over them, and pressed close to them, convex on one side, on the other having a longitudinal cleft widening inwards. It differs from *Asperula* only in the crown upon the seed<sup>b</sup>.

Native of many parts of Europe, among corn and on fallows; flowering during the greatest part of the summer.

2. Root annual. Stems decumbent. Leaves ovate-lanceolate, six in the lower, four in the middle whorls, two only together at top. Flowers in pairs on their proper peduncles, pale, flat. Fruits oblong, hispid. Seeds bowed a little, with little or no crown.

Native of Italy. Found also at Constantinople, on walls.

3. This is a torose, irregular, rugged shrub, with the branches bluntly four-cornered. Leaves in fours, narrow-lanceolate, quite entire, smooth, rolled back at the edge, a little longer than the internodes of the branches, separated by very short, awl-shaped stipules. Flowers opposite, sessile, axillary. Calyx four-leaved, growing upon the germ, with lanceolate leaflets permanent. Corolla funnel-form, four-cleft, white, length of the germ. Anthers four oblong. Pericarp two-grained. It is one of the very few plants which the island of Ascension affords; and was found there by Osbeck<sup>c</sup>.

According to Swartz this species is between a *Spermacoce* and a *Diodia*; and less allied to the genus *Sherardia*.

SHERARDIA. See *Galenia* and *Verbena*.

SHOT, INDIAN. See *Canna*.

SIAMIN. See *Pentapetes*.]

SIBBALDIA. (So named by Linneus, in memory of Sir Robert Sibbald, professor of physic at Edinburgh: author of *Scotia illustrata*, 1684, &c.)

*Lin. gen. n. 393. Reich. n. 425. Schreb. n. 536.*

*Fl. lapp. Gært. t. 73. Juss. 337.*

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Senticosæ*. *Rosaceæ*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, half-ten-cleft, with an erect base: segments half-lanceolate, equal, spreading, alternately narrower, permanent.

<sup>a</sup> Smith, Curtis, With.    <sup>b</sup> Gærtner.    <sup>c</sup> Linn. spec.

- COR. *Petals* five, ovate, inserted into the calyx.  
 STAM. *Filaments* five, capillary, shorter than the corolla, inserted into the calyx. *Anthers* small, obtuse.  
 PIST. *Germis* five, ovate, very short. *Styles* from the middle of the side of the germis; length of the flamenis: *Stigmas* headed.  
 PER. none. *Calyx* converging, concealing the seeds within its bosom.  
 SEEDS five, somewhat oblong.  
 OBS. *It sometimes, but very seldom, becomes luxuriant, by doubling the number of pistils, on the same plant.*

## ESSENTIAL CHARACTER.

Cal. ten-cleft. Pet. five, inserted into the calyx. Styles from the side of the germ. Seeds five.

## SPECIES.

1. *Sibbaldia procumbens. Procumbent Sibbaldia. Lin. spec. 406. syst. 308. Reich. 1. 777. Willd. 1. 1567. fl. lapp. n. 111. succ. n. 275. Gært. fruct. 1. 348. Hudf. angl. 136. Wither. arr. ed. 3. 326. Smith brit. 345. Lightf. scot. 175. Dickf. hort. ficc. 10. 12. Fl. dan. t. 32. Villars dauph. 2. 554. Hall. helv. n. 1116. (Fragaria.)*  
*Fragariæ sylvestri affinis planta, flore luteo. Sibb. scot. 2. 25. t. 6. f. 1.*  
*Fragariæ affinis fericea incana. Baub. pin. 327. prodr. 139.*  
*Pentaphylloides pumila, foliis ternis ad extremitates trifidis. Raii syn. 256. Petiv. brit. t. 41. f. 7.*  
*Stem procumbent, leaflets three-toothed wedge-form.*  
 [2. *Sibbaldia erecta. Upright Sibbaldia. Lin. spec. 407. Reich. 1. 777. Willd. 1. 1567. Gmel. fib. 3. 186. Amm. ruth. 112. t. 15. (Pentaphylloides.)*  
*Stem upright, leaves linear multifid.*  
 3. *Sibbaldia altaica. Lin. syst. 308. Willd. 1. 1567. suppl. 191. Pallas in act petrop. 1773. p. 526. t. 18. f. 2.*  
*Stem upright, leaves linear-filiform three-parted.*

## DESCRIPTIONS, &amp;c.

1. Root woody, branched, black on the outside. Stems very short, leafy. Leaves on long petioles, ternate: leaflets inversely wedge-shaped, hairy, three-toothed at the end. Stipules two, fastened to the petiole. Peduncles corymbed. Flowers small, yellow. Calyx hairy, permanent, with the alternate segments larger. Petals obovate, entire. Stamens very short. Styles five, sometimes ten. Seeds ovate gibbous<sup>a</sup>: according to Gærtner, five, small, subglobular, acuminate, smooth, of a yellow-bay colour.—When cultivated, the stamens are often seven or more; the germs ten; and ten seeds, fixed to a dry hairy receptacle<sup>b</sup>. Hence Miller has made a second species, which he names *octopetala*, and is no more than a variety. Dr. Smith is of opinion, that Plukenet's figure (t. 212. f. 3.) which Linneus refers to this, belongs rather to *Potentilla subacaulis*.

Native of the mountains of Lapland, Switzerland, Scotland and Siberia. On the north side of Ben Lomond, three fourths up the mountains, plentifully. On Ben Mor, sparingly. Flowering in July.

2. The leaves are very finely jagged, and the flowers flesh-coloured.—Native of Siberia<sup>c</sup>.

3. Leaves linear, three-cusped. Calyxes cylindrical. Corollas purple<sup>d</sup>. Stem an inch high or more, almost naked, having only one flower, or else terminated by a corymb of from three to five flowers<sup>e</sup>.]

## PROPAGATION AND CULTURE.

1. Growing on moist ground in high mountains, it is with difficulty preserved in gardens, and rarely produces seeds there; the plants therefore must be procured from the places where they grow naturally, and if they are planted in a moist soil and shady situation, they will thrive tolerably well and produce flowers.

[SIBI. See *Lagerstroemia*.

<sup>a</sup> Smith.    <sup>b</sup> Withering    <sup>c</sup> Amman.    <sup>d</sup> Linn. syst.  
<sup>e</sup> Willdenow.

SIBTHORPIA.



SIBTHORPIA. (So named by Linneus, in honour of Humphrey Sibthorp, M. D. Professor of Botany at Oxford.)

Lin. gen. n. 775. Reich. n. 836. Schreb. n. 1038.

Gärtn. t. 55. Juss. 99.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of Pediculares, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, five-parted, spreading: leaflets ovate, permanent.

COR. one-petalled, five-parted, spreading, equal, length of the calyx: segments rounded.

STAM. Filaments four, capillary: two approximating. Anthers cordate-oblong.

PIST. Germ roundish, compressed. Style cylindrical, thicker than the filaments, length of the flower. Stigma simple, capitate, depressed.

PER. Capsule compressed, orbicular, two-bellied, with the sides acute, two-valved, two-celled: partition transverse.

SEEDS some, roundish-oblong, convex on one side, flat on the other. Receptacle globular, fastened to the middle of the partition.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-parted, equal. Stam. in remote pairs. Caps. compressed, orbicular, two-celled, with the partition transverse.

SPECIES.

1. *Sibthorpia europæa*. Cornish Money-wort.

Lin. spec. 880. Juss. 572. Reich. 3. 180. mant. 421.

amoen. 3. 22. Loeßl. it. 150. Hudf. angl. 276.

Witber. arr. ed. 3. 556. Smith brit. 667. engl.

bot. t. 649. Dicks. hort. sic. 76.

S. prostrata. Salisb. ic. 11. t. 6.

Alfine spuria pusilla repens, foliis Saxifragæ aureæ.

Raii syn. 352. Pluk. phyt. t. 7. f. 6. Petiv. brit.

t. 6. f. 11.

Leaves kidney-form-subpeltate crenate.

DESCRIPTION, &c.

1. [Root fibrous, perennial. Stems prostrate, creeping, branched, very long, slender and delicate, interwoven, leafy, hairy. Leaves alternate, on footstalks, horizontal, with shallow distant notches, hairy. Peduncles axillary, solitary, short, one-flowered, hairy. Calyx hispid. Corolla pale yellow, with a purplish tinge in the three upper segments. Stamens very short. Stigma peltate\*. Capsule small, cordate-rounded, with a groove on each side, compressed like a lens, two-celled, two-valved: partition simple, very narrow, contrary to the valves. Receptacle subglobular, spongy, tubercled, fastened on each side to the middle of the partition. Seeds few, about six in each cell, small ovate, plano-convex or subangular, brown<sup>r</sup>.

This curious and most distinct genus was named, as was said above, in honour of Dr. Humphrey Sibthorp, successor to Dillenius in the Botanic chair at Oxford. His son, the late Professor John Sibthorp, has richly earned his inheritance of the honour, by his indefatigable zeal in the pursuit of the same science, to which indeed he fell a sacrifice. His knowledge of the plants of his own country is displayed in his *Flora Oxoniensis*, published not long before his death. The arrangement of his Grecian treasures is intrusted to Dr. Smith<sup>z</sup>.

Native of Portugal, and England, in shady places and about springs; in Devonshire and Cornwall, plentiful; and about Longsledale in Westmoreland. It flowers in July and August, or from June to September.]

PROPAGATION AND CULTURE.

Planted or sown in pots, placed in the shade and kept moist, it will thrive very well in gardens.

SICYOIDES. See *Sicyos*.

SICYOS. (Σίκυος of Theophrastus.)

Lin. gen. n. 1094. Reich. n. 1195. Schreb. n. 1481.

Gärtn. t. 88. Juss. 394. Sicyoides. Tournef.

t. 28. Bryonioides. Dill. elth. 51.

Class. 21. 9. Monoecia Syngenesia.

Nat. order of Cucurbitaceæ.

\* Smith.

<sup>r</sup> Gærtner.

<sup>z</sup> Engl. bot.

GENERIC CHARACTER.

\* Male Flowers.

CAL. Perianth one-leafed, bell-shaped, five-toothed: toothlets awl-shaped.

COR. five-parted, bell-shaped, fastened to the calyx: segments ovate.

STAM. Filaments three, united. Anthers as many, separate.

\* Female Flowers on the same plant.

CAL. Perianth as in the male, superior, deciduous.

COR. as in the male.

PIST. Germ ovate, inferior. Style cylindrical. Stigma thickish, trifid.

PER. Berry ovate, set with spines, one-celled.

SEED single, subovate.

ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. five-parted.

MALE. Filaments three.

FEM. Style trifid. Drupe one-seeded.

SPECIES.

1. *Sicyos angulata*. Angular-leaved *Sicyos*, or single-seeded Cucumber.

Lin. spec. 1439. Reich. 4. 209. hort. cliff. 452.

upf. 291. Berg. cap. 352. Sabb. hort. 1. t. 60.

Dill. elth. 58. t. 51. f. 59. (Bryonioides.) Pluk.

phyt. t. 26. f. 4. (Cucumis.)

β. *Cucumis canadensis monospermus*, fructu echinato.

Herm. par. 108. t. 133.

Leaves angular.

2. *Sicyos laciniata*. Jagged-leaved *Sicyos*.

Lin. spec. 1439. Reich. 4. 210. Plum. spec. 3.

ic. 243. (Sicyoides.)

Leaves jagged.

[3. *Sicyos Garcini*. Garcin's *Sicyos*.

Lin. Juss. 870. Reich. 4. 210. mant. 297. Burm.

ind. 311. t. 57. f. 3.

Leaves five-parted erose-toothed, fruits ciliate.]

DESCRIPTIONS, &c.

1. This is an annual plant, which rises with two large seed-leaves like those of the Cucumber; the stalk is trailing, and has tendrils, by which it fastens itself to neighbouring plants, and will rise fifteen or sixteen feet high, dividing into many branches, with angular leaves on them like those of the Cucumber. The flowers come out upon long peduncles from the side of the branches in clusters; the females are small, of a pale sulphur colour, and appear in June and July; they are succeeded by prickly oval fruit, ripening in autumn. [The fruit is an inferior fleshy berry, becoming juiceless, coriaceous and membranaceous, ovate-acuminate, compressed a little, covered all over with a rigid curling cotton, and slender yellowish pungent spines; one-celled. Seed ovate, compressed a little, smooth, of a rusty brown colour, with four white calluses at the navel<sup>a</sup>.

Native of North America. Cultivated in 1732 by James Sherard, M. D.<sup>b</sup>]

2. This is also an annual plant, with trailing stalks like the former; but the leaves are cut into several segments. The flowers are larger and of a deeper colour. The fruit is not quite so large, nor so closely armed with prickly hairs.—Native of the West Indies.

[3. Leaves cordate, five-parted with the sinuses obtuse: segments sinuate with mucronate teeth. Fruit sessile, solitary, ciliate, pressed to the stem.—Native of Ceylon<sup>c</sup>.]

PROPAGATION AND CULTURE.

1. If the seeds be permitted to scatter, the plants will come up in the spring better than when sown by hand, and require no other care but to keep them clean from weeds. These plants ramble, and take up too much room in small gardens; they should therefore be allowed a place near a hedge, upon which they may climb: they do not bear transplanting well, unless when they first come up.

2. Sow the seeds upon a hot-bed in the spring, and treat the plants in the same way as Cucumbers and Melons, keeping them under frames. They

<sup>a</sup> Gærtner.

<sup>b</sup> Hort. kew.

<sup>c</sup> Burm. in Linn. mant.

require



require more room, so that a plant or two will be enough for curiosity.

[Sicyos. See *Cissus* and *Elaterium*.]

SIDA. (*Σίδη* of Theophrastus.)

Lin. gen. n. 837. Reich. n. 902. Schreb. n. 1129.

Cavan. diff. 1. 6. L'Herit. stirp. fasc. 5. Gærtn.

fruct. t. 134. Juss. 273. Malvinda. Dill. elth.

171. 172. Abutilon. Dill. elth. 2. 5. 6. Tournef.

t. 25. Anoda. Cavan. diff. 1. Napæa. Clayt.

& ed. prior.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of Columnifera. Malvaceæ, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, angular, half-five-cleft, permanent.

COR. Petals five, wider above, emarginate, fastened below to the tube of stamens.

STAM. Filaments very many, united below into a tube, in the apex of the tube divided. Anthers roundish.

PIST. Germ orbicular. Styles five or more; or else one many-cleft. Stigmas headed.

PER. Capsule roundish-angular, composed of five or more cells, (corresponding with the number of the styles or stigmas,) two-valved, awnless, acuminate or horned, opening above, or close, and finally separating.

SEEDS solitary, two three, or five, roundish, mostly acuminate, convex on one side, angular on the other, fastened to the interior suture.

OBS. Malvinda, Dill. has five cells with one seed in each.

Abutilon, Dill. & Tourn. has several cells, and commonly several seeds in each.

Anoda, Cavan. has several united cells with one seed in each.

Napæa, Linn. is dioecous, with several cells not opening.

Sida periplocifolia, Linn. has five superior two-valved cells, and as many inferior alternate not opening.

#### SPECIES.

\* With long narrow lanceolate oblong and ovate leaves.

[1. *Sida linifolia*. Flax-leaved Sida.

Lin. spec. ed. Willd. 3. 734. Cavan. diff. 1. 14. t. 2. f. 1.

Malva hirsuta gramineo folio. Barr. æquin. 72. Aubl. guian. 2. 704.

Leaves linear quite entire, racemes terminating, capsules almost awnless.]

2. *Sida angustifolia*. Narrow-leaved Sida.

Lin. syst. 621. Willd. 3. 734. L'Herit. stirp. 1. 109. t. 52. Cavan. diff. 1. 14. t. 2. f. 2. & diff. 2. 48. Murr. fl. gott. 220.

*S. ulmifolia*. Retz. obs. 3. 37.

Leaves linear-lanceolate toothed, peduncles subsolitary axillary, capsules two-cusped.

[3. *Sida acuta*. Sharp-leaved Sida.

Lin. spec. ed. Willd. 3. 735. Cavan. diff. 1. 15. t. 2. f. 3. Burm. ind. 147. Pluk. mant. t. 334. f. 1. (Althæa.)

Silagurium longifolium. Rumph. amb. 6. 43. t. 18. f. 2.

Tsjeru-parua. Rheed. mal. 10. 105. t. 53.

Leaves linear-lanceolate toothed, peduncles solitary, axillary, capsules two-cusped, stipules lanceolate.

4. *Sida canariensis*. Canary Sida.

Lin. spec. ed. Willd. 3. 735.

*S. alba*. Cavan. diff. 1. 22. t. 3. f. 8. & diff. 2. 48.

Leaves lanceolate sublinear toothed smooth, peduncles solitary axillary length of the leaves, capsules two-beaked.

5. *Sida lanceolata*. Lance-leaved Sida.

Lin. spec. ed. Willd. 3. 736. Retz. obs. 4. 28.

*S. stipulata*. Cavan. diff. 1. 22. t. 3. f. 10.

Leaves oblong-lanceolate toothed smoothish, peduncles axillary, solitary, capsules two-beaked, stipules linear nerved longer than the peduncle.]

6. *Sida spinosa*. Prickly Sida.

Lin. spec. 960. syst. 621. Reich. 3. 334. Willd. 3.

736. hort. cliff. 346. ups. 199. fl. zeyl. n. 254.

Cavan. diff. 1. 11. t. 1. f. 9. Swartz obs. 257.

Vahl symb. 2. 78. Comm. hort. 1. 3. t. 2. (Alcea.)

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Pluk. phyt. t. 9. f. 6. (Althæa.) Sloan. jam. t. 218. (Malva.)

*S. carpinifolia*. Mill. dict. n. 2.

*Stewartia corchoroides*. Forsk. descr. 126.

Leaves ovate-lanceolate obsolete cordate toothed, peduncles subsolitary axillary, axils somewhat spiny, stipules bristle-shaped longer than the peduncle, capsules two-beaked.

[7. *Sida frutescens*. Shrubby Sida.

Lin. spec. ed. Willd. 3. 736. Cavan. diff. 1. 12. t. 10. f. 1.

Leaves ovate-oblong, ferrate, peduncles one-flowered axillary, capsules two beaked.

8. *Sida carpinifolia*. Hornbeam-leaved Sida.

Lin. syst. 621. ed. Willd. 3. 737. suppl. 307. Jacqu. ic. rar. 1. t. 135. collect. 1. 38. Cavan. diff. 5. 274. t. 134. f. 1.

*S. planicaulis*. Cavan. diff. 1. 24. t. 3. f. 11.

Leaves ovate-oblong subduplicate ferrate, peduncles axillary four-flowered or thereabouts, capsules two-beaked.

9. *Sida jamaicensis*. Jamaica Sida.

Lin. spec. 962. syst. 621. Reich. 3. 336. Willd. 3. 737. amoen. 5. 401. Swartz obs. 258. Cavan. diff. 1. 17. t. 2. f. 5. Brown. jam. 280. 5.

Leaves ovate ferrate tomentose, flowers axillary subpeduncled, capsules in fives two-horned.

10. *Sida orientalis*. Oriental Sida.

Lin. spec. ed. Willd. 3. 737. Cavan. diff. 1. 21. t. 12. f. 1.

Leaves ovate acuminate toothed smooth, peduncles one-flowered axillary, capsules awnless.

11. *Sida glomerata*. Globe-flowered Sida.

Lin. spec. ed. Willd. 3. 738. Cavan. diff. 1. 18. t. 2. f. 6.

Leaves ovate-lanceolate ferrate, flowers about five together axillary subsessile, capsules two-horned.

12. *Sida maculata*. Spotted-flowered Sida.

Lin. spec. ed. Willd. 3. 738. Cavan. diff. 1. 20. t. 3. f. 7.

Leaves ovate obtuse ferrate tomentose, peduncles axillary racemed at the top of the stem, capsules two-horned.

13. *Sida suberosa*. Corky Sida.

Lin. spec. ed. Willd. 3. 738. L'Herit. stirp. 1. 113. t. 54.

Leaves ovate toothed hirsute, peduncles axillary one-flowered twice as long as the petiole, capsules two-horned, stem corky at the base.

14. *Sida capensis*. Cape Sida.

Lin. spec. ed. Willd. 3. 738. Cavan. diff. 1. 23. t. 12. f. 3. & diff. 2. 49. Pluk. phyt. t. 240. f. 5.

Leaves ovate-lanceolate toothed, peduncles solitary, stipules linear ciliate longer than the petiole.

15. *Sida microphylla*. Small-leaved Sida.

Lin. spec. ed. Willd. 3. 739. Cavan. diff. 1. 22. t. 12. f. 2.

Leaves elliptic toothed, peduncles solitary longer than the petiole, capsules two-horned.

16. *Sida micans*. Glittering Sida.

Lin. spec. ed. Willd. 3. 739. Cavan. diff. 1. 19. t. 3. f. 1.

Leaves ovate obtuse ferrate tomentose shining, peduncles solitary much longer than the petiole, capsules two-horned.

17. *Sida pusilla*. Dwarf Sida.

Lin. spec. ed. Willd. 3. 739. Cavan. diff. 1. 6. t. 1. f. 4. & diff. 5. t. 127. f. 1.

Leaves roundish-elliptic toothed smooth, peduncles longer than the petiole solitary, capsules awnless, stem prostrate. \*\* With wedge-shaped leaves.

18. *Sida rhombifolia*. Rhomb-leaved Sida.

Lin. spec. 961. syst. 621. Reich. 3. 334. Willd.

3. 740. vir. cliff. 68. hort. cliff. 346. ups. 199.

fl. zeyl. n. 252. Gron. virg. 101. Murr. prodr.

168. Kniph. cent. 8. n. 85. Cavan. diff. 1. 23.

t. 3. f. 12. & diff. 2. 48. Swartz obs. 257. Forst.

prodr. n. 256. Sloan. jam. 1. 217. (Malva.) Dill.

elth. 216. t. 172. f. 212. (Malvinda.) Bocc. sic.

11. t. 2.

Leaves oblong lanceolate toothed wedge-form at the base quite entire, peduncles much longer than the petioles, capsules two-horned.



19. *Sida canescens*. Hoary-leaved Sida.  
*Lin. spec. ed. Willd.* 3. 740. *Cavan. diff.* 1. 23. t. 8. f. 3.  
 Leaves rhomb-ovate toothed at the top tomentose beneath, peduncles longer than the leaf.
20. *Sida retusa*. Retuse-leaved Sida.  
*Lin. spec.* 961. *syft.* 621. *Reich.* 3. 335. *Willd.* 3. 740. *Cavan. diff.* 1. 18. t. 3. f. 4. & *diff.* 5. 274. t. 131. f. 2. *Pluk. phyt.* t. 9. f. 2.  
*Silagurium rotundum* f. *vulgare*. *Rumph. amb.* 6. 44. t. 19.  
 Leaves obovate toothed at the end and retuse tomentose beneath, peduncles solitary longer than the leaf, capsules awnless.]
21. *Sida alnifolia*. Alder-leaved Sida.  
*Lin. spec.* 961. *syft.* 621. *Reich.* 3. 335. *Willd.* 3. 741. *hort. cliff.* 346. *ups.* 200. *fl. zeyl. n.* 253. *Lour. cochinch.* 413. *ed. Willd.* 502. *Cavan. diff.* 1. 12. t. 1. f. 13? *Dill. elth.* 215. t. 172. f. 211. (Malvinda.)  
 Leaves roundish-obovate toothed quite entire at the base, peduncles many axillary shorter than the leaf, capsules two-horned.
22. *Sida ciliaris*. Ciliated Sida.  
*Lin. spec.* 961. *syft.* 621. *Reich.* 3. 335. *Willd.* 3. 741. *amoen.* 5. 401. *Cavan. diff.* 1. 21. t. 3. f. 9. & *diff.* 5. 275. t. 127. f. 2. *Swartz obs.* 257. *Sloan. jam.* 1. 217. t. 137. f. 2. *Brown. jam.* 282. 2. (Malva.)  
 Leaves lanceolate truncate toothed somewhat wedge-shaped at the base, stipules linear ciliate longer than the flower, flowers solitary subsessile, capsules awnless muricate.
- \*\*\* With cordate quite entire leaves.
23. *Sida periplocifolia*. Great Bindweed-leaved Sida.  
*Lin. spec.* 962. *syft.* 622. *Reich.* 3. 337. *Willd.* 3. 741. *fl. zeyl. n.* 251. *Loeff. it.* 237. *Cavan. diff.* 1. 26. t. 5. f. 2. *Swartz obs.* 260. *Brown. jam.* 280. 3. *Dill. elth.* 4. t. 3. f. 2. (Abutilon.) *Sloan. jam.* 1. 222. t. 139. f. 3. *Pluk. phyt.* t. 74. f. 7. (Alcea.)  
*Abutilon* n. 7. *Mill. dict. ed.* 7.  
 Leaves cordate-lanceolate acuminate quite entire tomentose beneath, peduncles subdivided longer than the petiole, capsules awned.
- [24. *Sida excelsior*. Tall Sida.  
*Lin. spec. ed. Willd.* 3. 742. *Cavan. diff.* 1. 27. t. 5. f. 3.  
 Leaves cordate ovate acuminate quite entire tomentose beneath, racemes paniced, capsules two-toothed.
25. *Sida hernandioides*. Hernandia-leaved Sida.  
*Lin. spec. ed. Willd.* 3. 742. *L'Herit. stirp.* 1. 121. t. 58.  
 Leaves subpeltate cordate ovate acuminate almost quite entire pubescent, peduncles one-flowered, capsules awnless.]
26. *Sida nudiflora*. Naked-flowered Sida.  
*Lin. spec. ed. Willd.* 3. 742. *L'Herit. stirp.* 1. 123. t. 59. 6. *Plum. spec.* 2. ic. 3. (Abutilon.)  
*S. stellata*. *Cavan. diff.* 1. 27. t. 5. f. 4. & *diff.* 6. 349.  
*S. periplocifolia* β. *Lin. spec.* 963.  
*Abutilon* n. 4. *Mill. dict. ed.* 7.  
 Leaves roundish-cordate acuminate almost quite entire tomentose beneath, panicle terminating racemed, capsules awnless.
- \*\*\*\* With cordate toothed leaves, and one-flowered peduncles.
27. *Sida triquetra*. Triangular-stalked Sida.  
*Lin. spec.* 962. *syft.* 621. *Reich.* 3. 335. *Willd.* 3. 743. *Jacqu. hort.* 2. 54. t. 118. *Cavan. diff.* 1. 26. t. 6. f. 1. *Gertn. fruct.* 2. 249.  
*S. trifulcata*. *Jacqu. amer.* 195. *piet.* 96. t. 184.  
 Leaves cordate acuminate serrulate, peduncles solitary, capsules awnless truncate, branches three-sided.
28. *Sida fragrans*. Sweet Sida.  
*Lin. spec. ed. Willd.* 3. 743. *L'Herit. stirp.* 1. 111. t. 53.  
 Leaves roundish-cordate acuminate crenate hirsute-viscid, peduncles solitary shorter than the petiole, capsules two-bristled.
29. *Sida lignosa*. Woody Sida.  
*Lin. spec. ed. Willd.* 3. 744. *Cavan. diff.* 1. 28. t. 6. f. 2.  
 Leaves roundish-cordate acuminate crenate tomentose, peduncles solitary longer than the petiole, capsules awnless.
30. *Sida reflexa*. Reflex-flowered Sida.  
*Lin. spec. ed. Willd.* 3. 744. *Cavan. diff.* 1. 36. t. 7. f. 7. & *diff.* 2. 54. & *diff.* 6. 549. t. 195. f. 1.  
*S. retrorsa*. *L'Herit. stirp.* 1. 133. t. 64.  
 Leaves roundish-cordate acuminate crenate tomentose, peduncles solitary longer than the petiole, petals wedge-form toothed at the end and reflexed.
31. *Sida humilis*. Low Sida.  
*Lin. spec. ed. Willd.* 3. 744. *Cavan. diff.* 5. 177. t. 134. f. 2.  
*S. unilocularis*. *L'Herit. stirp.* 1. 117. t. 56. bis.  
*S. pilosa*. *Retz. obs.* 1. 23.  
 β. *S. morifolia*. *Cavan. diff.* 1. 9. t. 1. f. 1. *Pluk. phyt.* t. 132. f. 5. (Althæa.)  
 γ. *S. veronicæfolia*. *Cavan. diff.* 1. 7. t. 1. f. 3. & *diff.* 5. 274. t. 127. f. 3. *Pluk. phyt.* t. 132. f. 3. (Althæa.)  
 Leaves roundish-cordate hairy above serrate, peduncles subsolitary longer than the petiole, capsules awnless.
32. *Sida repens*. Creeping Sida.  
*Lin. spec. ed. Willd.* 3. 745. *Cavan. diff.* 1. 7. t. 1. f. 2.  
 Leaves roundish-cordate toothed hispid on both sides, peduncles solitary longer than the petiole, stem filiform prostrate.
33. *Sida bivalvis*. Two-valved Sida.  
*Lin. spec. ed. Willd.* 3. 745. *Cavan. diff.* 1. 13. t. 11. f. 3.  
 Leaves ovate-cordate acuminate crenate tomentose, peduncles solitary shorter than the petiole, calyxes awn-acuminate, capsules cohering two-toothed.
34. *Sida ulmifolia*. Elm-leaved Sida.  
*Lin. spec. ed. Willd.* 3. 745. *Cavan. diff.* 1. 15. t. 2. f. 4.  
 Leaves ovate-cordate acuminate crenate, peduncles solitary almost equal to the petiole, capsules beaked.
35. *Sida multiflora*. Many-flowered Sida.  
*Lin. spec. ed. Willd.* 3. 746. *Cavan. diff.* 1. 18. t. 3. f. 3.  
 Leaves ovate-cordate bluntish toothed tomentose, peduncles solitary longer than the petiole, capsules two-beaked.
36. *Sida microsperma*. Small-seeded Sida.  
*Lin. spec. ed. Willd.* 3. 746. *Cavan. diff.* 1. 29. t. 13. f. 4.  
 Leaves roundish-cordate acute subcrenate, peduncles subsolitary shorter than the petiole, capsules two-beaked.
37. *Sida viscosa*. Clammy Sida.  
*Lin. spec.* 963. *syft.* 622. *Reich.* 3. 336. *Willd.* 3. 746. *amoen.* 5. 401. *Swartz obs.* 239. *Lour. cochinch.* 413. *ed. Willd.* 502. *Brown. jam.* 280. *Sloan. jam.* 1. 222. t. 139. f. 4. (Althæa.)  
 Leaves ovate-cordate acuminate very finely serrate tomentose-viscid hairy, peduncles subsolitary longer than the petiole, capsules awnless.
38. *Sida foetida*. Stinking Sida.  
*Lin. spec. ed. Willd.* 3. 747. *Cavan. diff.* 6. 349.  
*S. viscosa*. *L'Herit. stirp.* 1. 111. bis. t. 53.  
 Leaves roundish-cordate sharpish toothed tomentose, peduncles solitary shorter than the petiole, capsules awnless.
39. *Sida calycina*. Calycine Sida.  
*Lin. spec. ed. Willd.* 3. 747. *Cavan. diff.* 1. 9. t. 8. f. 2.  
 Leaves roundish-cordate acuminate repand-toothed, peduncles solitary longer than the petiole, capsules awnless pear-shaped.]
40. *Sida crispa*. Curled Sida.  
*Lin. spec.* 964. *syft.* 623. *Reich.* 3. 339. *Willd.* 3. 747. *mant.* 445. *Loeff. it.* 240. *Kniph. cent.* 4. n. 80. *Cavan. diff.* 1. 30. t. 7. f. 1. & *diff.* 5. 275. t. 135. f. 2. *Dill. elth.* 6. t. 5. f. 5. *Mart. cent.* t. 29. (Abutilon.)  
*Abutilon* n. 5. *Mill. dict. ed.* 7.  
 Leaves oblong-cordate acuminate crenate the upper ones sessile, peduncles solitary longer than the petiole the fruiting ones bent down, capsules inflated awnless waved and curled.



- [41. *Sida perfica*. *Persian Sida*.  
*Lin. spec. ed. Willd.* 3. 748. *Burm. ind.* 148. t. 47.  
 f. 1. *Cavan. diff.* 1. 35. t. 4. f. 1.  
*Lower leaves petioled cordate acuminate, upper sessile lanceolate toothed, peduncles solitary one-flowered.*
42. *Sida sylvatica*. *Wood Sida*.  
*Lin. spec. ed. Willd.* 3. 748. *Cavan. diff.* 2. 56. & *diff.* 5. 276. t. 133. f. 2.  
*Leaves ovate-cordate acuminate crenate, peduncles geminate much longer than the petiole, capsules awnless headed.*
43. *Sida arborea*. *Tree Sida*.  
*Lin. syst.* 622. *Willd.* 3. 748. *suppl.* 307. *L'Herit. stirp.* 1. 131. t. 63.  
*S. peruviana.* *Cavan. diff.* 1. 36. t. 7. f. 8. & *diff.* 5. 276. t. 130.  
*Leaves orbicular-cordate crenate tomentose, peduncles in pairs longer than the petiole, capsules awnless truncate, stem arboreous.*
44. *Sida mauritiana*. *Mauritius Sida*.  
*Lin. spec. ed. Willd.* 3. 749. *Jacqu. ic. rar.* 1. 137. *misc.* 2. 352. *L'Herit. stirp.* 1. 129. t. 62.  
*S. planiflora.* *Cavan. diff.* 1. 32. t. 7. f. 4. & *diff.* 5. 275. t. 135. f. 1.  
*Leaves roundish-cordate acuminate toothed tomentose beneath, peduncles solitary longer than the petiole, capsules two-beaked truncate longer than the calyx.*
45. *Sida occidentalis*. *Downy Sida*.  
*Lin. spec.* 964. *syst.* 622. *Reich.* 3. 337. *Willd.* 3. 749. *amoen.* 4. 325. *Cavan. diff.* 1. 24. t. 4. f. 3. *Dill. elth.* 7. t. 6. f. 6. (*Abutilon*.)  
*Leaves oblong-cordate toothed sublobed, peduncles solitary shorter than the petiole, capsules obtuse globular nodding.]*
46. *Sida americana*. *Woolly Sida*.  
*Lin. spec.* 963. *syst.* 622. *Reich.* 3. 338. *Willd.* 3. 749.  
*Abutilon n.* 16. *Mill. dict. ed.* 7.  
*Leaves cordate oblong undivided, capsules many-celled length of the calyx, cells lanceolate.*
47. *Sida Abutilon*. *Broad-leaved Sida*.  
*Lin. spec.* 963. *syst.* 622. *Reich.* 3. 338. *Willd.* 3. 750. *hort. cliff.* 346. *upf.* 198. *Gron. virg.* 78. *Lepich. it.* 1. 309. *Kniph. cent.* 4. n. 79. *Cavan. diff.* 1. 34. & 2. 49. *Allion. pedem.* n. 1412.  
*Abutilon.* *Dod. pempt.* 656. *Mill. dict. n.* 1. *Hall. herb. n.* 1075.  
*Althæa Theophrasti flore luteo.* *Baub. pin.* 316. — *quibusdam Abutilon.* *Baub. hist.* 2. 958.  
*A. altera f. Abutilon.* *Camer. epit.* 668.  
*A. lutea.* *Ger.* 790. *emac.* 935. *Raii hist.* 699. 1.  
*A. lutea f. Abutilon Avicennæ putatum.* *Park. theat.* 304. f. 5.  
*Leaves roundish-cordate acuminate toothed tomentose, peduncles solitary shorter than the petiole, capsules two-awned truncate.*
- [48. *Sida Abutiloides*.  
*Lin. spec. ed. Willd.* 3. 750. *Jacqu. obs.* 1. 17. t. 7.  
*Lavatera americana.* *Lin. spec.* 973. *syst.* 627. *Reich.* 3. 352. *amoen.* 4. 400. *Swartz obs.* 263.  
*Leaves cordate undivided acuminate crenate, peduncles length of the petioles, capsules ten three-seeded.*
49. *Sida asiatica*. *Small-flowered Sida or Indian Mallow*.  
*Lin. spec.* 964. *syst.* 622. *Reich.* 3. 338. *Willd.* 3. 750. *amoen.* 4. 324. *L'Herit. stirp.* 1. 130. *Cavan. diff.* 1. 31. t. 7. f. 2. & 2. 49. & 5. 275. t. 128. f. 1. *Pluk. phyt.* t. 126. f. 5. (*Alcea affinis*.)  
*Abutilon indicum, flore luteo minore.* *Lin. zeyl.* n. 520.  
*Leaves oblong-cordate toothed, peduncles solitary longer than the petiole, capsules acute truncate almost equal to the calyx.*
50. *Sida populifolia*. *Poplar-leaved Sida*.  
*Lin. spec. ed. Willd.* 3. 751. *Cavan. diff.* 1. 34. t. 7. f. 9. & 5. 275. t. 128. f. 2.  
*S. Beloere.* *L'Herit. stirp.* 1. 130.  
*Beloere.* *Rheed. mal.* 6. 77. t. 45. *Raii hist.* 1880.  
*Abutilon læve f. agreste.* *Rumph. amb.* 4. 31. t. 11.  
*Leaves roundish-cordate acuminate unequally repand-toothed, peduncles solitary longer than the petiole, capsules acute truncate longer than the calyx.*

51. *Sida hirta*. *Rough-haired Sida*.  
*Lin. spec. ed. Willd.* 3. 751. *Cavan. diff.* 1. 33. t. 7. f. 5. & 5. 276. t. 129. f. 1.  
*S. pilosa.* *L'Herit. stirp.* 1. 130.  
*Abutilon hirsutum.* *Rumph. amb.* 4. 29. t. 10.  
*Leaves roundish-cordate acuminate toothed, peduncles solitary longer than the petiole, capsules truncate shorter than the calyx.]*
52. *Sida indica*. *Rough-capsuled Sida*.  
*Lin. spec.* 964. *syst.* 623. *Reich.* 3. 339. *Willd.* 3. 752. *amoen.* 4. 324. *Cavan. diff.* 1. 33. t. 7. f. 10. *Vahl symb.* 2. 79. *Lour. cochinch.* 414. *ed. Willd.* 503. *Forst. prodr.* n. 257.  
*S. cordifolia.* *Forst. descr.* 124.  
*Abutilon indicum.* *Camer. hort.* 3. t. 1. *Baub. hist.* 2. 959. *Mor. hist.* 2. 531. f. 5. t. 19. f. 4. *Mill. dict. ed.* 7. n. 2. *Park. theat.* 304. f. 6.  
*Althæa Theophrasti similis.* *Baub. pin.* 316. *Raii hist.* 699. 2.  
*Leaves oblong-cordate bluntish unequally toothed, peduncles longer than the petiole, capsules awnless globular-aggregate rugged longer than the calyx.*
- [53. *Sida mollissima*. *Soft-leaved Sida*.  
*Lin. spec. ed. Willd.* 3. 752. *Cavan. diff.* 2. 49. t. 14. f. 1.  
*S. cistiflora.* *L'Herit. stirp.* 1. 127. t. 61.  
*Leaves roundish-cordate acuminate toothed, peduncles subbiflorous shorter than the petiole solitary, capsules two-toothed truncate equal to the calyx.*
54. *Sida Sonneratiana*. *Sonnerat's Sida*.  
*Lin. spec. ed. Willd.* 3. 753. *Cavan. diff.* 1. 29. t. 6. f. 4.  
*Leaves roundish-cordate acuminate toothed, peduncles solitary longer than the leaf, capsules truncate obtuse larger than the calyx.*
55. *Sida pubescens*. *Pubescent Sida*.  
*Lin. spec. ed. Willd.* 3. 753. *Cavan. diff.* 1. 33. t. 7. f. 6.  
*Leaves roundish-cordate acuminate angular-toothed, peduncles solitary longer than the petiole, capsules two-toothed truncate larger than the calyx.*
56. *Sida althææfolia*. *Marsh-Mallow-leaved Sida*.  
*Lin. spec. ed. Willd.* 3. 753. *Swartz prodr.* 101. *descr.* 2. 1207. *L'Herit. stirp.* 1. 112.  
*Althæa flore luteo.* *Sloan. jam.* 1. 218. t. 136. f. 2.  
*Leaves cordate somewhat angular obtuse serrate-crenate tomentose on both sides, beaks of the seeds shorter than the calyx.*
57. *Sida glutinosa*. *Glutinous Sida*.  
*Lin. spec. ed. Willd.* 3. 753. *Cavan. diff.* 1. 16. t. 2. f. 8.  
*Leaves roundish-cordate acuminate toothed, peduncles geminate subbiflorous longer than the petiole, capsules two-awned, awns longer than the calyx.*
58. *Sida exstipularis*. *Unstipuled Sida*.  
*Lin. spec. ed. Willd.* 3. 754. *Cavan. diff.* 2. 56. t. 14. f. 2.  
*Leaves ovate-cordate acuminate, peduncles solitary shorter than the petiole, capsules awnless, shorter than the calyx.*
59. *Sida nutans*. *Nodding Sida*.  
*Lin. spec. ed. Willd.* 3. 754. *L'Herit. stirp.* 1. 119. t. 57. *bis.* *Cavan. diff.* 2. 57. & 5. 276. t. 133. f. 1.  
*Leaves oblong-cordate acute toothed, peduncles subgeminate longer than the petiole, the flowering ones nodding, capsules obtuse.*
60. *Sida borbonica*. *Bourbon-island Sida*.  
*Lin. spec. ed. Willd.* 3. 754. *Cavan. diff.* 1. 9. t. 10. f. 2.  
*Leaves roundish-cordate acute toothed, peduncles solitary longer than the petiole, capsules two-awned, awns longer than the calyx.*
61. *Sida flavesens*. *Yellow Sida*.  
*Lin. spec. ed. Willd.* 3. 755.  
*S. prostrata.* *Cavan. diff.* 1. 13. t. 13. f. 3.  
*β. S. flavesens.* *Cavan. diff.* 1. 14. t. 13. f. 2.  
*Leaves ovate-cordate obtuse unequally toothed, peduncles geminate subbiflorous shorter than the petiole, capsules acute.*
62. *Sida radicans*. *Rooting Sida*.  
*Lin. spec. ed. Willd.* 3. 755. *Cavan. diff.* 1. 8.



- Nela-Vaga. *Rheed. mal.* 10. 137. t. 69.  
Leaves roundish-cordate acute ciliate-toothed, peduncles solitary longer than the petiole, capsules awnless.]
63. *Sida arguta.* Sharp-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 755. *Swartz prodr.* 101. descr. 2. 1205.  
*S. glabra.* *Mill. dict. n.* 14.  
Leaves cordate serrate attenuated at the top, stem wand-like, peduncles axillary filiform one-flowered.
- [64. *Sida multicaulis.* Many-stalked *Sida*.  
*Lin. spec. ed. Willd.* 3. 755. *Cavan. diff.* 1. 10. t. 1. f. 6.  
Leaves roundish-cordate acute toothed, peduncles solitary double the length of the petiole, capsules awnless.
65. *Sida pilosa.* Hairy *Sida*.  
*Lin. spec. ed. Willd.* 3. 756. *Cavan. diff.* 1. 9. t. 1. f. 8.  
Leaves ovate-cordate obtuse toothed, peduncles solitary longer than the petiole, capsules two-beaked shorter than the calyx.
66. *Sida rotundifolia.* Round-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 756. *Cavan. diff.* 1. 20. t. 3. f. 6. & 6. 529. t. 194. f. 2.  
Leaves roundish-ovate cordate obtuse toothed, peduncles solitary much longer than the petiole, capsules two-awned, awns longer than the calyx.
67. *Sida supina.* Trailing *Sida*.  
*Lin. spec. ed. Willd.* 3. 756. *L'Herit. stirp.* 1. 109. t. 52.  
*S. procumbens.* *Swartz prodr.* 102. descr. 2. 1211.  
*S. ovata.* *Cavan. diff.* 6. 350. t. 196. f. 2.  
Leaves roundish-cordate bluntish crenate, peduncles solitary longer than the petiole, capsules two-awned, stem procumbent.
68. *Sida truncata.* Truncate-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 756. *Cavan. diff.* 1. 35. t. 6. f. 7.  
Leaves roundish cordate blunt and truncate at the top and toothed, peduncles solitary longer than the petiole, capsules awnless.
69. *Sida herbacea.* Herbaceous *Sida*.  
*Lin. spec. ed. Willd.* 3. 757. *Cavan. diff.* 1. 39. t. 13. f. 1.  
Leaves oblong acute toothed cordate at the base, peduncles solitary a little shorter than the petiole, capsules two-awned.
70. *Sida emarginata.* Notch-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 757.  
*S. truncata.* *L'Herit. stirp.* 1. 107. t. 51.  
Leaves ovate-lanceolate cordate toothed truncate and retuse at the top, peduncles shorter by half than the petiole, capsules two-beaked.
71. *Sida alba.* White-flowered *Sida*.  
*Lin. spec.* 960. syst. 621. *Reich.* 3. 334. *Willd.* 3. 757. *Dill. elth.* 214. t. 171. f. 210. (*Malvinda*.) *Pluk. phyt.* t. 9. f. 3. (*Althæa*.)  
Leaves oblong-cordate rounded-obtuse toothed, peduncles equal to the petiole, capsules two-horned.]
72. *Sida cordifolia.* Heart-leaved *Sida*.  
*Lin. spec.* 961. syst. 622. *Reich.* 3. 336. *Willd.* 3. 758. *Cavan. diff.* 1. 19. t. 3. f. 2. *Lour. cochinch.* 414. ed. *Willd.* 503. *Dill. elth.* 211. t. 171. f. 209. (*Malvinda*.) *Pluk. phyt.* t. 131. f. 2. (*Althæa*.)  
Leaves ovate cordate toothed somewhat angular bluntish, peduncles solitary a little shorter than the petiole, capsules two-beaked.
- [73. *Sida hederæfolia.* Ivy-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 758. *Cavan. diff.* 1. 8. t. 9. f. 3. *Plum. spec.* 2. ic. 69. f. 3. (*Malva*.)  
Leaves roundish-cordate obtuse repand, peduncles longer than the petiole, capsules two-awned, stem prostrate creeping.
- \*\*\*\*\* With cordate toothed leaves, and many-flowered or racemed peduncles.
74. *Sida verticillata.* Whorled *Sida*.  
*Lin. spec. ed. Willd.* 3. 758. *Cavan. diff.* 1. 13. t. 1. f. 12.  
Leaves ovate-cordate acuminate toothed, flowers subsessile aggregate whorled, capsules almost awnless.
75. *Sida urens.* Stinging *Sida*.  
*Lin. spec.* 963. syst. 622. *Reich.* 3. 337. *Willd.* 3. 759. *amoën.* 5. 402. *Murr. in comm. goett.* 3. 75. t. 5. *Swartz obs.* 261. *Cavan. diff.* 1. 15. t. 2. f. 7. *Brown. jam.* 280. 6. *Sloan. jam.* 1. 44. (*Althæa*.)  
Leaves ovate-cordate acuminate toothed, peduncles axillary many-flowered glomerate, capsules awnless.
76. *Sida umbellata.* Umbelled *Sida*.  
*Lin. spec.* 962. syst. 622. *Reich.* 3. 336. *Willd.* 3. 759. *amoën.* 5. 401. *Jacqu. hort.* t. 56. *Cavan. diff.* 1. 28. t. 6. f. 3. & 5. 276. t. 129. f. 2.  
Leaves roundish-cordate toothed somewhat angular acute, peduncles four-flowered or thereabouts umbelled axillary, capsules two-awned.
77. *Sida pyramidata.* Pyramidal *Sida*.  
*Lin. spec. ed. Willd.* 3. 759. *Cavan. diff.* 1. 11. t. 1. f. 10. & 6. 549 t. 194. f. 1.  
Leaves roundish-cordate acuminate serrate, peduncles corymbed subpanicled, capsules two-awned.
78. *Sida paniculata.* Panicked *Sida*.  
*Lin. spec.* 962. syst. 622. *Reich.* 3. 337. *Willd.* 3. 760. *amoën.* 5. 401. *L'Herit. stirp.* 1. 112. *Cavan. diff.* 1. 16. t. 12. f. 5. *Swartz obs.* 259. *Brown. jam.* 280. 7.  
*β. S. atro-sanguinea.* *Jacqu. ic. rar.* 1. t. 136. collect. 1. 49.  
*S. capillaris.* *Cavan. diff.* 1. 10. t. 1. f. 7. & 5. 274.  
Leaves ovate-cordate toothed, racemes panicked, capsules two-beaked.
79. *Sida dumosa.* Bush *Sida*.  
*Lin. spec. ed. Willd.* 3. 760. *Swartz prodr.* 101. descr. 2. 1209.  
Leaves cordate ovate acuminate serrate smooth on both sides, flowers panicked.
80. *Sida ramosa.* Branched *Sida*.  
*Lin. spec. ed. Willd.* 3. 760. *Cavan. diff.* 1. 28. t. 6. f. 1.  
Leaves ovate-cordate unequally toothed, racemes axillary, capsules two-awned.
81. *Sida spicata.* Spiked *Sida*.  
*Lin. spec. ed. Willd.* 3. 761. *Cavan. diff.* 1. 24. t. 8. f. 1.  
*Abutilon veficarium flore luteo majus.* *Plum. ic.* 1. t. 2.  
Leaves ovate-cordate acute toothed, raceme terminating naked, capsules awnless in heads larger than the calyx.
82. *Sida terminalis.*  
*Lin. spec. ed. Willd.* 3. 761. *Cavan. diff.* 1. 29. t. 6. f. 6. & 6. 49. t. 195. f. 2.  
Leaves ovate-lanceolate cordate toothed, raceme terminating elongated bracted, capsules awnless in heads larger than the calyx.
- \*\*\*\*\* With cordate leaves three-cusped or angular at the base.
83. *Sida veficaria.* Bladder *Sida*.  
*Lin. spec. ed. Willd.* 3. 761. *Cavan. diff.* 2. 55. t. 14. f. 3.  
Leaves ovate-cordate toothed three-cusped, peduncles solitary axillary longer than the petiole, capsules truncate awnless sharpish.
84. *Sida crassifolia.* Thick-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 761. *L'Herit. stirp.* 1. 125. t. 60.  
*S. tricuspdata.* *Cavan. diff.* 1. 30. t. 6. f. 5.  
Leaves ovate-cordate toothed somewhat three-cusped, peduncles solitary axillary length of the petioles, capsules two awned.
85. *Sida biflora.* Two-flowered *Sida*.  
*Lin. spec. ed. Willd.* 3. 762. *Cavan. diff.* 1. 37. t. 9. f. 1.  
Leaves ovate-cordate acuminate toothed three-cusped, peduncles geminate axillary equal to the petiole.
86. *Sida obtusa.* Blunt-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 762. *Vogel. cent.* t. 89. *Cavan. diff.* 1. 34. t. 9. f. 2.  
Leaves cordate-ovate obtuse toothed three-cusped, peduncles longer than the petiole bearing about four flowers in an umbel, capsules acute.
87. *Sida*



87. *Sida gigantea*. Giant *Sida*.  
*Lin. spec. ed. Willd.* 3. 762. *Jacqu. hort. Schonbr.*  
 2. 8. t. 141.  
 Leaves roundish-cordate crenate acuminate three-cusped,  
 flowers panicled, corollas reflexed.
88. *Sida javensis*. Javan *Sida*.  
*Lin. spec. ed. Willd.* 3. 763. *Cavan. diff.* 1. 10.  
 t. 1. f. 5.  
 Leaves roundish-cordate toothed three-cusped, peduncles  
 solitary axillary longer than the petiole, capsules two-  
 cusped, stem reclined.
89. *Sida hastata*. Halbert-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 763.  
*S. cristata* β. *Lin. spec.* 964. *hort. upf.* 199. *Kniph.*  
*cent.* 7. n. 86.  
*Anoda hastata*. *Cavan. diff.* 1. 38. t. 11. f. 2.  
 Lower leaves cordate acuminate-five-cornered somewhat  
 toothed obtuse, upper hastate acuminate somewhat tooth-  
 ed at the base, peduncle solitary axillary length of the  
 leaves.
90. *Sida cristata*. Crested *Sida*.  
*Lin. spec.* 964. *yst.* 623. *Reich.* 2. 339. *Willd.* 3.  
 763. *hort. cliff.* 346. *Kniph. cent.* 2. n. 85.  
*Anoda triloba*. *Cavan. diff.* 1. 39. t. 10. f. 3.  
 All the leaves crenate, lower roundish-cordate obtuse some-  
 what five-cornered, upper rounded-hastate acuminate,  
 peduncles solitary axillary longer than the leaf.]
91. *Sida Dilleniana*. Dillenius's *Sida*.  
*Lin. spec. ed. Willd.* 3. 764.  
*S. cristata*. *Curt. magaz.* t. 330.  
*Anoda Dilleniana*. *Cavan. diff.* 1. 40. t. 11. f. 1.  
*Abutilon lavateræ* flore, fructu cristato. *Dill. elth.* 3.  
 t. 2. f. 2. *Mill. dict. ed.* 7. n. 14.  
 Lower leaves triangular-subhastate crenate, upper ovate-  
 lanceolate almost quite entire, peduncles solitary axillary  
 length of the leaves.
- \*\*\*\*\* With lobed leaves, palmate or compound.
- [92. *Sida triloba*. Three-lobed *Sida*.  
*Lin. spec. ed. Willd.* 3. 764. *Jacqu. hort. Schonb.*  
 2. 9. t. 142. *Thunb. prodr.* 117. *Cavan. diff.* 1.  
 11. t. 1. f. 11. & 5. 274. t. 131. f. 1.  
 Leaves cordate toothed three-lobed, with the middle lobe  
 acute and longer, peduncles axillary solitary, capsules  
 awnless.
93. *Sida ternata*. Three-leaved *Sida*.  
*Lin. syst.* 623. *Willd.* 3. 765. *suppl.* 307. *Thunb.*  
*prodr.* 118.  
 Leaves ternate, leaflets lanceolate remotely serrate.
94. *Sida pterisperma*. Wing-fruited *Sida*.  
*Lin. spec. ed. Willd.* 3. 765. *L'Herit. stirp.* 1. 119.  
 t. 57.  
*S. multifida*. *Cavan. diff.* 1. 25. t. 4. f. 2.  
 Leaves three-parted, segments linear repand-sinuate,  
 flowers subracemed, capsules winged.
95. *Sida ricinoides*. Ricinus-leaved *Sida*.  
*Lin. spec. ed. Willd.* 3. 765. *L'Herit. stirp.* 1. 115.  
 t. 55.  
*S. palmata*. *Cavan. diff.* 1. 20. t. 3. f. 5.  
 Leaves subpeltate five-lobed, lobes ovate acute toothed un-  
 divided, peduncles one or two-flowered, capsules two-  
 awned.
96. *Sida jatrophioides*. Jatropha-like *Sida*.  
*Lin. spec. ed. Willd.* 3. 765. *L'Herit. stirp.* 1. 117.  
 t. 56.  
*S. palmata*. *Jacqu. ic. rar.* 3. 547. *collect.* 2. 336.  
*Cavan. diff.* 5. 274. t. 131. f. 3.  
 Leaves subpeltate seven-lobed-palmate, lobes lanceolate  
 acuminate pinnatifid toothed, peduncles many-flowered,  
 capsules two-awned.]
97. *Sida Napæa*.  
*Lin. spec. ed. Willd.* 3. 766. *Cavan. diff.* 5. 277.  
 t. 132. f. 1.  
*Napæa lævis*. *Lin. syst.* 896. & *Dist. nostr.* n. 1.  
*N. hermaphrodita*. *Lin. spec.* 965. & *Mill. dict.*  
 n. 2.  
 Leaves somewhat five-lobed smooth, lobes oblong acumi-  
 nate toothed, peduncles many-flowered, capsules awn-  
 less acuminate.
98. *Sida dioica*.  
*Lin. spec. ed. Willd.* 3. 766. *Cavan. diff.* 5. 278.  
 t. 132. f. 2.  
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- Napæa scabra*. *Lin. syst.* 896. *Dist. nostr.* n. 2.  
*N. dioica*. *Lin. spec.* 965. *Mill. dict.* n. 1.  
 Leaves seven-lobed-palmate rugged, lobes lanceolate gasb-  
 toothed, flowers dioecous corymbed bracted.
- [99. *Sida Phyllanthus*.  
*Lin. spec. ed. Willd.* 3. 767. *Cavan. diff.* 5. 276.  
 t. 127. f. 4.  
 Stemless, leaves ternate, leaflets sessile three-parted wedge-  
 form quite entire undivided obtuse, flower solitary in-  
 serted into a winged petiole.

## DESCRIPTIONS, &amp;c.

This genus, which contained only twenty-seven spe-  
 cies in the 14th edition of the *Système Vegetabilium*  
 by Murray, is thus enlarged chiefly by the labours of  
 Cavanilles, whose species have been adopted by Will-  
 denow, with new specific characters. It contains either  
 shrubs or herbs, with a few trees; the herbaceous spe-  
 cies are mostly annual or biennial. The flowers are  
 axillary or terminating, with the pedicels as it were  
 jointed under the calyx, according to the observation of  
 Cavanilles; who also remarks, that the petals in the  
 species with five or ten capsules having one seed in  
 each, are commonly produced on one side obliquely  
 and somewhat in form of a sickle. The capsules in  
*S. vesicaria* are five-seeded.—Cavanilles separates three  
 species, (89, 90, 91.) which he names *Anoda*, from  
 the pedicels not being jointed: they are herbaceous,  
 with the flowers solitary and axillary, but differ prin-  
 cipally in having a simple fruit.—The same author  
 unites *Napæa* with *Sida*. The two species of that  
 genus are tall herbs, and one of them is dioecous: the  
 petals in these are not oblique, nor are the pedicels  
 jointed; the calyx also is wider at the base<sup>d</sup>. These  
 plants are mostly natives of the East and West Indies,  
 not one properly of Europe, though *S. Abutilon* has  
 established itself in some of the southern parts.

1. The leaves of this are rough with hairs, and it  
 has five capsules.—Native of Peru and the island of  
 Cayenne\*.]

2. This rises with a slender woody stalk about two  
 feet high, sending out many erect branches. Leaves  
 an inch and half long, and a third of an inch broad in  
 the middle, ending in acute points, and placed on  
 pretty long slender foot-stalks. The flowers come  
 out singly from the axils, are small, and of a pale yel-  
 low colour. [According to Willdenow, there are  
 sometimes two flowers from an axil, and the capsules  
 are five.—Retzius describes his *ulmifolia* as annual,  
 with the leaves very soft beneath, though the nap is  
 scarcely observable; the stipules bristle-shaped; no  
 spines; peduncles many, axillary, one-flowered.

According to L'Heritier it is scarcely suffrutescent,  
 and continues only a few years; the branches, which  
 are few, are wand-like, round and subpubescent; be-  
 low each leaf is a very short reflexed triple spine, the  
 side ones very small; leaves alternate, scarcely tomen-  
 tose beneath but paler, on round subpubescent petioles  
 thickish at the top and only one third of the length of  
 the leaves; stipules awl-shaped, erect, deciduous;  
 flowers one, two or three from an axil, peduncled,  
 erect, yellow, half an inch in diameter; peduncles  
 jointed in the middle, scarcely pubescent, shorter than  
 the petiole. Capsules five, round on one side, angular  
 on the other, with two villose horns. Seeds solitary,  
 gibbous on one side, angular on the other, brown.—  
*S. spinosa*, *truncata*, and *rhombofolia* are very nearly al-  
 lied to this in the herb, flowers and spines. *S. angus-  
 tifolia* differs indeed only by its linear leaves.

Native of Brasil and the island of Bourbon.

3. Like the preceding, but with the flowers solitary  
 in the axils, and the stipules lanceolate not setaceous.  
 Native of Java.

4. Capsules nine or ten two-beaked. Native of the  
 Canary Islands. It is the *alba* of Cavanilles, but not  
 of Linneus.

5. Stipules linear, nerved, ciliate, one of them com-  
 monly filiform. Capsules five to nine<sup>f</sup>.—Stem up-  
 right, branched, nappy here and there; leaves acumi-  
 nate, acutely serrate, naked, on short petioles; stipules  
 longer than the petiole, and peduncles a little longer

<sup>d</sup> Jusseu.<sup>e</sup> Willdenow.<sup>f</sup> Idem.



than the stipules; flowers small; capsules acuminate-awned.

Native of the islands of Ceylon and Mauritius; Retzius's specimen was sent by Koenig. Annual.]

6. Stems hairy, branching, near three feet high: the branches come out from the bottom almost to the top, and form a pyramidal bush. Leaves lanceolate, deeply serrate, on short petioles. Flowers axillary, solitary towards the bottom of the stem, but above in clusters, of a pale sulphur colour.

[Native of the East Indies, Arabia Felix, Senegal, Jamaica and Guiana. Annual. Introduced, according to the Kew catalogue, in 1771, by Monf. Richard. Probably Mr. Aiton considered the East Indian plant as different from the West Indian and Mr. Miller's *carpinifolia*.

7. This has five capsules and is shrubby. It is not known where it is a native.

8. Branches spreading in two rows and hairy. Leaves on short petioles, in two rows, ovate-lanceolate serrate, the serratures terminated by a hair or rigid bristle, veined, smooth. Stipules awl-shaped, longer than the petiole, erect, converging. Peduncles axillary, seldom solitary, umbelled, length of the petiole which is hairy. Calyx smooth. Corolla yellow. Capsules eight<sup>s</sup>, not awnless as Cavanilles has affirmed. Cultivated in the island of Madeira.

9. Stem suffrutescent, a foot high, branched, round, hispid. Leaves petioled, alternate, small, scarcely acuminate, nerved, softish: petioles many times shorter than the leaves: leaves next the petiole slightly emarginate. Stipules opposite, at the base of the petioles, bristle-shaped. Flowers on very short peduncles, from one to three, small, yellow. Beaks of the capsules very short<sup>h</sup>.

Very common in all parts of Jamaica. The leaves and tender buds contain a great quantity of mucilage, and lather like soap with water: they are frequently used in shaving-washes by such as cannot conveniently bear the smell or acrimony of soap. The leaves are purgative. It is known by the name of Broom-weed in Jamaica<sup>i</sup>.] Mr. Miller says, that he has received three or four species by this name, and has been informed that the inhabitants cut these plants as we do Heath, to make besoms for sweeping.

[10. Capsules nine or ten. Native of the East Indies<sup>i</sup>.

11. Stem simple, a foot high, tomentose. Leaves tomentose. Stipules lanceolate erect. Calyxes ciliate. Corolla yellow<sup>k</sup>. Capsules five. Cavanilles has a variety with naked capsules, which may perhaps be a distinct species<sup>i</sup>.

12. Corolla middle-sized yellow with five red spots at the base. Capsules nine. Native of the West Indies.

13. Capsules nine.—*S. brasiliensis* of Cavanilles, *diff.* 1. 37. & *diff.* 2. 34. f. 1. is very nearly allied to this, yet seems to be different; it is however a dubious plant, the flowers and capsules of which are unknown. Native of Hispaniola.

14. Capsules ten, supposed to be a native of the Cape of Good Hope, though Plukenet entitles it *Althæa maderaspatana*.

15. Capsules seven. Native of the East Indies.

16. Native of the West Indies.

17. Capsules five. Native of the island of Mahe.

18. Native of the East Indies and Jamaica<sup>m</sup>. Cultivated in the Eltham garden in 1732.

19. Native of Senegal.

20. Capsules nine. Native of Tranquebar, Amboina, the Philippines, and the island of Mauritius. Annual. Dillenius regards it as a variety of the next species, but it seems to be distinct.]

21. Stem slender, woody, more than two feet high, sending out several slender branches. Leaves on long foot-stalks, a little hairy on their under side. Flowers single, or two or three together, upon slender peduncles, of a pale copper colour. [Capsules six or seven.

Annual.—Native of the East Indies<sup>a</sup> and Cochinchina. Cultivated in 1732, by James Sherard, M.D.<sup>o</sup>

22. Stems many, trailing, dividing into slender branches, covered with a light-brown bark. Leaves small, hairy on their under side, on short foot-stalks. Flowers in small clusters, sitting close at the end of the branches, small and bright scarlet. The capsules have two stiff bristly teeth.

[Stems five or six inches long, frutescent, filiform, strict, rugged; with diverging branches. Leaves terminating, in clusters, oblong, retuse, serrate towards the top. Stipules the length of the petioles. Flowers blood-red. Capsules five, depressed, muricate<sup>p</sup>, awnless, according to Willdenow. Native of Jamaica and St. Domingo.

Browne says, that this little creeping plant is very common in the low lands of Jamaica, and seldom runs above seven or eight inches in length; that the flowers grow single, each of the pedicels being generally adorned with one leaf and three ciliated stipules, which compose the outward cup: but that those towards the top of the plant are very short, so that the flowers appear as if they were disposed in small heaps at the axils of the leaves.

23. Root annual. Stem from two to four feet high, erect, simple, round, pubescent, sometimes divided towards the top into spreading branches. Leaves petioled, alternate, smooth, somewhat wrinkled, hoary beneath. Panicle terminating, half the length of the stem, erect, almost simple, spreading. Peduncles simply subdivided, alternate, filiform, the last one-flowered. Flowers pale, sometimes light purple. Capsules five, ovate, acuminate<sup>\*</sup>, or terminated by a single awn, three-seeded. Native of the West Indies and Ceylon<sup>q</sup>. Cultivated by Sherard at Eltham in 1732.

24. This is a lofty tree. Capsules five three-seeded. Native of Peru.

25. Capsules five three-seeded acute. Native of Hispaniola.

26. Leaves obscurely crenate. Capsules five, six, or seven, three-seeded. Native of Peru and St. Domingo<sup>r</sup>.

L'Heritier remarks, that in *S. bernandioides* the peduncles are more elongated than in most of the species; that the leaves have one lobe at the base so placed upon the other, as to be in a manner peltate, and to bear a tolerable resemblance to those of *Hernandia*; that the fruit is absolutely the same as in *periplocifolia* and *nudiflora*; and that it is distinguished from the former chiefly by the leaves being cordate-rounded, whereas in that they are cordate-lanceolate. The seeds were sent from Hispaniola by Julien Franc. Duchemin de Lestang: the plants flowered in the Paris garden in 1783, perfected their seeds, and then died in the winter.

The *nudiflora* is a shrub, three fathoms in height, and somewhat tomentose. It has the name from the panicles being naked, and not leafy as in *paniculata*, *bernandioides* and *periplocifolia*. Dombey found it in Huanuco a province of Peru, and sent the seeds to the Paris garden, where it has flowered every year, but has not perfected seeds. The flowers are yellow, and an inch in diameter<sup>s</sup>.

27. This is a shrub three feet in height, with sub-tomentose branches, having each of the three sides hollowed out with a blunt groove. Leaves cordate without angles, very soft, obscurely tomentose, bluntly serrate, acuminate. Peduncles axillary, one-flowered. Corolla yellow purple at the base. Stamens yellow. Style five-cleft<sup>t</sup>. Capsules five, three-seeded<sup>u</sup>. Gartner describes the capsule as ovate-oblong, flattened a little at the top, five-horned, rounded-five-cornered, five-celled, five-valved: partitions corresponding with the external groove, and inserted into the middle of the valves, which after opening are two-horned at the top. Seeds about three in each cell, kidney-form-globular, blackish, marbled with ash-coloured spots as if frosted, fastened to the central margin of the partitions.

<sup>s</sup> Linn. suppl.

<sup>h</sup> Swartz.

<sup>i</sup> Browne.

<sup>i</sup> Willdenow.

<sup>k</sup> Cavanilles.

<sup>l</sup> Willdenow.

<sup>m</sup> Cavanilles and Willdenow.

<sup>n</sup> Willdenow.

<sup>o</sup> Hort. kew.

<sup>p</sup> Swartz.

<sup>q</sup> Idem.

<sup>r</sup> Willdenow.

<sup>s</sup> Idem.

<sup>t</sup> L'Heritier.

<sup>u</sup> Linn. spec.

<sup>v</sup> Willdenow.



Native of the West Indies. Introduced in 1775, by Joseph Nicholas de Jacquin, M.D.\*

28. In habit this resembles the *bernandioides*. Leaves three inches long, deeply cordate, with the lobes imbricate, and very long-pointed at the end. Petioles almost the length of the leaves. Peduncles solitary, three or four times shorter than the petioles. Capsules five, with one seed in each<sup>r</sup>.

It differs from the *bernandioides* in having one-seeded capsules, peduncles shorter, without bractes, and one-flowered, (not having the rudiment of a second flower, as that has,) and the herb hirsute and somewhat clammy, not villose-tomentose.

Native of Hispaniola, whence seeds of it were sent to the Paris garden in 1781 and 1782 by Jos. Nic. Thiery de Menonville. It flowered but did not bear fruit<sup>z</sup>.

29. Capsules seven or eight, very hard, three-seeded. Native of St. Domingo<sup>a</sup>.

30. This is sufficiently distinguished by the lateral filaments being gradual, as in *Hibiscus*, not terminating and pencil-form, as in the other species; and the corolla absolutely reflexed. Flowers drooping, blood-red with a dusky spot at the base of each petal<sup>b</sup>. Capsules twelve, three-seeded, according to Willdenow. Native of Peru.

31. Root annual. Stem branched, procumbent, round, hairy. Leaves hairy above, rugged beneath, on long hairy petioles. Stipules filiform, a little recurved. Peduncles solitary, very rarely two together, one-flowered, axillary. Flowers small, yellow. Arils five, membranaceous, angular, perforated at the top, one-seeded<sup>c</sup>. According to Willdenow, it has five one-seeded capsules.

Its habit is that of the five-seeded Sidas, but the joints are unarmed, and the capsules have no horns or beaks. It is singular in having incomplete arils external only, not incarcerated or winged as in *S. pterosperma*<sup>d</sup>.

Native of the East Indies. Koenig sent the seeds from Tranquebar. Commerçon also found it on the island of Mauritius.

Cavanilles has two other species, which Willdenow considers as varieties of this.

32. Stem prostrate but not rooting. Capsules five, awnless or two-awned. Native of Peru, especially in shady places about Lima<sup>e</sup>.

33. Distinct from the other species to which it is allied by its awned-acuminate calyxes, and five cohering capsules slightly two-toothed at the side, obtuse and two-valved. Native of St. Domingo.

34. Capsules five, with long hooked beaks standing far out. Native of the island of St. Domingo<sup>f</sup>.

Miller has a species under this name. *Ulmifolia* of Retzius is Miller's *angustifolia*. See n. 2.

35. Fruit within the calyx. Capsules nine, with long beaks in bundles. Native of Brasil.

36. Capsules about thirteen, three seeded, two-beaked when open: beaks ciliate. Seeds very small<sup>g</sup>.

37. Plant from two to four feet high, spreading. Leaves small, hirsute. Flowers yellow. The whole plant is clammy, and smells very strong<sup>h</sup>.

Browne remarks, that this little shrubby plant seldom rises above four or five feet in height; that the trunk is pretty woody, and covered with a whitish bark; the leaves and smaller branches a little villose; and that the seed-vessels are few, flattened at the top, and composed of many cells.

Native of Jamaica, and according to Loureiro, of Cochinchina.

38. This differs from the preceding in the leaves not being acuminate or hairy, but soft with a very fine nap, much larger and grossly toothed; the peduncles shorter than the petiole, and seven capsules squeezed into a ball<sup>i</sup>.

According to Willdenow, this, and not the preceding, is the *viscosa* of L'Heritier; who remarks, that it has the leaves and habit of the *occidentalis* and *nutans*, but is easily distinguished by its clammy stems

and branches: the fruit also is different and not appendicled inwardly.

Native of Peru. Annual.

39. Capsules five. Native of the island of Bourbon.

40. Root annual. Stem tomentose not hairy. Stipules awl-shaped, spreading. The leaves have a produced point, and vary with and without angles. Peduncle capillary, declined, even, always pendulous. Flower white, before it expands nodding, but afterwards straight from the joint of the peduncle. Capsules obtuse, compressed, rough-haired along the keel: twelve in number, three-seeded<sup>k</sup>.

Native of Carolina and the Bahama islands. Cultivated in 1726, by James Sherard, M.D.<sup>l</sup>

41. Capsules many, without beaks. Native of Persia.

42. Capsules thirty to thirty-six, compressed, one-seeded globular-umbilicate. Native of Peru, in woods near the river Maragnon. Shrubby<sup>m</sup>.

43. This is a small tree, remarkable for its large bell-shaped flowers, whitish or pale sulphur-coloured: the column of stamens is in five parcels at top: the seeds have a bearded umbilicus: the leaves are absolutely those of *S. reflexa*, except that they are more veined, with closer notches. Native of Peru<sup>n</sup>.

44. This differs from *S. Abutilon* especially by its very long peduncles, which in that are three times shorter than the petioles. Flowers orange-coloured. It is an annual plant, native of the island of Mauritius<sup>o</sup>.

45. Root annual. Peduncles longer than the petiole, the thickness of a thread, permanent, erect after the capsule is fallen. Capsules twenty-seven to thirty, awnless, one-seeded, collected into a globular head<sup>p</sup>.

Native of America. Cultivated in 1732, by James Sherard, M.D.<sup>q</sup>

46. Leaves twice as long as they are broad, very tomentose, ferrate, double the length of the petioles. Capsules the same size as in *S. Abutilon*, twelve-celled, tomentose, the cells ending in a lanceolate point the length of the capsule itself, not at all cut out at the interior future. Calyx tomentose. Peduncles shorter than the leaf<sup>r</sup>.]

Mr. Miller describes it as the most beautiful species yet known, growing to the height of six or seven feet, and having a smooth woody stem, which puts out many lateral branches towards the top. Leaves smooth and heart-shaped. Flowers axillary, solitary, on long peduncles. Corolla large and yellow. Discovered by Dr. Houstoun at La Vera Cruz<sup>s</sup>. [According to Linneus and Aiton it is a native of Jamaica; the latter says, it was cultivated by Mr. Ph. Miller in 1759; but if it be Houstoun's plant, he must have cultivated it before 1733, in which year Houstoun died. Mr. Miller has a *Sida americana*, which is clearly different from this.]

47. Height about four feet, putting out some side branches towards the top. Leaves soft and woolly, whence it is called in some parts of America Marsh-Mallow, and is used instead of that plant. Flowers axillary, on long peduncles. Annual.

[Leaflets of the calyx folded together or channelled. Fruits black, hairy<sup>t</sup>. Capsules fifteen, two-beaked, three-seeded<sup>u</sup>.

Native both of the East and West Indies, Virginia and Siberia. Naturalized in the South of Europe.—Cultivated in 1596 by Gerarde<sup>v</sup>.

48. This is an elegant annual plant, thickly covered with a whitish-green woolly nap. Stem firm, straight, round, branched, four feet high. Leaves sharply and equally crenate, on round spreading petioles shorter than the leaf, having an awl-shaped erect stipule on each side. Peduncles axillary, solitary, one-flowered, spreading. Corolla yellow, spreading very much<sup>w</sup>.—Native of Jamaica. Introduced into Europe by Jacquin.

49. Leaves longer than they are wide, as in *S. ame-*

\* Hort. kew.      y Willdenow.      z L'Heritier.

<sup>a</sup> Willd. and Cavan.      <sup>b</sup> L'Heritier.      <sup>c</sup> Retzius.

<sup>d</sup> L'Heritier.      <sup>e</sup> Cavanilles.      <sup>f</sup> Willdenow.

<sup>g</sup> Cavanilles.      <sup>h</sup> Swartz.      <sup>i</sup> Willdenow.

<sup>k</sup> Linn. spec. & mant.

<sup>k</sup> Willdenow.

<sup>l</sup> Hort. kew.

<sup>m</sup> Cavanilles.

<sup>n</sup> L'Heritier.      <sup>o</sup> Idem.

<sup>p</sup> Willdenow.

<sup>q</sup> Hort. kew.

<sup>r</sup> Linn. spec.

<sup>s</sup> Dist. ed. 7.

<sup>t</sup> Linn. spec. & syst.

<sup>u</sup> Willdenow.

<sup>v</sup> Hort. kew.

<sup>w</sup> Jacquin.



*ricana*. Capsule truncate and very hirsute<sup>z</sup>: they are about twenty in number, with three seeds in each<sup>a</sup>.

Native of the East Indies. Annual. Introduced about 1768.

Linneus does not seem to have distinguished the *populifolia* and *hirta* from this. These three species, together with *mauritiana* (n. 44.) should be carefully distinguished. *S. mauritiana* and *populifolia* are soft; their capsules are twice as large as the calyx, with their horns or beaks standing round like rays: the leaves in the former acuminate-ligulate and toothed; in the latter crenate acuminate. *Asiatica* and *hirta* have the upper surface of the leaf scarcely a little rugged; the capsules equal to the calyx, and the stipules more permanent. In *hirta* the stems, peduncles and petioles are very hairy, and the leaves rounded, acuminate and wrinkled; whereas in *asiatica* they are cordate and acute or scarcely acuminate<sup>c</sup>.

50. Capsules from eleven to nineteen, with three seeds in each. Annual. Native of the East Indies, in Bengal.

51. Capsules from fifteen to seventeen, with three seeds in each. Annual. Native of the East Indies<sup>d</sup>. The flowers have sometimes a dark-purple eye<sup>e</sup>.

52. Peduncles erect. Capsules terminated by a right angle<sup>f</sup>: from thirteen to fifteen in number, having three seeds in each<sup>g</sup>. Native of the East Indies, Cochinchina, Tanna and New Caledonia. Cultivated in 1739, in the botanic garden at Chelsea<sup>h</sup>.

53. Shrubby. Leaves more elongated than in *S. Abutilon*, to which it is allied; and not rounded, as in that. Peduncles commonly one-flowered, but sometimes having a second flower at the top. Calyxes cistoid. Corollas fulvous, three quarters of an inch in diameter. Capsules from ten to twelve (or capsule ten or twelve-celled,) with three seeds in each.

Native of Peru, in woods near the river Maragnon. Found by Dombey, who sent the seeds to the Paris garden<sup>i</sup>.

54. This very much resembles the *asiatica*. Capsules nine, three-seeded. Native of the Cape of Good Hope.

55. Capsules fifteen, three-seeded. Native of St. Domingo<sup>k</sup>.

56. The whole herb is tomentose, hoary, and very soft. Leaves cordate-ovate, acute, toothed; the primary ones somewhat angular at the top, nerved, thickish. Stipules awl-shaped. Flowers close, in a sort of panicle, on axillary peduncles at the ends of the branches, yellow. One peduncle one-flowered; a second many-flowered, almost leafless, bracted, a little longer than the other. Calyxes somewhat angular. Capsules ten or twelve, deciduous, shortly two-horned<sup>l</sup>.

According to Swartz, the peduncles are axillary towards the top of the branchlets, shorter than the petioles, subsolitary, sometimes but rarely two or three together, round, tomentose, one-flowered. Flowers biggish, fulvous. Capsules roundish-compressed, one-seeded.—Native of Jamaica and Hispaniola.

57. Capsules five, each terminated by two very long awns. Native of the island of Mauritius.

58. Capsules fewer than thirty, truncate, obtuse, one-seeded. Native of the island of Bourbon<sup>m</sup>.

59. This species is singular for the internal appendices of the cells. *S. occidentalis* has in like manner a ligule from the bottom of the cell, but it is very different; being simple, sickle-shaped, surrounding the seed vertically; not two-leaved, lanceolate, and shorter than the seed, as in this. The leaves resemble those of *S. occidentalis* or *viscosa*, but they are hoary with a very short and soft nap; not as it were papillose, as in *S. occidentalis*; more deeply cordate and not stinking, as in *S. viscosa*. The joints are generally without prickles<sup>n</sup>.

Capsules ten or more, blunt, depressed, one-seeded. The seeds have a linear aril<sup>o</sup>.

Native of Peru. Introduced into Europe by Jo-

<sup>z</sup> Linn. syst.

<sup>a</sup> L'Heritier.

<sup>f</sup> Linn. syst.

<sup>l</sup> L'Heritier.

<sup>m</sup> Willdenow.

<sup>a</sup> Willdenow.

<sup>d</sup> Willdenow.

<sup>g</sup> Willdenow.

<sup>k</sup> Willdenow.

<sup>n</sup> L'Heritier.

<sup>b</sup> Hort. kew.

<sup>c</sup> L'Heritier.

<sup>h</sup> Hort. kew.

<sup>i</sup> L'Heritier.

<sup>o</sup> Willdenow.

seph Pavon, companion to Dombey in travels through Peru and Chili<sup>p</sup>.

60. Capsules five, with one seed in each. Native of the island of Bourbon.

61. Shrubby. Capsules five; said, in the specific character, to be acute; but in the observation, to be obtuse.—Native of Brasil. Cavanilles has two species, one with a prostrate stem and yellow flowers; the other with an upright stem and reddish flowers; which Willdenow considers as one species.

62. Capsules five, one-seeded. Native of the East Indies<sup>q</sup>.]

63. Stems smooth, round, three feet high, sending out long slender branches. Leaves smooth, light green, on long foot-stalks: the lower ones near three inches long, and almost two broad at their base. Flowers on very long peduncles, small, and of a whitish yellow colour. [Capsules five, two-awned at the top, smooth, one-seeded. Native of Jamaica, in dry hedges, in the southern parts<sup>r</sup>.

64. Capsules five, much less than the calyx. Native of Malabar.

65. Capsules five. It varies with hairy or smooth stems. Native of St. Domingo.

66. Capsules nine, with the awns hairy. Native of the island of Bourbon<sup>s</sup>.

67. Stem procumbent, filiform, unarmed, very much branched next the ground. Flowers pale yellow, fugacious, three or four lines in diameter. Capsules five, with one seed in each. Native of Hispaniola<sup>t</sup>. Perennial.

68. Capsules nine. Native of the island of St. Domingo. Annual<sup>u</sup>.

69. Stem upright, hairy, branched. Capsules nine. Native of the East Indies<sup>v</sup>.

70. Two feet in height, probably annual. Stipules awl-shaped, erect. Peduncles solitary, one-flowered. Flowers yellow. Capsules five, one-seeded. Native of Hispaniola.

Among the three-spined Sidas, there are perhaps some that are mules; the near alliance of the species or varieties seems to indicate this<sup>w</sup>.

71. This is very like *S. spinosa*, but the leaves are round. Corollas white with purple stigmas, and the tips of the petals purplish. The whole plant is bigger<sup>x</sup>. Capsules five<sup>y</sup>. Annual. Cultivated in the Eltham garden before 1732; being raised from seeds sent from Bengal, and communicated by P. Collinson<sup>z</sup>.

72. Root annual. Stem simple. Calyx hairy. Beaks of the seeds, when the corolla falls, prominent in a bundle the length of the calyx<sup>aa</sup>. Capsules from seven to ten<sup>ab</sup>.] Flowers small, of a pale obscure yellow or sulphur colour. Stem more than three feet high, sending out several erect branches from the sides. Leaves two inches and a half long, and two broad, of a light green colour, soft to the touch, on very long hairy foot-stalks.

[Cultivated in the Eltham garden before 1732. Native of the East Indies and the Cape of Good Hope.

73. Capsules five. Native of St. Domingo.

74. Capsules five. Native of Brasil, by Rio Janeiro<sup>ac</sup>.

75. Stem a foot high and more, suffrutescent, simple or branched, erect, round, hirsute. Leaves alternate, nerved, hirsute, hispid; on long petioles. Stipules bristle-shaped, at the base of the petioles. Flowers terminating, heaped on axillary branchlets, subglomerate, on very short pedicels, yellow with a purple eye. Capsules five, oblong, compressed. Seeds roundish, compressed, wrinkled black. Native of Jamaica in dry coppices<sup>ad</sup>.

76. Capsules from six to eleven, three-seeded. Native of Jamaica. Annual.

77. Flowers small on corymbed peduncles forming a leafy terminating panicle. Capsules five. Native of St. Domingo<sup>ae</sup>.

78. Stem herbaceous, erect, two feet high, sub-

<sup>p</sup> L'Heritier.

<sup>t</sup> L'Heritier.

<sup>v</sup> L'Heritier.

<sup>b</sup> Dillenius.

<sup>a</sup> Willdenow.

<sup>u</sup> Willdenow.

<sup>z</sup> Linn. spec.

<sup>c</sup> Linn. spec.

<sup>f</sup> Swartz.

<sup>r</sup> Swartz.

<sup>d</sup> Willdenow.

<sup>aa</sup> Willdenow.

<sup>ab</sup> Willdenow.

<sup>ac</sup> Willdenow.

<sup>s</sup> Willdenow.

<sup>x</sup> Cavanilles.

<sup>q</sup> Willdenow.

<sup>ae</sup> Idem.



divided, round, rugged, somewhat hirsute. Branches spreading, almost simple, filiform. Leaves petioled, alternate, subcordate, the smaller ones ovate, acute, tooth-ferrate, nerved, somewhat hirsute. Peduncles axillary, subdivided, very long, capillary, spreading very much; the last one-flowered. Segments of the calyx bent back. Corolla dark purple, with the petals spreading. Capsules five, compressed, roundish, acuminate<sup>b</sup>.

Native of the calcareous rocks of Jamaica, of Peru and Brasil.

β. Cavanilles distinguishes the *atro-sanguinea* of Jacquin, under the name of *capillaris*. The petals are reflexed. The corollas dark purple. The capsules one-seeded, scarcely acuminate. It was found by Dombey very abundantly about Lima<sup>c</sup>.

79. Panicles terminating, branched, almost erect. Petals pale yellow. Capsules five or more frequently six roundish, gibbous on one side, angular on the other, with an awl-shaped beak, hoary with very small stellate hairs, closely converging at top, one-seeded. Native of the southern parts of Jamaica in coppices<sup>k</sup>.

80. Capsules six. Native of Senegal<sup>l</sup>.

81. Capsules numerous, one-seeded squeezed into a ball. Native of St. Domingo.

82. Leaves the length of the petiole or an inch. Raceme simple, on a long peduncle. Peduncles one-flowered, with a linear-lanceolate bracte at the base. Capsules nine villose three-seeded. Native of Brasil<sup>m</sup>.

83. Fruit inflated. Capsules ten, five-seeded. Native of Mexico<sup>n</sup>.

84. This is a shrub, tomentose all over and strong-smelling. Leaves shortly acuminate. Peduncles one-flowered, equal to the calyx; not subbiflorous and shorter than the calyx, as in *S. cistiflora*. The calyxes are five-cornered, as in that: this circumstance, together with the leaves being thicker, more tomentose and fetid, distinguish the *crassifolia* from *mauritiana*, *asiatica*, *populifolia* and *hirta*. The nerves of the leaves are more manifestly pedate than in the others<sup>o</sup>. Capsules nine or ten, three-seeded. Native of Hispaniola.

85. Capsules several. Shrubby.

86. Capsules eight three-seeded.

87. This is a tree growing to twenty feet in height. Capsules ten to twelve, truncate, acuminate, villose. Native of the Caracas.

88. Capsules five. Native of Java.

89. Root annual. Capsules several, acuminate, connate at the base in this and the two following. The flowers in this are of the same size as in *Malva rotundifolia*.—Native of Mexico and Lima in moist places. Linneus had made this a variety of the next following.

90. Root annual. Flower of the same size as in *Lavatera Olbia*. Native of Mexico<sup>p</sup>.

91. This also is annual, and has been confounded with the preceding, but the upper leaves are for the most part quite entire. The flowers are of the same size: but it differs from that in having the upper leaves not three-lobed hastate, but ovate-lanceolate without any angle; the lower ones three-cornered or sometimes but more seldom five-cornered and elongated, not rounded-cordate. The petals are more emarginate than in the preceding: in *S. hastata* they are quite entire. Native of Mexico<sup>q</sup>.

Mr. Curtis, who considers it as the *cristata*, observes, that it grows to the height of three feet or more, producing during the months of July and August a number of blossoms in succession, which are large and showy; and that the stigmas are curious objects, resembling the heads of Fungi in miniature.

It flowered first in November 1725, in Sherard's garden at Eltham, but earlier in the following years: the seeds were sent from Mexico, with those of other rare plants by Stevenson<sup>r</sup>.

These three species have been separated from the other Sidas by Cavanilles and others, for a reason given above; but it does not appear to be a good one.

<sup>a</sup> Swartz. <sup>l</sup> L'Heritier. <sup>k</sup> Swartz. <sup>l</sup> Cavanilles.  
<sup>m</sup> Willdenow. <sup>n</sup> Cavanilles. <sup>o</sup> L'Heritier.  
<sup>p</sup> Willdenow. <sup>q</sup> Idem. <sup>r</sup> Dillenius.

92. Lower leaves cordate undivided; upper three-lobed or sometimes but more seldom five-lobed. Peduncles capillary shorter than the leaves; of the same length or longer. Corolla white. Native of the Cape of Good Hope<sup>s</sup>.

93. Native also of the Cape, where it was found by Thunberg.

94. Capsules twenty-five; one-seeded, winged. Corolla white<sup>t</sup>.

L'Heritier, though he inserts it among the Sidas, regards it as so singular, as to be almost of a separate genus, on account of the fenestrated arils incarcerating the seeds; and the membranaceous placenta springing from the receptacle.—Native of Peru, where it was found by Dombey, in the province of Chancaye, and the seeds were communicated to the Paris garden. It is an annual prostrate plant.

95. Root annual. Leaves exactly like those of *Ricinus*. Capsules eight, gibbous on one side, angular on the other, spiny or subulate-two-horned, collected about a pyramidal striated receptacle, shorter than the calyx, one-celled, two-valved, one-seeded; opening at top, brown: awns set with rigid reversed hairs, the length of the calyx. Seeds with a one-grooved bump on the outside, angular within, acute, brown. Native of Peru; found by Dombey, and introduced by him into the Paris garden<sup>u</sup>.

96. Leaves nine or seven-lobed. Corolla purple or violet<sup>v</sup>. It has the appearance of *Jatropha* or *Urena*. L'Heritier doubts whether this and *ricinoides* be distinct species: he had distinguished them, by this having naked capsules, but he afterwards saw a specimen with two-horned capsules, and strigose awns exactly as in *ricinoides*, which however has the leaves lobed rather than palmate, with the segments undivided not runcinate; the flowers also are twice as big as in *jatrophoides*, and the herb is more hirsute: neither species has stipules.

Found in the province of Chancaye in Peru by Dombey, who sent the seeds to the Paris garden<sup>w</sup>.

97, 98. See *Napaea*.

99. Leaves tomentose, white above, rufescent beneath: leaflets cut into three to the very base; segments lanceolate, obtuse, quite entire, imbricate: petiole winged with the decurrent stipules. Flowers large, blue, sessile on the petiole, whence the trivial name.—Native of Peru. Perennial<sup>x</sup>.

Willdenow has subdivided the numerous species of this genus into seven sections, chiefly from the leaves. L'Heritier proposes rather to adopt the capsules for this purpose, as follows.

Sect. 1. Polycoccous species, with one-seeded complete deciduous arils.—Some with five arils only, as *spinosa*, *truncata*, *alba*, *angustifolia*, *supina*, *urens*. Others with from six to ten arils, as *rhombifolia*, *retusa*, *alnifolia*, *carpinifolia*, *ciliaris*, *cordifolia*, *althææfolia*, *suberosa*, *ricinoides*, *jatrophoides*, *unilocularis*, *pterosperma*.—Among these the greater part is two-horned, as *spinosa*, &c. some however are naked, as *urens*; other muricate, as *ciliaris*.

Sect. 2. Polycoccous species, with one-seeded incomplete arils.—*S. unilocularis* has five arils: *cristata* and *pterosperma* have many. In the first the arils are simple, in the second one horned, in the last winged-two-eared.

Sect. 3. Multicapsular species, with one seed in a cell: as *paniculata* and *fragrans*, both five-celled: *viscosa*, *cristata*, *nutans*, *occidentalis*, which have more than five cells.

Sect. 4. Multicapsular with several seeds in a cell: as *periplocifolia*, *bernandioides*, *nudiflora*, *triquetra*, which have five cells; *umbellata*, *crassifolia*, *Abutilon*, *cistiflora*, *mauritiana*, *populifolia*, *asiatica*, *hirta*, *arborea*, *reflexa*, *indica*, *crista*, which have many cells.

Among the multicapsular species are some with inflated capsules, as *occidentalis*, *crista*, *indica*; others with capsules appendicled within, as *nutans* and *occidentalis*.]

<sup>s</sup> Willdenow. <sup>t</sup> Idem. <sup>u</sup> L'Heritier. <sup>v</sup> Willdenow.  
<sup>w</sup> L'Heritier. <sup>x</sup> Willdenow.



Mr. Miller has nineteen species of *Sida*, all from the West Indies.

1. *Sida ulmifolia*.  
*Malvinda ulmifolia* femine rostrato bidente. *Art. lond.* 399.  
*Leaves ovate-lanceolate ferrate, flowers solitary axillary, capsules two-beaked.*  
 Stem upright branching three or four feet high. Leaves two inches long and one inch broad, sessile. Flowers on very short peduncles, small, of a pale copper colour. Capsule five-celled, with one seed in each cell. Native of America as far north as Virginia. Cavanilles has a species under this name (n. 34.) and Retzius (n. 2.)
2. *Sida carpinifolia*.  
*Stem branched hairy, leaves lanceolate ferrate, flowers clustered axillary, capsules one-beaked.*  
 This cannot well be the *carpinifolia* of Linneus: (n. 8.) nor does it seem to be the *spinosa*, (n. 6.) though Miller refers to Sloane's synonym. Both have two-beaked capsules.
3. *Sida angustifolia*, n. 2.  
*Malvinda pimpinellæ folio angustiore femine bidente. Art. angl. vol. 35.*
4. *Sida pimpinellifolia*.  
*Malvinda pimpinellæ majoris folio, femine bidente. Art. angl. 399.*  
 Stems slender, seldom more than a foot high, with a few slender branches. Leaves small, heart-shaped, ferrate, a little hoary on their under side, on pretty long foot-stalks. Flowers small, of a pale yellowish colour, coming out singly from the axils. Capsules two-beaked.—Perhaps a variety of the preceding.
5. *Sida jamaicensis*.  
*Malvinda profundius ferrato folio, femine tridente. Art. lond. 399.*  
 Stem hairy, covered with a dark-brown bark, three feet high, sending out many side branches. Leaves ovate-lanceolate, on long foot-stalks, more than two inches long, and an inch and quarter broad, ending in an obtuse point, and deeply ferrate. Flowers axillary in pairs, sessile, larger than those of the former sort, and of a deeper yellow colour: the capsules are larger, and have three horns.—I dare not affirm this to be the *jamaicensis* of Linneus, n. 9. though we are not to place implicit confidence in the number of horns or beaks to the capsule, as a specific difference.
6. *Sida villosa*.  
*Malvinda carpinifolia folio villosa, floribus conglobatis ad foliorum alas. Houst. mfs.*  
 Stem woody, upright, hairy, from three to four feet high, sending out a few slender branches towards the top. Leaves a little woolly, sessile, near two inches long, and one inch broad near the base, subcordate, veined, ferrate. Flowers axillary in clusters, sessile. Calyx hairy, acute. Corolla small, pale yellow. Capsules two-beaked.
7. *Sida alnifolia*, n. 21.
8. *Sida cordifolia*, n. 72.
9. *Sida hirsuta*.  
 Stems very slender, stiff, covered with fine hairs, a foot and half high, sending out a few side branches. Leaves roundish-heart-shaped, two inches long, and an inch and three quarters broad at the base, thin, of a light green colour, crenate, on long slender hairy foot-stalks. Flowers axillary on long peduncles solitary. Capsules ending in ten stiff acute points or hairs. Corollas small, white.
10. *Sida capitata*.  
 See *Malachra capitata*.
11. *Sida hirsutissima*.  
*Malvinda hirsutissima carpinifolia folio longiore, floribus singulis ad foliorum alas, femine bidente. Houst. mfs.*  
 Stem woody, erect, three feet high, covered with yellowish hairs. Leaves spear-shaped, hairy, sessile, two inches long, and one inch broad in the middle, ferrate, pale green beneath. Flowers axillary, solitary, on short peduncles. Corolla small, white.
12. *Sida abutilifolia*.  
*Malvinda abutili folio minore, caulibus hirsutissimis, floribus ad foliorum alas. Houst. mfs.*

Stems slender infirm, three feet high, covered with long white hairs. Leaves soft, woolly, heart-shaped, crenate, acuminate, little more than an inch long, and three quarters of an inch broad at the base, on long slender hairy foot-stalks. Flowers on long slender axillary peduncles, two generally coming out together. Corolla pale yellow.

13. *Sida ciliaris*, n. 22.

14. *Sida glabra*. *S. arguta*, n. 63.

15. *Sida fericea*.

*Malvinda supina, foliis subrotundis fericeis, seminibus non dentatis. Houst. mfs.*

Stems several, spreading flat on the ground, nine or ten inches long, sending out several short side branches. Leaves ovate, ferrate, fatteny, on short foot-stalks. Flowers axillary, solitary, sessile, small, yellow. Capsules without any beaks or horns.

16. *Sida americana*.

*Malva americana abutili folio, floribus conglobatis ad foliorum alas. Houst. mfs.*

Stem woody with a purplish bark, two feet high, sending out several branches from the lower part. Leaves pretty thick, subcordate, crenate, ending obtusely, woolly beneath, an inch and half long, three quarters of an inch broad near the base, veined, on pretty long foot-stalks. Flowers pale-yellow, gathered in clusters fitting close at the axils. Calyxes hairy, cut into many acute segments at the top. Capsules two-beaked.—This is not the *americana* (n. 46.) of Linneus. Miller's *Abutilon*, n. 16. is that species.

17. *Sida pilosa*.

*Malvinda carpinifolia folio, flore luteo, caule & averfa foliorum parte villosa. Houst. mfs.*

Stem woody, four feet high, covered with brown hairs, sending out a few long slender branches, which have leaves on the lower part: these are ovate, an inch and half long, and three quarters of an inch broad, slightly ferrate, having many longitudinal veins, downy beneath. The branches in the upper part are destitute of leaves more than a foot in length, and from their sides come out peduncles two inches long, sustaining several small yellow flowers in clusters, with hairy calyxes cut into several acute segments.—This is not the *pilosa* of L'Heritier, (n. 51:) nor of Cavanilles. (n. 65.)

18. *Sida fruticosa*.

*Malvinda frutescens ulmifolia, feminibus singulis tribus aculeis lappaceis armatis. Houst. mfs.*

Stem strong, shrubby, six or seven feet high, covered with a rough brown bark, and sending out several woody hairy branches from the side. Leaves spear-shaped, on long foot-stalks, six inches in length, and two broad in the middle, ending in acute points, and unequally ferrate, dark green above, pale beneath. Flowers collected in heads, on long naked peduncles terminating the branches: each head containing seven or eight flowers, the petals extending much beyond the calyx: the flowers are of a pale sulphur-colour when they first open, but afterwards fade almost to white. Calyxes smooth, but terminated by five hairy points which stand erect. Capsule short, roundish, sessile in the calyx, five-celled, one-seeded. Seeds angular, having three sharp burry teeth, by which they adhere to any thing.—Discovered by Dr. William Houstoun at La Vera Cruz in New Spain.

19. *Sida alba*.

*Malvinda foliis subrotundis acuminatis, floribus albis conglomeratis ad foliorum alas. Houst. mfs.*

Stem shrubby, seven or eight feet high, sending out several very slender branches, extending to two feet or more in length, and bending down at their ends. The joints are two inches asunder, and at each is one large heart-shaped leaf, upon a pretty long foot-stalk; the leaves are above four inches in length, and they are two inches and a half in breadth near the base; they are ferrate on their edges, and run out to a long sharp point; many strong veins rise from the midrib and diverge towards the borders; they are of a light green above, and pale beneath. Flowers axillary in clusters; those on the lower part of the branches in close obtuse spikes about an inch in length; but



but on the upper part in globular heads, placed nearer together and having no leaves under them; the branches are terminated by one of these heads. The calyxes end in five acute hairy points. Corollas small, when they first open white, but fading to a brownish colour. Capsule roundish, five-celled, sessile in the calyx, two-beaked; having one angular seed in each cell. Discovered by Dr. Houstoun in Jamaica.—This is not the *alba* of Cavanilles (n. 4.) nor of Linneus (n. 71.)

There are certainly more species than are here mentioned, for new sorts frequently come up in the earth which is brought from the West Indies with other plants. The above are undoubtedly distinct species, having been cultivated several years, and never changing when raised from seeds.

Mr. Miller, in the seventh edition of his Dictionary, has the same Species, with the addition of a twentieth, which is the *Althæa flore luteo* of Sloane, and therefore should be the *Sida althæaefolia* of Linneus, (n. 56.) He has also sixteen species of *Abutilon*, which having omitted in his eighth edition, he probably intended to have transferred them into this genus, and forgot it when he came to the proper place, as he has several times done in cases of the same sort.

1. *Abutilon* Dod. S. *Abutilon*, n. 47.
2. *A. indicum*. *Baub. hist.* S. *indica*, n. 52.
3. *A. carolinianum reptans*, *Alcææ foliis*, *gillo flore*. *Art. lond.* *Malva caroliniana*, *Lin.*
4. *A. americanum*, *amplissimo folio*, *caule villosa*. *Plum.* S. *nudiflora*, n. 26.
5. *A. amer. fructu subrotundo pendulo*, *e capsulis vesicariis crispis confiato*. *Rand.* S. *crispa*, n. 40.
6. *A. althæoides*, *flore carneo*, *fructu globofo*. *Dill. elth.* 1. t. 1. f. 1.

This grows to be a shrub of eight or nine feet high. [Leaves thick, soft, like those of Marsh-Mallow, but deeper cut, crenate, on long petioles. Calyx double; inner one-leaved divided to the middle into five segments; outer three-leaved, as in *Malva*. Flowers axillary, peduncled, one, two or more together. Capsules globular.—Native of the island of Providence, one of the Bahamas, whence the seeds were brought by Mr. Mark Catesby. The plants flowered the third year from seed, in July 1728, in the Eltham garden\*.]

7. *A. periplocæ acutioris folio*, *fructu stellato*. *Dill. elth.* 4. S. *periplocifolia*, n. 23.
8. *A. americanum*, *folio hastato*, *flore amplo purpureo-cæruleo*, *longo petiolo insidente*. *Houft.* Annual.
9. *A. amer. flore albido*, *fructu e capsulis vesicariis planis confiato*, *pediculo geniculato*. *Mart. cent.* 33. Annual; and probably only a variety of *S. crispa*, n. 40. though Miller affirms that he has constantly found them to be different.
10. *A. amer. ribesii foliis*, *flore carneo*, *fructu pentagono aspero*. *Houft.*—Annual.
11. *A. amer. frutescens*, *folio amplo cordato subtus lanuginoso*, *floribus amplis luteis*. *Houft.*—A shrubby plant, nine or ten feet high, with large heart-shaped woolly leaves, and pretty large yellow flowers, which make a good appearance, but are of short duration; there is however a succession of them for more than two months.
12. *A. fruticosum aquaticum*, *folio cordato scabro*, *flore pallide luteo*. *Houft.*—Shrubby, nine or ten feet high. Flowers small.
13. *A. amer. frut. foliis cordatis*, *floribus parvis purpurascentibus*. *Houft.*—Shrubby, nine or ten feet high. Flowers small, purple. In the preceding they are pale yellow.—These are natives of Jamaica, La Vera Cruz and the Havannah.
14. *A. Lavatææ flore*, *fructu cristato*. *Hort. elth.* S. *dilleniana*, n. 91.
15. *A. arboreum*, *folio Althææ*, *fructu villosa*, *flore maximo ex rubro flavescente*. *Houft.*

This grows to the height of ten or twelve feet, with many lateral branches towards the top, and makes a handsome plant: the stems are woody and of a brown colour. Leaves smooth, shining, heart-

\* Dillenius.

shaped, on long foot-stalks. Flowers very large, at their first appearance pale red, but as they expand, changing to yellow; they are of short duration, but there is a succession of them for two months, with proper treatment. Seeds covered with a short down somewhat like cotton. Mr. Miller had seeds of this from the north side of Jamaica, from the Spanish West Indies, and from the coast of Malabar.

16. *A. frutescens lanuginosum foliis subrotundis*, *flore amplo luteo patulo*. *Houft. mss.*—*S. americana*, n. 46.

#### PROPAGATION AND CULTURE.

These plants are many of them annual in England, but some are of longer duration in their native countries, and might be so here, if they were placed in a warm stove in winter; but as most of them perfect their seeds the same year, if the plants are brought forward in the spring, few persons have room in their stoves to receive these plants, as there are so many perennial exotic plants at present in the English gardens, which require a warm stove to preserve them.

They are propagated by seeds, which should be sown upon a moderate hot-bed the beginning of April, and when the plants are come up fit to remove, they should be transplanted to another hot-bed, planting them four inches distance every way; they must be shaded from the sun till they have taken new root, and then they must have a large share of free air admitted to them when the weather is mild, to prevent their drawing up weak; they will also require water pretty frequently. If the plants thrive well, they will have strength enough to be fit to transplant in the open air; for which purpose they should be gradually hardened, and the beginning of June they may be taken up with balls of earth to their roots, and planted in a warm sheltered part of the garden, at about three feet distance, observing to shade and water them until they have taken new root; after which they will require no other care but to keep them clean from weeds. In July the plants will begin to flower, and there will be a continued succession of flowers until the frost comes on. If the season proves warm, they will ripen their seeds very well in autumn; but lest these should miscarry by the unfavourableness of the season, it may be proper to put one plant of each sort in pots filled with light kitchen-garden earth, placing them in the shade till they have taken new root, and then they may be removed to a warm situation, where they will thrive very well in a good season; but if the summer proves cold, they should be placed in a dry airy glass-case, where they may be kept warm, which will ripen their seeds.

Some of the species will not flower the first year: in this case the plants must be placed in a warm stove in autumn, and during the winter they must be treated as other tender plants from the East and West Indies. The following summer they will flower and produce ripe seeds, but being not of long duration in general, there should be a succession of young plants raised from seed.

47. Is an annual plant hardy enough to come up in the common ground, and to perfect its seeds without any trouble. It will not bear transplanting, unless when very young; the seeds therefore are best sown where the plants are designed to remain; and if they be permitted to fall, they will come up the following spring without any care.

On the contrary some of the species from the West Indies will not flower, or indeed live through the winter in England, unless they are preserved in a stove. In summer they must have as much air as possible, and be frequently watered.

[SIDA. See *Malachra* and *Napæa*.]

SIDERITIS (of Pliny. Σιδερίτις of Dioscorides. From σιδερος, iron. So named on account of its fancied property in healing flesh wounds.)

*Lin. gen.* n. 712. *Reich.* n. 770. *Schreb.* n. 966.

*Tournef.* t. 90. *Juss.* 113.

*Class.* 14. 1. *Didynamia Gymnospermia*.

*Nat. order.* of *Verticillatæ*. *Labiata*, *Juss.*

#### GENERIC CHARACTER.

*CAL.* *Perianth* one-leaved, tubular, oblong, about half five-cleft: *segments* acute, almost equal.



COR. one-petalled, almost equal: tube cylindrical, oblong: throat oblong, roundish: upper lip erect, bifid, narrow: lower lip trifid; lateral segments sharper, commonly smaller than the upper lip; middle segment roundish crenate.

STAM. Filaments four, within the tube of the corolla, shorter than the throat, two of which are smaller. Anthers roundish, two twin.

PIST. Germ four-cleft. Style filiform, usually longer than the stamens. Stigmas two: upper cylindrical, concave, truncate; lower membranaceous, shorter, sheathing the upper.

PER. none. Calyx cherishing the seeds in its bosom.

SEEDS four.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. ringent: upper lip bifid; lower three-parted. Stam. within the tube of the corolla. Stigma the shorter involving the other.

#### SPECIES.

##### \* Without bractes.

1. *Sideritis canariensis*. Canary Iron-wort.  
Lin. spec. 801. syst. 531. Reich. 3. 37. Willd. 3. 63. Jacqu. hort. 3. 18. t. 30. Lin. hort. cliff. 310. Pluk. phyt. t. 322. f. 4. (Stachys.)  
Sbrubby villose, leaves cordate-oblong acute petioled, spikes whorled, before flowering nodding, branches divaricate.
2. *Sideritis candicans*. Mullein-leaved Iron-wort.  
Lin. spec. ed. Willd. 3. 63. Ait. kew. 2. 289.  
Stachys canariensis frutescens verbasco folio. Comm. hort. 2. 197. t. 99.  
Sbrubby tomentose, leaves ovate-lanceolate cordate attenuated at the top snow-white beneath, whorls about eight-flowered remote.
3. *Sideritis cretica*. Cretan Iron-wort.  
Lin. spec. 801. syst. 531. Reich. 3. 37. Willd. 3. 64.  
Sbrubby tomentose, leaves cordate-oblong, obtuse petioled, branches divaricating, spikes whorled.
4. *Sideritis montana*. Mountain Iron-wort.  
Lin. spec. 802. syst. 531. Reich. 3. 38. Willd. 3. 64. Jacqu. austr. 5. 16. t. 434. Kniph. cent. 7. n. 87. Crantz. austr. 248. Krock. files. n. 909.  
Cunila. Lin. hort. cliff. 313. upf. 169.  
*Sideritis montana parvo varioque flore*. Baub. pin. 233. Raii hist. 565.  
S. mont. parvo flore nigro-purpureo, capite medio croceo. Col. ecphr. 1. 198. t. 196.  
S. mont. apula versicolor. Park. theat. 586. 7.  
Herbaceous without bractes, calyxes larger than the corolla spiny, upper lip trifid.
5. *Sideritis elegans*. Dark-flowered Iron-wort.  
Lin. syst. 531. Willd. 3. 64. Murr. in comm. gott. 1. 1778. p. 92. t. 4.  
S. nigricans. Lamarck. encycl. 2. 167.  
Mappia. Fabric. helmst. 106.  
Herbaceous without bractes villose, stem diffused, segments of the calyxes almost equal spinulose.]
6. *Sideritis romana*. Roman Iron-wort.  
Lin. spec. 802. syst. 531. Reich. 3. 39. Willd. 3. 65. Villars dauph. 2. 372. Allion. pedem. n. 94. Desfont. atlant. 2. 15. Cavan. ic. 2. 69. t. 187.  
Cunila. Lin. hort. cliff. 313.  
*Sideritis genus verticillis spinosis*. Baub. hist. 3. 428.  
S. vert. spinosis, minor procumbens. Mor. hist. 3. 388. f. 11. t. 12. f. 5.  
Herbaceous decumbent without bractes, calyxes spiny, upper lip ovate.

##### \*\* Braetted, with the bractes quite entire.

7. *Sideritis syriaca*. Sage-leaved Iron-wort.  
Lin. spec. 801. Reich. 3. 37. Willd. 3. 65. Fabric. helmst. 88. Sabb. hort. 3. t. 40.  
Cunila. Lin. hort. cliff. 313.  
S. cretica tomentosa candidissima, flore luteo. Tournef. cor. 12.  
β. Stachys fruticosa, foliis lanceolato-linearibus integerrimis sessilibus. Lin. hort. cliff. 310.  
S. minor italica. Baub. pin. 236.  
S. lychnoides incana angustifolia flore aureo. Barr. ic. 1187.

*Suffruticose tomentose-woolly, leaves lanceolate almost quite entire, flowers whorl-spiked cordate acute tomentose.*

8. *Sideritis taurica*. Tauric Iron-wort.  
Lin. spec. ed. Willd. 3. 66.  
S. syriaca. Pallas nov. act. petrop. 10. 312.  
*Suffruticose tomentose, leaves lanceolate crenate, flowers whorl-spiked, whorls approximating, bractes cordate acuminate netted-nerved.*
9. *Sideritis distans*. Distant-whorled Iron-wort.  
Lin. spec. ed. Willd. 3. 66.  
*Suffruticose hoary, leaves lanceolate quite entire acute, flowers whorl-spiked, whorls distant, bractes cordate acuminate mucronate netted-nerved.*
10. *Sideritis perfoliata*. Perfoliate Iron-wort.  
Lin. spec. 802. Reich. 3. 38. Willd. 3. 66. Kniph. cent. 8. n. 86.  
S. orientalis phlomidis folio. Tournef. cor. 12?  
Herbaceous hispid-hairy, upper leaves lanceolate embracing toothletted, bractes cordate acuminate netted-nerved hairy at the edge.
11. *Sideritis ciliata*. Ciliated Iron-wort.  
Lin. syst. 532. ed. Willd. 3. 67. Thunb. jap. 245.  
Herbaceous, leaves petioled ovate serrate, bractes nerved ciliate.  
\*\*\* Braetted, with bractes toothed.
12. *Sideritis incana*. Lavender-leaved Iron-wort.  
Lin. spec. 802. Reich. 3. 39. Willd. 3. 67. Gouan illustr. 36. Cavan. ic. 2. 69. t. 186. Allion. pedem. n. 96.  
S. hispanica erecta, folio angustiore. Tournef. inst. 191.  
Hyssopus montanus verticillatus major. Barr. ic. 239. Bocc. mus. 2. 77. t. 67. f. 2.  
*Suffruticose tomentose, leaves lanceolate-linear quite entire, bractes toothed, lateral lobes of the upper lip of the corolla acute.*
13. *Sideritis virgata*. Rod-like Iron-wort.  
Lin. spec. ed. Willd. 3. 68. Desfont. atlant. 2. 15. t. 125.  
*Suffruticose tomentose, leaves linear quite entire, bractes toothed, lateral lobes of the upper lip of the corolla obtuse.*
14. *Sideritis glauca*. Glaucous Iron-wort.  
Lin. spec. ed. Willd. 3. 68. Cavan. ic. 2. 68. t. 185.  
Hyssopus montanus verticillatus minor. Barr. ic. 250.  
Herbaceous perennial, pubescent hoary, leaves linear-spattulate quite entire, bractes toothed, lateral lobes of the lower lip of the corolla acute.]
15. *Sideritis hyssopifolia*. Hyssop-leaved Iron-wort.  
Lin. spec. 803. syst. 531. Reich. 3. 39. Willd. 3. 69. hort. cliff. 313. Hall. helv. n. 260. (Betonica.)  
Allion. pedem. n. 95.  
S. alpina hyssopifolia. Baub. pin. 233.  
S. 7. Clus. hist. 2. 41.  
S. montana hyssop. minor. Barr. ic. 171. Villars dauph. 373. 2. c.  
β. S. alpina. Villars dauph. 2. 373.  
S. montana trifido folio. Barr. ic. 171.  
S. alpina hyssopi folio in summitate crenato. Tournef. inst. 191.  
Leaves lanceolate smooth quite entire, bractes cordate tooth-spiny, calyxes equal.
16. *Sideritis scordioides*. Crenated Iron-wort.  
Lin. spec. 803. syst. 532. Reich. 3. 40. Willd. 3. 69. Villars dauph. 2. 374. Hall. helv. n. 261. (Betonica.)  
S. montana scordioides glabra. Barr. ic. 343.  
S. foliis hirsutis profunde crenatis. Baub. pin. 233.  
S. f. ferruminatrix heraclea. Lob. ic. 528.  
β. S. hirta. Roth. catal. 1. 67. Willd.  
S. hirsuta procumbens. Baub. pin. 233.  
S. montana scordioides tomentosa. Barr. ic. 1160.  
Tetrahit herbariorum. Lob. ic. 523.  
Leaves lanceolate somewhat toothed smooth above, bractes ovate tooth-spiny, calyxes equal.
17. *Sideritis spinosa*. Thorny Iron-wort.  
Lin. spec. ed. Willd. 3. 70. Vahl symb. 1. 41.  
Lamarck encycl. 2. 168. D'Affo arag. n. 518.  
S. subspinosa. Cavan. ic. 3. 5. t. 209.  
Hirsute, leaves lanceolate with the bractes cordate tooth-spiny.]



18. *Sideritis hirsuta*. *Hairy Iron-wort*.  
*Lin. spec.* 803. *syft.* 532. *Reich.* 3. 40. *Kniph.*  
*cent.* 4. n. 81. *Sabb. hort.* 3. t. 58. *Allion. pedem.*  
 n. 97.  
*Tetrahit caulibus procumbentibus, foliis fessilibus.*  
*Ger. prov.* 272.  
*S. hirsuta procumbens.* *Baub. pin.* 233.  
*S. 3. Clus. hist.* 2. 40.  
*Leaves lanceolate obtuse toothed hairy, bractes tooth-*  
*spiny, stems hirsute decumbent.*
- [19. *Sideritis ovata*. *Ovate-leaved Iron-wort*.  
*Lin. spec. ed. Willd.* 3. 70. *Cavan. ic.* 1. 36. t. 48.  
*Herbaceous pubescent, leaves petioled elliptic obtuse cre-*  
*nate, spike four-cornered, bractes ovate tooth-spiny.*
2. *Sideritis lanata*. *Woolly Iron-wort*.  
*Lin. spec.* 804. *Reich.* 3. 41. *Willd.* 3. 71.  
*Leaves cordate obtuse villose, calyces awnless woolly, spike*  
*long, stem erect.]*

## DESCRIPTIONS, &amp;c.

1. Stem five or six feet high, sending out several woody branches covered with a soft down. Leaves on long footstalks; in young plants often five or six inches long, and two and a half broad near their base, but in older plants not more than half that size; they are very woolly, especially on their under side, which is white, but their upper surface is of a dark yellowish green. The flowers, which grow in thick whorled spikes at the end of the branches, are of a dirty white, and appear early in June. The plants frequently produce flowers again in autumn.

[It is a shrub with cordate acuminate crenate leaves, green on both sides. Spikes peduncled, long, nodding: whorls remote; flowers numerous; calyces rough-haired, mucronate<sup>a</sup>.—Native of the Canaries and of Madeira. Cultivated in 1697, by the Dutchess of Beaufort.

2. Native of Madeira, where it was found by Mr. Francis Masson, and introduced in 1777. It flowers from April to July<sup>b</sup>.

3. This is a shrub with divaricating branches, very thickly tomentose and snow-white. Leaves cordate, crenate, tomentose on both sides, obtuse, very thickly tomentose and snow-white beneath, green above. Spike from the division of the branches, peduncled, pendulous, tomentose, snow-white together with the calyces which are blunt. Flowers about eight in each whorl.—Native of the island of Crete or Candia<sup>c</sup>.

4. This is an annual plant, with a stem decumbent at bottom and then upright, a foot in length. Calyces sessile, hairy, with awny spiny segments<sup>d</sup>. Corollas yellow with a ferruginous margin, less than the calyx. Whorls six-flowered<sup>e</sup>. In rocky situations it is upright, in meadows decumbent<sup>f</sup>.

Native of Italy, Austria and Silesia. Cultivated in 1758 by Mr. Miller. It flowers in July and August<sup>g</sup>.

5. Annual. Calyces extremely villose and somewhat pungent, with the uppermost segment longer than the rest. Corolla a little longer than the calyx, white with black lips; the upper lip emarginate<sup>h</sup>.—The native place of growth not known. Introduced in 1787, by Mr. Zier. It flowers in July<sup>i</sup>.]

6. The roots seldom continue longer than two years in England. Lower leaves oblong, entire and hairy. Stems smooth, hoary, near four feet high, dividing into several long slender branches. Leaves hoary and acute-pointed. Flowers small, whitish, in small, compact, remote whorls, having two very short leaves immediately under them, which end in a sharp spine.

[Stems depressed, stiffish. Whorls six-flowered. The fifth or upper lobe of the calyx ovate, twice as wide as the others. Corollas like those of Horehound, with the upper lip only emarginate.—Native of the South of Europe<sup>k</sup>, and Barbary.

Stems prostrate or procumbent at the base, simple or branched at bottom; the branches undivided. Leaves spatulate-elliptic, blunt, approximating, spreading, nerved, villose, produced into the petiole, toothed

above. Whorls from bottom to top, sessile. Calyx rigid, villose, striated. Corolla a little longer: upper lip linear, standing upright; lower spreading, flat, slightly three-lobed, the middle lobe rounded. Seeds small, brown, shining, blunt, slightly three-cornered<sup>l</sup>.

Cultivated in 1759 by Mr. Miller. It flowers from June to August<sup>m</sup>; and is generally agreed to be biennial.]

7. This has a short woody stem, with a few branches about a foot long. Leaves thick, wedge-shaped, very downy and white. Flowers in whorls towards the end of the branches, yellow with smooth downy calyces.

[This little shrub has the appearance of a Sage, but is longer. Leaves of Sage, tomentose woolly white, the lower petioled, the upper sessile. Flowers yellowish-white<sup>n</sup>. The whole plant is covered with a very close white cotton. The root-leaves appear to be quite entire, but on a narrow inspection they have very minute notches round the edge. Bractes cordate ovate acute, covered with a white nap, a little shorter than the calyces<sup>o</sup>.

Native of the Levant. Cultivated in 1739, by Mr. Miller. It flowers from June to September<sup>p</sup>.

8. Stem suffruticose. Branches a foot long, somewhat divided, white-tomentose. Root-leaves petioled, stem-leaves sessile, all crenate, having a thin nap on them, wrinkle-veined. Bractes cordate, roundish-ovate, acuminate, nerved, netted, shorter than the calyces, during the flowering covered with a thin nap, but afterwards almost smooth, villose only at the edge. Corollas yellow, with the tube less than the calyx. Quite different from the preceding, by its subtomentose netted-nerved bractes, and other marks. Native of the Chersonesus Taurica.

9. This approaches to the preceding, but differs in having the leaves acute, less tomentose, quite entire; the stem only villose, with the whorls very remote; the bractes almost smooth, mucronate; the tube of the corolla longer than the calyx, with the middle segment of the lower lip blunt, not emarginate.

Native place not known, but perhaps from the Levant. Shrubby<sup>q</sup>.]

10. Root (perennial, but) seldom continuing longer than two years in England. Lower leaves oblong, entire, hairy. Stems near four feet high, dividing into several long slender branches. Stem-leaves hoary, acute-pointed. Flowers small, whitish, in small compact remote whorls, having two very short leaves immediately under them, which end with a sharp spine. Calyces prickly.

[Stem upright, herbaceous. Lower stem-leaves petioled, upper sessile, opposite, embracing; floral leaves cordate, quite entire, acuminate. Corollas white with some rufous veins<sup>r</sup>.

Native of the Levant. Cultivated in 1731 by Mr. Miller. It flowers from August to November<sup>s</sup>.

11. Stem herbaceous, four-cornered, erect, a foot and more in height, with branches and branchlets like the stem and bent in. Leaves acute, pale beneath, dotted above, scarcely an inch long: petiole a little shorter than the leaf. Spikes of flowers terminating, lanceolate, erect, a finger's length. Bractes suborbiculate, acuminate, nerved, imbricate, ciliate not spiny, in which it differs from all the rest. The whole plant is villose. Native of Japan<sup>t</sup>.

12. This has the habit of Lavender, but it is hoary with a cottony nap. Trunk suffruticose, for the most part decumbent at the base; whence spring many stems or branches, very finely tomentose, white, erect, elongated, a foot long, four-cornered. Leaves marked with lines, tomentose, white; the lower ones linear-lanceolate, naked above; upper ones linear, more remote; uppermost near the whorls sometimes toothed. Bractes cordate, toothed, somewhat spiny. Whorls six-flowered. Calyces five-toothed, hoary. Corollas yellow; upper lip erect, linear, often bifid, lower trifid with the middle segment four times as wide as the others<sup>u</sup>.

<sup>a</sup> Linn. spec.<sup>b</sup> Hort. kew.<sup>c</sup> Linn. spec.<sup>d</sup> Krock.<sup>e</sup> Linn. spec.<sup>f</sup> Linn. syft.<sup>g</sup> Hort. kew.<sup>h</sup> Willdenow.<sup>i</sup> Hort. kew.<sup>k</sup> Linn. spec. & syft.<sup>l</sup> Desfontaines.<sup>m</sup> Hort. kew.<sup>n</sup> Linn. spec.<sup>o</sup> Willdenow.<sup>p</sup> Hort. kew.<sup>q</sup> Willdenow.<sup>r</sup> Linn. spec.<sup>s</sup> Hort. kew.<sup>t</sup> Thunberg.<sup>u</sup> Linn. spec.



It varies with the lower leaves linear-spatulate and the upper linear; also with the lower linear and the upper oblong or spatulate; lastly, with the leaves quite entire and subcordate\*.

Native of Spain. Cultivated in 1748 by Mr. Miller<sup>γ</sup>.

13. This is an upright hoary shrub, with rod-like, upright, slender, four-cornered branches. Lower leaves approximating, petioled, narrowed at the base, linear-lanceolate; upper remote, twice or thrice as short as the internodes, linear or linear-subulate. Flowers small, in whorls, sessile at the top of the branches. Whorls three to five, distinct, from four to six-flowered. Bractes pressed close, palmate-toothed; segments narrow, acute, mucronate. Calyx cylindrical, tomentose, five-toothed: teeth setaceous-spiny: Corolla pale yellow, longer than the calyx.—Native of Barbary, on sandy hills near Mascara<sup>z</sup>.

Willdenow suspects it to be a variety of the preceding.

14. Nearly allied to *S. incana*, but differing in having the stem herbaceous, and in not being tomentose.—Native of Spain, in the kingdom of Valencia<sup>z</sup>.]

15. This has a short woody stem, with branches a foot and half long. Leaves narrow, smooth, an inch long, having a strong scent when bruised. Flowers yellow, in large spiked whorls at the end of the branches.

[Stems many, hairy, straight, hard, a foot high. Leaves on short petioles, somewhat hairy, elliptic, with a few and sometimes no teeth, and three nerves. Whorls close, collected into short spikes; with ovate acute leaves interposed, acutely ferrate, the ferratures and tip ending in yellow spinules. Calyx two-lipped, awned, villose; the lower lip two-toothed, separate from the upper. Corolla pale yellow, with a few lines on the upper lip, waved, produced into a long appendix, emarginate: middle segment of the lower lip emarginate, crenate<sup>b</sup>.

Native of Switzerland, Italy and the Pyrenees. Cultivated in 1731 by Mr. Miller. It flowers from June to November<sup>c</sup>.]

16. Root perennial. Stems a foot long. Leaves lanceolate, deeply crenate, an inch long and half an inch broad, with short heart-shaped prickly bractes. The flowers grow in whorled spikes at the end of the stem, are yellow, and have an equal prickly calyx.

[Stems perennial a little above the ground, ascending, simple. It differs from *S. hirsuta* in the stems being more upright, the leaves above often smooth, the corollas yellow even on the upper lip, the spikes ovate, not interrupted, the bractes ovate, tooth-ciliate<sup>d</sup>.

Haller remarks, that it is very like the preceding, but that the stem is more tomentose, and the leaves deeply crenate.

Native of the South of France, and of Spain. Cultivated in 1739, by Mr. Miller. It flowers from August to November<sup>e</sup>.

β. *S. hirta* of Roth, which he describes as having the stem decumbent at the base, the leaves toothed and rough-haired, the bractes cordate, and the spikes elongated, is only a variety of the *scordioides*, there being intermediate specimens which connect them<sup>f</sup>.

17. Stem perennial at the base, very much branched, diffused, rigid, hirsute. Leaves narrow at the base, rigid, hirsute: with two teeth on each side, spiny. Spikes terminating, an inch and half long. Bractes cordate, tooth-gashed, nerved, smooth, with the teeth spiny. Calyxes on each side three, shorter than the bracte, hirsute, with the segments spiny and equal<sup>g</sup>.

Plant a foot high. Stems round, hoary. Leaves tomentose, on each side two or three stout spiny teeth. Whorls remote, with six flowers in each. Calyxes equal with five spines. Corollas yellow. It varies with the leaves less rigid, and having more teeth. It differs from *S. Scordioides* in having the spikes not ovate but interrupted, and the leaves more rigid<sup>h</sup>.

\* Willdenow.

γ Desfontaines.

δ Hort. kew.

ε Willdenow.

ζ Hort. kew. Mill. dict. ed. 5. n. 7.

η Willdenow.

θ Linn. spec.

ι Vahl.

κ Hort. kew.

λ Affo.

Native of Spain. Vahl found it common in Castille and Arragon.]

18. Root perennial. Stems herbaceous, hairy, trailing, a foot and half long, sending out branches at the bottom. The upper part of the stem has whorls of purple flowers standing pretty far asunder.

[Stem rigid. Leaves wrinkled and plaited, with three or four sharpish serratures. Bractes cordate. Whorls very remote, sessile, six-flowered, with the stem more hairy between the whorls. Corollas yellow, with the tube curved in, the upper lip linear, semi-bifid, reflexed, erect, snow-white, and the lower very small. Calyxes rough-haired, with five equal spines. Stamens within the tube<sup>1</sup>.

The same synonym from Caspar Bauhin is given here and under *Scordioides* β.

Native of the South of Europe. Cultivated in 1731 by Mr. Miller. It flowers in June and July<sup>k</sup>.

19. Bractes imbricate in four rows, making a square spike. Native of Peru. Perennial<sup>l</sup>.

20. Root annual. Plant a span high, upright, woolly all over. Stem quite simple. Leaves subsessile, indistinctly crenate. Spike longer than the stem itself, sessile, composed of six-flowered, remote, very woolly whorls. Corollas dark violet, length of the calyx. Bractes ovate, indistinctly ferrate, woolly<sup>m</sup>.]

#### PROPAGATION AND CULTURE.

The first sort is generally kept in green-houses in England, but in moderate winters I have had these plants live abroad without cover in a warm dry border: however, if they are screened from hard frost under a common frame, where they may be exposed to the open air at all times when the weather is mild, and protected from hard frosts, they will thrive better than with more tender treatment. It is propagated by seeds which should be sown in autumn, for those which are sown in the spring seldom succeed, or if they do, the plants rarely come up the first year.

Most of the sorts are hardy enough to thrive in the open air in England: they are propagated by seeds, which, if sown in autumn, will succeed better than those which are sown in the spring. The seeds may be sown in shallow drills upon a dry spot of ground, and in the spring when the plants come up, they must be kept clean from weeds; and when the plants are fit to remove, part of each sort may be drawn out, and planted in a bed at about nine or ten inches distance, which will give those which are left in the seed-bed room to grow. The plants which are removed should be shaded and watered until they have taken new root, after which they will require no other care but to keep them clean from weeds till the following autumn, when they should be transplanted to the places where they are to remain. None of the sorts should be planted in rich ground, for that will cause them to grow so luxuriant in summer, that the frost or much wet will destroy them in winter.

The annual sorts (n. 4. 5.) should not be removed, but the plants thinned and left in the place where they were sown, keeping them clean from weeds.

The sixth and seventh sorts, though properly greenhouse plants, will often live through the winter in the open air, especially if their seeds are sown upon dry rubbish; for when either of these happen to grow in the joints of old walls, they will endure the greatest cold of this country, therefore their seeds should be sown in such places. The seventh sort does not produce good seeds in England, therefore this is propagated by slipping off the heads, planting them in a shady border during the spring or summer months, which will readily take root; some of these may then be taken up and put into pots, that they may be screened under a frame in winter.

[SIDERITIS. See *Betonica*, *Clinopodium*, *Dracocephalum*, *Galeopsis*, *Hyptis*, *Leonurus*, *Lycopus*, *Phlomis*, *Stachys*.

SIDE-SADDLE FLOWER. See *Sarracenia*.

SIDERODENDRUM. (*Iron Tree*.)

Lin. gen. Schreb. n. 169. *Sideroxyloides*. Jacqu. amer. 19.

<sup>1</sup> Linn. mant.

<sup>k</sup> Hort. kew.

<sup>l</sup> Linn. spec.

<sup>m</sup> Cavanilles.



# S I D

## GENERIC CHARACTER.

- CAL.** *Perianth* one-leafed, very small, four-toothed, acute, placed on the germ.
- COR.** one-petalled. *Tube* cylindrical, curved in, long. *Border* four-cleft: *segments* oblong, obtuse, flat, reflexed, shorter by half than the tube.
- STAM.** *Filaments* four, very short, arising below the divisions of the border. *Anthers* oblong, erect.
- PIST.** *Germ* roundish, inferior. *Style* filiform, length of the tube of the corolla. *Stigma* oblong, obtuse, thickish. *Jacqu.*
- PER.** *Berry* dicoccous, crowned with the calyx, two-celled; with the partition contrary.
- SEEDS** solitary, on one side convex, wrinkled; on the other flat, margined, fastened to the partition.

## ESSENTIAL CHARACTER.

- Cor.* one-petalled, salver-shaped. *Cal.* five-toothed. *Berry* dicoccous, two-celled. *Seeds* solitary.

## SPECIES.

1. *Siderodendrum triflorum.*  
*Lin. spec. ed. Willd.* 1. 812. *Vahl ecl.* 1. 10.
- Sideroxyloides ferreum.* *Jacqu. amer.* 19. t. 175. f. 9. *piet.* 1. 259. f. 7.
- Sideroxylum americanum*, f. *lignum duritie ferrum æmulans.* *Pluk. phyt.* 1. 224. f. 2.

## DESCRIPTION, &c.

This is a tall branching tree, with ovate-lanceolate, acute, quite entire, shining, petioled, opposite leaves, half a foot long. Peduncles axillary, very short, often three-flowered. Flowers small, rose-coloured on the outside, white within.

Branches smooth, below round, above slightly four-cornered, compressed at the top. There is a little bracte on each side the base of the pedicels. The corolla is often changed, perhaps by some insect, into an oblong bag, half an inch in length, fleshy, hollow within, ending in a point at top, and having the appearance of a fruit.

Jacquin found it in the mountain woods of Marti-  
nico; and Ryan in Montserrat.

SIDEROXYLOIDES. See *Siderodendrum*.]

SIDEROXYLON. (*Iron wood*.)

*Lin. gen. n.* 264. *Reich. n.* 233. *Schreb. n.* 357.  
& p. 823. *Dill. elth.* 265. *Jacqu. amer.* 55.  
*Juss.* 151.

*Class.* 5. 1. Pentandria Monogynia.

*Nat. order of* *Dumosa.* *Sapotæ*, *Juss.*

## GENERIC CHARACTER.

- CAL.** *Perianth* five-cleft, small, erect, permanent.
- COR.** one-petalled, wheel-shaped: *segments* five, roundish, concave, erect. *Toothlet* cusped, serrate, at the base of each division of the petal, tending inwards.
- STAM.** *Filaments* five, awl-shaped, length of the corolla, alternate with the toothlets. *Anthers* oblong, incumbent.
- PIST.** *Germ* roundish. *Style* awl-shaped, length of the stamens. *Stigma* simple, obtuse.
- PER.** *Berry* roundish, one-celled.
- SEEDS** five.

**OBS.** *S. decandrum* differs in having ten stamens. The teeth are wanting in the corolla of *S. mite*, *melanophlæum*, and some others.

## ESSENTIAL CHARACTER.

- Cor.* five-cleft. *Nect.* (in most) five-leaved. *Stigma* simple. *Berry* five-seeded.

## SPECIES.

- [1. *Sideroxylon mite.*  
*Lin. syst.* 232. *Reich.* 1. 536. *Willd.* 1. 1089.  
*Jacqu. collect.* 2. 249.  
*Unarmed, flowers sessile.*]
2. *Sideroxylon inermis.* *Smooth Ironwood.*  
*Lin. spec.* 278. *syst.* 232. *Reich.* 1. 536. *Willd.*  
1. 1089. *hort. cliff.* 69. *Berg. cap.* 47. *Jacqu.*  
*collect.* 2. 250. *Thunb. prodr.* 36. *Mill. fig.*  
t. 299. *Kniph. cent.* 2. n. 36. *Dill. elth.* 357.  
t. 265. f. 344.  
*Unarmed, leaves perennial cbovate, peduncles round.*

<sup>a</sup> Jacquin.

<sup>o</sup> Vahl.

# S I D

- [3. *Sideroxylon melanophlæum.* *Laurel-leaved Iron-wood.*

*Lin. syst.* 232. *Reich.* 1. 537. *Willd.* 1. 1089.  
*mant.* 48. *Jacqu. hort.* 1. 89. t. 71. *Thunb.*  
*prodr.* 36. *Burm. afr.* 238. t. 84. f. 2. (*Padus*.)

*Laurifolia africana.* *Comm. hort.* 1. 195. t. 109.

*Unarmed, leaves perennial lanceolate, peduncles angular.*

4. *Sideroxylon cymosum.*

*Lin. syst.* 232. *Willd.* 1. 1090. *suppl.* 152. *Thunb.*  
*prodr.* 36.

*Unarmed, leaves opposite petioled, cymes compound and decomposed.*

5. *Sideroxylon sericeum.* *Silky Ironwood.*

*Lin. spec. ed. Willd.* 1. 1090. *Ait. kew.* 1. 262.

*Unarmed, leaves ovate tomentose-silky beneath.*

6. *Sideroxylon argenteum.* *Silvery Ironwood.*

*Lin. spec. ed. Willd.* 1. 1090. *Thunb. prodr.* 36.

*Unarmed, leaves ovate retuse tomentose, flowers peduncled.*

7. *Sideroxylon tomentosum.*

*Lin. spec. ed. Willd.* 1. 1090. *Roxb. corom.* 1. 28.  
t. 28.

*Unarmed, leaves oblong acuminate obtuse, the younger ones tomentose, peduncles aggregate axillary, length of the petiole.*

8. *Sideroxylon lycioides.* *Willow-leaved Ironwood.*

*Lin. spec.* 279. *Reich.* 1. 537. *Willd.* 1. 1090.

*Dubam. arb.* 2. 260. t. 68. *Wangenb. amer.* 117.

*Lycioides.* *Lin. hort. cliff.* 488.

*Arbor folio falicis, &c.* *Boerb. lugdb.* 2. 263.

*Spiny, leaves deciduous.*

9. *Sideroxylon decandrum.*

*Lin. syst.* 232. *Reich.* 1. 538. *Willd.* 1. 1091.  
*mant.* 48.

*Spiny, leaves deciduous elliptic.*

## DESCRIPTIONS, &c.

1. Royen remarked that the flowers have no teeth between the stamens. It is a native of Africa.]

2. At the Cape of Good Hope, where this tree is a native, it rises to the height of an English Apple tree; but in Europe it is rarely more than eight or ten feet high. The wood is so heavy as to sink in water, and being very close and hard, the name of Iron-wood has been given it, and hence the generic appellation of *Sideroxylon*. It divides into many branches, which are covered with a russet bark. Leaves about three inches long, and an inch and half broad in the middle, ending in points at both extremities, placed without order on the branches, having footstalks an inch long: they are smooth, of a lucid green, and continue all the year. The flowers come out in clusters from the side of the branches, upon short footstalks, which branch out into several smaller, each sustaining a single flower, which is small and white.

[Cultivated in 1729, by James Sherard, M. D.<sup>a</sup> It flowered that year in the Eltham garden, in the month of July: but had been there about seven years, and was obtained first from Dr. Uvedale's garden at Enfield, and afterwards from Holland<sup>r</sup>.

3. This tree bears a great resemblance to the preceding: it has thick branches like that, but without any streaks or warted dots. The leaves are perennial; and the peduncles very short, but not round. Burman's figure represents this rather than the inermis. There are no teeth between the stamens.—Native of the Cape of Good Hope<sup>r</sup>. Introduced in 1783, by Mr. John Græffer<sup>r</sup>.

*Sideroxylon tenax* and *fœtidissimum*, according to Swartz, ought to be referred to the genus *Bumelia*, on account of the form of the nectary, and the fruit being a one-seeded drupe.

The former is a native of Carolina, and is thus described in Linneus's mantissa.—Height twenty feet, with a white bark, and very tough branches. Buds alternate, from each proceed numerous peduncles, an inch long, one-flowered. Leaves within or between the peduncles five or six, petioled, oblong, bluntish, quite entire, subtomentose beneath, the length and breadth of a finger, firm, annual. Flowers small.

<sup>p</sup> Mill. fig.

<sup>q</sup> Hort. kew.

<sup>r</sup> Hort. elth.

<sup>s</sup> Linn. mant.

<sup>t</sup> Hort. kew.

Calyx



Calyx ovate, with five ovate blunt leaflets, the outer ones wider and converging. Tube of the corolla length of the calyx: border five-parted; the parts ovate, shorter than the calyx: nectary in the throat of the corolla, a little less than the corolla, five-parted; leaflets trifid, the middle generally longer. Stamens length of the corolla. Germ five-cornered. Style and stigma simple. Drupe oval. Nut ovate, shining, with two holes at the base, separated by an arched septum. Stature of *Chrysophyllum* or *Achras*: it varies with very short spines here and there on the branchlets. It is the *Chrysophyllum carolinense* of Jacquin's observations, and *Bumelia tenax* of Willdenow's species.

The latter, *Sideroxylon foetidissimum*, is a native of St. Domingo; and has the leaves subalternate, lanceolate-oblong, obtuse, submarginate, shining: the peduncles axillary, one-flowered, abundant in clusters. It is *Bumelia foetidissima* of Willdenow's species.]

Miller, besides the *inermis*, has a second species, which he names *Sideroxylon oppositifolium*. He says it grows more upright and regular; and that the leaves are smaller, more pointed, and placed opposite on the branches.

[4. This is a small shrub, native of the Cape of Good Hope. Thunberg found it on the Tafelberg<sup>a</sup>.

5. Native of New South Wales, where it was found by Sir Joseph Banks, and introduced in 1772<sup>a</sup>.

6. Native of the Cape of Good Hope.

7. A small tree, with an erect trunk, covered by an ash-coloured bark. Branches erect, very numerous. Leaves alternate, on short petioles, oval a little, scolloped; when full grown smooth, when young covered with much rust-coloured down; from three to five inches long, and an inch and half broad. Peduncles axillary, numerous, short, downy, bowing, undivided, one-flowered. Flowers small, dirty white. Calyx inferior, five-leaved: leaflets imbricate, downy, permanent. Tube of the corolla short, downy within: margin five-parted; segments spreading, half-lanceolate, acute, waved. Nectary of five petals, alternate with the filaments, waved, length of the stamens. Berry oval, size of an Olive, with one or two seeds only in general, though there are the rudiments of five.

Native of the East Indies, on the tops of mountains chiefly; flowering during the hot season<sup>a</sup>.

8. Native of Canada. Perhaps a species of *Bumelia*, Wangenheim having described the fruit to be a dry drupe containing one seed<sup>a</sup>. Cultivated in 1758 by Mr. Miller<sup>a</sup>.

9. This is a tree with axillary solitary spines and alternate leaves. Peduncles axillary, one-flowered, very many, a little longer than the petioles. Calyx five-cleft, obtuse. Corolla funnel-form, five-cleft, obtuse; with the segments concave, scarcely unfolded. Nectary five-leaved, ferrate, short, each lobe to each segment of the corolla. Stamens ten, awl-shaped, length of the nectary; anthers sagittate. Germ globular: style filiform; stigma very small. Berry black, globular, from three to five-celled, commonly abortive.—It resembles the preceding, yet differs much either in species, or from culture<sup>b</sup>.

Native of South America.

Of *Sideroxylon spinosum* there is no specimen in Linneus's herbarium sufficiently perfect to ascertain the species. From Clifford's herbarium, now in the possession of Sir Joseph Banks, it appears, that the Argan of Morocco, had been taken up by Linneus in the Hortus Cliffortianus under this name. This Argan or Olive tree of Morocco, is the *Rhamnus pentaphyllus*, first published by Linneus (app. syst. nat. ed. 12.) under the name of *Rhamnus ficulus*; as appears from the specimen in Linneus's herbarium, compared with specimens in Sir Joseph Banks's herbarium, from Morocco<sup>c</sup>.

Linneus seems to have confounded *Eleodendrum Argan* and *Flacourtia sepiaria* under this name of

<sup>a</sup> Linn. suppl.

<sup>a</sup> Willdenow.

<sup>x</sup> Hort. kew.

<sup>a</sup> Hort. kew.

<sup>c</sup> Dryander in Linn. trans. 2. 225.

<sup>y</sup> Roxburgh.

<sup>b</sup> Linn. mant.

*Sideroxylon spinosum*, which are both of very different genera from this. Willdenow received the latter of these two plants from Koenig, under the name of *Sid. spinosum*. The synonyms of *Commelin* (hort. 1. 161. t. 83.) Plukenet (phyt. t. 202. f. 2.) Rheede (5. 77. t. 39.) and Burman (ind. 59.) belong to *Flacourtia sepiaria*<sup>d</sup>.

See *Eleodendrum Argan*.

For the other species of *Sideroxylon*, see *Chrysophyllum*, *Curtisia* and *Olea*.]

#### PROPAGATION AND CULTURE.

These plants being natives of warm countries, cannot be preserved in England, unless they are placed in a moderate stove. They are propagated by seeds, when these can be procured from abroad. These must be sown in pots filled with light rich earth, and plunged into a good hot-bed in the spring, in order to get the plants forward early in the season. When the plants are fit to transplant, they should be each put into a separate small pot filled with good earth, and plunged into a fresh hot-bed while they are young. In winter they must be plunged into the tan-bed in the stove, and treated in the same manner as has been directed for tender plants from the same countries. As the plants obtain strength, they may be treated more hardily, by placing them in a dry stove in the winter, and giving them a greater share of free air in summer; and when they have obtained strength, they may be placed abroad in summer in a sheltered situation.

I have propagated them by layers, but these were two years before they had made good roots; and sometimes they will take from cuttings, but this is a very uncertain method, nor do the plants so raised ever grow so vigorously as those which come from seeds.

SIGESBECKIA. (So named from John George Siegesbeck, a German, Prefect of the Petersburg garden. Author of *Primitiæ Floræ Petropolitanae*. 1736. Rigæ 4°.—*De Maianthemo Lilium convallium nuncupato*. Petrop. 1736. 4°.—*Botanosophiæ verioris sciagraphia*. Petrop. 1737. 4°.—*Vaniloquentiæ botanicæ specimen*. Petrop. 1741. 4°.)

Lin. gen. n. 973. Reich. n. 1057. Schreb. n. 1320.

Gertn. t. 168. Juss. 187.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Oppositifoliæ*.—*Corymbiferae*, Juss.

#### GENERIC CHARACTER.

CAL. Common exterior five-leaved: leaflets linear, round, spreading very much, longer than the flower, permanent: interior subquincangular; leaflets many, ovate, concave, obtuse, equal.

COR. Compound, half-radiate. Corollæ hermaphrodite many in the disk: female five or fewer in the ray, only on one side of the flower.

Proper of the hermaphrodite funnel-form, exceeding the calyx in length, five-toothed or three-toothed.

Female ligulate, wide, three-toothed, very short; or funnel-shaped, trifid, the interior division deeper.

STAM. in the Hermaphrodites: Filaments five or three, very short. Anther cylindrical, tubular.

PIST. in the Hermaphrodites: Germ oblong, curved in, size of the calyx. Style filiform, length of the stamens. Stigma bifid.—In the Females: Germ oblong, curved in, size of the calyx. Style filiform, length of the hermaphrodite. Stigma bifid.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites solitary, oblong, obtusely four-cornered, thicker above, obtuse, naked. Pappus none.—In the Females very like the others.

REC. chaffy: chaffs very like the scales of the calyx, concave, wrapping up the seeds on one side and deciduous.

#### ESSENTIAL CHARACTER.

Cal. exterior five-leaved, proper, spreading. Ray halved. Pappus none. Recept. chaffy.

<sup>d</sup> Willdenow.



## SPECIES.

1. *Sigesbeckia orientalis*. *Oriental Sigesbeckia*.  
*Lin. spec.* 1269. *syn.* 779. *Reich.* 3. 875. *hort.*  
*cliff.* 412. *t.* 23. *upf.* 267. *Gärtn. fruct.* 2. 424.  
*Kniph. cent.* 2. n. 87. *Buxb. cent.* 3. 29. *t.* 52.  
 (Bidenti similis.) *Pluk. amalth.* 58. *t.* 380. *f.* 2.  
 (Cichorio affinis.)  
*Petioles sessile, exterior calyxes linear larger spreading.*
- [2. *Sigesbeckia occidentalis*. *American Sigesbeckia*.  
*Lin. spec.* 1269. *Vaill. aët.* 1720. 325. (Eupatorio-  
 phalacron.)  
*Phaethusa americana*. *Gärtn. fruct.* 2. 425. *t.* 169. &  
*Diët. nostr.*  
*Petioles decurrent, calyxes naked.*
3. *Sigesbeckia flosculosa*. *Small-flowered Sigesbeckia*.  
*L'Herit. stirp. nov.* 37. *t.* 19. *Ait. kew.* 3. 244.  
*Floscules three-toothed, the hermaphrodites three-sta-*  
*mened.]*

## DESCRIPTIONS, &amp;c.

1. Plant annual, near four feet high, sending out many branches. Flowers terminating, small, yellow.

[Stem upright. Leaves ovate, acuminate at both ends, finishing in the petioles, opposite, three-nerved, veined, serrate. Branches from each upper axil, shorter than the stem. Peduncles terminating and lateral from the upper branches solitary, brachiate, sustaining a fulvous flower, in form of a spider, with a spreading involucre, fenced by five hispid rays, or hairs having a clammy head on the top of each. When the ripe seeds are gathered, they move in the hand as if they were alive. It is remarkable for having the ray of the flower on one side, as in *Milleria*. Receptacle narrow, flat. Seeds inversely pyramidal, rugged with tubercles, glutinous, brown, bald, smooth, of a livid lead-colour, or brown<sup>f</sup>.

Native of India, China, Media, Otaheite and New Zealand. Cultivated in 1730, by Mr. Miller. It flowers in July and August<sup>g</sup>.

2. Stem stiff and straight. Leaves opposite, lanceolate-ovate, triple-nerved, serrate, running down on both sides along the stem, which thence has four membranaceous angles, subtomentose beneath. Peduncles terminating, brachiate. Calyx oblong. Receptacle naked. Corolla radiate, with a single, ligulate ray, bifid at the top. The seeds have a pappus on each side of two chaffs<sup>h</sup>.

Cultivated in 1731 by Mr. Miller; who has omitted it in the later editions of his Dictionary. It flowers in October and November, and is perennial<sup>i</sup>. See *Phaethusa*.

3. Plant annual, three feet high. Stem very much branched, round, slightly striated, somewhat villose, jointed, the thickness of a reed, dusky purple: branches opposite, when flowering dichotomous, diffused, striated, marked with rings, villose, purplish. Leaves opposite, embracing, remote, spreading, ovate, acute, unequally serrate, with appendages surrounding the stem at the base, three-nerved, veined, wrinkled, the upper surface shining, the lower paler, two inches long and fifteen lines wide. On the flowering branchlets the leaves are alternate, sessile, but not margined at the base, ovate-lanceolate, gradually less and less. Panicle terminating, very loose, leafy, dichotomous, from the stem itself. Flowers within the forkings of the branchlets or opposite to a leaf, solitary, peduncled, the upper ones closely heaped in a sort of corymb, herbaceous with a yellow disk. Peduncles erect, filiform, villose, four lines long. Calyx glandular-hairy; exterior five-leaved, interior ten-leaved, converging, angular. Compound corolla almost uniform, resembling a floscular flower, globular; having many hermaphrodite florets in the disk, and five female in the ray. Seeds to both florets, obovate, curved in, somewhat rugged, brown.—This species is distinguished at first sight from the *orientalis* by its floscular-like flowers, and dichotomous, diffused branches. Perhaps it is the only plant which is triandrous, in the class Syngenesia.

Native of Peru, whence it was sent by Dombey<sup>k</sup>.

<sup>a</sup> Linn. cliff.

<sup>f</sup> Gärtner.

<sup>g</sup> Hort. kew.

<sup>h</sup> Linn. spec. & mant.

<sup>i</sup> Hort. kew.

<sup>k</sup> L'Heritier.

It is an annual plant, flowering in June and July; and was introduced in 1784 by Chev. Thunberg<sup>l</sup>.]

## PROPAGATION AND CULTURE.

1. Sow the seeds on a hot-bed, and set out the plants in a warm border the beginning of June, supplying them with water in dry weather.

[2. Is a perennial hardy plant.

3. Soon ripens its seeds, and may be propagated by them or by cuttings.

SILAGURIUM. See *Sida*.]

SILAUM and SILAUS. See *Peucedanum*.

SILÈNE. So named by Linneus, from Σιᾶλος, Σιᾶλις, or Σιᾶλος, spuma, saliva, foam or spittle.)

*Lin. gen. n.* 567. *Reich. n.* 616. *Schreb. n.* 772.

*Juss.* 302. *Gärtn. t.* 130. *Viscago. Dill. elth.*

309. &c.

Class. 10. 3. Decandria Trigynia.

Nat. order of *Caryophyllei*. *Caryophyllee*, Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leaved, ventricose, five-toothed, permanent.

COR. Petals five: claws narrow, length of the calyx; margined: border flat, obtuse, often bifid.

Nectary composed of two toothlets in the neck of each petal, forming a crown at the throat.

STAM. Filaments ten, awl-shaped, alternately inserted into the claws of the petals, and later than the other five. Anthers oblong.

PIST. Germ cylindrical. Styles three simple, longer than the stamens. Stigmas bent contrary to the sun's apparent motion.

PER. Capsule cylindrical, covered, one or three-celled, opening at top into five or six parts.

SEEDS very many, kidney-form.

OBS. It differs from *Cucubalus* in the nectarous crown of the corolla.

## ESSENTIAL CHARACTER.

Cal. ventricose. Pet. five, with claws, crowned at the throat. Caps. three-celled.

## SPECIES.

## 1. Flowers solitary lateral.

[1. *Silene anglica*. *English Catchfly*.

*Lin. spec.* 594. *Reich.* 2. 344. *Willd.* 2. 691.

*hort. upf.* 113. *Huds. angl.* 187. *Wither. arr.*

*ed.* 3. 413. *Smith brit.* 465. *Curt. lond.* 4. *t.* 30.

*Relb. cant. ed.* 2. n. 364. *Dicks. ficc.* 13. 18

*Allion. pedem. n.* 1564. *Kniph. cent.* 8. n. 87

*Dill. elth.* 417. *t.* 309. *f.* 398. (Viscago.)

*S. arvensis. Salisb. prodr.* 301.

*Lychnis sylvestris flore albo minimo. Raii hist.* 996.

13. *syn.* 339.

*L. sylv. hirsuta annua, flore minore albo. Vaill. par.*

121. *t.* 16. *f.* 12.

*Hirsute viscid, petals emarginate, flowers lateral erect alternate, lower fruits divaricate-reflexed.*

2. *Silene lusitanica. Portugal Catchfly*.

*Lin. spec.* 594. *Reich.* 2. 345. *Willd.* 2. 691.

*hort. cliff.* 172. *upf.* 113. *Dill. elth.* 420. *t.* 311.

*f.* 401. (Viscago.)

*Hirsute, petals toothed undivided, flowers erect, fruits divaricate-reflexed alternate.]*

3. *Silene quinquevulnera. Variegated Catchfly*.

*Lin. spec.* 595. *Reich.* 2. 345. *Willd.* 2. 691.

*hort. cliff.* 171. *upf.* 113. *Huds. angl.* 188.

*Wither. arr. ed.* 3. 413. *Smith brit.* 466. *engl.*

*bot. t.* 86. *Sauv. monsp.* 146. *Krock. files.* n. 663.

*Allion. pedem. n.* 1566. *Hoffm. germ.* 151.

*Lychnis vulnerata. Scop. carn. n.* 524.

*L. sylvestris lanuginosa minor. Baub. pin.* 206.

*L. hirsuta, flore eleganter variegato. Raii hist.* 997. 19.

*L. hirta minor, flore variegato. Dodart mem.* 99.

*cum. ic.*

*Hirsute, petals roundish quite entire, flowers lateral alternate and fruits erect.*

[4. *Silene ciliata. Fringed Catchfly*.

*Lin. spec. ed. Willd.* 2. 692.

*Lychnis parvo flore calyce striato purpurascens.*

*Tournef. cor.* 24.

*Petals two-parted obtuse, calyxes club-shaped pubescent ciliate at the tip alternate erect.*

<sup>l</sup> Hort. kew.



5. *Silene sericea*. Silky *Silene*.  
*Lin. spec. ed. Willd.* 2. 692. *Allion. pedem. n.* 1573.  
*t.* 79. *f.* 3.  
*Petals bifid, flowers opposite peduncled erect, leaves oblong-spatulate silky-boary.*
6. *Silene nocturna*. Spiked night-flowering *Catchfly*.  
*Lin. spec.* 595. *Reich.* 2. 345. *Willd.* 2. 692.  
*Allion. pedem. n.* 1568. *Dill. elth.* 420. *t.* 310.  
*f.* 400. (*Viscago*.)  
*Lychnis sylvestris hirsuta elatior spicata lini colore.*  
*Barr. ic.* 10. *t.* 27. *f.* 1.  
*L. sylv. nocturna pilosa, floribus unius ordinis dilute purpureis.* *Cup. cathol.* 119. *Raii suppl.* 480.  
*L. segetum meridionalium annua hirta, flor. albis uno versu dispositis.* *Mor. hist.* 2. 346. *f.* 5. *t.* 36. *f.* 7.  
*Flowers in spikes alternate directed one way, sessile, petals bifid.*
- [7. *Silene gallica*. French *Catchfly*.  
*Lin. spec.* 595. *Reich.* 2. 346. *Willd.* 2. 693.  
*Dalib. par.* 129. *Allion. pedem. n.* 1567. *Hall. belv. n.* 914. *Dill. elth.* 419. *t.* 310. *f.* 399.  
*(Viscago.)*  
*Lychnis sylvestris hirsuta annua, flore minore carneo.*  
*Vaill. par.* 121. *t.* 16. *f.* 12.  
*Flowers subspiked alternate directed one way, petals undivided, fruits erect.*
8. *Silene cerasoides*.  
*Lin. spec.* 595. *Reich.* 2. 346. *Willd.* 2. 693.  
*Dill. elth.* 416. *t.* 309. *f.* 307. (*Viscago*.)  
*S. rigidula.* *Lin. amoen.* 4. 313.  
*Lychnis cerasoides.* *Scop. carn. n.* 522.  
*Hirsute, petals emarginate, fructifications erect, calyxes subsessile somewhat hairy.*  
*2. Flowers lateral in clusters.*
9. *Silene mutabilis*. Changeable *Catchfly*.  
*Lin. spec.* 596. *Reich.* 2. 347. *Willd.* 2. 694.  
*amoen.* 4. 314.  
*Lychnis flore albo minimo.* *Raii hist.* 996.  
*L. arvensis minor anglica.* *Raii hist.* 1004.  
*Petals bifid, calyxes angular peduncled, leaves lanceolate-linear.*
10. *Silene chlorantha*. Pale-flowered *Catchfly*.  
*Lin. spec. ed. Willd.* 2. 694. *Ebr. Beitr.* 7. 145.  
*Cucubalus chloranthus.* *Willd. prodr. berol. n.* 477.  
*t.* 5. *f.* 9. *Hoffm. germ.* 150. *Roth. germ.* 1. 193.  
*2. 492.*  
*Viscago nocturna non viscosa herbaceo flore.* *Dill. elth.* 425. *t.* 316. *f.* 408.  
*Lychnis sylvestris sesamoides major, flore obsolete viridi.* *Mentz. pug. t.* 2. *f.* 1.  
*Petals linear bifid, flowers lateral directed one way drooping, root-leaves rugged at the edge.*
11. *Silene nutans*. Nottingham *Catchfly*.  
*Lin. spec.* 596. *yst.* 420. *Reich.* 2. 347. *Willd.* 2. 694. *hort. cliff.* 171. *fl. succ. n.* 588. *Huds. angl.* 188. *Wither. arr. ed.* 3. 413. *Smith brit.* 466. *engl. bot. t.* 465. *Fl. dan. t.* 242. *Gumm. norv. n.* 1109. *Hoffm. germ.* 151. *Roth. germ.* 1. 192. 2. 494. *Pellich pal. n.* 417. *Leers herborn. n.* 333. *Krock. files. n.* 664. *Villars dauph. 3.* 606. *Allion. pedem. n.* 1569. *Gmel. fib.* 4. 138.  
*Viscago.* *Hall. belv. n.* 915.  
*Lychnis nutans.* *Scop. carn. n.* 525.  
*L. montana viscosa alba latifolia.* *Bauh. pin.* 205.  
*L. sylvestris albo flore.* *Tab.* 293. *Clus. pann.* 328.  
*L. silvest. g.* *Clus. hist.* 290. *f.* 291. 1.  
*L. sylvestris alba nona Clusii.* *Ger. emac.* 470. 8. *Raii syn.* 340. *Deering Nott.* 137.  
*L. sylv. alba, f. Ocymoides minus album.* *Park. theat.* 631. 5.  
*L. silv. f. montana latifolia viscosa, florum petalis supra albis, subtus virescentibus, interdum se contrahentibus.* *Mor. hist.* 2. 535.  
*Polemonium petraeum Gefneri.* *Bauh. hist.* 3. 351.  
*Flowers panicled directed one way drooping, petals two-parted, with linear segments, leaves lanceolate pubescent.*
- [12. *Silene amoena*.  
*Lin. spec.* 596. *Reich.* 2. 347. *Willd.* 2. 695.  
*hort. upf.* 114.  
*Petals bifid, coronet subcoadunate, flowers directed one*

- way, peduncles opposite three-flowered, branches alternate.
13. *Silene paradoxa*. Dover *Catchfly*.  
*Lin. spec.* 1673. *yst.* 420. *Reich.* 2. 348. *Willd.* 2. 695. *Jacqu. hort. vind.* 3. *t.* 84. *Smith brit.* 467.  
*Cucubalus viscosus.* *Huds. angl.* 186.  
*Lychnis major noctiflora Dubrensis perennis.* *Raii hist.* 995. *syn.* 340.  
*L. viscosa peregrina noctiflora odorata.* *Zam. hist.* *t.* 109.  
*Flowers panicled directed one way drooping, petals obcordate-emarginate, leaves linear-lanceolate smooth.*
14. *Silene maritima*. Sea *Catchfly*.  
*Wither. arr. ed.* 3. 414. *Smith brit.* 468. *engl. bot.* *t.* 957. *Willd. spec.* 2. 700.  
*S. amoena.* *Huds. angl.* 188. *Lighth. scot.* 227.  
*Cucubalus Behen β.* *Lin. spec.* 591. *Fl. dan. t.* 857. *Dist. nostr.*  
*C. littoralis.* *Donn. hort. cant.* 51.  
*Lychnis maritima repens.* *Bauh. pin.* 205. *Raii hist.* 998. *syn.* 337. *Petiv. brit. t.* 57. *f.* 1.  
*L. marina anglicana.* *Bauh. hist.* 3. 2. 357. 1. *Ger.* 382. 2. *emac.* 469. 2. *Lob. adv.* 143. *ic.* 337.  
*L. marina repens alba vel rubra.* *Park. theat.* 639, 3, 4.  
*L. perennis angustifolia marina Anglica repens.* *Mor. hist. f.* 5. *t.* 20. *f.* 2.  
*Flowers mostly solitary terminating, petals bifid crowned, calyxes smooth netted-veined, stems decumbent.]*
15. *Silene fruticosa*. Shrubby *Catchfly*.  
*Lin. spec.* 597. *Reich.* 2. 348. *Willd.* 2. 696.  
*vir. cliff.* 38. *hort. cliff.* 171. 4. *upf.* 111. 2.  
*Kniph. cent.* 5. *n.* 84.  
*Lychnis frutescens myrtifolia, Been albo similis.* *Bauh. pin.* 205. *Raii hist.* 998.  
*Ocymoides fruticosum.* *Cam. hort. t.* 33.  
*Saponaria frutescens, acutis foliis, ex Sicilia.* *Bocc. sic.* 58. *t.* 30.  
*Petals bifid, stem shrubby, leaves broad-lanceolate, panicle trichotomous.*
16. *Silene bupleuroides*. Hare's-ear-like *Catchfly*.  
*Lin. spec.* 598. *Reich.* 2. 348. *Willd.* 2. 696.  
*hort. cliff.* 171. *Desfont. atlant.* 351.  
*Lychnis orientalis bupleuri folio.* *Tournef. cor.* 2. *it.* 2. 139. *t.* 154.  
*Petals bifid, flowers peduncled opposite, shorter than the bracte, leaves lanceolate acute smooth.*
- [17. *Silene longiflora*. Long-flowered *Catchfly*.  
*Lin. spec. ed. Willd.* 2. 696. *Ebr. Beitr.* 7. 144.  
*S. juncea.* *Roth. catalect.* 1. 54.  
*Petals bifid, flowers panicled erect, peduncles opposite longer than the bracte, calyxes very long smooth.]*
18. *Silene gigantea*. Gigantic *Catchfly*.  
*Lin. spec.* 598. *Reich.* 2. 349. *Willd.* 2. 696.  
*Wachend. ultr.* 391.  
*Lychnis græca, Sedi arborecentis folio & facie, flore albo.* *Walth. hort.* 32. *t.* 11.  
*Petals bifid, root-leaves screw-shaped very blunt, flowers in a sort of whorl.*
- [19. *Silene crassifolia*. Thick-leaved *Catchfly*.  
*Lin. spec.* 597. *Reich.* 2. 349. *Willd.* 2. 697.  
*Petals emarginate, leaves suborbiculate fleshy hirsute, raceme directed one way.]*
20. *Silene viridiflora*. Green-flowered *Catchfly*.  
*Lin. spec.* 597. *Reich.* 2. 349. *Willd.* 2. 697.  
*hort. cliff.* 171. *Gmel. fib.* 4. 142. *Affo arag.* *n.* 375. *Kniph. cent.* 12. *n.* 89.  
*Lychnis ocymastri facie, flore viridi.* *Herm. parad.* *t.* 199.  
*Petals cloven half way, leaves ovate somewhat rugged acute, panicle elongated almost leafless.*  
*3. Flowers from the forks of the stem.*
21. *Silene conoidea*. Conoid *Catchfly*.  
*Lin. spec.* 598. *Reich.* 2. 350. *Willd.* 2. 698.  
*hort. upf.* 110. *Affo arag. n.* 376. *Sauv. monsp.* 146. *Villars dauph. 3.* 606. *Allion. pedem. n.* 1571. *Krock. files. n.* 667. *Desfont. atlant.* 351.  
*Lychnis sylvestris latifolia, caliculis turgidis striatis.* *Bauh. pin.* 205.  
*L. sylvestris 2.* *Clus. hist.* 1. 288.

[L. caliculis



- L. caliculis striatis 2. Clusii. Ger. 384. 7. emac. 470. 7.
- L. sylv. caliculis striatis. Park. theat. 631. 4. Raii hist. 997. 21.
- L. glabra annua, fol. oblongis mucronatis, flore amplo rubello, capsula oblonga pyramidalis. Mor. hist. 2. 542. f. 5. t. 36. f. 6. t. 21. f. 33. sec. Desfontaines. Calyxes of the fruit globular acuminate with thirty streaks, leaves smooth, petals entire.
- [22. Silene conica. Conic or Corn Catchfly. Lin. spec. 598. syst. 421. Reich. 2. 350. Willd. 2. 698. hort. upf. 110. Wither. arr. ed. 3. 416. Smith brit. 470. engl. bot. t. 922. Jacqu. austr. 3. 30. t. 253. vind. 77. obs. 38. Scop. carn. n. 521. Pollich pal. n. 418. Hoffm. germ. 151. Roth. germ. 1. 193. 2. 495. Villars dauph. 3. 607. Allion. pedem. n. 1572. Desfont. atlant. 351.
- S. conoidea. Hudf. angl. 189.
- Lychnis sylvestris angustifolia, caliculis turgidis striatis. Bauh. pin. 205. Raii hist. 997. 22. Dill. in Raii syn. 341.
- L. sylv. altera incana, caliculis striatis. Lob. ic. t. 338. Park. theat. 633. 11.
- L. sylv. incana Lobelii. Ger. emac. 470.—vel potius caliculis striatis, secunda Clusii. Ger. emac. 470.
- Muscipulae majori calyce ventricoso similis. Bauh. hist. 3. 350.
- Stem dichotomous, petals bifid, leaves soft, calyxes of the fruit conical with thirty streaks.
23. Silene bellidifolia. Daisy-leaved Catchfly. Lin. syst. 421. spec. ed. Willd. 2. 698. Jacqu. hort. 3. t. 81.
- Calyxes cylindric-conic pubescent erect, petals bifid, racemes geminate terminating directed one way, the middle flower peduncled, leaves lanceolate pubescent.
24. Silene dichotoma. Forked Catchfly. Lin. spec. ed. Willd. 2. 699. Ebr. Beitr. 7. 144.
- Calyxes ovate viscid-hairy erect, petals bifid, racemes geminate terminating directed one way, middle flower peduncled, leaves petioled ovate-lanceolate ciliate at the base.
25. Silene vespertina. Evening Catchfly. Lin. spec. ed. Willd. 2. 699. Retz. obs. 3. 31.
- Calyxes club-shaped pubescent erect, petals bifid, crown connate, racemes geminate terminating directed one way, middle flower peduncled, leaves obovate-lanceolate ciliate at the base.
26. Silene Behen. Bladder Catchfly. Lin. spec. 599. Reich. 2. 350. Willd. 2. 699.
- Lychnis vesicaria cretica, parvo flore purpurascens. Dill. elth. 427. t. 317. f. 409.
- L. cret. parvo flore, calyce striato purpurascens. Tournef. cor. 24.
- Calyxes smooth ovate netted-veined, capsules three-celled.
27. Silene stricta. Stiff Catchfly. Lin. spec. 599. Reich. 2. 350. Willd. 2. 699. amoen. 4. 314. & 1. 158.
- Petals emarginate, calyxes netted-veined acuminate longer than the peduncle, stem dichotomous stiff.]
28. Silene pendula. Pendulous Catchfly. Lin. spec. 599. Reich. 2. 351. Willd. 2. 700. hort. upf. 109. hort. cliff. 170. (Cucubalus.) Curt. magaz. t. 114.
- β. Cucubalus floribus trigynis erectis, calycibus fructus pendulis angulosis. Lin. hort. cliff. 171.
- Viscago hirsuta sicula, lychnidis aquaticae facie, supina. Dill. elth. 421. t. 312. f. 404.
- Fruiting calyxes pendulous inflated, angles ten rugged.
- [29. Silene procumbens. Procumbent Catchfly. Lin. spec. ed. Willd. 2. 701. Murr. in comm. goett. 1784. & 1785. p. 83. t. 2. Roth. catal. 1. 55.
- Calyxes inflated with about ten angles rugged, petals emarginate, stem procumbent, leaves sessile linear-lanceolate.]
30. Silene noctiflora. Forked night-flowering Catchfly. Lin. spec. 599. Reich. 2. 351. Willd. 2. 701. fl. suec. n. 389. Hudf. angl. 189. Wither. arr. ed. 3. 416. Smith brit. 470. engl. bot. t. 291. Relb. cant. suppl. 1. 13. ed. 2. n. 367. Sibth. oxon. n. 407. Abbot bedf. n. 319. Gertn. fruct. 2. 233. Hoffm. germ. 151. Roth. germ. 1. 193.
2. 495. Pollich pal. n. 419. Krock. filaf. n. 665. Allion. pedem. n. 1575. Villars dauph. 3. 608.
- Viscago. Hall. belv. n. 911.
- Lychnis noctiflora. Schreb. spicil. 31. Bauh. pin. 205. Raii hist. 994. syn. 340. Mor. hist. f. 5. t. 20. f. 12.
- Ocymoides noctiflorum. Cambr. hort. 109. t. 34. Best. exst. æst. 7. t. 12. f. 3.
- Stem dichotomous, petals bifid obtusely crowned, calyxes ten-angled, teeth nearly equal to the tube.
- [31. Silene ornata. Dark-coloured Catchfly. Ait. kew. 2. 96. Curt. magaz. 382. Willd. spec. 2. 702.
- Calyxes of the fruit oblong keeled hairy, petals bifid, leaves lanceolate pubescent viscid flat, stem viscid.
32. Silene undulata. Waved-leaved Catchfly. Ait. kew. 2. 96. Willd. spec. 2. 702.
- Calyxes of the fruit club-cylindrical hairy, petals bifid, leaves lanceolate pubescent waved, stem ascending.
33. Silene virginica. Virginian Catchfly. Lin. spec. 600. syst. 421. Reich. 2. 352. Willd. 2. 702. Gron. virg. 151. Pluk. phyt. t. 203. f. 1. (Lychnis.)
- Calyxes of the flower cylindrical villose, panicle dichotomous.
34. Silene antirrhina. Snap-dragon-leaved Catchfly. Lin. spec. 600. Reich. 2. 352. Willd. 2. 702. hort. upf. 114. Gron. virg. 50. Dill. elth. 422. t. 313. f. 403. (Viscago.)
- Leaves lanceolate subciliate, peduncles trifid, petals emarginate, calyxes ovate.
35. Silene sedoides. Sedum-like Catchfly. Lin. spec. ed. Willd. 2. 703. Jacqu. collect. suppl. 112. t. 14. f. 1.
- Lychnis cretica maritima minima portulacae sylvestris folio. Tournef. cor. 24.
- Glandular-hairy, calyxes club-shaped, petals emarginate, leaves oblong-obovate somewhat fleshy.
36. Silene apetala. Apetalous Catchfly. Lin. spec. ed. Willd. 2. 703.
- Calyxes ovate pubescent, flowers apetalous, leaves lanceolate pubescent.
37. Silene rubella. Small red-flowered Catchfly. Lin. spec. 600. Reich. 2. 352. Willd. 2. 703. hort. upf. 112. Dill. elth. 423. t. 314. f. 406. (Viscago.)
- Erect even, calyxes subglobular smooth veined, corollas unopen.
38. Silene inaperta. Small unopen-flowered Catchfly. Lin. spec. 600. Reich. 2. 352. Willd. 2. 703. Allion. pedem. n. 1577. Dill. elth. 424. t. 315. f. 407. (Viscago.)
- Stem dichotomous paniced, calyxes even, petals very short emarginate, leaves smooth lanceolate.
39. Silene clandestina. Clandestine Catchfly. Lin. spec. ed. Willd. 2. 703. Jacqu. collect. suppl. 111. t. 3. f. 3.
- Calyxes ovate ten-angled pubescent, petals bifid erect a little longer than the calyx, leaves oblong-lanceolate ciliate.
40. Silene portensis. Oporto Catchfly. Lin. spec. 600. Reich. 2. 353. Willd. 2. 704.
- Stem dichotomous paniced, calyxes striated, petals bifid, leaves linear.
41. Silene cretica. Cretan Catchfly. Lin. spec. 601. Reich. 2. 353. Willd. 2. 704. hort. upf. 112. Dill. elth. 422. t. 314. f. 404, 405. (Viscago.) Magn. hort. 126. (Lychnis.)
- Erect even, calyxes erect ten-angled, petals bifid.]
42. Silene Muscipula. Spanish Catchfly. Lin. spec. 601. Reich. 2. 353. Willd. 2. 704. Pallas it. 2. 110. Sauv. monsp. 145. Villars dauph. 3. 609. Desfont. atlant. 353.
- Lychnis sylvestris viscosa rubra altera. Bauh. pin. 205. Raii hist. 1001. Tournef. inst. 337.
- L. sylv. 3. Clus. hist. 1. 289. Tabern. ic. 295. Dalech. hist. 818.
- L. viscaria f. Muscipula. Ger. 481. 1. emac. 601. 1.
- L. sylv. rubra minor. Park. theat. 632. n. 3.
- Muscipula viscaria f. Lychnidis species. Bauh. hist. 3. 349.
- Petals bifid, stem dichotomous, flowers axillary sessile, leaves smooth.
- [43. Silene



- [43. *Silene polyphylla*. Many-leaved Catchfly.  
*Lin. spec.* 601. *Reich.* 2. 353. *Willd.* 2. 705.  
*Villars dauph.* 3. 609.  
*Lychnis sylvestris*, pluribus foliis simul junctis. *Baub.*  
*pin.* 205. *Raii hist.* 996.  
*L. sylv.* 8. *Clus. hist.* 1. 290. *Ger. emac.* 469. 4.—  
 prima Clusii (hisp.) *Ger.* 383. 4.  
*L. sylvestris angustifolia*. *Park. theat.* 632. n. 6. t. 631.  
 f. 6.  
*Leaves in bundles bristle-shaped, on the flowering-branches*  
*opposite.*]  
 4. *Flowers terminating.*  
 44. *Silene Armeria*. Common or Lobel's Catchfly.  
*Lin. spec.* 601. *syft.* 422. *Reich.* 2. 354. *Willd.* 2.  
 705. *hort. cliff.* 172. *upf.* 110. *Huds. angl.* 189.  
*Wither. arr. ed.* 3. 415. *Smith brit.* 471. *Fl.*  
*dan. t.* 559. *Rotb. germ.* 1. 293. 2. 496. *Hoffm.*  
*germ.* 151. *Krock. files.* n. 666. *Villars dauph.*  
 3. 609. *Allion. pedem.* n. 1578. *Kniph. cent.* 8.  
 n. 88.  
*Viscago*. *Hall. belv.* n. 916.  
*Lychnis Armeria*. *Scop. carn.* n. 526.  
*L. viscosa purpurea latifolia lævis*. *Baub. pin.* 205.  
*Raii hist.* 1000. *syn.* 341. *Mor. hist. f.* 5. t. 21.  
 f. 26. *Tournef. inst.* 335.  
*L. sylvestris* 1. *Clus. hist.* 1. 288.  
*Armerius flos quartus*. *Dod. pempt.* 176. 4.  
*Muscipula Lobelii* (*obs.* 242. 3.) *Ger.* 481. 2. *emac.*  
 601. 2.  
*Centaureum minus adulterinum*, quibusdam *Lychnidis*  
*viscidæ* genus. *Baub. hist.* 3. 355.  
*Panicles dichotomous fastigiate many-flowered, petals emar-*  
*ginate acutely crowned, upper leaves cordate smooth.*  
 [45. *Silene orchidea*. Orchis-flowered Catchfly.  
*Lin. syft.* 422. *Willd.* 2. 705. *suppl.* 241. *Ait.*  
*kew.* 2. 98.  
*S. Atocion*. *Lin. syft.* 421. *Jacqu. hort.* 3. 19. t. 32.  
*Lychnis græca bellidis folio verna*, flore parvo dilute  
*purpurascens*. *Tournef. cor.* 24.  
*Petals two-lobed, the borders having on each side of the*  
*base an awl-shaped process, leaves even, the lower*  
*roundish-spatulate, petioles ciliate.*  
 46. *Silene ægyptiaca*. Egyptian Catchfly.  
*Lin. syft.* 420. *Willd.* 2. 706. *suppl.* 241.  
*Petals emarginate toothed on both sides, leaves subto-*  
*mentose.*  
 47. *Silene Catesbæi*. Catesby's Catchfly.  
*Lin. spec. ed. Willd.* 2. 706. *Walt. carol.* 141.  
*Lychnis viscosa virginiana* flore amplo coccineo, f.  
*Muscipula regia*. *Pluk. phyt. t.* 203. f. 1.  
*Calyxes cylindrical, petals four-cleft acute, panicle termi-*  
*nating, leaves lanceolate.*  
 48. *Silene cordifolia*. Heart-leaved Catchfly.  
*Lin. spec. ed. Willd.* 2. 706. *Allion. pedem.* n. 1581.  
 t. 23. f. 3.  
*Calyxes pubescent angular cylindrical, petals bifid, flowers*  
*terminating, leaves roundish acute nerved hairy.*  
 49. *Silene chloræfolia*. Yellow-wort-leaved Catchfly.  
*Lin. spec. ed. Willd.* 2. 707. *Smith ic. ined.* 1. 13.  
*Lychnis orientalis viscosa centauræi lutei folio*, flore  
*longissimo*. *Tournef. cor.* 24.  
*Calyxes smooth club-shaped, petals semibifid, leaves glau-*  
*cous, lower oval, upper cordate embracing.*  
 50. *Silene alpestris*. Austrian Catchfly.  
*Lin. spec. ed. Willd.* 2. 707. *Jacqu. austr.* 1. 60.  
 t. 96. *Ait. kew.* 2. 98.  
*Lychnis alpestris*. *Lin. syft.* 435. *suppl.* 244.  
*L. quadrifida*. *Scop. carn.* n. 519.  
*L. viscosa alba angustifolia major*. *Baub. pin.* 205.  
*Raii hist.* 1002.  
*L. sylvest.* 10. *Clus. hist.* 1. 291.  
*Caryophyllus minimus humilis alter exoticus* flore can-  
*dido amoeno*. *Lob. ic.* 445. *Ger. emac.* 595. f. 17.  
*Petals four-toothed, stem dichotomous, capsules ovate-ob-*  
*long, leaves linear-lanceolate smooth erect, peduncles*  
*viscid.*  
 51. *Silene rupestris*. Rock Catchfly.  
*Lin. spec.* 602. *syft.* 422. *Reich.* 2. 354. *Willd.*  
 2. 707. *fl. lapp.* n. 183. *succ.* n. 390. *Jacqu.*  
*collect.* 2. 85. *Gmel. sib.* 4. 139. *Hoffm. germ.*  
 151. *Allion. pedem.* n. 1580. *Villars dauph.* 3.  
 611.

- Viscago*. *Hall. belv.* n. 917.  
*Alfine alpina glabra*. *Baub. pin.* 251. *prodr.* 113.  
*Fl. dan. t.* 4. *Raii hist.* 1003, 1031.  
*Auricula muris alpina glabra*. *Baub. hist.* 3. 360.  
 β. *Caryophyllus holosteus alpinus gramineus*. *Baub.*  
*pin.* 210. *prodr.* 104.  
*Flowers erect, petals emarginate, calyxes round, leaves*  
*lanceolate.*  
 52. *Silene Saxifraga*. Saxifrage Catchfly.  
*Lin. spec.* 602. *Reich.* 2. 354. *Willd.* 2. 708.  
*Jacqu. collect.* 2. 37. *Villars dauph.* 3. 611.  
*Allion. pedem.* n. 1582. *Thunb. jap.* 184.  
*Lychnis Saxifraga*. *Scop. carn.* n. 520.  
*L. minor saxifraga*. *Segu. veron.* 431. t. 6. f. 1.  
*Tournef. inst.* 338. *Garid.* 298.  
*Caryophyllus saxifragus*. *Baub. pin.* 211.  
*Saxifraga antiquorum quibusdam*. *Baub. hist.* 3. 338.  
*Raii hist.* 1033.  
*S. magna Matthioli*. *Ger. emac.* 605. 1.  
*S. vera Dioscoridis*. *Matth.* 979. *Park. theat.* 426.  
*Stems one-flowered, peduncles length of the stem, leaves*  
*smooth, flowers hermaphrodite and female, petals*  
*bifid.*  
 53. *Silene vallesia*. Woolly-leaved Catchfly.  
*Lin. spec.* 603. *syft.* 422. *Reich.* 2. 355. *Willd.*  
 2. 708. *mant.* 385. *Allion. pedem.* n. 1574. t. 23.  
 f. 2. *Villars dauph.* 3. 612.  
*Viscago*. *Hall. belv.* n. 910.  
*Lychnis pumila saxatilis alpina*, flore carneo, folio  
*crasso molli tomentoso*. *Lin. amoen.* 1. 158. *Bocc.*  
*mus.* 65. t. 54.  
*L. maritima pinguis e Corfica*. *Bocc. mus.* t. 34?  
*Stems one-flowered decumbent, leaves lanceolate tomentose*  
*length of the calyx.*  
 [54. *Silene pumilio*. Dwarf Catchfly.  
*Lin. spec. ed. Willd.* 2. 709. *Jacqu. collect.* 2. 126.  
 t. 10. *austr.* 5. *app.* t. 2.  
*Cucubalus pumilio*. *Lin. mant.* 71. *syft.* 420. *Reich.*  
 2. 344.  
*Lychnis pumilio*. *Scop. carn.* n. 513.  
*Betonica coronaria*. *Baub. hist.* 3. 337.  
*Caryophyllus silv.* 7. *Clus. hist.* 1. 285.  
*Stems one-flowered two-leaved, petals reflex, leaves*  
*linear-lanceolate.*  
 55. *Silene acaulis*. Stemless Catchfly or Mfs Champion.  
*Lin. spec.* 603. *syft.* 422. *Reich.* 2. 355. *Willd.*  
 2. 709. *fl. lapp.* n. 184. *succ.* n. 387. *Wither.*  
*arr. ed.* 3. 416. *Smith brit.* 472. *Lightf. scot.*  
 227. t. 12. f. 1. *Fl. dan. t.* 21. *Hoffm. germ.*  
 151. *Allion. pedem.* n. 1583. t. 79. f. 1. *Villars*  
*dauph.* 3. 612. *Dicks. hort. sicc.* 1. 8.  
*Viscago*. *Hall. belv.* n. 919.  
*Cucubalus acaulis*. *Gunn. norv.* n. 117. *Huds. angl.*  
 187.  
*Lychnis acaulis*. *Scop. carn.* n. 516.  
*L. alpina pumila folio gramineo*. *Baub. pin.* 206.  
*Dill. elth.* 206. t. 167. f. 206.  
*L. alp. minima*. *Raii hist.* 1004. *syn.* 341. *Petr.*  
*brit.* t. 56. f. 4.  
*Caryophyllus pumilio alpinus*. *Ger. emac.* 593. 8.  
*Ocymoides muscosus alpinus*. *Park. theat.* 639. 10.  
*Muscus alpinus flore insigni dilute rubente*. *Baub.*  
*hist.* 3. 768. *Ray—lychnidis flore.* 767. *Linn.*  
 β. *S. exscapa*. *Allion. pedem.* n. 1584. t. 79. f. 2.  
*Stemless, leaves linear ciliate at the base, peduncles so-*  
*litary one-flowered, petals emarginate.*  
 Species from Desfontaines.  
 56. *Silene hispida*. Hairy Catchfly.  
*Desfont. atlant.* 348.  
*Flowers racemed clustered directed one way, calyxes very*  
*hirsute, petals bifid.*  
 57. *Silene imbricata*. Imbricate-flowered Catchfly.  
*Desfont. atlant.* 349. t. 98.  
*Stem hairy below, leaves lanceolate, flowers sessile directed*  
*one way stiff in long racemes imbricate.*  
 58. *Silene tridentata*. Three-toothed Catchfly.  
*Desfont. atlant.* 349.  
*Lychnis sylvestris* 6. *Clus. hist.* 1. 290.  
*L. silv. lanuginosa minor*. *Baub. pin.* 206.  
*L. parva*. *Baub. hist.* 3. 352.  
*L. silv. hirta minima*. *Lob. ic.* 339.



*L. filv. minima. Tabern. ic. 297.*

*Hirsute, leaves narrow-lanceolate, flowers racemed distinct sessile, teeth of the calyx awl-shaped, capsules acuminate erect.*

59. *Silene reticulata. Netted Catchfly.*

*Desfont. atlant. 350. t. 99.*

*Smooth viscid, leaves narrow-lanceolate, peduncles two or three-flowered, calyx club-shaped netted, petals linear emarginate.*

60. *Silene bipartita. Cloven-petalled Catchfly.*

*Desfont. atlant. 352. t. 100.*

*Lower leaves spatulate, flowers racemed directed one way nodding, petals two-parted.*

61. *Silene Pseudo-atocion.*

*Desfont. atlant. 353.*

*Lowest leaves obovate, flowers in bundles terminating, calyxes club-shaped, petals linear quite entire.*

62. *Silene ramosissima. Branched Catchfly.*

*Desfont. atlant. 354.*

*Lychnis minima hispida noctiflora. Magn. bot. app. 308.*

*Pubescent viscid very much branched, leaves narrow-lanceolate, peduncles from one to three-flowered, calyxes ovate, petals bifid, capsules subsessile within the calyx.*

63. *Silene Arenaria. Sandwort Catchfly.*

*Desfont. atlant. 354.*

*Lychnis maritima gadenfis angustifolia. Tournef. inst. 338.*

*Villose viscid, leaves linear-lanceolate bluntish, flowers loosely racemed, petals bifid, capsules within the calyx pedicelled.*

64. *Silene arenarioides. Sandwort-like Catchfly.*

*Desfont. atlant. 355.*

*Pubescent, leaves narrow-linear, peduncles from one to three-flowered, calyxes ten-striated villose, petals bifid, capsules round pedicelled.*

65. *Silene cinerea. Ash-coloured Catchfly.*

*Desfont. atlant. 355.*

*Lower leaves ovate, flowers racemed subsessile solitary two or three together, calyx pubescent ten-streaked, petals bifid.*

66. *Silene patula. Spreading Catchfly.*

*Desfont. atlant. 356.*

*Viscid, branches panicled-spreading, lower leaves on long petioles ovate acuminate, peduncles subtriflorous, calyx elongated, petals semibifid.*

DESCRIPTIONS, &c.

1. Root annual, fibrous. Stem branched, spreading, flexuose, round, leafy; branches somewhat spoked, erect. Leaves linear-lanceolate acute. Flowers axillary, solitary, peduncled, white. Calyx nerved, hirsute, cylindrical, finally ventricose. Border of the petals elliptic, emarginate, having sometimes a flesh-coloured spot. Capsules ovate, rigid, the upper ones commonly erect<sup>a</sup>. They cannot be considered as pendulous, though Dillenius makes that a character of this species. The lower ones indeed diverge from the stem, and are finally bent downwards.

Linneus distinguishes this from the next species thus. The petals in this are not crenate; in the following they are both crenate and emarginate. Lower leaves obovate-lanceolate, towards the base ciliate. Calyxes not hairy, but mucronated at the angles with reflex scarcely conspicuous prickles<sup>b</sup>.

Native of England and France, in sandy fields; flowering in June and July. Lobel was the first who remarked this plant about Colchester and elsewhere. Dale found it in the same place, and also about Bocking in the same county of Essex. Johnson remarked it about Canterbury. Mr. Dent, near the Devil's ditch in Cambridgeshire. Mr. Relhan in Chippenham gravel-pit, and by the turnpike near Newmarket, in the same county. Dr. Smith, at Lakenham and Coffey near Norwich. Hudson and Curtis, about Coombe wood in Surry. About Weybridge in the same county. Mr. Curtis saw it also in great abundance in corn-fields near Newport in the Isle of Wight. In Scotland, it has been found between Dundee and St. Andrew's, by Mr. Browne: there and near Perth, by Mr. Mackay.

<sup>a</sup> Smith.

<sup>b</sup> Spec.

2. Calyxes of the fruit bent back horizontally, and very hairy. Corolla undivided, crenate, flesh-coloured. It is an annual plant, native of Portugal<sup>c</sup>, and Barbary. Differs from the next in having crenate pale purple petals, horizontal divaricating fruits, and the whole plant rough with spreading hairs<sup>d</sup>.

3. From a small fibrous annual root arise several flaccid spreading stems, round, hairy, and a little viscid; as are also the leaves in a slight degree. Numerous flowers spring in an alternate order from the bosoms of the upper leaves, on pedicels which are erect, or but little divaricated even when the fruit is ripe. The petals are remarkable for the deep red spot in their centre, like a drop of blood; whence the trivial name *quinquevulnera*. *S. anglica* has sometimes pale reddish spots on the petals, but these are emarginate in that species; which is also more viscid than this, and paler-coloured in all its parts<sup>e</sup>. All the capsules in *quinquevulnera* are for the most part erect, though the lower ones are sometimes bent back. The leaves are elliptic-lanceolate<sup>f</sup>.

Native of the South of Europe, Siberia, and Barbary. Mr. Hudson is our authority for considering this pretty plant as of British growth; he having mentioned it as growing in sandy fields about Wrotham in Kent. It has been long cultivated in our English gardens under the name of dwarf *Lychnis*, and may frequently be found almost naturalized on heaps of rubbish. It continues in flower from June till the end of August, and produces great plenty of seeds<sup>g</sup>. These were formerly sown in drills on the edges of borders, with several other low annual plants; but being of short duration, they were soon rejected for this purpose. [Ray cultivated it in his little garden at Cambridge, and says that the plants which rose from seeds self-sown in autumn were eighteen inches high.]

4. Root simple, perpendicular, filiform. Stems somewhat branched, several, ascending, a finger's length, round, pubescent. Root-leaves roundish-spatulate, pubescent. Stem-leaves oblong, acute, pubescent. Flowers erect, axillary, alternate, on very short peduncles. Calyx pubescent, club-shaped, ten-streaked; the teeth ciliate-hairy about the edge. Petals bigger than the calyx, deeply two-parted; the segments obovate. Crown two-parted. Capsule elliptic, pedicelled. Flower bigger than in the preceding.—Native of the island of Candia<sup>h</sup>.

5. Root white, annual, round, not very fibrous. Stem round, divided from the bottom alternately or forked into procumbent branches, not commonly simple. The whole plant is silky and somewhat hoary. Leaves conjugate, embracing. Flower peduncled, terminating each branch. Peduncle length of the calyx and of the leaves. Calyx club-shaped, with ten streaks and angles, whitish-transparent; the larger angles produced into segments, below which it is inflated. Claws of the petals linear, shining, higher than the calyx; border cordate, pale rose-coloured, cloven beyond the middle, blunt at the end: scales of the crown erect, acute.

Native of Piedmont, on the sandy coast between Oneglia and Porto Maurizio<sup>i</sup>.]

6. This is an annual plant with a low branching stem, which seldom rises more than eight or nine inches high, and is smooth. Leaves very narrow, and smooth, placed by pairs. The stems are terminated by spikes of dark purple flowers standing alternate, and opening in the evening, but closely shut during the day.

[Lower leaves obovate, concave, rigid. Flowers sessile, from opposite bracts alternate, alternately flowering. Petals white, bifid, biggish, greenish beneath, and not red after flowering. It resembles *Cucubalus reflexus*, but has a more branched and higher stem, with the petals spreading beyond the calyx<sup>k</sup>.

Native of France and Spain. Cultivated in 1683, by Mr. James Sutherland. It flowers in July<sup>l</sup>. According to Mr. Miller it grows naturally in Sicily and

<sup>c</sup> Linn. spec.

<sup>f</sup> Smith brit.

<sup>i</sup> Allioni.

<sup>d</sup> Desfontaines.

<sup>g</sup> Engl. bot.

<sup>k</sup> Linn. spec.

<sup>e</sup> Engl. bot.

<sup>h</sup> Willdenow.

<sup>l</sup> Hort. kew.



at the Cape of Good Hope. Linneus adds Pennsylvania to the European stations.

7. This is more viscid and hairy than the *anglica*. (*n.* 1.) It is more branched and grows higher, from a foot to two and three feet. The lower leaves are wider, the upper narrower and longer. Flowers axillary, on short peduncles, void of scent, opening in the day time, green in the middle, very pale purple above, streaked with deeper purple veins beneath. Calyxes striated, rough with many longish hairs<sup>m</sup>. It is an annual plant, native of France and Switzerland: flowering here in May. Cultivated by Sherard at Eltham in 1732; by seeds sent from Holland.

8. This is an annual, upright plant. Lower leaves roundish, upper narrower and longer, with the midrib scarcely visible. Calyx marked with ten green streaks, hirsute with long hairs, and slightly viscid, as are also the stems and leaves. Flower like that of *S. anglica*, but smaller, pale purple, with the crown scarcely visible. Capsules erect, not in so long a row as in *S. anglica*, and the whole plant less hirsute and viscid; the petals also are emarginate<sup>n</sup>.

Native of the South of Europe. Cultivated by Sherard in 1732.

9. Leaves narrow; lower three inches long, and scarcely an inch wide; on the stem gradually shorter and narrower; hairs on the upper surface fewer and longer, on the under more frequent and shorter. Stem eighteen inches high, round, weak, hairy, red towards the bottom: joints frequent, with a pair of sessile leaves at each, from a wide base contracting to a point. Flowers solitary and alternate from the upper axils, on short peduncles, the lower ones being scarcely half an inch long, very small, fugacious, and seldom expanding, usually white, but sometimes purple on the same plant. Calyxes rough with long hairs. Petals narrow, scarcely bifid, the edges bent inwards<sup>o</sup>.

It is an annual plant, native of the South of Europe. Ray had the seeds from Sir Hans Sloane, and cultivated it before 1688.

Linneus remarks that it is allied to *Cucubalus reflexus*; to which (as he says) Ray united it; but that, on being sown, they appeared to be different. I cannot find that Ray any where confounds these two plants.

10. Root perennial. Bottom leaves spread in a ring, oblong, narrow, smooth, without veins. Stems two feet high, and sometimes more, round, smooth, green in the lower part, purplish in the upper, with a glaucous bloom, not at all viscid. From the middle upwards at each joint spring round peduncles in pairs, tinged with purple, subdivided into more slender ones, each of which bears a flower or two. Calyxes oblong, round, smooth, glaucous, divided into five short segments at the top. Corollas herbaceous or greenish yellow, of five narrow petals, divided to the middle, without any visible crown, opening only at night. Capsule rigid, membranaceous, ventricose, opening in six parts. The flowers at first form an oblong pendulous spike; afterwards become loose in a thin nodding panicle; and when the seeds ripen, the whole panicle is upright. It is known by the leaves and stems being smooth and not viscid; the petals narrow and herbaceous<sup>p</sup>.

Native of Germany. Cultivated in the Eltham garden in 1732. The seeds came from Boerhaave, who sent Sherard rare plants and seeds every year. It also came from Paris<sup>q</sup>.

11. Root somewhat woody, perennial. Stems several, simple, (according to Mr. Woodward, frequently branched from the root,) a foot or more in height, erect, leafy, round, pubescent, jointed at the base, viscid in the upper part, terminating in a forked panicle, the summit and branches of which all droop towards one side. Leaves lanceolate acute, quite entire, pubescent on both sides, of a paleish green; the radical ones inclining to obovate, and forming thick tufts. Flowers drooping, white, of a delicate texture. Calyx ten-ribbed, half an inch long, slightly pubescent, some-

times purplish, as are very generally the long footstalks of the leaves at their insertion, and the base of the stem. Petals expanding in the evening, divided almost to the base; segments linear, obtuse. Crown cloven, acute. Five of the stamens projecting, the other five shorter, fastened to the petals. Styles pubescent varying in length. Capsule ovate. Seeds kidney-form, wrinkled<sup>r</sup>.

Native of several parts of Europe, chiefly on limestone rocks: also of Barbary, on hills about Algiers. In England, it was first shewn to Mr. Ray by Thomas Willifell, on the walls of Nottingham castle and thereabout. Morton found it between Harringworth and Wakerly in Northamptonshire. Mr. Woodward has since observed it on rocks in Dovedale, Derbyshire. Archdeacon Pierfon, about Knaresborough, Yorkshire. Mr. Pennant, near Gloddaeth in Caernarvonshire. Mr. Mackay observed it in Scotland, in 1793, near North Queen's-ferry. It flowers in June and July.

12. Stems diffused, smoothish, ascending. Branches divaricating, shorter. Leaves smooth above. Calyxes have ten purplish villose angles. Petals white, cloven half way. Divisions of the nectary (or crown) bifid, patulous, with a white streak. It is a perennial plant, native of Tartary<sup>s</sup>.

The plant which some of our botanists took for this, and which Linneus made to be a variety of his *Cucubalus Beben*, is the *Lychnis maritima repens* of Casp. Bauhin and Ray; and *Silene maritima* of Withering and Smith. See *n.* 14.

13. This has the habit of *nutans*, but is twice or thrice as large. The leaves are much narrower, linear-lanceolate and smooth. Calyx an inch long, more closely pubescent. Border of the petals obcordate (not cloven half way,) the segments widening and rounded; by no means divided to the base into linear segments, as in *nutans*<sup>t</sup>.

This plant was long mistaken for *Cucubalus viscosus* of Linneus; and lately was referred to *Silene nutans*. It is now ascertained by Dr. Smith to be the *paradoxa* of Linneus and Jacquin. It cannot be the *Cucubalus dubrensis* of Miller. See our *Cucubalus viscosus*.

Native of Italy, and of England on Dover cliffs, where it was found by Mr. Newton. Mr. Dillwyn (Linn. trans. 6.) affirms that *S. nutans* grows on the cliffs about Dover abundantly, and on Sandgate castle; but believes that *S. paradoxa* is not to be found in the neighbourhood.

14. Root perennial, creeping. Stems many, prostrate, leafy, with the extremities only growing upright, and terminating in a handsome white flower, generally solitary, but sometimes accompanied by one or two more; but the stem never bears so many flowers as in the common Spatling Poppy (*Cucubalus Beben* or *Silene inflata*), neither is the capsule so long as in that. In the leaves and calyx there is a considerable affinity between them. The petals are constantly crowned at their base; a circumstance which sometimes though rarely occurs in the Spatling Poppy or Bladder Campion, from which this is clearly distinct: indeed few plants vary less in their habit, though in the number of its styles and their corresponding fruit-cells it varies from three, the prevailing number, to four or five<sup>u</sup>.

Stems smooth, procumbent, spreading. Flowering-branches ascending, from six to twelve inches high. Leaves connate, lanceolate, smooth, one or two inches long, and one or two lines broad. Each branch bears on its summit from one to three flowers on short fruitstalks, much resembling those of *Cucubalus Beben*; but in this the reticulated veins of the calyx are deep purple. The petals are deeply cloven, with oval segments; beneath which are two prominent teeth forming the crown. Anthers deep purple<sup>v</sup>.

The leaves vary much in breadth, those on the barren and trailing branches being the narrowest; the edges are transparent, serrate with very minute prickles. Peduncles either axillary or terminating; mostly solitary, though in the larger and more upright plants

<sup>m</sup> Dillen. elth.

<sup>n</sup> Idem.

<sup>o</sup> Ray hist.

<sup>p</sup> Dill. elth.

<sup>q</sup> Idem.

<sup>r</sup> Smith brit. & engl. bot.

<sup>s</sup> Engl. bot.

<sup>t</sup> Linn. spec.

<sup>u</sup> Smith brit.

<sup>v</sup> Woodw. Mss.



there are sometimes three terminating flowers, as figured in Flora Danica. Floral leaves two, opposite, spear-shaped, at some distance from the flower. Calyx semi-transparent, with a net-work of veins, but neither hairy nor ribbed, often coloured. Petals white, cloven; segments rounded very entire; the crown formed by two little plaits in each petal. Styles sometimes five. Germ oblong, mulberry-coloured. Seeds fixed on short pedicels to the receptacle, which becomes loose<sup>v</sup>.

Native of Norway, Gothland and Britain. Common on many of our coasts, as Southwold in Suffolk, Wells in Norfolk. Suffex and almost all the southern and western coasts: found by Johnson in 1632 in the Isle of Thanet opposite to Sandwich: Portreth near Hayle in Cornwall; on Chesil bank, and at Weymouth, Swanage, Studland, Poole, and the north shore of Dorsetshire. Cardiganshire in Wales; and in Scotland.—Mr. Thomas Hesketh reported to Gerarde, that by the sea side in Lancashire, at Lytham, five miles from Wigan, there is a variety with red flowers.

For *Silene inflata* or Bladder Campion see *Cucubalus Beben*, and for *Silene Otites* see *Cucubalus Otites*.]

15. Stem low, shrubby, dividing into several short branches. Leaves smooth, ending in acute points. The flower-stalks rise about a foot high, and divide into spreading panicles, sustaining two and three flowers, of an herbaceous white colour. Capsules oval, smooth, having thick covers.

Native of Sicily [and Germany. Cultivated in the Edinburgh garden in 1683. It flowers in june and july<sup>z</sup>.]

16. Root perennial (or biennial.) Lower leaves narrow, spear-shaped, smooth, gathered in clustered heads, from the middle of which rises an erect clammy stem a foot and half high, with very narrow leaves on it. Flowers from the upper axils, on short peduncles sustaining two white flowers, having long tubes, and standing erect. The flowers are closed during the day, but expand at night.

[It is a very smooth plant, with wand-like jointed stems, often decumbent at the base, even, round, single at bottom, but loosely paniced at top. Leaves opposite, narrow-lanceolate, acuminate: lower stem-leaves decurrent, much longer than the internodes; upper shorter, sessile. Bractes narrow-lanceolate, very sharp. Peduncles one, two or three-flowered. Each flower pedicelled, nodding a little. Calyx smooth and even, tubular, often violet-coloured, five-toothed; teeth ovate, acute. Petals white above, pale violet beneath, cloven beyond the middle; segments narrowed at the base, blunt at the end: claws a little longer than the calyx, with two teeth at the top. Stamens projected. Capsule oblong on a long pedicel within the calyx. The stems are sometimes green, sometimes purple<sup>a</sup>.

Native of Persia and Mount Atlas. Cultivated by Mr. Miller in 1759.

17. Root perennial. Leaves lanceolate-linear, smooth. Stems paniced, smooth. Peduncles shorter than the calyx. Calyx subclavate, cut out at the base. Petals bifid with the segments divaricating.—Native of Hungary<sup>b</sup>.]

18. Lower leaves obtuse, and gathered in circular heads, like some of the Houseleeks or the Auricula, smooth and of a pretty thick consistence. Stems five or six feet high and viscous. Leaves lanceolate, opposite. Flowers on short peduncles from the axils in whorls; each peduncle sustaining three or four greenish flowers. Capsules oval, spreading open at top, and filled with angular seeds.

[Leaves of the former year very large. Stem of the second year two feet high, simple; the lower joints short and villose; the upper very long, naked, viscid. Lower leaves obovate, fleshy, fragile, concave, pubescent, sessile. Common peduncles opposite, spreading horizontally, very short, dichotomous. Calyxes pubescent. Corollas green, with a very indistinct crown. The flowers open only by night.

<sup>v</sup> Withering.

<sup>a</sup> Hort. kew.

<sup>b</sup> Desfontaines.

<sup>c</sup> Ehrhart and Roth.

Native of Africa<sup>c</sup>:—Mr. Miller says, of Sicily and Crete. Cultivated by him in 1759.

19. Root biennial. Stem two feet high, firm, hirsute; with alternate branches. Leaves orbiculate or obovate, very blunt, like those of Purslane, thick, fleshy, hairy on both sides. Raceme terminating, composed of from eight to twelve flowers, of a dull colour, with hirsute calyxes and ovate bractes. Petals emarginate, properly crowned. Pistils three.

Native of the Cape of Good Hope<sup>d</sup>. Introduced in 1774, by Mr. Francis Masson. It flowers in july and august<sup>e</sup>.]

20. Lower leaves roundish and hollowed like a spoon: those upon the stalks obtuse, and standing by pairs, threes or fours round the stalks; they are deep green, smooth and sessile. Stalks round, smooth, from two to three feet high. Flowers in loose spikes at the top, of a green colour.

[Root biennial. Plant a foot high and more. Stems erect, round, pubescent, thickening at the joints. Leaves lanceolate-ovate, pubescent, green, acute. Branches alternate. Panicle brachiate, with dichotomous few-flowered peduncles. Calyxes nodding, cylindrical, with ten angles, viscid like the peduncles. Flowers greenish white, with the petals cloven half way; the lobes recurved and linear. Stamens the length of the tube. Pistils the length of the petals<sup>f</sup>.

Native of Spain, Portugal and Siberia.—Cultivated in 1739, by Mr. Miller. It flowers in june and july<sup>g</sup>.]

21. Annual, with an upright branching stalk, a foot and half high, having swelling viscous joints, with narrow, acute-pointed, smooth leaves, sessile and near three inches long. Flowers terminating, small and red. Capsules globular, ending in acute points, and with striped calyxes over them.

[Plant pubescent. Stem dichotomous at top, with corymbed branches. Flowers erect, pedicelled. Calyx marked with thirty streaks, and having five awl-shaped teeth; when young it is ovate-cylindrical, but when the fruit is ripe, it is inflated, large, globular; acuminate, closed. Petals small, rose-coloured. Capsule within the calyx, sessile, shaped like the bottle gourd<sup>h</sup>.]

Native of France, Spain and Italy, among corn. It flowers in june, and the seeds ripen in august. [Cultivated by Mr. Miller in 1759.

22. Root annual, small, somewhat branched. Stem erect, round, pubescent, leafy, dichotomous. Leaves linear-lanceolate, acute, quite entire; very softly pubescent on both sides, and of a grayish-green colour. Flowers from the divarications of the stem, solitary, pedicelled, erect, in an evening exhaling a sweet smell approaching to that of a Honeysuckle, but weaker. Calyx cylindrical, becoming conical as the fruit swells, membranous, with thirty green downy prominent equal ribs, and five sharp teeth. Petals narrow; the border cloven, rose-coloured, with a sharp tooth on each side of the base, and a notched scale above, forming the crown. Capsule ovate. Seeds rough<sup>i</sup>.

Native of Germany, France, Spain, Italy, the Levant, and Barbary.—In England, it is found only in Kent, on the sand hills near Sandown castle, where it was found by Sherard and Rand; and opposite the Warren house at New Romney; found by the Rev. Mr. Stacey. It flowers in july.

Dr. Smith thinks it to be more than probable that *S. conoidea* is a very slight variety of this, with smoother leaves; the division of the petals not being an invariable mark.

23. This has an upright, round, subvillose and rather glutinous simple stem, slightly dichotomous at the top, with but few flowers: leaves oblong-lanced, entire, opposite, sessile, roughish and hairy: flowers on very short footstalks, opening by night; petals semibifid, rose-coloured. It is an annual, rising from a slender root<sup>k</sup>.

24. This is an annual or biennial plant. Leaves five-nerved, petioled, rugged. Stem dichotomous,

<sup>c</sup> Linn. spec.

<sup>d</sup> Idem.

<sup>e</sup> Hort. kew.

<sup>f</sup> Linn. spec.

<sup>g</sup> Hort. kew.

<sup>h</sup> Desfontaines.

<sup>i</sup> Engl. bot.

<sup>k</sup> Jacquin.



pubescent downwards. The primary flower from the fork; the rest spike-racemed solitary, directed one way, nodding. Calyx ten-angled, rugged. Petals bifid, crenate. Capsule erect<sup>1</sup>.—Native of Hungary.

25. Plant annual, rough-haired all over, not viscid, half a foot high. Stem branched, erect; the branches mostly alternate. Lower leaves ovate; upper lanceolate, quite entire, sessile, opposite. Raceme bifid, with one pedicelled flower in the fork, and three or four alternate on each branchlet shortly pedicelled, supported by two linear leaves, flesh-coloured, opening in the evening. The raceme is also frequently simple. Calyx oblong, somewhat club-shaped, hairy, with ten green streaks. Capsule ovate, subtrigonal, within the calyx on a long pedicel, opening by a six-toothed mouth. Seeds small, kidney-form, grooved at the back.

26. This differs from *Cucubalus Beben* in having a crown to the corolla; the laminae of the petals scarcely a third of the length of the calyx; the root annual; the corollas purplish, with white anthers; the calyx obtuse; the flowers nodding, on a peduncle from the fork, shorter than the flower.

Native of the island of Candia or Crete<sup>m</sup>. Cultivated by Sherard in 1732.

27. Plant annual. Flowers erect, subsessile or on very short peduncles. Leaves lanceolate, hairy-viscid. Native of Spain and Toulouse<sup>n</sup>.]

28. Plant annual, from whose root come out several branching stalks, near a foot and half long, which trail upon the ground, opposite. Leaves oval, acute-pointed. The flowers come out singly from the axils, upon short peduncles; they are large, and of a bright red colour, resembling those of the common wild red Campion. Capsules large, in inflated calyxes, having ten rough angles, containing many large roundish seeds, the weight of which causes the capsules to hang down.

[Native of Sicily and Crete or Candia. Cultivated in 1732 by James Sherard, M.D. It flowers in may and june<sup>o</sup>.

29. A perennial species, of a weak or tender appearance and very smooth: stalks very numerous, procumbent, round, slender, and about two feet long, spreading in all directions, furnished with pretty numerous joints, from each of which proceeds a branchlet: leaves narrow, acute, smooth, but rough on the edges; those on the first branches larger than the others: flowers solitary, upright, rising from the divisions of the stems and the tops of the branchlets; calyx purple-green with ten prominent lines: corolla purplish white, marked beneath with purple veins<sup>p</sup>.

30. Root annual, small in proportion to the herb, which often becomes very luxuriant in a manured soil. The whole plant is hairy. Stem erect, round, leafy, spreading, branched, dichotomous in the upper part. Leaves lanceolate, acute, soft and downy, deep green, sessile; the lower ones obovate. Flowers few, solitary at the forks, erect on hairy viscid peduncles, which are short at first, but are afterwards lengthened out to about an inch. Calyx hairy, viscid, white, with ten green branching veins, and linear teeth almost the length of the tube. Petals cloven half way, crowned with obtuse toothlets at the throat, of a cream colour tinged with red, the border rolled in during the day, but unfolding in the evening, and then the flowers become very sweet-scented, at least while warm weather continues<sup>q</sup>. Capsule clothed with the calyx marked with alternate branching veins, ovate-conical, one-celled at top, three-celled below, opening in six parts: partitions membranaceous, very thin, very short, at the upper wall of the capsule ending in mere raised streaks. Receptacle columnar, free above, hispid, thick, longer than half the capsule. Seeds very numerous (150) kidney-form globular, flattish on the back, rugged with acuminate tubercles in rows, yellowish rust-coloured<sup>r</sup>.

Native of Sweden, Germany, Switzerland, Dauphiné, Piedmont, England, in sandy fields. In the

midland, eastern and southern counties. In Norfolk and Suffolk not uncommon; especially on the west side of Norwich. In Cambridgehire, found by Dale by the road from Newmarket to Canva's-hall in Wood Ditton; by Relhan, near the turnpike on Newmarket heath, near Catledge-hall, between Snailwell and Chippenham, and between Chippenham-park wall and the gravel-pit. In Bedfordshire, Oakley westfield, by Dr. Abbot. In Oxfordshire, Headington, Cowley, Stanton Harcourt and South Leigh, by Dr. Sibthorp. Near Wetherby, in great abundance, by Sir Thomas Frankland. It flowers in july.

31. This is a biennial plant, with dark red flowers, somewhat like that of the Clove Pink, in which the beauty of this plant chiefly consists; for the plant itself is of rude growth. It grows readily, rising to the height of about two feet, blows freely during most of the summer months, and ripens its seeds<sup>s</sup>.—Native of the Cape of Good Hope. Introduced by Mr. Masson in 1775. It flowers from may to september.

32. Biennial. Native of the Cape. Introduced with the preceding at the same time by Mr. Masson. It flowers in august<sup>t</sup>.

33. Plant perennial, polymorphous. Flowers as in *Lychnis dioica* white and deep red. Calyxes narrower than its congeners, hirsute. The stamens with the styles prominent beyond the flower. Stem sometimes simple, a finger's length, terminated by flowers collected into a bundle; sometimes a foot high, trichotomous at the end, with a middle peduncle always one-flowered. Leaves oblong or broad-lanceolate, as in *Gomphrena globosa*.—Native of Virginia<sup>u</sup>.

34. Root annual, slender, fibrous. Stems round, smooth, viscid at the joints, dichotomous, the last division trifid, with a single flower between. Peduncles long and slender. Flowers open during the night, crowned at the throat. Calyxes ten-streaked, and divided at the end into five short purplish segments. Capsules obscurely three-sided, three-celled.—Native of Virginia and Carolina<sup>x</sup>. Cultivated in 1732, by James Sherard, M.D. It flowers in june and july<sup>v</sup>.

35. Root annual: stem branching, diffuse, about half a foot in length, with villose dichotomous branches: leaves opposite, sessile, subcuneiform, rather obtuse, perfectly entire, somewhat fleshy, and very slightly mucicated on the edges; they are about an inch in length: flowers small, upright, on solitary footstalks of about half an inch long, rising from the bosoms and tops of the branches: calyx tubular, and thickly covered with headed hairs: petals rather longer than the calyx, flesh-coloured above, and white beneath.—Native country uncertain<sup>z</sup>.

36. This is an annual plant, differing from all the species of *Silene* in the flowers being clandestine from the defect of petals. The whole is pubescent. Stem round, six inches high, with the branches simple and opposite. Lower leaves obovate-lanceolate, upper lanceolate, uppermost linear. Peduncles solitary in the forks of the stem, the length of the calyx. Calyx erect, oblong-ovate, ten-streaked. Capsule shortly pedicelled<sup>a</sup>.

37. Root annual, simple, fibrous, descending straight down. Sometimes the stem is simple and upright. Sometimes there are several stems decumbent at bottom, with three or four joints in the lower part from an inch to two inches distant from each other, and only one joint on the upper part a hand or more in length, before the stem divides into branchlets and peduncles. Root-leaves oblong; upper ones narrower, resembling those of *Antirrhinum* or Snapdragon. Flowers small, with reddish cloven petals, and a scarcely perceptible crown. Pedicels at first short, but lengthening as the capsules advance to maturity. Calyxes swelling, ten-streaked, five streaks longer, and five shorter. The joints are viscid, but very sparingly. It flowers in may<sup>b</sup>.

Native of Portugal and the Levant. Cultivated in the Eltham garden in 1732.

<sup>1</sup> Ehrhart.

<sup>o</sup> Hort. kew.

<sup>m</sup> Linn. spec.

<sup>p</sup> Murray.

<sup>r</sup> Gartner.

<sup>u</sup> Linn. amoen.

<sup>q</sup> Smith brit. & engl. bot.

<sup>s</sup> Curtis.

<sup>x</sup> Dillenius.

<sup>t</sup> Hort. kew.

<sup>v</sup> Hort. kew.

<sup>z</sup> Willdenow.

<sup>a</sup> Dillenius.

<sup>u</sup> Linn. spec.

<sup>z</sup> Jacquin.



[38. Root annual, fibrous. Stem from a foot to a foot and half in height, slender but firm and erect, round, smooth, green, putting out many branches from the very bottom. Leaves from the joints glaucous, smooth; the lower ones wider, bent back, those at the middle, joints narrower, less bent back; the upper ones shorter and narrower, upright or but little bent back. Flowers frequent on the branches, on pedicels as fine as a hair, never opening, whitish within, obsoletely ochre-coloured on the outside: petals five, narrow, cloven, not crowned. Capsule of an oblong round form, three-celled, opening at top into six parts. Calyx cylindrical, five-toothed. Stems and branchlets somewhat viscid to the middle of the internodes<sup>c</sup>. According to Linneus, the corolla has no border, and there are frequently only five stamens. Dillenius says that there are ten stamens concealed within the corolla, having small whitish anthers. It flowers in July and August.

Native of the South of Europe according to Linneus. Allioni specifies the county of Nice, and Scopoli, Carniola. The Kew catalogue makes it indigenous of Madeira.—Cultivated in 1732, by James Sherard, M. D.<sup>d</sup>

39. This is an annual plant, resembling the preceding, but differing from it in having an angular calyx, a border to the corolla, and ciliate leaves.—Native of the Cape of Good Hope<sup>e</sup>.

40. This also is an annual plant with the habit of *S. inaperta*; but the leaves are narrower, and the calyxes streaked longitudinally. The plant is a span high, brachiate and dichotomous. Leaves linear, acute, smooth. Peduncles filiform, very narrow, long, erect, from the forks, one-flowered. Calyxes club-shaped, long, purplish, with alternate white streaks. Stamens almost the length of the corolla. It may perhaps be only a variety of *S. inaperta*<sup>f</sup>.—Native of Portugal. Cultivated in 1759, by Mr. Miller. It flowers in July and August<sup>g</sup>.

41. Stem dichotomous-panicled, spreading, filiform, with the joints viscid. Calyxes smooth. Flowers bright purple, with the petals cloven half way, from upright spreading a little<sup>h</sup>.

Stems from a foot to two feet and more in height, round, smooth and somewhat glaucous, viscid at the joints, dividing about the middle into slender branches, at the top of which, on long slender peduncles, are middle-sized flowers, without scent, expanding only in the day-time, crowned. Capsules swelling in the middle, narrowed towards the top. Calyxes deeply striated, and when the capsules swell, the streaks become ribs. The lower leaves are like those of the Daisy and subhirsute; the next are narrower and less hairy; those at the upper joints are quite smooth and somewhat glaucous, as in the Pink<sup>i</sup>.

Native of Crete or Candia. Cultivated in 1732, by James Sherard, M. D. It flowers from June to August<sup>k</sup>. Dillenius says in May; and mentions a variety, which is higher, with a shorter and more swelling calyx, and a capsule somewhat more turgid, especially at the base, that flowers a fortnight earlier than the other.]

42. Root biennial. Stalk round, clammy, a foot and half high, having swelling joints. Leaves narrow and smooth, growing round the stalk in clusters. The upper part of the stalk divides into spreading branches by pairs, and has red flowers coming out singly from the axils, and sessile. Capsules oblong, viscous, filled with angular seeds.

[Root annual. Stem upright, round, smooth, thickish, with stiff branches. Leaves very smooth, broad-lanceolate, quite entire, longer than the internodes; the lower running down into the petiole and blunt, the middle and upper attenuated to both ends and sessile: the branch-leaves narrow-lanceolate. Flowering-branches dichotomous. Flowers subsessile in the forks. Bractes awl-shaped, some of them often longer than the flower. Calyx tubular, membra-

ceous, five-toothed, when the fruit is ripe ovate, five-cornered, narrowed at the base. Corolla small, of a deep rose-colour, a little longer than the calyx; the border of each petal emarginate. Capsule ovate-conical, shortly pedicelled, length of the calyx, opening at top in five parts, three-celled. Seeds rufous, small, kidney-form, wrinkled. The plant is extremely viscid<sup>l</sup>.—Native of the South of France, Spain, Siberia and Algiers.

The liminess of this plant is such, says Gerard, that if you take it in your hands, your fingers will cleave together, as if your hand touched bird-lime; and if flies do light upon the same, they will be so intangled with the liminess, that they cannot fly away. Whereupon I have called it *Catch-flie* or *Limewort*. We have these plants in our London gardens, rather for toys of pleasure, than any virtues they are possessed with.

43. Root perennial. Stems branching and frequently lying on the ground. Flowers small, whitish with a tinge of Carnation, and greenish beneath, often inclosed in a calyx with ten cylindrical streaks<sup>m</sup>.

Native of Dauphiné, Hungary, Austria, and Bohemia.]

44. This is an annual plant with erect stalks, a foot and half high, for more than an inch below each joint very glutinous. Lower leaves broad, oblong, smooth, sessile. Flowers in terminating bunches, standing erect, and forming a kind of umbel. Capsules slender, oblong, filled with angular seeds.

[Root small, stem branched, leafy, smooth. Leaves embracing, ovate, glaucous, smooth. Panicles terminating, leafless, many-flowered, dichotomous, fastigate with little bractes. Flowers erect. Calyx clavate-linear, ten-angled, very smooth and even, glaucous, with small, rounded, purplish teeth. Petals rounded, emarginate, acutely crowned. Capsule elliptic, pedicelled<sup>n</sup>.

Native of Denmark, Germany, France, Switzerland, Carniola, Piedmont. England, observed on the banks of the river half a mile below Chester, by Dr. Richardson. It flowers in July and August. This plant is not properly indigenous of our island, but, as Miller observes,] having been many years cultivated in our gardens, the seeds have spread upon walls, buildings, &c. so far, as to induce some to believe it a native.

There are three varieties which generally retain their differences: one has a bright purple flower; the second a pale red; and the third a white flower.

[45. Root annual. Stem erect, dichotomous, somewhat viscid above, branched below. Leaves oleraceous, the lower glandular-ciliate, the upper sessile. Flowers terminating, dichotomous, in bundles, fastigate. Calyx erect, club-shaped. Corolla bright purple, with a white band, crowned at the throat. Petals ovate, bifid, with a more slender tooth or segment at the base of the border on each side<sup>o</sup>.

Native of the Levant. Introduced in 1781, by P. M. A. Broussonet, M. D. It flowers in May and June<sup>p</sup>.

46. Stem herbaceous, a palm high, brachiate, very slightly tomentose. Leaves obovate, narrowed at the base, scarcely fleshy, even, sharpish. Flowers terminating, one or two, peduncled, erect. Calyx club-shaped, subpubescent, with short teeth. Petals obcordate or emarginate, obtuse, flesh-coloured, shorter than the calyx, with a sharp tooth on each side, and therefore four-cleft. The coronet is very short, obtuse and emarginate. The ten stamens are in the throat; and the three styles oblique.—Native of Egypt<sup>q</sup>.

47. Petals deeply bifid with a tooth on each side.—Native of Carolina<sup>r</sup>.

48. Root fibrous, perennial. Stems many, forming a tuft, filiform, a finger's length and half. Leaves opposite, sessile, ovate, acuminate, resembling those of common Chickweed, but slightly sinuate and very finely villose: the first pair is smaller, the next wider,

<sup>c</sup> Dillenius.<sup>d</sup> Hort. kew.<sup>e</sup> Willdenow.<sup>f</sup> Linn. amoen.<sup>g</sup> Hort. kew.<sup>h</sup> Linn. spec.<sup>i</sup> Dillenius.<sup>k</sup> Hort. kew.<sup>l</sup> Desfontaines.<sup>m</sup> Villars.<sup>n</sup> Smith brit.<sup>o</sup> Linn. suppl.<sup>p</sup> Hort. kew.<sup>q</sup> Linn. suppl.<sup>r</sup> Willdenow.



the uppermost more acuminate and again smaller; often five pairs in the whole. The stem ends in a short peduncle, bearing a single flower, sometimes accompanied with one on each side, whitish tinged with rose-colour, and yellowish on the outside. Petals half-five-cleft, the segments linear-roundish, with a deeply bifid crown. Calyx inflated, pale green, except towards the fun where it is reddish, ten-angled with the angles alternately larger and smaller, five-toothed. Capsule oblong, one-celled, opening by four two-toothed valves, not revolute. The plant is viscid all over.

Native of the higher rocks of Piedmont, the county of Nice and the Col de Tende<sup>a</sup>.

49. Root probably perennial. Stems very many, a foot high, erect, dichotomous, round, smooth. Leaves opposite, naked, somewhat fleshy, mucronate, rugged at the edge. Peduncles long, viscid in the middle. Flowers erect, very large. Calyx ten-streaked, curved in a little, five-cleft at the mouth; the teeth acute membranaceous at the edge. Claws of the petals longer than the calyx; borders cordate, patulous, with a bifid, upright crown. Five of the stamens the length of the corolla, and five shorter. Anthers linear, emarginate. Germ obconical. Styles longer than the stamens. Stigmas revolute, pubescent. Capsule erect, ovate, shining, three-celled, opening irregularly.

Native of Armenia, where it was found by Tournefort<sup>a</sup>.

50. Root perennial. Stems a span high, erect, even. Flowers in a dichotomous panicle. Calyx even, with blunt teeth. Petals four-cleft, white, the length of the calyx. Capsule longer than the calyx.

Native of the mountains of Austria<sup>a</sup>. Introduced in 1774, by Joseph Nicolas de Jacquin, M.D. It flowers from may to july<sup>a</sup>.

51. This is a little plant which spreads and branches out dichotomously. Leaves oval, sessile, smooth, entire, glaucous. Flowers small, funnel-shaped; petals slightly emarginate, or only truncate, white. It is biennial. The crown is scarcely apparent; and the hollow or funnel shape of the calyx and corolla distinguishes this species<sup>a</sup>.

According to Haller, the root is large, woody and rugged; the stems erect, very much branched and brachiate; the leaves glaucous, smooth, and ovate-lanceolate; the flowers terminating, on long peduncles, solitary, forming all together a loose umbel; the calyx bell-shaped, inversely conical, marked with lines; the petals milk-white, emarginate, cordate, with earlets forming a coronet. Fruit conical.

Native of Lapland, Sweden, Germany, Dauphiné, Piedmont, Siberia. Introduced in 1771, by Monf. Richard. It flowers from june to august<sup>a</sup>.

52. Root woody, branched. Stems several, a finger's length, smooth. Leaves opposite, linear, acute, from four to six pairs. Peduncle terminating, filiform, length of the stem: sometimes but seldom there is a second lateral peduncle. Flowers solitary. Calyx club-shaped, smooth. Border of the petals shorter than the calyx, red beneath<sup>a</sup>.

It is a creeping plant, with the branches commonly simple, and viscid. Petals pale red, rolled inwards, within an oblong, reddish calyx, a little channelled and viscid<sup>b</sup>.

Native of France, Italy, Carniola and Japan. Introduced in 1772, by Monf. Richard. It flowers from june to august<sup>c</sup>.]

53. This plant seldom rises more than six inches high, sending out many shrubby decumbent branches. The flowers grow erect, are of a pale red colour, and are succeeded by turgid capsules, filled with roundish seeds.

[Stems a hand in length, filiform, woody. Leaves wider towards the end, acute, glutinous, opposite in clusters. Peduncle terminating, solitary, one-flowered, length of the flower. Flower erect: petals bifid, with

a small crown: calyx club-shaped, with ten raised brownish streaks, and small blunt teeth. When the flowering is past, it increases three times in size; is club-shaped, scariose, and inflated as in Behen<sup>d</sup>.

Root hard, woody, perennial. Stems one-flowered, or dichotomous and three-flowered. Leaves linear-elliptic, acuminate, sessile, hairy-viscid. Calyx inflated, at first cylindrical, then oval, an inch long, five-toothed, ten-streaked, viscid-hairy, netted with purple veins. Petals quadrangular cordate, within white, very pale rose-coloured, or whitish, on the outside purple with red veins; the border often rolled back towards the centre of the flower: ten scales of the same colour form an internal corolla, and the petals have a wing on each side. Capsule three-celled, cloven into five or six parts at the top.

Native of the higher alps of the Vaudois, the Valais and Dauphiné. Cultivated in 1768, by Mr. Miller. It flowers from june to august<sup>e</sup>.

54. Root perennial. Root-leaves heaped into a tuft, linear, blunt, even. Stems quite simple, very short, often three-jointed. Calyx oblong, bell-shaped, spreading, blunt, pubescent, length of the stem.

Native of the mountains of Italy, Moravia and Carinthia<sup>f</sup>.

55. The root is perennial, forms a thick tuft, and descends far in the earth. Leaves heaped, sheathing, spreading, slightly keeled. Peduncles terminating, erect, naked, indistinctly quadrangular, smooth, lengthening out after flowering (to two inches.) Flowers erect, pretty, rose-coloured (or bright purple.) Calyx bell-shaped, half-five-cleft, five-ribbed, smooth. Petals slightly emarginate, crowned. Capsule cylindrical, double the length of the calyx<sup>g</sup>.

Leaves awl-shaped, smooth, set at the edges with hooked teeth pointing downwards. Petals cordate, with two small teeth forming a coronet. Capsule smooth and shining, tinged with purple<sup>h</sup>.

Linneus remarks that the herb resembles a *Bryum*.

Native of the mountains of Lapland, Denmark, Britain, Germany, Dauphiné, Austria, Piedmont, Switzerland and the Pyrenees. On the highest mountains of Devonshire, Wales and Scotland. Dartmoor; Caernarvonshire near Llanberys; Ben Lomond, &c. Isles of Mull, Rum and Skye. It flowers from may to july.

56. Stem simple or sparingly branched, hairy. Leaves also hairy: the lower spatulate, obtuse, running down the petiole; middle and upper stem-leaves lanceolate, acute, sessile. Flowers subsessile, erect. Bractes lanceolate-subulate, twice or three times shorter than the calyx. Calyx tubular, striated, five-toothed; when the fruit is ripe ovate, narrowed at the base. Capsule ovate, smooth, pedicelled, erect, three-celled, many-seeded. Annual.—Native of Mount Atlas.

57. Stem erect, with slender rod-like branches. Leaves villose; lower obtuse, upper narrow, lanceolate, acute. Flowers sessile or on very short pedicels, solitary, pressed close, a little longer than the internodes, except the lower ones. Bractes small, awl-shaped. Calyx tubular, smooth, ten-streaked, five-toothed. Petals white, bifid. Capsule smooth, ovate-oblong, pedicelled within the calyx. Annual.—Native of Barbary, in fields near Mascara.

58. Stem erect, hairy, branched. Branches slender, erect. Leaves hairy: root-leaves spatulate or obovate; lower and middle stem-leaves narrow-lanceolate. Flowers in loose racemes, alternate, sessile or subsessile, axillary; the lower shorter than its linear-subulate leaflet. Calyx hirsute, tubular, ten-streaked, erect, when the fruit is ripe ovate-round, five-toothed; teeth longish subulate. Capsule even, ovate, acuminate, opening at top, subsessile within the calyx. Petals rose-coloured, a little longer than the calyx, for the most part three-toothed. Annual.—Found in corn fields near Algiers, by Desfontaines; and in Spain by Clusius, flowering in may.

59. Stem erect, smooth, branched, viscid, slender.

<sup>a</sup> Allioni.

<sup>x</sup> Hort. kew.

<sup>a</sup> Linn. spec.

<sup>b</sup> Smith, ic. ined.

<sup>y</sup> Villars.

<sup>b</sup> Villars.

<sup>u</sup> Linn.

<sup>z</sup> Hort. kew.

<sup>c</sup> Hort. kew.

<sup>d</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>z</sup> Smith brit.

<sup>f</sup> Linn. mant.

<sup>h</sup> Woodw. Mfs.



Leaves very smooth, acute. Flowers panicled. Peduncles filiform, one, two or three-flowered; the middle flower sessile or on a short pedicel. At the base of the pedicels are two awl-shaped leaflets. Calyx thin, club-shaped, very slightly ten-streaked, netted with purplish veins, five-toothed: teeth ovate, acute. Corolla small, rose-coloured: border of the petals linear, narrow, emarginate, with a slender claw, the length of the calyx, having two appendices at the top. Capsule smooth, ovate-oblong, on a long pedicel, scarcely surpassing the calyx, opening at the top, three-celled. Seeds many, small, brown, kidney-form, wrinkled, inserted into a central, elongated, branched receptacle.—Native of Algiers.

60. Stem pubescent, jointed, erect or else decumbent at the base, branched. Branches simple or forked at top. Flower solitary in each fork. Leaves opposite; lower pubescent, spatulate, blunt, decurrent into a ciliate petiole; middle and upper leaves lanceolate, sessile. Flowers on short pedicels, nodding a little. Bractes ovate-lanceolate. Calyx round, narrowed at bottom, membranaceous, ten-grooved, five-toothed; when the fruit is ripe ovate, contracted at the base. Petals rose-coloured: border deeply two-parted; segments narrow, distinct, oblique, obtuse, with two appendices at the top of the claw, forming the coronet. Capsules ovate, smooth, erect, pedicelled, from five to seven-valved at top, three-celled. Seeds many, brown, kidney-form. This is a very handsome species, flowering during spring in the fields of Sbiba in Barbary. Annual.

Broussonet found a variety in Morocco, which was smaller, and had villose calyxes.

61. Stems often many from the same tuft, branched, erect, hairy, seldom smooth. Leaves opposite; lower obovate, decurrent, ciliate at the base; middle and upper stem-leaves sessile or subsessile, ovate, often acuminate. Flowers one, two or three from one peduncle. Peduncles villose. Calyx tubular, round, slender, pubescent; when the fruit is ripe widening from the middle to the top, five-toothed; teeth acute. Petals rose-coloured, blunt: claws a little longer than the calyx, with two appendices at the top. Capsule ovate, opening at top, three-celled. It has very much the appearance of Jacquin's *S. Atocion*, (Orchidea, n. 45.) but differs in having the petals quite entire. Perhaps it may be a variety. Annual.—Native of Mount Atlas.

62. This is a viscid plant covered with very short villose hairs, and for the most part covered with sand and dust. Stem erect, very much branched; the branches panicled. Flowers very numerous. Peduncles axillary, unequal. Pedicels erect. Calyx ten-streaked, ovate, five-toothed; teeth small, acute. Petals white, small. Capsule smooth, even, ovate, very shortly pedicelled within the calyx, five-valved at the top. Perennial on sand by the coast of Barbary.

63. This also is a villose glutinous plant, covered with sand. Stems procumbent at the base, jointed, branched. Branches alternate, striated. Leaves like those of *Cerastium vulgatum*, thickish, villose; root-leaves spatulate; stem-leaves linear-lanceolate, obtuse. Flowers axillary and terminating, solitary or in pairs, pedicelled. Calyx tubular, when the fruit is ripe ovate, pubescent, ten-streaked, five-toothed; teeth acute. Petals small, white, bifid. Capsule ovate, smooth, five or six-valved at the top, pedicelled within the calyx. Allied to *S. ramosissima*; but differs in having much fewer branches, the lower leaves with longer hairs, the stem decumbent at the base, flowers fewer, and the capsules pedicelled within the calyx. Perennial.—Native of sandy shores of the Mediterranean sea.

64. Stems from the same tuft many, erect or decumbent at the base, slender, pubescent, simple or sparingly branched. Lower leaves a little narrower towards the base, bluntish; upper stem-leaves awl-shaped, connate, ciliate below. Peduncles lateral and terminating. Calyx purplish, tubular, when the fruit is ripe subovate, narrowed at the base, five-toothed; teeth small, ovate, obtuse. Claws of the petals a little

longer than the calyx. Capsule even, shortly pedicelled within the calyx, five-valved, opening at top, three-celled.—Native of Barbary in fields.

65. This has the appearance of *S. nocturna*. Stem pubescent with a very short pile. Lower leaves sessile; upper lanceolate, remote. Flowering branches often forked. Lower flowers in threes; upper solitary. Calyx round; when the fruit is ripe ovate, narrowed below, five-toothed; teeth small, acute, silky. Petals a little longer than the calyx, white; segments narrow, linear. Capsule ovate, pedicelled within the calyx. Flower in the fork, solitary, shortly pedicelled.—Native of fields about Algiers.

66. Leaves pubescent with a very short pile: lower obovate, running down into a long petiole; middle and upper stem-leaves remote, narrow-lanceolate. Stem erect, pubescent below, branched. Branches opposite, panicled, spreading, viscid, often bifid or trifid. Flowers on each peduncle one, two or more commonly three, the middle one on a shorter pedicel. At the base of the calyx two ovoid acute little bractes. Calyx tubular, narrower below, ten-streaked, smooth or scarcely pubescent, when the fruit is ripe from the middle to the point widened, ovate, five-toothed; teeth small, ovate, erect. Corolla white, the size of *Lychnis dioica*: claws a little longer than the calyx, with two teeth at top forming the coronet. Capsule ovate, pedicelled within the calyx, opening at top, three-celled. The flowers open at sunset and then smell very pleasantly. Perennial.—Native of Barbary, in fields<sup>1</sup>.]

#### PROPAGATION AND CULTURE.

Many of these plants are hardy annuals, which rise easily from seeds sown in the autumn, or spontaneously from scattered seeds.

3. Sow the seeds thin upon a border of light earth in autumn; and in the spring thin the plants to the distance of four inches, and keep them clean from weeds. They will flower in may and june. If some seeds be sown in the spring, the plants will flower a month later. These directions will serve for several other species.

2, 4, 5, 6, 21, 33, 34, 38, 40, 41, 45, &c. Sow the seeds upon a warm border in the autumn.

15. This may be increased by slips planted in a shady border: and if the plants are set in a warm dry border, they will live several years without shelter, but in moist ground they frequently rot in winter. This also rises easily from seeds.

16. As the seeds seldom ripen here, it is difficult to propagate this species. The only way is to slip off the heads in june, and plant them under a glass; these will take root, if shaded from the sun and duly watered.

18, 19, 20. Sow the seeds in autumn upon a warm border. When the plants are fit to remove set them on a dry soil in a warm situation, where they will live through the winter, and the following summer they will flower and ripen their seeds and then decay.

1, 28, 30, 44, &c. Permit the seeds to scatter, and the plants will come up without farther care.

[31, 32. These require the protection of a dry stove, greenhouse or glass-case. They may easily be raised from seeds, but are more commonly increased from cuttings, which strike freely.]

42. Sow the seeds in autumn. When the plants are fit to remove transplant them into a bed of fresh earth at six inches distance, shading and watering them until they have taken new root. Keep them clean from weeds till autumn, and then transplant them to the places where they are designed to remain for flowering. When the seeds happen to scatter upon a wall, the plants will continue much longer than in the ground.

[50, 51, 52, 53. These are perennial species, and may be propagated by seeds or cuttings. They are all hardy.] The seeds of the last should be sown in dry rubbish, where the plants will live many years; but in rich moist soils they rarely live through the winter.

<sup>1</sup> Desfontaines.



- [SILENE. See *Cucubalus*, *Lychnis*, *Saponaria*, *Velezia*.]  
 SILER. See *Laserpitium*, [*Peucedanum*, *Seseli*.]  
 SILIQUA. See *Ceratonia*, [*Cercis*, *Poinciana*, *Tamarindus*.]  
 SILIQUASTRUM. See *Cercis*.  
 [SILK COTTON. See *Bombax*.]  
 SILPHIUM (of Pliny. Σιλπίου of Dioscorides.)  
 Lin. gen. n. 986. Reich. n. 1069. Schreb. n. 1334.  
 Gært. t. 171. Juss. 188. Asteriscus. Dill.  
 elth. 39. 42.  
 Class. 19. 4. Syngenesia Polygamia, Neceffaria.  
 Nat. order of *Compositæ Oppositifoliæ*. *Corymbiferæ*,  
 Juss.

## GENERIC CHARACTER.

- CAL. Common ovate, imbricate, squarrose: scales ovate-oblong, bent back in the middle, prominent every way, permanent.  
 COR. Compound radiate. Corollets hermaphrodite in the disk many: females in the ray fewer.  
 Proper of the hermaphrodites one-petalled, funnel-form, five-toothed; the tube scarcely narrower than the border:—of the females lanceolate, very long, often three-toothed.  
 STAM. in the hermaphrodites: Filaments five, capillary, very short. Anther cylindrical, tubular.  
 PIST. in the hermaphrodites: Germ round, very slender. Style filiform, very long, villose. Stigma simple:—in the females, Germ obcordate. Style simple, short. Stigmas two, bristle-shaped, length of the style.  
 PER. none. Calyx unchanged.  
 SEEDS in the hermaphrodites none:—in the females foliary, submembranaceous, obcordate, with the edge membranaceous, two-horned, emarginate.  
 REC. chaffy: chaffs linear.

## ESSENTIAL CHARACTER.

- Cal. squarrose. Seed-down margined-two-horned.  
 Recept. chaffy.

## SPECIES.

- [1. *Silphium laciniatum*. Jagged-leaved Silphium.  
 Lin. spec. 1301. fyst. 789. Reich. 3. 919. Lin.  
 fl. fasc. 1. t. 1.  
 Leaves alternate pinnate-sinuate.  
 2. *Silphium terebinthinum*. Broad-leaved Silphium.  
 Lin. fyst. 789. suppl. 383. Jacqu. hort. 1. 16. t. 43.  
 Ait. kew. 3. 267. Gært. fruct. 2. 445.  
 Leaves alternate ovate serrate rugged, root-leaves cordate.  
 3. *Silphium perfoliatum*. Square-stalked Silphium.  
 Lin. spec. 1301. fyst. 789. Reich. 3. 920. Gouan  
 monsp. 462.  
 Leaves opposite deltoid petioled perfoliate, stem four-cornered even.  
 4. *Silphium connatum*. Round-stalked Silphium.  
 Lin. fyst. 789. Reich. 3. 920. mant. 574.  
 Leaves opposite sessile perfoliate, stems round rugged.]  
 5. *Silphium Asteriscus*. Hairy-stalked Silphium.  
 Lin. spec. 1302. Reich. 3. 920. hort. cliff. 494.  
 Fabric helmst. 141. Gron. virg. 133.  
 Asteriscus *Coronæ-folis folio & facie*. Dill. elth. 42.  
 t. 37. f. 42.  
 Leaves undivided sessile opposite, lower alternate.  
 6. *Silphium trifoliatum*. Three-leaved Silphium.  
 Lin. spec. 1302. Reich. 3. 921. Gron. virg. 133.  
*Chrysanthemum virginianum*, foliis asperis tribus f.  
 quaternis ad genicula sitis. Mor. hist. 3. 24. f. 6.  
 t. 3. f. 68. Raii suppl. 211.  
 Leaves in threes.  
 [7. *Silphium trilobatum*. Three-lobed Silphium.  
 Lin. spec. 1302. Reich. 3. 921. amoen. 4. 307.  
 Brown. jam. 321. 4. (Bupthalmum.) Plum. spec.  
 10. ic. 107. f. 2. (Corona folis.) Sloan. jam. 1.  
 262. t. 155. f. 1. Pluk. phyt. t. 450 f. 4.  
 Leaves opposite sessile wedge-form.]  
 8. *Silphium arborescens*. Tree Silphium.  
 Mill. dict. n. 4.  
*Corona folis americana arborescens*, flore parvo luteo,  
 femine alato. Houtt. Mss.  
 Leaves lanceolate alternate rugged slightly serrate, stem  
 shrubby.

## DESCRIPTIONS, &amp;c.

[1. Root perennial. Stem twice the height of a man, as thick as the thumb, quite simple, smooth below, above rugged with brown tubercles and white spreading hairs, round. Leaves petioled, two feet in length and a foot in breadth, embracing at the base, pinnatifid; segments on each side four or five, distant, narrow, tooth-sinuate, rugged, with very solid ribs raised on both sides; margin of the upper leaves purplish. Calyx of ten scales, ending in large awl shaped spines. Petals of the ray thirty, length of the calyx, with a bifid slender style. Florets of the disk yellow, many, separated by chaffs, attenuated at the base; with a simple style. Seeds in the ray-membranaceous, oval, emarginate, with two small awns:—in the disk columnar, four-cornered, abortive<sup>k</sup>.

Native of North America. Introduced in 1781 by Mons. Thouin. It flowers from July to September<sup>l</sup>.

2. Stems two or three in number, strong, upright, annual, smooth: paniced above, but without any branches throughout the whole length, being beset with distant leaves: radical and lower cauline leaves large, heart-shaped, upright, rough, sharply toothed on the edges, and ciliated with very short hairs: they are very veiny, but not wrinkled: the footstalks are long and embrace the stem at their base: the stem-leaves are similar, but scarcely hearted at the base, and the others are more oblong, and half embrace the stem: the peduncles are elongated, round, and mostly leafless; though a few of them are furnished with two opposite leaflets: the terminal flower on the stem flowers first, and when this begins to feed the lateral peduncles of the panicle begin to extend and proceed to flower. The smell of the flower, which is moderately large, and yellow, is similar to that of the Sunflower<sup>m</sup>. Calyx ventricose at the base, squarrose above. Chaffs of the disk almost the length of the barren flowers:—of the ray ovate-oblong, flat, a little shorter than the seed, to the base of which they are fastened. Seeds ovate-rounded, plano-convex, very much compressed, pedicelled with a setaceous base, simply emarginate at top, without any visible seed-down<sup>n</sup>.

Native of North America. Introduced in 1756, by Messrs. Kennedy and Lee. It flowers in August and September<sup>o</sup>.

3. Root perennial. Stem higher than a man, four-cornered, even. Leaves opposite, ovate or deltoid, serrate, decurrent along the petioles, and oppositely perfoliate. Upper leaves sessile, very wide, perfoliate. Peduncle terminating and from the axil of the last leaves, round, inclined. Calyx squarrose, blunt. Corolla yellow with twenty-four rays and two-parted styles: those of the disk have simple longer styles, and are barren<sup>p</sup>.

Native of North America. Cultivated in 1766 by Peter Collinson, Esq. It flowers from July to October<sup>q</sup>.

4. Root perennial. Stem the height of a man, as thick as the thumb, erect, quite simple, round except at the bottom where it is indistinctly four-cornered, rugged with hairs bent down. Leaves connate-perfoliate, ovate-oblong, with the disk concave, as in *Dipsacus laciniatus*, sessile and not with the last petioles connate-perfoliate as in *S. perfoliatum*, rugged, a span long, sharpish, serrate. Panicle terminating, dichotomous: peduncles of the forking solitary, one-flowered, length of the internodes. Calyx squarrose, with the scales ovate, bluntish, even, flat and reflexed at the top, as in *S. Asteriscus*. Corolla radiate, yellow: florets of the disk many, hermaphrodite, abortive, with a simple style standing out:—of the ray twelve, elongated, female, fertile, with a bifid pistil shorter than the corollets<sup>r</sup>.

Native of North America. Introduced in 1765, by Messrs. Kennedy and Lee. It flowers from July to October<sup>s</sup>.

5. Root perennial. Stem four or five feet high,

<sup>k</sup> Linn. spec.<sup>l</sup> Hort. kew.<sup>m</sup> Jacquin.<sup>n</sup> Gartner.<sup>o</sup> Hort. kew.<sup>p</sup> Linn. spec.<sup>q</sup> Hort. kew.<sup>r</sup> Linn. mant.<sup>s</sup> Hort. kew.



thick, solid, set with prickly hairs, and having many purple spots. Lower leaves alternate; upper opposite and sessile, rough, about two inches long and an inch broad near the base, having a few slight indentures on their edges. The upper part of the stem divides into five or six small branches, terminated by yellow radiated flowers like those of the perennial Sun-flower, but smaller, having generally nine florets in the ray.

[Native of North America. Cultivated in 1732, by James Sherard, M.D. from Carolina seeds. It flowers from July to September'.]

6. Root perennial and woody. Stems annual, rising five feet high or more in good land, of a purplish colour, and branching towards the top. Leaves oblong, rough, having some sharp teeth on the edges; they are from three to four inches long, and almost two broad; towards the bottom of the stem they stand by fours at each joint; higher up they are by threes, and at the top by pairs, sitting close to the stems. Flowers upon pretty long peduncles, solitary. Calyx of three rows of imbricate leaves, the outer row smallest. In the ray thirteen yellow florets, three-toothed at the end.—Native of many parts of North America.

[Cultivated in 1759, by Mr. Miller. It flowers from July to October".]

7. This is a weakly plant, creeping far among other vegetables, but more luxuriant and upright towards the top.

Native of the West Indies. Frequent in Jamaica, in low marshy lands\*.]

8. This rises with a shrubby stalk to the height of eight or ten feet, sending out woody branches, with spear-shaped leaves placed alternately on every part; they are four inches long, and an inch and half broad in the middle, ending in acute points; their surface is rough, and their edges slightly serrate. Flowers terminating, some singly on slender peduncles, others by two or three upon each peduncle, unequal in height. They have short scaly calyxes; florets of the ray short; those of the disk more prominent than in the other sorts: colour deep yellow.

Discovered by Dr. William Houstoun at La Vera Cruz in New Spain.

#### PROPAGATION AND CULTURE.

These plants may be increased by parting the roots, in the same manner as is practised for the perennial Sun-flower. The best time for this is in autumn, when the stalks begin to decay. Treat them afterwards in the same way as the perennial Sun-flower.

8. Slip off the young shoots in July, plant them in a pot filled with light loam, plunge it in a gentle hot-bed, covering the pot closely with a bell or hand-glass, and shade it from the sun. When the slips are rooted, plant each in a separate pot; place them, during the warm months, in the open air, in a warm situation; but in winter keep them in a moderate stove.

[SILPHIUM SOLIDAGINOIDES. See *Bupththalmum helianthoides*.]

SILVER BUSH. See *Anthyllis*.

——— TREE. See *Protea*.

——— WEED. See *Potentilla*.

SILYBUM. See *Carduus* and *Gundelia*.

SIMABA. See *Zwingera*.

SIMIRA. See *Psychotria*.

SIMPLER'S JOY. See *Verbena*.

SINAPI. See *Brassica*, *Bunias*, *Myagrum*, *Sinapis*, *Symbrium*.]

SINAPIS (of *Plautus*. *Sinapi* of *Pliny*. *Sinape* of *Columella*. *Σινάπι* of *Theophrastus* and *Dioscorides*. Also *σινάπι* & *σινάπι*; *παρά το σινεσαι τους οφθαλμους*; from its making the eyes water.)

*Lin. gen. n. 821. Reich. n. 885. Schreb. n. 1097.*

*Gartn. t. 143. Juss. 238. Sinapi. Tournef. t. 112.*

Class. 15. 2. Tetradynamia Siliquosa.

Nat. order of *Siliquosæ* or *Cruciformes*.—*Cruciferae*, Juss.

\* Hort. kew.

u Idem.

x Browne.

#### GENERIC CHARACTER.

CAL. *Perianth* four-leaved, spreading: *leaflets* linear, concave-channelled, cruciform-spreading, deciduous.

COR. four-petalled, cruciform. Petals roundish, flat, spreading, entire: *claws* erect, linear, scarcely the length of the calyx.

*Nettareus glands* four, ovate: one on each side between the shorter stamen and the pistil; and one on each side between the longer stamens and the calyx.

STAM. *Filaments* six, awl-shaped, erect: two of them opposite, the length of the calyx, and four longer. *Antbers* from erect spreading, acuminate.

PIST. *Germ* cylindrical. *Style* length of the germ, height of the stamens. *Stigma* capitate, entire.

PER. *Siliqua* oblong, torose below, rugged, two-celled, two-valved: *partition* for the most part twice the length of the valves, large, compressed.

SEEDS many, globular.

Obs. Hence *Sinapis* differs from *Brassica*, in having the calyx spreading, but the claws of the corolla erect. Crantz unites this genus with *Raphanus*.

#### ESSENTIAL CHARACTER.

Cal. spreading. Cor. claws erect. Gland between the shorter stamens and pistil, and between the longer stamens and calyx.

#### SPECIES.

1. *Sinapis arvensis*. Wild Mustard or Charlock.

*Lin. spec. 933. syst. 602. Reich. 3. 280. Willd. 3. 554. hort. cliff. 338. fl. suec. n. 610. Hudf. angl. 298. Wither. arr. ed. 3. 594. Smith brit. 721. Lightf. scot. 360. Curt. lond. 5. t. 47. 321. Relb. cant. ed. 2. n. 558. Sibth. oxon. n. 589. Abbot bedf. n. 484. Fl. rust. t. 101. Fl. dan. t. 753. Hall. belv. n. 467. Hoffm. germ. 242. Roth. germ. 1. 288. 2. 122. Pollich pal. n. 642. Krock. files. n. 1100. Neck. gallob. 286. Scop. carn. n. 842. Villars dauph. 3. 338. Allion. pedem. n. 957.*

*Sinapi arvense præcox femine nigro, foliis integris. Tournef. inst. 227.*

*Rapistrum. Dod. pempt. 675. 1.*

*R. flore luteo. Bauh. pin. 95. hist. 2. 844.*

*R. arvorum. Lob. obs. 99. 1. ic. 1. 196. 2. Ger. emac. 232. 2. Park. theat. 862. 3. Raii hist. 802. syn. 295. Petiv. brit. t. 45. f. 12.*

*Irion. Fuchf. hist. 257.*

*Siliques multangular torose-turgid longer than the ancipital beak, leaves ovate sublyrate.*

2. *Sinapis orientalis*. Oriental Mustard.

*Lin. spec. 933. syst. 602. Reich. 3. 281. Willd. 3. 554. amoen. 4. 280. Murr. prodr. 167.*

*S. orientale maximum, rapi folio. Tournef. cor. 17.*

*Siliques hispid backwards slightly four-cornered and compressed at the tip.*

3. *Sinapis brassicata*. Cabbage Mustard.

*Lin. syst. 602. Reich. 3. 281. Willd. 3. 555.*

*Lour. cochinch. 399. ed. Willd. 485.*

*Leaves obovate toothblotted even.]*

4. *Sinapis alba*. White Mustard.

*Lin. spec. 933. syst. 602. Reich. 3. 281. Willd. 3. 555. mant. 429. hort. cliff. 338. ups. 191.*

*Gartn. fruct. 2. 299. Hudf. angl. 298. Wither. arr. ed. 3. 594. Smith brit. 722. Lightf. scot. 361. Curt. lond. 5. t. 46. 322. Relb. cant. ed. 2. n. 559. Sibth. oxon. n. 590. Abbot bedf. n. 485.*

*Fl. rust. t. 70. Hall. belv. n. 466. Roth. germ. 1. 289. 2. 123. Krock. files. n. 1101. Villars dauph. 3. 338. Allion. pedem. n. 958.*

*Sinapi album. Ger. emac. 244. 4. Blackw. t. 29.—*

*siliqua hirsuta, femine albo & ruffo. Bauh. hist. 2. 856. Raii hist. 802. syn. 295. Petiv. brit. t. 45. f. 10.*

*S. apii folio. Bauh. pin. 99.*

*S. sativum alterum. Dod. pempt. 707. 1.*

*S. primum genus. Fuchf. hist. 538.*

*S. secundum. Matth. 563.*

*Siliques hispid torose shorter than the ancipital beak, leaves hispid.*



5. *Sinapis nigra*. Common or Black Mustard.  
*Lin. spec.* 933. *Reich.* 3. 282. *Willd.* 3. 555.  
*hort. cliff.* 338. *fl. suec. n.* 611. *mat. med.* 164.  
*Woodw. med. bot.* 409. *t.* 151. *Huds. angl.* 297.  
*Wither. arr. ed.* 3. 595. *Smith brit.* 722. *engl.*  
*bot. t.* 969. *Lightf. scot.* 361. *Relb. cant. n.* 560.  
*Sibth. oxon. n.* 591. *Abbot bedf. n.* 486. *Fl. rust.*  
*t.* 51. *Hoffm. germ.* 242. *Roth. germ. i.* 289. 2.  
123. *Pollich pal. n.* 643. *Krock. fles.* 1102.  
*Villars dauph. 3.* 339. *Allion. pedem. n.* 959.  
*Blackw. t.* 446. *Regnault bot.*  
*Sinapi rapi folio.* *Baub. pin.* 99. *Tournef. inst.* 227.  
*S. sativum* 2. *Gér. emac.* 244. *Raii hist.* 803. *syn.*  
295.  
*S. sat. prius.* *Dod. pempt.* 706. 2.  
*S. filiqua latiuscula glabra, femine ruffo f. vulgare.*  
*Baub. hist.* 2. 856.  
*S. i.* *Matth.* 562.  
*Siliques smooth four-cornered pressed to the raceme, upper*  
*leaves linear-lanceolate quite entire smooth.*  
[6. *Sinapis pyrenaica*. Pyrenean Mustard.  
*Lin. spec.* 934. *fst.* 602. *Reich.* 3. 282. *Willd.*  
3. 556. *Allion. pedem. n.* 960. *t.* 55. *f.* 1.  
*Erysimum dentis leonis folio perenne pyrenaicum.*  
*Tournef. inst.* 228.  
β. *Sinapis maritima.* *Allion. pedem. n.* 961.  
*Siliques streaked rugged, leaves runcinate even.*  
7. *Sinapis pubescens*. Pubescent Mustard.  
*Lin. fst.* 602. *Reich.* 3. 282. *Willd.* 3. 556.  
*mant.* 95. *Ard. spec. i.* 21. *t.* 9.  
*Siliques pubescent erect, beak compressed, leaves lyrate*  
*villose.*  
8. *Sinapis hispida*. Hispid Mustard.  
*Lin. spec. ed.* *Willd.* 3. 556.  
*Siliques hispid erect, leaves lyrate very rugged, stem*  
*hispid.*  
9. *Sinapis chinensis*. Chinese Mustard.  
*Lin. fst.* 602. *Reich.* 3. 283. *Willd.* 3. 557.  
*mant.* 95. *Ard. spec. i.* 23. *t.* 10. *Lour. cochinch.*  
399. *ed.* *Willd.* 485.  
*Siliques even slightly jointed patulous, leaves lyrate-runci-*  
*nate subhirsute.]*  
10. *Sinapis juncea*. Fine-leaved Mustard.  
*Lin. spec.* 934. *fst.* 602. *Reich.* 3. 283. *Willd.*  
3. 557. *hort. ups.* 191. *Jacqu. hort.* 2. 80.  
*t.* 171.  
*Branches in bundles, upper leaves lanceolate quite entire.*  
[11. *Sinapis Allionii*.  
*Lin. fst.* 602. *Willd.* 3. 557. *Jacqu. hort.* 2.  
*t.* 168.  
*Siliques ovate-oblong patulous, leaves pinnatifid, segments*  
*gashed.]*  
12. *Sinapis eruroides*. Dwarf Mustard.  
*Lin. spec.* 934. *fst.* 602. *Reich.* 3. 283. *Willd.*  
3. 557. *mant.* 429. *amoen.* 4. 322. *Jacqu. hort.*  
2. *t.* 170.  
*Sinapi hispanicum pumilum album.* *Tournef. inst.*  
227.  
*Eruca sylvestris flore albo italica.* *Barr. ic.* 132.  
*Siliques smooth equal, leaves lyrate oblong smooth, stem*  
*rugged.*  
[13. *Sinapis cernua*. Pendulous Mustard.  
*Lin. fst.* 602. *Willd.* 3. 557. *Thunb. jap.* 261.  
*Siliques even patulous, root-leaf lyrate, end-lobe very*  
*large ovate gash-toothed.]*  
14. *Sinapis hispanica*. Spanish Mustard.  
*Lin. spec.* 934. *Reich.* 3. 283. *Willd.* 3. 558.  
*hort. cliff.* 338.  
*Sinapi hispanicum, nasturtii folio.* *Tournef. inst.* 227.  
*Leaves doubly pinnate, segments linear.*  
[15. *Sinapis japonica*. Japanese Mustard.  
*Lin. fst.* 602. *Willd.* 558. *Thunb. jap.* 262.  
*Siliques even erect, leaves gash-pinnatifid smooth.*  
16. *Sinapis incana*. Hoary Mustard.  
*Lin. spec.* 934. *fst.* 602. *Reich.* 3. 283. *Willd.*  
3. 558. *amoen.* 4. 281. *Gouan illustr.* 45. *Jacqu.*  
*hort.* 2. 79. *t.* 169. *Hall. belv. n.* 463.  
*Erysimum folius subincanis, filiquis brevissimis.* *Herm.*  
*par. t.* 115. *Vaill. par.* 51.  
*Siliques pressed to the raceme even, lower leaves lyrate*  
*rugged, upper lanceolate, stem rugged.*

17. *Sinapis frutescens*. Shrubby Mustard.  
*Lin. spec. ed.* *Willd.* 3. 559. *Ait. kew.* 2. 404.  
*Siliques linear even, lower leaves oblong toothed, upper*  
*lanceolate entire, stem smooth shrubby.*  
18. *Sinapis radicata*.  
*Lin. spec. ed.* *Willd.* 3. 559. *Desfont. atlant.* 98.  
*t.* 167.  
*Root-leaves deeply lyrate hispid, stem-leaves pinnate,*  
*branches rod-like smooth, filiques awl-shaped torulose*  
*spreading.*  
19. *Sinapis lævigata*. Smooth Mustard.  
*Lin. spec.* 934. *Reich.* 3. 284. *Willd.* 3. 559.  
*amoen.* 4. 281.  
*Erysimi varietas.* *Herm. par.* 155.  
*Siliques even patulous, leaves lyrate smooth, upper lan-*  
*ceolate, stem even.*

## DESCRIPTIONS, &amp;c.

1. Root annual, fusiform, small, rigid: Stem from nine inches or a foot to a foot and half in height, upright, round, striated or grooved, rough with a few stiff hairs or bristles bent somewhat downwards, commonly much branched, and the branches spreading. Leaves petioled, harsh or rugged, deeply and irregularly indented and serrate, sometimes entire, but most frequently jagged at the base, and sometimes lyrate or pinnatifid. Flowers at the ends of the stem and branches, each on a pedicel the length of the calyx and slightly hispid. Calyx-leaves green or yellow; linear, compressed-concave, half as long as the corolla, standing open at top. Corolla always yellow. Siliques spreading, scarce perceptibly angular, (sub-octangular, *Sm.*) slightly hairy or sometimes smooth, torose or swelling, ending in a short, compressed, ensiform, grooved beak. Seeds dark brown, shining, eight or nine<sup>1</sup>.

The stem is either wholly green or tinged with red. Among corn it is more drawn up, and often scarcely branched. The leaves vary much in form and degree of division. The plant differs in height and degree of hairiness<sup>2</sup>.

It is confounded by husbandmen, under the name of Charlock, with *Raphanus Raphanistrum*, which is as common a weed in some fields, as this is in others. But the stem and leaves of *Sinapis arvensis* are green without any glaucous cast; the stem hirsute with very rigid hairs; the pods smooth and belying, but not angular; the flowers smaller; calyx-leaves spreading, yellow, half the length of the petals; corolla smaller, yellow and without veins<sup>3</sup>.

Native of Europe, in corn fields, flowering in may and june, and perfecting its seeds before harvest; it is therefore very abundant in spring corn.

Its classical name in English is Wild Mustard; but it is known among husbandmen by the names of Charlock, Garlock, Warlock, Chadlock, Cadlock, and Kedlock, all evidently the same name originally, only variously pronounced in different counties. We find the last in Fitzherbert and our other early English writers. In some parts of Yorkshire it is said to be called Runsh.

The young plants, and particularly the tender tops before they flower, are boiled and eaten as greens by husbandmen in Scandinavia, Ireland, and many parts of England.]

The seed is commonly sold under the title of Durham Mustard-feed.

[2. Like the preceding, but the beak only of the pod smooth. Native of the Levant.

3. Stature of Cabbage or Lettice, but the calyx of Mustard. Stem a foot and half high, very smooth. Root-leaves oleraceous, obovate, obtuse, toothed, smooth, white-veined, with the petioles channelled: middle stem-leaves oblong, sometimes eared at the base of the petiole: upper lanceolate, sessile, embracing. Flower very like that of the common Cabbage. Calyx yellow, spreading. Petals yellow, scarcely emarginate. Pod like that of Cabbage.

Native of China<sup>4</sup>. Cultivated abundantly both there and in Cochinchina<sup>5</sup>.

<sup>1</sup> Fl. rust. and Smith.<sup>2</sup> Fl. rust.<sup>3</sup> Woodw. Mfs.<sup>4</sup> Linn.<sup>5</sup> Loureiro.



4. Root annual. That and the stem nearly as in the *arvensis*. Stem strong, hard, nearly round, upright, branched, striated or finely grooved, set with numerous stiffish hairs pointing downwards, from a foot and half to two feet in height. Leaves petioled, alternate, pale green, rough with strong hairs on both sides, all deeply indented or lobed, the terminating segment very broad and large, and frequently a pair of small wings on the petiole: the lower ones deeply pinnatifid; the upper ones sublyrate. Flowers on loose racemes or bunches at the ends of the branches, on horizontal pedicels, which have four grooves or corners, and strong hairs pointing downwards. Calyx-leaves linear, spreading a little at top and ending bluntly, green yellow or sometimes purplish. Petals yellow, with upright narrow claws scarcely the length of the calyx; lamina or border obovate and entire. Siliques spreading on almost horizontal peduncles, an inch long, roundish, ribbed, torose or swelling where the seeds are, hispid, separated into two cells, by a membranaceous partition, which is produced above the valves into a very long coriaceous, ensiform, flattened, greenish, rugged beak. Seeds three or four, globular, very large, white, yellowish, brown or dark rust colour<sup>d</sup>.

Ray distinguishes this species from common Mustard and Charlock; by the leaves being more deeply and frequently cut; the pods hairy and standing out more from the stalk; the seeds very large, so as to swell out the pod into knots; and the pod itself finishing in a broad thin oblong sword-shaped point. Haller remarks, that the flower is larger than in the common Mustard.

Native of Germany, France, Flanders, Switzerland and Britain, in corn fields, on banks, and by road sides; flowering in June, and ripening its seeds in August. Mr. Curtis observes, that Mustard is as common in the fields about High Wycomb, in Bucks, as Charlock (*Sinapis arvensis*) is in other places.

White Mustard is generally cultivated in gardens as a salad herb, with Cresses, Radish, &c. for winter and spring use. The seeds have nearly the same properties with those of common Mustard<sup>e</sup> (*Sinapis nigra*.)

5. Root annual, small. Stem upright, round, streaked, the upper part smooth, three or four feet in height, with many distant spreading branches. Leaves petioled, variously lobed and toothed; those next the root lyrate, rugged; on the stem smooth, the upper ones frequently simple, lanceolate, and sharply toothed, the very uppermost quite entire. Calyx and corolla pale yellow. Siliques short, parallel to the stem, with a smooth beak: the peduncles are slightly hairy. Seeds brown<sup>f</sup>.

"Our ordinary Mustard," says Johnson, (Ger. emac. 243.) "hath leaves like Turneps, but not so rough, the stalks are smooth, and grow sometimes to three, four or five cubits high; they have many branches, and the leaves upon these branches, especially the uppermost, are long and narrow, and hang downward on small stalks; the cods are short, and lie flat and close to the branches, and are somewhat square: the seed is reddish or yellow."

This hanging down of the upper leaves on the branchlets, remarked by Johnson, distinguishes this at first sight from its congeners<sup>g</sup>.

Ray's distinctions are good ones. "It is a loftier plant than either White Mustard or Charlock; the upper part of the stem and the branches are smooth; the pods short, pressed close to the stem and almost quadrangular. The seeds are the smallest among these plants." We may add, that the leaves are of a much darker colour, and their divisions blunter than in the White Mustard; the flowers are smaller, the pods for the most part quite smooth, and scarcely torulose.

Native of Europe, in corn fields, on the banks of ditches, and by way sides; flowering in June and July. Whenever they throw the earth out of their ditches in the Isle of Ely, the bank comes up thick with

Mustard; the seed falling into the water and sinking to the bottom, will remain embalmed in the mud for ages without vegetating. The tender leaves are sometimes boiled and eaten as greens in the spring. But it is principally cultivated for the seed, which is used both medicinally and for culinary purposes<sup>h</sup>.

The seeds reduced to powder make the common Mustard for the table. When fresh, this powder has little pungency and much bitterness; but moistened with vinegar and kept for a day, the essential oil is evolved, and it becomes considerably more acrid. By distillation with water they yield an essential oil of great acrimony. Subjected to the press, they yield a considerable quantity of mild insipid oil, which is as free from acrimony as that of Almonds<sup>i</sup>.

The seeds unbruised taken inwardly, in the quantity of a table spoonful or more, gently loosen the bowels, and are of service in asthma, chronic rheumatism and palsy. The powdered seeds curdle milk, and give a strong impregnation to boiling water. This infusion, taken in considerable quantity, vomits; in smaller doses it is an useful aperient and diuretic. Cataplasms formed with crum of bread, vinegar and powdered mustard seed are very commonly applied to the soles of the feet, as stimulants in fevers that require such treatment; they are used with advantage, topically applied, in fixed rheumatic and sciatic pains. Upon the whole, whenever we want a strong stimulus, that acts upon the nervous system, without exciting much heat, we know none preferable to Mustard seed. Its acrimony is not to be ascribed to volatile alkali, but consists in an essential oil<sup>k</sup>.

Bergius informs us, that he found Mustard of great efficacy in curing vernal intermittents; for this purpose he directed a spoonful of the whole seeds to be taken three or four times a day, during the apyrexia; and when the disease was obstinate, he added flour of Mustard to the bark. Mustard-seed may be most conveniently given entire or unbruised, and to the quantity of a spoonful or half an ounce to a dose<sup>l</sup>.

6. Root biennial. Leaves runcinate, smooth, with a whitish rib; the triangular segments of the root-leaves toothletted, of the stem-leaves lanceolate. Stem smoothish. Flowers racemed, small, yellow. Siliques straightish, striated, rugged, with indistinct hairs pointing upwards<sup>m</sup>.

Stems angular, even, round, striated, flexuose, smooth. Margin of the leaves and rib shortly subhirsute: the leaves themselves pinnatifid, with the pinnae triangular, toothed especially below, on a grooved petiole. Flower-stalks from the axils of the leaves. Flowers first in an umbel, afterwards in a raceme. Pedicels round. Calyx-leaves linear, greenish-yellow, about the length of the claws. Petals ovate, quite entire. Siliques striated, torose, round. Seeds ten or twelve, oblong, grooved in the inner part<sup>n</sup>.

Native of the Pyrenees, mont Cenis, the Alps of the Vaudois and di Vin.

β. This, according to Allioni, differs not only in its place of growth, but in some other marks. The biennial roots bear the root-leaves on long petioles, sinuate-angular especially towards the petiole. The stem-leaves are more sparingly toothed, and longer with the end triangular; the upper ones scarcely angular and rather hastate. All juicy and thickish, very smooth, subglaucous, concave above. Stem a yard high, firm, erect, branched, round, very smooth; with a raceme of flowers on each branch. Calyx spreading. Petals ovate, clawed, sulphur-coloured. The peduncles thicken after flowering. Siliques irregularly pressed close to the branches and commonly twisted, round, torulose, narrower towards the end, thickened (but not horned or beaked) with a two-necked permanent stigma. In the other the stigma is not cloven.

Native of the coast of Uneglia, the descent of the Col di Tenda and the following mountains towards Nice, &c.

7. Stem perennial, shrubby. The whole plant

<sup>d</sup> Fl. rust. Smith, Withering, Woodw. Mss. Curtis, Gartner.

<sup>e</sup> With. & Fl. rust. <sup>f</sup> Fl. rust. Smith, Relh. Woodw. With.

<sup>g</sup> Goodenough in Smith brit.

<sup>h</sup> Fl. rust.

<sup>i</sup> Woodville.

<sup>j</sup> Woodville.

<sup>k</sup> Linn. spec.

<sup>l</sup> Withering:

<sup>m</sup> Allioni.



villose. Leaves blunt. Petals yellow, entire.—Native of Sicily<sup>o</sup>.

8. Root annual. Stem hispid-muricated. Leaves pinnatifid, blunt, toothed, the end lobe oblong and very large, very rugged on both sides with short rigid hairs. Petioles hispid. Flowers yellow. Beak of the silique long, blunt and flat.—Native of Morocco<sup>p</sup>.

9. Root annual. Stem hispid below. Leaves toothed, rugged about the edge and along the rib. Flowers white, small<sup>q</sup>.

Stem three feet high, thick, striated, branched. Root-leaves large, oblong-oval, lyrate-runcinate, wrinkled, with few hairs, often none: petioles roundish, channelled, short, fleshy. Stem-leaves cordate-conical, embracing, subserrate, alternate, smooth, with rounded ears. Flowers terminating, yellow, in long simple spikes. Siliques torose; containing brown, globular seeds.

Native of China and Cochinchina, and very extensively cultivated in both countries.

There are two varieties of it in Cochinchina, with entire leaves, not lyrate. These being more tender and having more flavour, are preferred for eating. The seeds are used internally as a stimulant, and externally as sinapisms<sup>r</sup>.

Introduced in 1782 by Mons. Thouin; and flowering here in July<sup>s</sup>.

Loureiro has another species, (*S. pekinensis*) which is cultivated about Pekin, and esteemed the best of all the sorts. It grows higher in Cochinchina, but is inferior in quality. Loureiro sowed the seeds in Portugal, on his return home, but found that it degenerated every year. He describes it as annual, two feet high, with an upright, thick, round, smooth stem: the root-leaves turbinate-ovate, entire, serrate-runcinate, curled, smooth, yellowish, very tender; on flat-tish, very wide, white, grooved, half-embracing petioles; stem-leaves conical, sessile, quite entire. Spikes solitary, very long, spreading. Calyx-leaves oblong, blunt, upright, yellow. Corolla yellow, spreading. Siliques linear, compressed, smooth. Seeds globular, rufous.

Loureiro regards *Sinapis juncea* and *cernua* as varieties of the *chinensis*; and considering how the Cabbage varies in Europe by culture, he doubts whether all these plants may not be varieties, rather than true species.]

10. Stems three or four feet high. Root-leaves broad, smooth, jagged; but the upper ones are entire. Flowers yellow. Pods smooth and turgid.

Native of China, whence the seeds are frequently brought to England. This plant is used as a boiled salad by the Chinese, but in England it is not regarded. It flowers in June and the seeds ripen in August.—Calyx hairy, pale green: flowers white.

[Cultivated in 1731, by Mr. Miller<sup>t</sup>.

11. Root fibrous, white, and annual: the whole plant is either perfectly smooth, or at most scattered over with a few distant whitish hairs: stem solitary, round, branchy, and about a foot and half high: all the leaves lacinated in a pinnatifid manner, rather obscure, insipid, with the segments unequally tooth-pinnated: upper leaves sessile, the rest footstalked: no radical leaves, except the seed-leaves: flowers thinly placed on upright racemes, almost inodorous: calyx yellowish, with a tinge of green: petals yellow: siliques ovate-oblong, wrinkled, glaucous, not at all hairy, and marked by a few longitudinal prominent lines<sup>u</sup>.]

12. This seldom rises more than eight or nine inches high. Leaves smooth and much jagged. The stalk branches towards the top, and is terminated by a loose spike of white flowers; these are succeeded by smooth, taper, blunt pods, filled with small brown seeds. It flowers in June, and the seeds ripen in August.

[Root annual. Stem purplish, somewhat angular, rugged. Leaves lyrate-runcinate, sharpish, serrulate. Racemes corymbed. Calyx half-spreading, pubescent.

Petals white, obtuse, scarcely emarginate. Filaments purplish<sup>x</sup>.

Native of Italy and Spain, in vineyards and by way sides.

13. The whole plant is smooth. Root-leaf lyrate: lobes nearly opposite, oblong, entire, half an inch long, the length of the internodes: terminating lobe ovate, obtuse, gashed, toothed with wide teeth, little curled; nerved, almost the size of a Cabbage leaf. Stem-leaves subsessile, oblong, entire below, toothed above, nerved, a finger's length, with the upper ones gradually smaller. Stem striated, smooth, branched at top. Flowering-branches drooping. Flowers terminating, racemed, white. Peduncles capillary, spreading. Siliques linear, attenuated at the top, even, smooth.

Native of Japan<sup>y</sup>, and China. Annual.

14. Native of Spain. Cultivated in 1759 by Mr. Miller, who has however given no description of it.

15. The whole plant is smooth and herbaceous. Stem erect, striated, even, branched. Branches spreading, like the stem, subdivided. Leaves petioled, rounded at the corners; acute, a finger's length: the upper ones less deeply pinnatifid, often toothed at the end. Raceme of flowers very long. Peduncles capillary, from spreading upright. Corollas yellowish. Siliques erect, somewhat angular, smooth and even, attenuated at the top.—Native of Japan about Jedo, flowering in May<sup>z</sup>.

16. Root branched, hard, acrid, having the taste and smell of *Brassica Napus* or Navew. Root and stem-leaves on long petioles, lyrate, very hairy, hoary, with the lobes ovate, decurrent, alternate, toothed: axillary leaves lanceolate-linear, quite entire, seldom toothed. Stem panicle-branched, hispid, with hairs pointing backwards. Branches stiffish. Racemes terminating and axillary. Flowers small, yellow. Siliques pressed close to the raceme, as in *Erysimum officinale*, at first rough-haired, then smooth, composed of one lower long many-seeded joint, and one upper shorter commonly one-seeded. Style very short. In gardens the stem is more upright, less branched, smoother, less hoary, with branches less wandlike<sup>a</sup>.

Native of France, Spain, Portugal and Switzerland. Introduced in 1778, by Mons. Thouin. It is biennial and flowers in July.

17. Native of the island of Madeira. Introduced in 1777, by Mr. Francis Masson. It flowers from December to June<sup>b</sup>.

18. Root perennial, very long, twisted, having filiform branches. Stem hispid at the base, smooth above, even, erect, with long, erect branches. Root-leaves and lower stem-leaves petioled, hispid, deeply lyrate; with the pinnules alternate, remote, obtuse, often narrowed at the base, unequally toothed, with smaller ones interposed; the end-lobe larger, rounded or oblong. Middle and upper stem-leaves few, remote, pinnate, smooth, with the pinnules lanceolate or linear-lanceolate, acute, entire or toothed. Flowers of the same size as in *S. juncea*. Calyx coloured, loose, with linear-elliptic leaflets. Petals pale yellow, with the border obovate and quite entire. Siliques loosely racemed, pedicelled, torulose, smooth, spreading, with an awl-shaped point. Pedicels filiform, a little shorter than the silique.—Near Algiers, on barren hills<sup>c</sup>.

Desfontaines has other species: as 1. *Sinapis circinata*. Pubescent all over, with an upright, striated stem, sparingly branched. Leaves petioled, soft: the upper ones simple, toothed, ovate, obtuse; the lower pinnate-lyrate, pinnules three or five, unequally crenate; the end lobe very large, circinate, crenate, the other lobes smaller, oblong, obtuse, unequal. Flowers in racemes, pedicelled. Calyx pubescent, coloured, patulous, deciduous. Corolla yellow, the same size as in *S. arvensis*: border obovate, quite entire. Germ pubescent. It is an annual plant, found among corn in Barbary.

2. *Sinapis recurvata*. *Allion. pedem. n. 963. t. 82. f. 1.* Root perennial (biennial, *Allion.*) Leaves

Linn. mant.  
Loureiro.

<sup>p</sup> Willdenow.  
<sup>r</sup> Hort. kew.  
<sup>u</sup> Jacquin.

<sup>q</sup> Linn. mant.  
<sup>t</sup> Idem.

<sup>x</sup> Linn. mant. <sup>y</sup> Thunberg. <sup>z</sup> Idem. <sup>a</sup> Gouan.  
<sup>b</sup> Hort. kew. <sup>c</sup> Desfontaines.



petioled, smooth, deeply pinnate-lyrate; with the lobes distinct, unequal, acute or obtuse, running down the petiole; the end one larger, ovate, unequally toothed. Flowering branches smooth, simple, leafy at the base, naked above, ascending. Flowers pedicelled, racemed. Calyx smooth. Petals pale yellow. Siliques smooth, torulose, awl-shaped at top, pedicelled, loosely racemed, when ripe nodding.

Found by Bellardi in Piedmont, and by Desfontaines in the clefts of rocks on mount Hamamelif near Tunis.

3. *Sinapis bipinnata*. This has the appearance of a *Silybrium*, and perhaps may belong to that genus. Root annual. Stem erect, slender, simple or sparingly branched, tubercled, rugged, hairy, with short hairs turned back. Leaves petioled, smooth, bipinnate; pinnules linear, unequal, entire or toothletted. Flowers at first in a corymb, afterwards in a raceme. Calyx small, smooth; leaflets linear-elliptic, obtuse. Petals pale yellow, with the claw longer than the calyx, and the border obovate and entire.—Native of the mountains of Cassia.

4. *Sinapis geniculata*. Allied to *S. nigra*, but differing in having the siliques more slender, striated, pubescent, with the point bluntish, longer, jointed and bent in. It is an annual plant found among corn in Barbary<sup>d</sup>.

10. This is a biennial plant, native of Spain and Portugal. Introduced in 1770, by Monf. Richard. It flowers in June<sup>e</sup>.

#### PROPAGATION AND CULTURE.

1. This and the other species, when they are weeds among corn, being annuals, may be destroyed, or at least checked, by spring-feeding with sheep, or by weeding with the hook, to prevent its flowering. The seed will lie in the ground, till turned up within the sphere of vegetation; by which means it may be destroyed on fallows.]

4. White Mustard is chiefly cultivated in gardens for a salad herb in the winter and spring. For this purpose sow the seeds very thick in drills, upon a warm border, or in very cold weather upon a moderate hot-bed. They will be fit for use in ten days or a fortnight, for if they are large and have rough leaves, they are too strong to put into salads.

To save the seeds, a spot of ground must be sown in the spring, and when the plants have four leaves, hoe the ground in the same manner as for Turneps, in dry weather. In a month hoe the ground over again, leaving the plants eight or nine inches asunder. If this be well performed, and in dry weather, the ground will remain clean till the seeds are ripe. As soon as the pods change brown, cut the plants off, and spread them upon cloths two or three days to dry, and thresh them out for use.

5. Common Mustard is cultivated only for the seeds, which should be sown in the same way as those of the preceding, and treated in the same manner, only allowing the plants twice as much room, or hoeing them out to the distance of eighteen inches. Sometimes this sort requires to be hoed three times.

The other sorts are cultivated only for variety, and may be treated in the same way.

[SINAPISTRUM. See *Cleome*.

SINGANA. See *Sterbeckia*.

SINGLE-SEEDED CUCUMBER. See *Sicyos*.

SIO AFFINIS. See *Cardamine*.

SIOUANNA-POLA-TALI. See *Crinum*.

SIPANEA. See *Viresta*.

SIPHONANTHEMUM. See *Siphonanthus*.

SIPHONANTHUS. (From *Σιφων*, a siphon or tube; and *ανθος*, a flower.)

*Lin. gen. n. 129. Reich. n. 135. Schreb. n. 165.*

*Juss. 132. Siphonanthemum. Amman. act. petrop. 1736.*

*Class. 4. 1. Tetrandria Monogynia.*

*Nat. order of Borraginea, Juss.*

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-parted, wide, permanent.

COR. one-petalled, funnel-form: tube filiform, very narrow, several times as long as the calyx: border four-parted, spreading, less than the calyx.

STAM. *Filaments* four, longer than the border of the corolla. *Anthers* oblong, triangular.

PIST. *Germ* four-cleft, very short, superior. *Style* filiform, length of the stamens, recurved at the tip: *Stigma* simple.

PER. *Berries* four, with the spreading calyx, roundish.

SEEDS solitary, roundish.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form, very long, inferior. Berries four, one-seeded.

#### SPECIES.

1. *Siphonanthus indica*.

*Lin. spec. 159. syst. 152. Reich. 1. 310. Willd.*

*1. 606. Amm. act. petrop. 1736. p. 214. t. 15.*

*Lamarck encycl. t. 79. f. 1.*

*Border of the corolla spreading, stigma undivided.*

2. *Siphonanthus angustifolia*.

*Lin. spec. ed. Willd. 1. 606. Lamarck encycl. t. 79. f. 2.*

*Border of the corolla two-lipped, stigma bifid.*

#### DESCRIPTIONS, &c.

1. Stem herbaceous, quite simple. Leaves opposite and alternate, linear-lanceolate. Flowers in axillary corymbs, three or four together. Border of the corolla flat, with the segments spreading and acute. Anthers triangular, sagittate. Stigma undivided, thickish. Native of South America.

2. This has leaves like those of the preceding, but much narrower, and by threes. Flowers axillary in bifid corymbs six-flowered or three-flowered. Tube of the corolla curved in; segments of the corolla blunt, three of them bent back, the uppermost erect, as in a labiate flower. Anthers roundish. Stigma bifid<sup>f</sup>.

SIPHONIA. (From *Σιφων*; the inspissated juice, under the name of Elastic Gum, being used in making Siphons, among many other things.)

*Lin. gen. Schreb. n. 1466. Hevea. Aubl. t. 335.*

*Juss. 389. Caoutchouc. Auct. D. Richard.*

*Class. 21. 8. Monoecia Monadelphia.*

#### GENERIC CHARACTER.

\* *Male* flowers numerous, in racemes.

CAL. *Perianth* one-leafed, globular-bell-shaped, half-five-cleft: *teeth* erect, acute, reflex at the edge.

COR. none.

STAM. *Filament* a Column shorter than the calyx. *Anthers* five, growing to the column below the top of it, subovate.

\* *Female* terminating, one in each raceme.

CAL. *Perianth* one-leafed, turbinate-bell-shaped, five-cleft: *teeth* acute, from spreading-recurved, deciduous, the circular base only remaining.

PIST. *Germ* conical-globular, shorter than the calyx. *Style* none. *Stigmas* three, thickish, depressed-two-lobed.

PER. *Capsule* large, trilocular, depressed, hollowed at the base, woody, very hard, covered with a fibrous bark, three-celled: *cells* two-valved; valves opening elastically.

SEEDS solitary, (or two or three) subovate, with a brittle spotted shell.

#### ESSENTIAL CHARACTER.

Cal. one-leafed. Cor. none.

MALE. *Anthers* five, growing below the top of the column.

FEM. *Style* none. *Stigmas* three. *Caps.* trilocular. *Seed* one, (sometimes two or three.)

#### SPECIES.

1. *Siphonia elastica*. *Elastic-Gum Tree*.

*Jatropha elastica. Lin. syst. 865. suppl. 422. Dist. nostr.*

*Hevea guianensis. Aubl. guian. 871. t. 335.*

#### DESCRIPTION, &c.

See *Jatropha elastica*.

SIPONIMA. See *Symplocos*.

SIRIBOA. See *Piper*.

<sup>d</sup> Desfontaines.

<sup>e</sup> Hort. kew.

<sup>f</sup> Willdenow.



SIRIUM: See *Piper* and *Santalum*.

SIRUM. See *Piper*.

SISARUM. See *Sium*.]

SISON. (*Σίσων* of *Dioscorides*.)

Lin. gen. n. 349. Reich. n. 379. Schreb. n. 481. Juss. 221.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferæ*.

GENERIC CHARACTER.

CAL. Umbel universal with fewer than six rays, unequal: partial with fewer than ten rays, unequal.

Involucre universal mostly four-leaved, unequal: partial consimilar.

Perianth scarcely manifest.

COR. universal uniform. Florets all fertile.

Proper equal: petals five, lanceolate, inflexed, flattish.

STAM. Filaments five, capillary, length of the corolla. Anthers simple.

PIST. Germ subovate, inferior. Styles two, reflected. Stigmas obtruse.

PER. none. Fruit ovate, striated, bipartite.

SEEDS two, ovate, convex and striated on one side, flat on the other.

ESSENTIAL CHARACTER.

Involucres mostly four-leaved. Fruit ovate, striated.

SPECIES.

1. *Sison Amomum*. Hedge Honewort or Bastard Stone Parsley.

Lin. spec. 362. Juss. 285. Reich. 1. 695. Willd. 1. 1436. mant. 355. hort. cliff. 98. Hudf. angl. 119. Wither. arr. ed. 3. 300. Smith brit. 315. engl. bot. t. 954. Relb. cant. ed. 2. n. 258. Sibth oxon. n. 293. Abbot bedf. n. 214. Jacqu. hort. vind. 3. t. 17. Hoffm. germ. 101. Sauv. monsp. 232. Villars dauph. 2. 607. Allion. pedem. n. 1364. Plenck, ic. 200.

*S. quod Amomum officinis nostris*. Baub. pin. 154. Mor. hist. f. 9. t. 5. f. 7.

*S. f. officinarum Amomum*. Baub. hist. 3. p. 2. 107. Raii hist. 443.—vulgare, vel *Amomum germanicum*. Park. theat. 914. 1.

*Sium Amomum*. Roth. germ. 2. 336.

*S. aromaticum Sison Off.* Tournef. inst. 308. Raii syn. 211.

*Seseli Amomum*. Scop. carn. n. 355.

*Cicuta Amomum*. Crantz umb. 96.

*Petroselinum*. Fuchs. hist. 655.

*P. macedonicum Fuchii*. Dod. pempt. 697. 1. Ger. emac. 1016. 1.

Leaves pinnate; umbels erect mostly four-rayed.

2. *Sison segetum*. Corn Honewort.

Lin. spec. 362. Juss. 285. Reich. 1. 696. Willd. 1. 1436. Hudf. angl. 120. Wither. arr. ed. 3. 300. Smith brit. t. 316. engl. bot. 228. Relb. cant. ed. 2. n. 259. Sibth. oxon. n. 299. Abbot bedf. n. 215. Dicks. hort. succ. 12. 17. Jacqu. hort. vind. 2. t. 134. Hall. helv. n. 779.

*Sium arvense f. segetum*. Tournef. inst. 308. Raii syn. 211.—terrestre. Mor. hist. 3. 283. f. 9. t. 5. f. 6. ord. 2.

*Selinum Sii foliis*. Ger. emac. 1018. Raii hist. 443.

*S. segetale*. Park. theat. 932.

Leaves pinnate, leaflets roundish numerous, umbels drooping irregular.

3. *Sison canadense*. Three-leaved Honewort.

Lin. spec. 363. Juss. 285. Reich. 1. 696. Willd. 1. 1436. hort. cliff. 99. Gron. virg. 147. Kalm. it. 3. 259. ed. angl. 3. 27. Thunb. jap. 118.

*Myrrhis canadensis trilobata*. Mor. hist. 3. 301. f. 9. 11. f. 4.

*M. canadensis*. Riv. pent. t. 53.

Leaves ternate.

[4. *Sison Ammi*.

Lin. spec. 363. Juss. 285. Reich. 1. 696. Willd. 1. 1437. hort. upf. 63. mat. med. 81. Jacqu. hort. vind. 2. t. 200. Gouan illustr. 17. Plenck, ic. 199.

*Ammi*. Lin. hort. cliff. 81. Camer. epit. 522.

*A. parvum foliis sceniculi*. Baub. pin. 159.

*A. femine tenuissimo & odoratissimo*. Baub. hist. Raii hist. 455.

*A. creticum aromaticum*. Lob. ic. 724.

*A. perpusillum*. Ger. emac. 1037. 3.

Leaves tripinnate, root-leaves linear, stem-leaves bristle-shaped, stipular-leaves longer.

5. *Sison inundatum*. Water Honewort.

Lin. spec. 363. Juss. 285. Reich. 1. 696. Willd. 1. 1437. fl. suec. n. 249. Fl. dan. t. 89. Hoffm. germ. 101. Hudf. angl. 120. Wither. arr. ed. 3. 301. Engl. bot. t. 227. Sibth. oxon. n. 300. Dicks. hort. succ. 3. 3. Villars dauph. 2. 607.

*Hydrocotyle inundata*. Smith brit. 290. Relb. cant. ed. 2. n. 237.

*Sium inundatum*. Roth. germ. 1. 128. 2. 336. Hall. helv. n. 780.

*S. pusillum foliis variis*. Raii syn. 212. Petiv. brit. t. 26. f. 4.

*S. minimum*. Raii hist. 444.—umbellatum foliis variis. Pluk. phyt. t. 61. f. 3.

*S. min. fol. imis ferulaceis*. Mor. hist. 3. 223. f. 9. t. 5. f. 5.

Leaves pinnate gashed, those under water cut as fine as hairs into many parts, umbels five-flowered bifid.

[6. *Sison falsum*.

Lin. Juss. 285. Willd. 1. 1438. suppl. 181.

*Peucedanum redivivum*. Pallas act. petrop. 1779. 2. p. 252. t. 8. f. 1—3.

Root-leaves compound, leaflets subverticillate-bundled lanceolate, stem leafless, branches umbelliferous dichotomous.

7. *Sison crinitum*.

Lin. spec. ed. Willd. 1. 1438. Pallas act. petrop. 1779. 2. p. 250. t. 7.

Root-leaves triplicate-pinnate, stem-leaves bipinnate, leaflets bristle-shaped, universal involucre many-leaved bipinnate.

DESCRIPTIONS, &c.

1. Root annual or biennial, spindle-shaped, with lateral branches. Stem erect, two or three feet high (except in dry places), much branched and spreading, rather flexuose, round, furrowed, smooth, leafy. Leaves pinnate with a terminating lobed leaflet, unequally ferrate: the lower ones have seven or nine leaflets, ovate, gashed, ferrate, sometimes compound; the upper ones have the leaflets narrower, deeper cut, and often pinnatifid. Umbels numerous, terminating, solitary, erect when in flower, composed of four, seldom more, unequal rays; with a small four-leaved general involucre. Partial umbels likewise have but few rays, and those unequal, with a small four-leaved partial involucre. Calyx scarcely perceptible. Petals white, inflexed, broader than those of *S. segetum*. Fruit ovate, short, compressed, ribbed. Seeds aromatic and pungent when ripe and dry; but in an early state they, like the whole herb, have a peculiar nauseous smell<sup>a</sup>.

Native of England, Germany, South of France, Carniola and Piedmont. With us not unfrequent in moistish spots under hedges, where the soil is marly or chalky, flowering in the latter part of summer.

2. Root small but strong, annual in general but often biennial. Stems very much branched, round, striated, slender and rush-like, leafy. Leaves unequally pinnate; leaflets numerous, ovate-roundish, ferrate, scarcely gashed, the end one trifid; radical leaves largest, consisting of from seven to fifteen leaflets. General umbels of few (two or three) very unequal rays. Partial umbels nodding, few-flowered, with the pedicels of various lengths. Involucre two-leaved, lanceolate. Involucres mostly five-leaved, ovate, acute, concave. Flowers very small, regular, white or flesh-coloured. Calyx five-toothed. Petals incurved. Anthers purple. Fruit oblong-ovate, doubly ribbed, pungent and aromatic, as is the whole plant in some degree<sup>b</sup>.

Native of Switzerland and England, in corn fields in a chalk and clay soil, but not very frequently. Observed by Goodyer about Mapledurham, Hants, long before 1620, in which year he described it. The whole account of this herb by this accurate observer, with the origin of its name *Honewort*, from its curing a swelling in the cheek called a *Hone*, with the history

<sup>a</sup> Engl. bot.

<sup>b</sup> Smith brit. & engl. bot.



of Mistress Ursula Leigh, and Mistress Charitie Leigh, is a model of accurate inquiry and precise information<sup>1</sup>. It occurs in Madingley road near Cambridge, and about Haddenham, in the isle of Ely. About Goldington and Clapham in Bedfordshire. Found near Kelmarsh in Northamptonshire by William Hanbury, Esq. At South Leigh, in Oxfordshire, by Dr. Sibthorp. At Binham in Norfolk by Mr. Crowe. At Walthamstow in Essex by Messrs. Forsters. It flowers in July and August.

3. Root perennial. Radical leaves ternate, ferrate; the middle leaf trifid, the two side ones bifid. Stem-leaves ternate, ferrate, lanceolate, shining. Umbel four-cleft, unequal, without any involucre. Umbellets mostly seven-flowered, with a very small involucre. Petals white, equal. General involucre none\*.

Stem round, upright, smooth, little branched, two feet high and more. Leaves petioled, all ternate, paler beneath, smooth, the lower ones larger, the upper gradually less: leaflets ovate, acute, gashed, sharply ferrate, almost equal, the lateral ones sessile, the middle one subpetioled. Radical petioles capillary, smooth, many times longer than the leaves; those of the stem-leaves a little shorter. Flowers axillary, panicled and umbelled. Peduncles and pedicels capillary, loose, smooth. Corollas white. Seeds oblong, scored, smooth<sup>1</sup>.

Native of North America and Japan. Introduced before 1699, by William Sherard, Esq.<sup>m</sup>

Kalm says that it abounds in the woods of all North America; that the French call it *Cerfeuil sauvage*, and make use of it in spring in green soups, like Chervil, and that it is universally commended in North America as a wholesome antiscorbutic plant.

4. Root annual. Radical leaves linear, superdecompound, flat: leaflets sessile, folded back and imbricate. Stem-leaves superdecompound-pinnate, brittle-shaped: those which terminate the petiolar sheath are trichotomous and longer than the others<sup>n</sup>.

Stem a foot high, simple, erect, very slightly grooved: branches very few, at the top of the stem, or from the axils of the middle, not the lower leaves. Leaves uniform, triangular, tripinnate; leaflets setaceous-silulate, two or three lines in length, trifid or eared, seldom quite entire. Petioles of the radical leaves two inches long; of the middle stem-leaves an inch. Sheaths membranous at the edge, wider at the base, half-embracing; very much narrowed at the top, not two-lobed, running into the petiole. Umbels of two or three rays, half an inch long, remote; without any general involucre. Umbellets of eight to twelve rays, for the most part equal. The sheaths of the middle and branch-leaves are often two-lobed. This plant has a fragrant aromatic smell<sup>o</sup>.

Native of Portugal, Apulia and Egypt.

5. Root annual or biennial. Stems creeping, floating; round. Leaves alternate, unequally pinnate, with membranous sheathing stipules embracing the stem: such leaflets as are above the water are oblong, trifid, often pinnatifid; those under water, especially at any depth, are finely divided into capillary segments, as in *Ranunculus aquatilis*. The umbels are placed opposite to each leaf, just within the stipule, on longish peduncles, and consist of only two partial umbels, without any general involucre. Each partial umbel has about five, white, slightly radiant flowers, with oval, entire, spreading petals; and for the most part a four-leaved involucre. Fruit elliptic, striated<sup>p</sup>.

Dr. Smith, in Engl. bot. suggested that this plant rather belongs to the genus *Hydrocotyle*; and in his British Flora he has removed it into that genus. Haller and Roth make it a *Sium*, as the old authors had done.

Native of the North of Europe, Britain, Germany, Switzerland and Dauphiné. It seems not to be unfrequent in wet places overflowed in winter, as well as ditches and pools. It flowers in May.

6. Leaves only radical, in bundles, shorter, pinnate:

pinnae opposite, oblong; the first pair decomposed, the rest not: leaflets with lanceolate pinnae, green; with a white membranaceous border, in bundles. Stem consisting of umbelliferous branchlets with awl-shaped bractes at the ramifications: branchlets divaricate. Umbels small, erect. Involucres small, awl-shaped. The leaves flourish in the spring, and after they wither away the stem grows up, and flowers in August, in a manner leafless.—Native of Siberia, in the salts near the Wolga<sup>q</sup>.

7. Native of Siberia, where it was discovered by Pallas.]

#### PROPAGATION AND CULTURE.

1. 2. Sow the seeds in autumn, in a moist shady spot of ground; or permit the seeds to scatter, and the plants will rise without care.

3. 4. 6. 7. Sow the seeds as above. The plants require no other culture than to thin them where they are too close, and keep them clean from weeds. They delight in a moist soil and shady situation, where the roots will continue several years.

[*Sison verticillatum*. See *Sium*.]

SISYMBRIA. See *Sisymbrium*.

Sisymbrii species. See *Cardamine*.

SISYMBRIUM (of Pliny: *Σισυμβριον* of Theophrastus: *Σισυμβρια* of Nicander in Ther.)

Lin. gen. n. 813. Reich. n. 877. Schreb. n. 1089: Tourn. t. 109. Juss. 239. Radicula. Dill. gen. 6.

Class. 15. 2. Tetradynamia Siliquosa.

Nat. order of *Siliquosæ*, *Cruciformes* or *Cruciferae*.

#### GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets lanceolate-linear, spreading, coloured, deciduous.

COR. four-petalled, cruciform. Petals oblong, spreading, commonly less than the calyx, with very small claws.

STAM. Filaments six, longer than the calyx: of these two opposite a little shorter. Anthers simple.

PIST. Germ oblong, filiform. Style scarcely any. Stigma obtuse.

PER. Siliqua long, incurved, gibbous, round, two-celled, two-valved: valves in opening straightish: partition a little longer than the valves.

SEEDS very many, small.

OBS. Sophia has the corolla shorter than the calyx, and a very slender very long siliqua.

Radiculae of Dillenius, produce a very short gibbous siliqua, as *S. sylvestre*, *amphibium*, and *pyrenaicum*.

#### ESSENTIAL CHARACTER.

Siliqua opening with straightish valves. Cal. and Cor. spreading.

#### SPECIES.

1. *Siliques declined short*.

1. *Sisymbrium Nasturtium*. Common Water Cress.

Lin. spec. 916. Syst. 594. Reich. 3. 249. Willd. 3. 489. hort. cliff. 336. fl. suec. n. 592. mat. med. 161. Woodv. med. bot. 134. t. 48. Hudf. angl. 296. Wither. arr. ed. 3. 580. Smith brit. 700. engl. bot. t. 855. Curt. lond. 6. t. 44. Lightf. scot. 350. Relb. cant. ed. 2. n. 542. Sibth. oxon. n. 583. Abbot bedf. n. 472. Fl. dan. t. 690. Hoffm. germ. 234. Roth. germ. 1. 289. 2. 124. Pollich pal. n. 623. Krock. filef. n. 1055. Hall. helv. n. 482. Scop. carn. n. 820. Villars dauph. 3. 339. Allion. pedem. n. 998. Gron. virg. 170. Thunb. jap. 260. Desfont. atlant. 81. Bulliard. herb. t. 302.

*S. Cardamine*. Fuchs. hist. 723.—f. *Nasturtium aquaticum*. Baub. hist. 2. 884. Raii syn. 300. Petiv. brit. t. 47. f. 2.

*S. aquaticum*. Matth. 487. Tournef. inst. 226.

*Nasturtium aquaticum*. Dod. pempt. 592. 1. Trag. 82. 2.—supinum. Baub. pin. 104. Tabern. ic. 455. Mor. hist. f. 3. t. 4. f. 8. Blackw. t. 260.

*N. aquat. vulgare*. Park. theat. 1239. 1. Raii hist. 816.

*N. aquat. f. Cratævæ Sium*. Ger. emac. 257. 5.

Lob. obs. 105. 3. ic. 1. 209. 1.

<sup>q</sup> Linn. suppl.

β. N.

<sup>1</sup> Ger. emac. 1018. Engl. bot. 228.

<sup>k</sup> Linn. spec.

<sup>1</sup> Thunberg.

<sup>m</sup> Hort. kew.

<sup>n</sup> Linn. spec.

<sup>o</sup> Gouan.

<sup>p</sup> Smith brit. & engl. bot.



- β. N. aquat. foliis minoribus, præcocius. *Raii syn.* 301. *Petiv. brit. t.* 47. f. 3.
- γ. N. aquat. pinnulis paucioribus. *Dill. in Raii syn.* 301.
- Siliques declined, leaves pinnate, leaflets cordate-roundish.*
2. *Sisymbrium sylvestris*. *Creeping Water Rocket.*  
*Lin. spec.* 916. *syst.* 594. *Reich.* 3. 250. *Willd.* 3. 489. *hort. cliff.* 336. *fl. suec. n.* 594. *Huds. angl.* 296. *Wither. arr. ed.* 3. 581. *Smith brit.* 701. *Curt. lond.* 3. t. 41. *Lightf. scot.* 351. *Relb. cant. ed.* 2. n. 543. *Sibth. oxon. n.* 584. *Abbot bedf. n.* 473. *Hoffm. germ.* 234. *Roth. germ.* 1. 290. 2. 125. *Hall. belv. n.* 485. *Scop. carn. n.* 822. *Villars dauph.* 3. 345. *Krock. files.* n. 1056. *Gmel. fib.* 3. 268. *Kniph. cent.* 12. n. 93.
- S. palustre repens, nasturtii folio.* *Tournef. inst.* 226. & *fl. par.*
- Brachiolobus sylvestris.* *Allion. pedem. n.* 1012. t. 56. f. 2.
- Eruca palustris, nasturtii folio, filiqua oblonga.* *Baub. pin.* 98.
- E. sylvestris minor, luteo parvoque flore.* *Baub. pin.* 98.
- E. quibusdam sylvestris repens, flosculo luteo.* *Baub. hist.* 2. 866. 2.
- E. palustris minor.* *Tabern. ic.* 447.
- E. sylvestris.* *Fuchs. hist.* 263.
- E. aquatica.* *Ger. emac.* 248. 6. *Park. theat.* 1242. *Raii hist.* 808. *syn.* 297. *Petiv. brit. t.* 46. f. 5. *Mor. hist. f.* 3. t. 6. f. 17.
- Siliques declined, leaves pinnate, leaflets lanceolate gash-ferrate.*
3. *Sisymbrium terrestre.* *Annual Water Rocket.*  
*Curt. lond.* 5. t. 49. 289. *Wither. arr. ed.* 3. 582. *Smith brit.* 701. *Relb. cant. n.* 544. *Sibth. oxon. n.* 585. *Abbot bedf. n.* 475.
- S. palustre.* *Lin. spec. ed. Willd.* 3. 490. *Hoffm. germ.* 234. *Roth. germ.* 1. 290. 2. 127. *Pollich pal.* n. 625. *Leyss. hal. n.* 679. *Fl. dan. t.* 931.
- S. amphibium α.* *Huds. angl.* 296. *Mill. dict. n.* 3.
- Raphanus aquaticus, foliis in profundas lacinias divis.*  
*Baub. pin.* 97. *prodr.* 38. *Raii syn.* 301. *Petiv. brit. t.* 49. f. 9.
- Radicula n.* 487. *Hall. belv.*
- Siliques declined turgid, leaves pinnatifid unequally toothed, root simple, petals shorter than the calyx.*
4. *Sisymbrium amphibium.* *Great Water Rocket.*  
*Lin. spec.* 917. *Reich.* 3. 250. *Willd.* 3. 491. *Wither. arr. ed.* 3. 581. *Smith brit.* 702. *Lightf. scot.* 352. *Relb. cant. n.* 545. *Sibth. oxon. n.* 586. *Abbot bedf. n.* 474. *Fl. dan. t.* 984. *Hoffm. germ.* 234. *Roth. germ.* 1. 290. 2. 126. *Krock. files. n.* 1057.
- S. aquaticum.* *Mill. dict. n.* 4.
- S. amphibium β.* *Huds. angl.* 296. et forte γ. 297.
- Raphanus aquaticus.* *Ger. emac.* 240.—alter. *Baub. prodr.* 38.
- Radicula sylvestris.* *Baub. hist.* 2. 866. *Raii syn.* 301. *Petiv. brit. t.* 49. f. 8, 10.
- Radicula n.* 486. *Hall. belv.*
- Siliques declined pedicelled, leaves oblong pinnatifid or ferrate, petals longer than the calyx.*
- [5. *Sisymbrium pyrenaicum.* *Pyrenean Wild Rocket.*  
*Lin. spec.* 916. *syst.* 594. *Reich.* 3. 251. *Willd.* 3. 491. *Villars dauph.* 3. 341. t. 38. *Affo arag. n.* 606. *De la Chenal in act. belv.* 4. 288. t. 15. *Hall. belv. n.* 488. (Alyssum.)
- Brachiolobus pyrenaicus.* *Allion. pedem. n.* 1013. t. 18. f. 1.
- Raphanus minimus repens luteus, foliis tenuiter divis.* *Mor. hist.* 2. 236. f. 3. t. 7. f. 1. *Raii hist.* 809.
- Siliques subovate; lower leaves lyrate, upper bipinnatifid embracing, styles filiform.]*
6. *Sisymbrium tanacetifolium.* *Tansy-leaved Wild Rocket.*  
*Lin. spec.* 916. *Reich.* 3. 251. *Willd.* 3. 492. *Villars dauph.* 3. 348. *Allion. pedem. n.* 999. *Hall. belv. n.* 460. (Eruca.)
- Eruca tanacetifolia.* *Mill. dict. n.* 5. H. R. Par. & *Tournef.*
- E. tanacetii foliis.* *Mor. hist.* 2. 231. f. 2. t. 6. f. 19. *Becc. mus.* 145.
- E. fruticosa, fol. tanacetii, indica.* *Zan. hist.* 86. t. 33. 104. t. 172.
- Leaves pinnate, leaflets lanceolate gash-ferrate, the outmost confluent.*
- [7. *Sisymbrium ceratophyllum.* *Horn-leaved Wild Rocket.*  
*Lin. spec. ed. Willd.* 3. 492. *Desfont. atlant.* 82. t. 155.
- Siliques elliptic; leaves linear-subulate pinnatifid-toothed, stem ascending.*
8. *Sisymbrium coronopifolium.* *Buck's-horn leaved Wild Rocket.*  
*Lin. spec. ed. Willd.* 3. 492. *Desfont. atlant.* 82. t. 154.
- Siliques linear incurved, leaves lanceolate pinnatifid-toothed pubescent, stem ascending.]*
9. *Sisymbrium tenuifolium.* *Fine-leaved Wild Rocket.*  
*Lin. spec.* 917. *syst.* 594. *Reich.* 3. 252. *Willd.* 3. 493. *Smith brit.* 703. *engl. bot. t.* 525. *Hoffm. germ.* 235. *Roth. germ.* 1. 290. 2. 128. *Pollich pal.* n. 627. *Villars dauph.* 3. 354. *Allion. pedem. n.* 1000. *Krock. files. n.* 1060.
- Brassica muralis.* *Huds. angl.* 290. *Wither. arr. ed.* 3. 592. *Curt. lond.* 3. t. 38. 158.
- B. Erucastrum.* *Huds. angl. ed.* 1. 253.
- Eruca perennis.* *Mill. dict. n.* 3.
- E. Hall. belv. n.* 461. *Ger. prov.* 369. 2.
- E. tenuifolia perennis, flore luteo.* *Baub. hist.* 2. 861. *Tournef. inst.* 227. *Vaill. par.* 50. *Garid.* 161.
- E. fativa.* *Fuchs. hist.* 262.
- E. sylvestris.* *Dod. pempt.* 708. 2. *Matth.* 531. *Ger.* 191. 2. *emac.* 246. 2. *Raii hist.* 807. *syn.* 296. *Blackw. t.* 266. *Petiv. brit. t.* 46. f. 8.
- E. sylv. vulgarior.* *Park. theat.* 818. 1.—major foetus. *Mor. hist.* 2. 230.
- Siliques erect, leaves smooth almost quite entire pinnatifid and bipinnatifid, upper ones entire.*
- [10. *Sisymbrium sagittatum.* *Arrow-leaved Wild Rocket.*  
*Lin. spec. ed. Willd.* 3. 493. *Ait. kew.* 2. 390.
- S. molle.* *Jacqu. collect.* 1. 68. *ic. rar.* 1. t. 122.
- Pubescent, siliques cylindrical declined, leaves obovate-oblong toothed, root-leaves hastate, stem-leaves sagittate embracing.*
11. *Sisymbrium amplexicaule.* *Clasping-leaved Wild Rocket.*  
*Lin. spec. ed. Willd.* 3. 493. *Desfont. atlant.* 81. t. 153.
- Smooth, siliques compressed erect, leaves toothed, root-leaves obovate, stem-leaves oblong cordate embracing.*
2. *Siliques sessile axillary.*
12. *Sisymbrium fupinum.* *Decumbent Wild Rocket.*  
*Lin. spec.* 917. *Reich.* 3. 252. *Willd.* 3. 494. *hort. upf.* 192. *Isnard. act.* 1724. p. 295. t. 18. (Eruca.)
- Siliques axillary subsessile solitary, leaves tooth-sinuate.]*
13. *Sisymbrium polyceratium.* *Dandelion-leaved Wild Rocket.*  
*Lin. spec.* 918. *syst.* 595. *Reich.* 3. 252. *Willd.* 3. 494. *hort. upf.* 193. *Jacqu. hort. vind.* 1. 34. t. 79. *Hall. belv. n.* 483. *Sauv. monsp.* 283. *Allion. pedem. n.* 1008.
- Erysimum polyceratium f. corniculatum.* *Baub. pin.* 101.
- E. alterum Matthioli siliquis parvis, quibusdam Dentaria.* *Baub. hist.* 2. 864.
- E. alt. Italicum.* *Ger. emac.* 254. f. 2.
- Irio altera.* *Dalech. hist.* 653.
- Siliques axillary sessile awl-shaped aggregate, leaves repand-toothed.*
- [14. *Sisymbrium filifolium.* *Thread-leaved Wild Rocket.*  
*Lin. spec. ed. Willd.* 3. 495.
- Siliques axillary subsessile compressed, leaves linear.*
15. *Sisymbrium burisfolium.* *Shepherd's Purse-leaved Wild Rocket.*  
*Lin. spec.* 918. *syst.* 595. *Reich.* 3. 253. *Willd.* 3. 495. *amoen.* 4. 323. *Gouan illustr.* 42. *Hall. belv. n.* 481. *Villars dauph.* 3. 345.
- S. dentatum.* *Allion. pedem. n.* 1001. t. 57. f. 3.
- Hesperis dentata.* *Lin. spec.* 928. *Dill. elth.* 179. t. 148. f. 177.
- Raceme flexuose, leaves lyrate, stem erect, leafy.*
16. *Sisymbrium*



16. *Sisymbrium torulosum*. Swollen-podded Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 495. *Desfont. atlant.* 84.  
*t.* 159.  
*Raceme erect, siliques sessile pubescent, leaves lanceolate toothed.*  
 3. *Stem naked.*
17. *Sisymbrium murale*. Wall Wild Rocket.  
*Lin. spec.* 918. *syft.* 595. *Reich.* 3. 253. *Willd.*  
 3. 496. *hort. cliff.* 337. *Villars dauph.* 3. 351.  
*Allion. pedem. n.* 1002.  
*Eruca viminea, iberidis folio, flore luteo.* *Barr.*  
*rar.* 421. *t.* 131.  
 β. *S. Erucastrum*. *Gouan illustr.* 42. *t.* 20.  
*Almost stemless, leaves lanceolate sinuate-ferrate, smoothish,*  
*scapes somewhat rugged ascending.*
18. *Sisymbrium monense*. Procumbent Sea Rocket.  
*Lin. spec. ed.* 1. 658. *ed.* 2. 918? *Willd.* 3. 496.  
*Lightf. scot.* 353. *t.* 15. *f.* 1. *Smith brit.* 704.  
*engl. bot. t.* 962. *Dicks. hort. succ.* 17. 13.  
*Brassica monensis.* *Huds. angl.* 291. *Wither. arr. ed.*  
 3. 593.  
*Eruca monensis laciniata lutea.* *Raii syn.* 297.  
*E. mon. lacin. flore luteo majore.* *Dill. elth.* 135.  
*t.* 111. *f.* 135.  
*Siliques almost upright, leaves pinnatifid somewhat hairy,*  
*stems quite simple almost naked smooth.*
19. *Sisymbrium repandum*. Sinuate-leaved Sea Rocket.  
*Lin. spec. ed. Willd.* 3. 497.  
*S. monense.* *Villars dauph.* 3. 350. *t.* 39. *Ger. prov.*  
 360. 8. *Allion. pedem. n.* 1003.  
*Eruca perennis & faxatilis, radice crassa e rupe victoriæ.*  
*Tournef. schol. bot.* 81. *Garid. aix.* 162.  
*Stemless, leaves oblong repand-sinuate smooth, scapes*  
*smooth, siliques compressed-four-cornered.*
20. *Sisymbrium Tillieri*.  
*Lin. spec. ed. Willd.* 3. 497. *Bellardi app. alt. ad.*  
*flor. pedem.*  
*Stem almost naked panicled, leaves smooth, root-leaves*  
*runcinate-sublyrate, stem-leaves pinnatifid at the base.*
21. *Sisymbrium vimineum*.  
*Lin. spec.* 919. *Reich.* 3. 254. *Willd.* 3. 497.  
*Villars dauph.* 3. 353. *Allion. pedem. n.* 1004.  
*Eruca pumila ficula, burfæ pastoris folio.* *Bocc. sic.* 19.  
*t.* 10.  
*E. minimo flore, monspeliensis.* *Baub. hist.* 2. 862.  
*E. vinealis, parvis luteis floribus.* *Mor. blæs.* 263.  
*Stemless, leaves lyrate even, scapes ascending, flowers*  
*minute.*
22. *Sisymbrium Barrelieri*. Small Wild Rocket.  
*Lin. spec.* 919. *syft.* 595. *Reich.* 3. 254. *Willd.*  
 3. 498. *Allion. pedem. n.* 1005.  
*Eruca sylvestris minor, burfæ pastoris folio.* *Baub. pin.*  
 98. *prodr.* 39.—*lutea, italica.* *Barrel. ic.* 1016.  
*Stem almost naked branched, root-leaves runcinate toothed*  
*hispid.*
23. *Sisymbrium arenosum*. Sandy Wild Rocket.  
*Lin. spec.* 919. *Reich.* 3. 255. *Willd.* 3. 498.  
*fl. succ. n.* 597. *Crantz austr.* 47. *Hoffm. germ.*  
 235. *Krock. files. n.* 1062.  
*Arabis arenosa.* *Scop. carn. n.* 837. *t.* 40. *Roth.*  
*germ.* 1. 285. 2. 111.  
*Eruca n.* 462. *Hall. belv.*  
*E. cærulea in arenosis proveniens.* *Baub. pin.* 99.  
*prodr.* 40. *Barr. ic.* 196.  
*E. sylvestris major minorque, foliis subasperis in orbem*  
*sparsis.* *Loef. pruss.* 68. *t.* 13.  
*Stem somewhat leafy branched, leaves lyrate rectangular-*  
*toothed hispid with branched hairs.*
24. *Sisymbrium valentinum*. Valentia Wild Rocket.  
*Lin. spec.* 920. *Reich.* 3. 255. *Willd.* 3. 498.  
*Krock. files. n.* 1063.  
*Erucula hirsuta, floribus albis.* *Barr. rar.* 423. *t.* 195.  
*Bocc. mus.* 2. 84. *t.* 80.  
*Stem simple erect smooth above, leaves lanceolate hispid*  
*toothed in front.*  
 4. *Leaves pinnate.*
25. *Sisymbrium Parra*. Brasil Wild Rocket.  
*Lin. syft.* 595. *Reich.* 3. 255. *Willd.* 3. 499.  
*mant.* 255.  
*Caulescent, leaves runcinate muricate.*
26. *Sisymbrium asperum*. Rough-podded Wild Rocket.  
*Lin. spec.* 920. *syft.* 595. *Reich.* 3. 256. *Willd.*

3. 499. *mant.* 428. *Sauv. monsp.* 283. 255.  
*Ger. prov.* 360. *n.* 10. *Villars dauph.* 3. 349.  
*Sinapi parvum, filiqua aspera.* *Baub. pin.* 499. *prodr*  
 41.  
*S. palustre minus, fil. aspera.* *Tournef. inst.* 226  
*Garid.* 442.  
*S. monspessulanum, fil. asp. hirsuta.* *Baub. hist.* 2.  
 858.  
*Siliques rugged, leaves pinnatifid, pinnae linear-lanceolate*  
*somewhat toothed, corollas longer than the calyx.*
27. *Sisymbrium lævigatum*. Smooth-podded Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 500.  
*Siliques smooth, leaves pinnate, pinnules of the lower*  
*toothed, of the upper linear and quite entire.*
28. *Sisymbrium millefolium*. Milfoil-leaved Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 500. *Ait. kew.* 2. 391.  
*Sinapis millefolia.* *Jacqu. collect.* 1. 41. *ic. rar.* 1.  
*t.* 127.  
*Leaves superdecompound tomentose, petals bigger than the*  
*calyx.]*
29. *Sisymbrium Sophia*. Flix-weed.  
*Lin. spec.* 920. *syft.* 596. *Reich.* 3. 256. *Willd.* 3.  
 500. *fl. succ. n.* 595. *lapp. n.* 261. *mat. med.* 161.  
*Huds. angl.* 297. *Wither. arr. ed.* 3. 582. *Smith*  
*brit.* 704. *engl. bot. t.* 963. *Lightf. scot.* 354.  
*Relb. cant. n.* 546. *Sibth. oxon. n.* 588. *Abbot*  
*bedf. n.* 476. *Fl. rust. t.* 57. *Fl. dan. t.* 528.  
*Hall. belv. n.* 484. *Hoffm. germ.* 235. *Roth.*  
*germ.* 1. 291. 2. 130. *Pollich pal. n.* 629. *Krock.*  
*files. n.* 1064. *Crantz austr.* 53. *Scop. carn.*  
*n.* 821. *Villars dauph.* 3. 347. *Allion. pedem.*  
*n.* 1006. *Ludw. ect. t.* 73. *Kniph. cent.* 6. *n.* 86.  
*Blackw. t.* 440.  
*Nasturtium sylvestre tenuissime divisum.* *Baub. pin.*  
 105.  
*Erysimum Sophia dictum.* *Raii syn.* 298. *Petiv. brit.*  
*t.* 46. *f.* 12.  
*Sophia.* *Dod. pempt.* 133. 2.  
*S. chirurgorum.* *Lob. obs.* 426. *ic.* 1. 738. 2. *Ger.*  
 910. 1, 2. *emac.* 1068. *Park. theat.* 830. 3. *Raii*  
*hist.* 812.  
*Seriphium Absinthium.* *Fuchs. hist.* 2.  
*Ser. germanicum f. Sophia quibusdam.* *Baub. hist.* 2.  
 886. 2.  
*Leaves pinnate-decompound somewhat hairy, petals*  
*smaller than the calyx.*
- [30. *Sisymbrium album*. White Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 501. *Pallas it.* 3. *app.*  
*n.* 102. *t.* U. *Gmel. fib.* 3. 269.  
*Leaves whitish-pubescent pinnate, leaflets obtuse attenu-*  
*ated at the base,*
31. *Sisymbrium cinereum*. Ash-coloured Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 501. *Desfont. atlant.* 83.  
*t.* 157.  
*Leaves pubescent somewhat fleshy pinnate, pinnae linear-*  
*filiform.]*
32. *Sisymbrium altissimum*. Tall Wild Rocket.  
*Lin. spec.* 920. *syft.* 596. *Reich.* 3. 257. *Willd.*  
 3. 501. *hort. upf.* 193. *Sauv. monsp.* 229. *Pallas*  
*it.* 3. 556. *Krock. files. n.* 1065.  
*S. Waltheri.* *Crantz austr.* 51. *n.* 6.  
*Erysimum siliquis laxis, fol. hastato-pinnatis.* *Lin.*  
*hort. cliff.* 338. *Sauv. monsp.* 284. *Buxb. cent.* 5.  
 26. *t.* 51. *Walth. hort.* 133. *t.* 22.  
*Leaves runcinate flaccid, leaflets sublinear quite entire,*  
*peduncles loose.*
- [33. *Sisymbrium echartbergense*. Austrian Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 502.  
*S. austriacum.* *Jacqu. austr. t.* 262?  
*Leaves runcinate flaccid rugged at the edge and quite en-*  
*tire, siliques filiform inflex-patulous.*
34. *Sisymbrium pannonicum*. Hungarian Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 502. *Jacqu. collect.* 1. 70.  
*ic. rar.* 1. *t.* 123. *Ait. kew.* 2. 392.  
*S. Sinapios.* *Retz. obs.* 3. 37.  
*Lower leaves runcinate toothed, upper pinnate, pinnae*  
*linear quite entire, siliques spreading rectangularly.*
35. *Sisymbrium erysimoides*.  
*Lin. spec. ed. Willd.* 3. 502. *Desfont. atlant.* 84.  
*t.* 158.  
*Leaves runcinate-lyrate toothed smooth, siliques spreading*  
*rectangularly subpeduncled.]*



35. *Sisymbrium Irio*. London Wild Rocket, or broad-leaved Hedge Mustard.  
*Lin. spec.* 921. *fyst.* 596. *Reich.* 3. 257. *Willd.* 3. 503. *fl. suec. n.* 596. *amoen.* 4. 279. *Huds. angl.* 297. *Witth. arr. ed.* 3. 583. *Smith brit.* 705. *Curt. lond.* 5. t. 48. 311. *Relb. cant.* n. 547. *Sibth. oxon. n.* 587. *Jacqu. austr.* 4. 11. t. 322. *Hoffm. germ.* 236. *Roth. germ.* 1. 291. 2. 132. *Pallas it.* 3. 681. *Villars dauph.* 3. 356. *Allion. pedem. n.* 1007. *Vahl symb.* 2. 77. *Krock. files. n.* 1068.  
*S. pinnatifidum.* *Forsk. descr.* 118.  
*Erysimum latifolium majus glabrum.* *Baub. pin.* 101. *Mor. hist. f.* 3. t. 3. f. 3.  
*E. latifolium neapolitanum.* *Park. theat.* 834. 4. *Raii hist.* 811. *syn.* 298. *Petiv. brit.* t. 46. f. 4.  
*Irio lævis apulus, Erucae folio.* *Col. ecphr.* 1. 264. t. 265.  
*Leaves runcinate toothed naked, stem smooth, siliques erect.*
37. *Sisymbrium Columnæ.* Colonna's Wild Rocket.  
*Lin. fyst.* 596. *Willd.* 3. 503. *Jacqu. austr.* 4. t. 325. *Hoffm. germ.* 236. *Roth. germ.* 2. 133.  
*S. Irio.* *Crantz austr.* 49.  
*Rapistrum montanum Irionis folio.* *Col. ecphr.* 1. 266. t. 268.  
*Leaves runcinate toothed with the stem villose and somewhat hoary, siliques erect.*
38. *Sisymbrium Loefelii.* Loefelius's Wild Rocket.  
*Lin. spec.* 921. *fyst.* 596. *Reich.* 3. 258. *Willd.* 3. 503. *amoen.* 4. 322. *Hoffm. germ.* 236. *Roth. germ.* 1. 291. 2. 133. *Pollich pal. n.* 630. *Gouan illustr.* 42. *Jacqu. austr.* t. 324. *Kniph. cent.* 12. n. 92. *Crantz austr.* 48. n. 4. *Krock. files. n.* 1069.  
*Sinapi erysimo Tragi cognatum.* *Baub. hist.* 2. 857.  
*Erysimum angustifolium majus.* *Baub. pin.* 107.  
*E. hirsutum siliqua Erucae.* *Loef. pruss.* 69. t. 14.  
*Rapistrum montanum, Irionis folio, macroleptocera-*  
*tum.* *Col. ecphr.* 1. 266. t. 268.  
*Leaves runcinate acute rough-haired, stem hispid back-*  
*wards.*
39. *Sisymbrium obtusangulum.*  
*Lin. spec. ed. Willd.* 3. 504. *Schleicher catal.* 48.  
*Eruca.* *Hall. belv. n.* 459.  
*E. inodora.* *Baub. hist.* 2. 862.  
*Leaves pinnatifid obtuse toothed embracing, stem hispid*  
*backwards.*
40. *Sisymbrium orientale.* Oriental Wild Rocket.  
*Lin. spec.* 921. *Reich.* 3. 258. *Willd.* 3. 504. *amoen.* 4. 322.  
*Erysimum orientale, folio sonchi, flore sulphureo, fili-*  
*quis longissimis.* *Boerb. lugdb.* 1. 14. *Hall. goett.* 248.  
*Leaves runcinate tomentose, stem even.]*
41. *Sisymbrium barbaræ.*  
*Lin. spec.* 921. *fyst.* 596. *Reich.* 3. 258. *Willd.* 3. 505. *Krock. files. n.* 1067.  
*S. orientale, barbaræ facie, plantaginis folio.* *Tournef. cor.* 16.  
*Erysimum orientale.* *Mill. dict. n.* 4.  
*Leaves simple spatulate-ovate embracing naked.*
- [42. *Sisymbrium lyratum.* Lyrate-leaved Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 505. *Burm. ind. fl. cap.* 17.  
*Lower leaves lyrate-runcinate toothed, upper linear-lan-*  
*ceolate remotely toothed.*
43. *Sisymbrium catholicum.* Portuguese Wild Rocket.  
*Lin. fyst.* 596. *Reich.* 3. 258. *Willd.* 3. 505. *mant.* 93. *Krock. files. n.* 1066.  
*Siliques filiform even, leaves pinnate toothletted.*
44. *Sisymbrium heterophyllum.* Various-leaved Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 505. *Forsk. prodr. n.* 250.  
*Leaves pinnate, leaflets kidney-form subirilobate, lowest*  
*pinnatifid hairy.*
45. *Sisymbrium glaciale.* Icy Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 505. *Forsk. in com. gott.* 9. 36.  
*Siliques filiform even, leaves pinnate, leaflets kidney-*  
*form ciliate.]*

5. *Leaves lanceolate entire.*
46. *Sisymbrium strictissimum.* Spear-leaved Wild Rocket.  
*Lin. spec.* 922. *fyst.* 596. *Reich.* 3. 259. *Willd.* 3. 506. *hort. cliff.* 337. *ups.* 192. *Jacqu. vind.* 122. *austr.* 2. 56. t. 194. *Crantz austr.* 54. *crucif.* 139. n. 24. *Hoffm. germ.* 236. *Roth. germ.* 1. 291. 2. 134. *Villars dauph.* 3. 356. *Allion. pedem. n.* 1009. *Krock. files. n.* 1070.  
*Eruca.* *Hall. belv. n.* 458.  
*Hesperis lutea filiquis strictissimis.* *Tournef. inst.* 222.  
*Draba lutea.* *Park. theat.* 851. 7. —fil. strictissimis.  
*Baub. pin.* 110.  
*D. 4. Ger. emac.* 275.  
*Arabis quibusdam dicta planta.* *Camer. epit.* 342.  
*Erysimum non laciniatum Draba dictum.* *Raii hist.* 811.  
*Leaves oblong-lanceolate toothed pubescent petioled, siliques*  
*spreading.*
- [47. *Sisymbrium pendulum.* Pendulous Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 506. *Desfont. atlant.* 82. t. 156.  
*Leaves lanceolate gash-toothed hispid, siliques pendulous.*
48. *Sisymbrium hispanicum.* Spanish Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 507. *Jacqu. collect.* 1. 69. *ic rar.* 1. t. 124.  
*Leaves lanceolate toothed sessile smooth, siliques pressed close,*  
*stem branched divaricating.*
49. *Sisymbrium pumilum.* Dwarf Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 507.  
*Leaves lanceolate toothed sagittate embracing pubescent,*  
*siliques from erect spreading.*
50. *Sisymbrium falsuginosum.* Salt Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 507. *Pallas itin.* 2. app. n. 114. t. V.  
*Leaves lanceolate quite entire cordate embracing smooth,*  
*siliques spreading.*
51. *Sisymbrium integrifolium.* Entire-leaved Wild Rocket.  
*Lin. spec.* 922. *Reich.* 3. 259. *Willd.* 3. 508. *Gmel. fib.* 3. 270. t. 63.  
*Leaves linear quite entire, peduncles glutinous-hispid.*
52. *Sisymbrium indicum.* Indian Wild Rocket.  
*Lin. fyst.* 596. *Reich.* 3. 259. *Willd.* 3. 508. *mant.* 93. *Burm. ind.* 140.  
*Leaves lanceolate-ovate serrate petioled even, siliques*  
*slightly bowed.*
53. *Sisymbrium hispidum.* Hairy Wild Rocket.  
*Lin. spec. ed. Willd.* 3. 508. *Vahl symb.* 2. 77.  
*Sinapis Harra.* *Forsk. descr.* 118.  
*Caulescent, leaves petioled oblong toothed hispid, stem also*  
*hispid.*

## DESCRIPTIONS, &amp;c.

1. Roots perennial, consisting of long white fibres, the lowermost fixed in the soil, the rest suspended in the water. Stems spreading, declining or floating, angular, branched, leafy. Leaves alternate, pinnate, somewhat lyrate, the terminating and upper leaflets being the largest: all the leaflets roundish, more or less heart-shaped, smooth, shining, waved or toothed, frequently tinged with a purplish brown hue. Flowers white, in a corymb, soon lengthened out into a spike. Pods shortish, on horizontal pedicels, but the pods themselves recurved upwards. Stigmas nearly sessile.

According to Curtis, the root is annual. Withering marks it as biennial. Stems numerous, from a foot to two feet or more in height. Leaves half-embracing, composed of three or four pairs of leaflets, which are opposite, ovate, obtuse, with a slight indentation at the end, bluntly toothed, sessile, the end leaflet rounder and larger, often running out to a point. The leaves, when the plant grows in the shade, are green; when exposed to the sun, purplish brown: when growing in a rapid current, they are sometimes considerably lengthened out; as is the case with other plants in the same circumstances. In this state, there is a possibility that the leaves may be mistaken for those of the creeping Water-Parsnep (*Sium nodiflorum*), which commonly grows with it; but the leaves of the Water-Parsnep are not only long and pointed, but serrate, of a much paler colour, and without any of that creis-like taste, which is to be found in Water-Cresses.



Native of Europe, Asia, Africa and America, in springs, pools and rivulets; flowering in June and July.

Water-Cress is reputed an excellent antiscorbutic, with less acrimony than Scurvy-grass. It is supposed to purify the blood, and to open visceral obstructions. In the spring it is very frequently eaten as a salad. The juice is directed, with that of Scurvy-grass and Seville Oranges, and thus forms a popular remedy, under the name of Spring juices<sup>1</sup>.

2. Root perennial, whitish, slender, remarkably creeping, thickly beset with germs, which give it a knobbed appearance. Stems numerous, a foot high, upright or nearly so, leafy, flexuose; weak; sometimes purplish, smooth, somewhat angular and finely grooved, branched: the branches very slightly hairy; forming a sort of panicle. Leaves alternate, pinnate, smooth; leaflets in the lower decurrent, elliptic, oblong; toothed, in the upper, narrower, subpetioled, gash-ferrate. Petioles channelled above; often purplish. Common peduncle flexuose; pedicels alternate, spreading almost horizontally or bent a little upwards, generally longer than the pod; all together forming finally very long racemes. Calyx-leaves ovate, concave, upright, equal, yellowish. Corolla small, yellow or gold-coloured; petals obtuse, a little longer than the calyx. Nectary of four deep-green glands, united in a circle. Filaments yellow: anthers incumbent. Germ the length of the stamens: style very short: stigma villose. Silique scarcely half an inch long, cylindrical, curved upwards; generally abortive, as is frequently the case in plants that increase very much by the root. Both Ray and Tournéfort mention the seeds; it is probable therefore that they found it in dry situations favourable to their ripening<sup>2</sup>. The pod then assumes an oblong-ovate form, as Linneus describes it<sup>3</sup>.

Mr. Woodward says; that he never found the pods producing perfect seeds; and remarks, that the pedicels are indeed at first parting from the branch curved downwards, but the pod itself rises upwards, which cannot answer to Linneus's description of *siliquis declinatis*.

Native of Sweden, Britain, Germany, France, Switzerland, Carniola, Piedmont, Siberia. From Tournéfort; who has described the plant with much accuracy, it appears to be plentiful, not only along the banks of the Seine, but in the courts of houses, and most moist situations. With us it is not of such general growth, but where it does occur, it is found in great abundance. The watery part of Tothill-fields, Westminster is overrun with it<sup>4</sup>, and it is found on the banks of the Thames in several places. On Cambridge common; between Chesterton-sludge and Barnwell-pool; and in the Isle of Ely. On Bungay common in Suffolk. In Bedfordshire frequent. In Oxfordshire, on the banks of the canal beyond High-bridge, Port meadow, Binsey common, and Otmere. On the banks of the Severn near Worcester. On the banks of the Aire below Leeds<sup>5</sup>.

3. The annual Water-Rocket, which was probably unknown to Linneus, and was confounded by Hudson, with the great Water-Rocket or Water-Radish, differs from it in the following circumstances: 1. It is an annual plant, whereas the *amphibium* is not only a perennial, but has a creeping root. 2. It is a much smaller plant, seldom acquiring half the height of the *amphibium*. 3. It is seldom in water, except accidentally. 4. Its foliage is very different, the radical leaves much resembling those of *Erysimum officinale*. 5. The seed-vessels are always turgid, and full of seeds, while those of the *amphibium* are usually abortive<sup>6</sup>.

To these marks it may be added, that the root is simple, fusiform and small; the stem generally upright, branched, a foot high and smooth; the leaves lyrate-pinnatifid, smooth, unequally and obtusely tooth-ferrate; the flowers small, the petals being shorter than the calyx, and sometimes emarginate; the fruiting ra-

comes very long; the siliques spreading horizontally, a little curved in, short, obtuse, even, many-seeded (twenty), terminated by a very short style<sup>7</sup>.

Mr. Woodward remarks, that the pinnas of the upper leaves are lanceolate and toothed, the terminating one very large, confluent with the next pair, deeply indented.

When this plant happens to be overflowed, which is frequently the case, it is then more procumbent, and will sometimes take root at the joints; in which state it appears to be the *Sisymbrium palustre repens, parvo flore* of Vaillant.

It has a taste similar to most plants of the Cress kind; but is not very pungent.

Common about London, with *Rumex maritimus*, on the edges of wet ditches, and on ground apt to be occasionally overflowed; as on Tothill-fields, &c.<sup>8</sup> Hauxton in Cambridgeshire, and near Ely-bridge<sup>9</sup>. Elstow and Goldington in Bedfordshire<sup>10</sup>. Oxfordshire, near the Diamond House<sup>11</sup>. On Bungay common in Suffolk, by Mr. Woodward.—It flowers from June to September.

4. Root perennial fibrous. Stems elongated, rooting; somewhat flexuose, leafy, grooved, little branched. Leaves alternate, oblong, serrate or pinnatifid; the upper ones commonly quite entire; the radical ones petioled, and when they grow out of the water sometimes pubescent. Flowers yellow, with the petals longer than the calyx. Germ pedicelled, globular. Siliques very short, terminated with the elongated style<sup>12</sup>. According to the observation of Mr. Woodward; they are at first spreading, but afterwards hang down; and the fruitstalks are much longer than the pods themselves. This differs materially from the *terrestre* in these particulars: the pods being not above half as long, and hanging perfectly down; and yet the fruitstalks being much longer than the other.

In rivers and brooks, and sometimes on the banks that are seldom overflowed, in most parts of Europe: flowering from June to August.

5. Root perennial. Petioles embracing. Style capillary. Silique oval<sup>13</sup>.

Stem-leaves bipinnate, with the pinnules linear, acute and quite entire. Flowers yellow<sup>14</sup>.

Dillenius, Haller, and Allioni have separated this from *Sisymbrium*, each under a different name, on account of the shortness of the pod.

Native of the Pyrenees, Aragon, Dauphiné and Switzerland.—Introduced in 1775, by Mons. Thouin. It flowers in May and June<sup>15</sup>.

6. Leaves finely divided, somewhat like those of Tansy, but of a hoary green colour. The stalks rise a foot and half high, fully clothed with leaves of the same form, but gradually diminishing in size upwards. Flowers in terminating clusters, small and pale yellow. Pods slender, taper, two inches long. Seeds small and round.

[Height from two to three feet. Stems straight, and simple except a few branches at the top. Leaves, though green, covered with stellate hairs, and so like those of Tansy, that one might be deceived were it not that they want the peculiar smell of that herb. Corolla yellow, in a coloured calyx shorter than the petals. Siliques straight and thin<sup>16</sup>.

Guettard and Villars would make a distinct genus of this and Sophia.

Native of Italy, Dauphiné and Switzerland.—Cultivated by Mr. Miller in 1731<sup>17</sup>.

7. Root annual. Stems ascending or erect, slender, branched below, pubescent. Leaves smooth or slightly pubescent; lower toothed, upper quite entire. Calyx small, coloured. Corolla yellow, twice as long as the calyx; border of the petals obovate, quite entire. Siliques smooth, slender, compressed a little, disposed in a naked, loose, long raceme, on filiform pedicels almost twice their length. Style very short. Seeds four, five or six, small, rufescent. Allied to *S. coronopifolium*, but differs in having linear leaves, twice or

<sup>1</sup> Woodville, Wither. Engl. bot.

<sup>2</sup> Withering.

<sup>3</sup> Curtis.

<sup>4</sup> Curtis.

<sup>5</sup> Curtis and Smith.

<sup>6</sup> Smith and Withering.

<sup>7</sup> Smith.

<sup>8</sup> Sibthorp.

<sup>9</sup> Hort. kew.

<sup>10</sup> Curtis.

<sup>11</sup> Smith.

<sup>12</sup> Villars.

<sup>13</sup> Relhan.

<sup>14</sup> Linn. spec.

<sup>15</sup> Hort. kew.

<sup>16</sup> Abbot.

<sup>17</sup> Affo.



thrice narrower than in that. Found in sands near Cassa in Barbary.

8. Lower leaves almost like those of *Plantago Coronopus*, with the teeth remote, linear, entire, uniform, pectinated, shorter or longer. Stems often many, simple or little branched, diffused or decumbent at the base, villose, very slightly striated. Calyx pubescent, loofish, coloured, deciduous, with elliptic leaflets. Corolla twice or thrice the length of the calyx, yellow, border of the petals obovate, quite entire. Style none. Siliques slender, smooth, in loose racemes, compressed a little, many-seeded, on filiform, pubescent pedicels, scarcely longer than the filique. It flowers in winter.—Native of the desert near Cassa, in sands<sup>a</sup>.

9. Root perennial, fusiform, whitish, somewhat woody. Stem very much branched, a foot and half high, leafy, round, glaucous, smooth with sometimes a few scattered hairs. Leaves rather fleshy, glaucous, quite entire or sometimes slightly notched; the uppermost generally but not always simple. Flowers large, lemon or straw-coloured, handsome but smelling unpleasantly. Calyx spreading, commonly rough-haired at the end. Siliques erect, oblong, smooth, round, with a raised line on each side; terminated by a short style. Seeds elliptic, compressed. Every part of the herb is pungent to the taste<sup>b</sup>.

Mr. Curtis remarks, that the calyx, before it opens, appears to have two little short horns, from each of which issue one or more fine hairs; that when the flower is expanded two of the calyx-leaves stand almost upright, while the other two bend back; and that two of the four glands are uncommonly long.

Mr. Hudson at first took this plant for Linneus's *Brassica Erucastrum*: in his second edition he called it *Brassica muralis*, quoting *Sisymb. murale* as a synonym, which is very different. Linneus adopted his *S. tenuifolium* from Dalibard, without seeing a specimen, nor is it, as such, in his herbarium. The spreading calyx makes it a *Sisymbrium*, not a *Brassica*, so that there is no occasion to recur to the uncertain mark of the nectariferous glands. The name *tenuifolium*, taken from John Bauhin, is certainly exceptionable, some of the genus having much more finely cut leaves<sup>c</sup>. *Murale* would have been better, had it not been pre-occupied.

Native of Germany, France, Piedmont, Switzerland and England: flowering from July to October. On many old walls and castles throughout England, about the Tower of London, London Bridge, Bethlehem Hospital, Hyde Park, &c. Windsor, Chester, Bristol, Yarmouth, Lichfield, Taunton, Exeter, Berwick, Sunderland, Tinnmouth, &c.

Linneus latterly confounded this with his *S. catholicum*, which has sharply ferrate leaves, and is a smaller more delicate plant<sup>d</sup>.

10. The radical leaves petioled hastate or subtruncate<sup>e</sup>. Perennial. Native of Siberia. Introduced in 1780, by Peter Simon Pallas, M. D. It flowers in May and June<sup>f</sup>.

11. Root annual. Stems even, erect, having a few short hairs at the base, smooth above, branched, slightly streaked. Branches slender, erect, spreading. Leaves smooth; radical and lower stem-leaves obovate or wedge-form, somewhat toothed, running down the short petiole; middle and upper stem-leaves few, remote, embracing, lanceolate or cordate-lanceolate, toothed or quite entire. Calyx small, with elliptic, coloured leaflets. Petals yellow, twice or thrice the length of the calyx, with an ovate border quite entire. Style short, acute, permanent. Siliques forming a raceme, spreading, erect, on capillary pedicels, smooth, slender, compressed a little, drawn to a point at each end, mucronate at the tip, shorter by half than the pedicel, or nearly so. Seeds from three to five, very small, rufescent. It flowers early in the spring.

Native of the hills about Algiers<sup>g</sup>.

12. This is an annual plant, native of the South of Europe; flowering in June and July. Introduced in 1778 by Monf. Thouin<sup>h</sup>.

13. This differs from the preceding in having the teeth of the leaves sharper, and the filiques not solitary in the axils of the leaves. Annual<sup>i</sup>. According to Allioni it is biennial.

Haller remarks, that in leaves and flower it agrees entirely with the common Hedge-Mustard, *Erysimum officinale*, which Allioni considers to be of this genus; but the leaves are smooth, with fewer and wider pinnae; upper leaves entire, triangular as in *Atriplex*, or semipinnate, with the nerve less denudated than in *Erysimum*, and not pinnate. Flowers small, yellow. The whole filique different, erect, curved, two or three together, in bundles, sessile: partition hollowed out deeply. Seed very small.]

Miller describes it as an annual plant, with the stalks spreading and declining, a foot long, and dividing into many branches. Leaves smooth, shaped like the point of a halbert, deeply sinuated and indented, with the indentures turning backward. Flowers in axillary clusters, small and yellow. Pods slender, crooked in clusters. It flowers in June and July.

Native of the South of France, and of Italy, [and Switzerland.—Johnson saw it in the garden of Master Parkinson, who must therefore have cultivated it before 1633<sup>j</sup>.

14. This is a very small annual, not more than an inch and half or two inches in height. Leaves subsessile, an inch long, smoothish, very narrow, sharpish, the upper ones sometimes bifid. Flowers small. Petals white, linear, obtuse, a little longer than the calyx. Siliques linear, blunt, somewhat rugged.—Native of Siberia, by the river Kuma<sup>k</sup>.

15. Annual. Native of Italy, in moist places on mountains. It is doubtful whether Linneus's plant be the same with Gouan's or Allioni's, &c. See Villars.

16. Stems branched, rough with short spreading hairs. Branches spreading, hirsute, rigid. Leaves pubescent, decurrent along the short petiole. Flowers small. Calyx hirsute, coloured; with linear leaflets. Petals white, a little longer than the calyx; border obovate, quite entire. Style none or very short. Stigma thickish. Siliques in racemes, slender, awl-shaped, round, torulose, erect, villose. Seeds small, many. There are often some racemes of flowers from the root. It flowers early in spring.

Native of the kingdom of Tunis near Sbiba, in fallows<sup>l</sup>.

17. Root annual. Stems somewhat rugged, having a few stiff hairs scattered over them, branched and leafy above the base. Leaves petioled, oleraceous, having a few scattered hairs underneath. Scapes long, at first decumbent, and then ascending. Calyxes half-spreading arched at the top, having a few hairs. Corollas yellow, very blunt, large; the diameter of the leaves. Siliques thickish, compressed a little, with the valves indistinctly keeled<sup>m</sup>. It differs in very few circumstances from the next species. The leaves are indistinctly or only here and there and very remotely ferrate<sup>n</sup>.

The constant characters of this are, longish hairs at the bottom of the scape, which sometimes becomes a stem; a villose calyx, a little gibbous at the upper part exteriorly; and petals of a deep yellow colour, very blunt or slightly emarginate; there are also two glands at the base of two of the petals, sharp like the point of a pin, sometimes a quarter of a line in length, but often shorter. Leaves often smooth, but sometimes a little villose. Petals as long again as the calyx. Siliques an inch in length, a little gibbous, on a short peduncle<sup>o</sup>.

Native of France and Italy. On the 6th of October, 1801, L. W. Dillwyn, Esq. sent information to the Linnean Society of London, that he had discovered this plant growing wild abundantly on the pier at Ramsgate and other places thereabouts; and that

<sup>a</sup> Desfontaines.

<sup>g</sup> Idem.

<sup>b</sup> Smith brit.

<sup>c</sup> Willdenow.

<sup>d</sup> Desfontaines.

<sup>e</sup> Engl. bot.

<sup>f</sup> Hort. kew.

<sup>h</sup> Hort. kew.

<sup>i</sup> Willdenow.

<sup>j</sup> Willdenow.

<sup>k</sup> Linn. syst.

<sup>l</sup> Villars.

<sup>m</sup> Ger. emac. & Hort. kew.

<sup>n</sup> Desfontaines.

<sup>o</sup> Linn. spec.



he believed it to be rather common throughout the isle of Thanet<sup>d</sup>.

β. *S. Erucastrum* of Gouan is probably a variety of this.

18. Root perennial and strong. Stems several, six or eight inches high, spreading unbranched, round, smooth, for the most part destitute of leaves, except about the bottom. Leaves many, on longish stalks, rather fleshy and inclining to a glaucous hue, pinnatifid; their lobes narrowish, distant, entire or toothed, having here and there a few bristly hairs. Flowers large, in a corymb. Calyx tipped with hairs; its leaves but little expanded. Petals lemon-coloured veined with purple. Pods loosely spreading, not quite erect, beaked, obscurely square, smooth.—In a garden the stems become taller and leafy, sometimes branched<sup>e</sup>.

Native of Britain. Found in the isle of Man, between the landing-place at Ramsey and the town plentifully: by Mr. Lawson, in Sella fields, Seabank, Cumberland; also between Marsh-grainge and the isle of Walney, but not plentifully. Near Abermeney-ferry in Anglesea, by Mr. Llwyd<sup>f</sup>, who shewed it to Dillenius in 1726. He conveyed some plants to London, and planted them in the Eltham garden, where they flowered the year following in May<sup>g</sup>. Several persons have found it since in Walney island. In Scotland, on sandy coasts in many places; as in the isles of Bute, Skye and Arran, and in Cantire<sup>h</sup>.

*S. monense* of Villars and Allioni, and n. 8. of Ger. prov. which Linneus had before him when writing the second edition of his *Species Plantarum*, is the next species. It has smaller flowers than this, less evidently veined, and differs in its general aspect<sup>i</sup>.

19. This is very distinct from the preceding. The leaves are never pinnate, but only sinuate and sometimes almost quite entire, and altogether smooth. Pods very long (two inches,) compressed, and the valves have a raised longitudinal suture through the middle, which gives them a square appearance. Perennial.—Native of Provence, Dauphiné and Piedmont<sup>k</sup>.

20. Root biennial. The whole plant smooth. Radical leaves petioled runcinate-pinnatifid, with the terminating lobe roundish-five-cornered, a little larger than the others. Stem upright, panicked at top with three or four racemes. Stem-leaves oblong, the lower runcinate pinnate at the base, the upper oblong blunt toothed very fine pinnatifid at the base. Flowers yellow.—Native of the Val d'Aost<sup>l</sup>.

21. This has the appearance of *S. muralis* and *monensis*, but the leaves, though small and a finger's length, are lyrate altogether like those of *Barbarea*, blunt and even. Scapes filiform, almost upright. Flowers yellow, not larger than those of *Sophia*. Petals erect, blunt, scarcely twice the length of the calyx.—Native of the South of France and Sicily<sup>m</sup>.

22. Root annual. Leaves radical, very many, lyrate, toothed as in *Taraxacum*, though scarcely an inch long, hispid all over with pellucid bristles. Stem erect, more thinly hispid, with few branches, under which is an awl-shaped leaf. Calyxes even. Petals yellow, oblong, biggish, entire. Siliques oblong, swelling a little at the seeds<sup>n</sup>. Allied to the next, but differing in having yellow flowers<sup>o</sup>.

Native of Spain and Italy. Introduced in 1770, by Mons. Richard. It flowers in July<sup>p</sup>.

23. Root annual. Radical leaves very many, lanceolate-lyrate, hispid on both sides with branching bifid or trifid hairs. Stem-leaves lanceolate, toothed, hispid like the others. Stem rough with a few simple hairs. Calyxes smooth. Corollas white tinged with pale violet<sup>q</sup>; or quite white or all purple.

Native of Sweden, Germany, Switzerland, Austria and Carniola.

24. Root annual. Stem erect, round, a foot high, very slender, and scarcely branched, having a few hairs scattered over it below, smooth above. Root-leaves narrow-lanceolate, with four stout teeth standing out

forwards, hispid with white simple hairs some longer others shorter. Stem-leaves fewer, lanceolate-linear, not toothed. Peduncles filiform, longer than the flower.

Native of Spain, in the kingdom of Valencia and about Madrid<sup>r</sup>.

25. Root annual or biennial. Leaves radical, spreading in a ring, abundant; the interior ones less, a span long, runcinate, like those of Shepherd's-purse; the upper surface, especially the edge muricated with warts, or scattered mucronate tubercles, having a transparent point. These tubercles for the most part disappear when the leaves are more advanced. They are also rugged on the lower surface. Pinnas opposite, wider at the base, toothed, pressed close by pairs at the upper base. The first year it is stemless; the second year it produces a stem; it flowers in both. Scapes erect, even, with remote scattered strigæ, panicked, a foot high. Pedicels remote, spreading, stiff, longer than the flower, a day or two before flowering (which is singular) recurved; erect. Calyx closed, even, pale, gaping with a more swelling base. Petals obovate, obtuse, quite entire, distant, twice as long as the calyx, yellow. Nectareous glands four, two opposite between the longer stamens, and the inner leaflets of the calyx, awl-shaped, longer than in most of this class. Silique round, cylindrical, even, swelling a little at the seeds.—Native of Brasil<sup>s</sup>.

26. Root annual. Stems half a foot long and almost trailing. Leaves green, winged, and the leaflets sometimes cut. Flowers small and yellow. Siliques about half an inch long, rather thick in proportion to the size of the plant, round, rude and villose<sup>t</sup>.

Native of the South of France and marshes about Estremadura. Introduced in 1778, by Mons. Thouin. It flowers in May and June<sup>u</sup>.

27. Root annual. Radical and lower leaves pinnate, with the pinnas linear and grossly toothed: stem-leaves pinnate, with the pinnas linear, acute, quite entire. Flowers yellow. Siliques an inch and half long, smooth. It resembles the preceding.

28. This resembles the following species, but the stem is shrubby, the leaves are hoary, the leaflets oblong, and the petals bigger than the calyx.

Native of the rocks of Teneriffe<sup>v</sup>. Found there by Mr. Francis Masson, and introduced in 1779. It flowers from May to September<sup>w</sup>.

29. Root annual, small, tapering. Stem a foot and half or two feet high, upright, round, much branched and very leafy. Leaves alternate, spreading, three inches long and more, two inches broad, very finely divided; doubly pinnate, or perhaps more properly pinnatifid, for the principal and partial divisions are all confluent; the last segments are lanceolate, acute, entire, more or less evidently hairy; the terminating ones largest. Flowers in corymbs, very small, numerous, frequently more than a hundred in a single corymb. Petals pale yellow, so minute as to be almost hidden by the calyx, which has nearly as much colour as themselves. The corymb soon grows out into a very long spike of slender pods, which stand erect on spreading pedicels: they are about half an inch in length, so obscurely four-cornered as to seem round, and swell out a little where the seeds are. Seeds numerous, small, roundish, smooth, yellow or reddish.

Flix-weed is so named, from the quality attributed to it of curing immoderate laxity of the bowels. It is not uncommon in most parts of Europe, on walls, among rubbish, about church-yards, waste ground, hedges and dunghills; flowering in June, July and later, and ripening its seeds in August and September. The pods retain the seeds all winter, for the food of small birds.

According to Linneus, sheep and kine eat the plant, horses and goats are not fond of it, and swine refuse it. With us it seems seldom to be cropped by cattle, except from wantonness. The force of gunpowder is said to be augmented, by mixing a tenth part of the

<sup>d</sup> Linn. trans. 6. 389.

<sup>e</sup> Engl. bot.

<sup>f</sup> Ray syn.

<sup>g</sup> Hort. elth.

<sup>h</sup> Lightfoot.

<sup>i</sup> Engl. bot.

<sup>k</sup> Willdenow.

<sup>l</sup> Idem.

<sup>m</sup> Linn. spec.

<sup>n</sup> Idem.

<sup>o</sup> Willdenow.

<sup>p</sup> Hort. kew.

<sup>q</sup> Linn. spec.

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<sup>r</sup> Linn. spec.

<sup>s</sup> Linn. mant. & syst.

<sup>t</sup> Villars.

<sup>u</sup> Hort. kew.

<sup>v</sup> Willdenow.

<sup>w</sup> Hort. kew.



feeds with the other ingredients. The plant is sometimes prescribed in dysenteries and hysteric cases; and the seeds are given to destroy worms<sup>z</sup>.

30. Root perennial. Stems a span high, upright, very finely tomentose, several from a somewhat woody root. Leaves becoming hoary; those next the root pinnate, with obovate pinnas most commonly two-parted, the upper ones confluent: stem-leaves pinnate, with the pinnas lanceolate, quite entire, obtuse, attenuated at the base, the upper ones confluent. Petals bigger than the calyx, white. Siliques linear, round, even, erect.—Native of Siberia, by the lake Baikal.

31. Root annual. Plant a span high. Stem upright, branched. Leaves pubescent, somewhat fleshy; lower subbipinnate, upper simply pinnate, with the pinnas distinct, linear-filiform, obtuse. Flowers pale violet.—Native of Barbary, near Cassa, in sands<sup>a</sup>.]

32. Lower leaves flaccid, runcinate, ending in arrow-pointed lobes. Stalks three or four feet high, with linear leaflets. It branches out greatly on every side. Flowers scattered at the ends of the branches. Pods very long, slender, smooth; filled with small yellowish seeds. [Annual. Native of Siberia, Armenia, and Austria.—Cultivated by Mr. Miller in 1768. It flowers in august<sup>b</sup>.

33. This is very like the preceding, but differs in having the leaves rugged at the edge, and especially in having the siliques much narrower and shorter, filiform, bent in and spreading a little, but not spreading wide and divaricating. Annual. Supposed to be native of Thuringia<sup>c</sup>.

34. This is a biennial plant, or annual. Stems three or four feet high, branched, erect, slightly angular. Lower-leaves runcinate-pinnatifid with toothed lobes, the lower of which are distinct and remote, the upper confluent; little hairy, except along the nerves and margin, which have white hairs: they have the taste of Mustard. Calyx and corolla yellow. Stigma headed, perforated, large. Between the pistil and each shorter stamen is a large gland. Siliques spreading, very narrow, swelling a little, smooth<sup>d</sup>.

Native of Hungary. Introduced in 1787, by Mr. Zier. It is annual, and flowers in august<sup>e</sup>.

35. Leaves smooth, pinnatifid; segments oblong, toothed at the end, the terminating one very large, rhomb-shaped, gash-toothed. Racemes long. Flowers small, white. Siliques linear, an inch long and more, spreading horizontally, almost sessile.—Native of Tunis near Kerwan, in sandy places<sup>f</sup>.

36. Root annual, fusiform, small. The whole plant perfectly smooth, with the biting taste of Mustard. Stem upright, from one to two feet high, round, shining, here and there purplish, somewhat flexuose, leafy, not striated or grooved, branched at top, and often quite from the bottom. Leaves alternate, except the uppermost runcinate-pinnatifid, unequally and variously cut, toothed or ferrate, petioled, spreading and flaccid, the lobes for the most part acute, the end one larger and longer: the uppermost leaves are hastate or simply lanceolate, entire or having one or two teeth towards the base. Flowers in corymbs, soon lengthened out into long spikes. Calyx spreading and yellowish. Corolla small, yellow; petals longer than the calyx, obtuse, oblong, spreading widely. Siliques numerous, slender, nearly round, about two inches long, on short pedicels. Seeds very small, pale yellow; and being a little protuberant, the pods have the appearance of being finely jointed; a character which readily distinguishes this plant<sup>g</sup>.

Native of many parts of Europe, in corn fields; with us on dry banks, old walls, and among rubbish; flowering from June or July to August or September. Mr. Ray observed it at Faulkourn in Essex, and on the walls of Berwick upon Tweed; though scarce in many parts of Britain, it is frequent in the neighbourhood of London. After the great fire in 1666, it came up in such abundance on the ruins, that

in many places it might have been mowed like a field of corn<sup>h</sup>.

37. Like the preceding, but pubescent and somewhat hoary all over, and the flower paler. Annual.—Native of Germany, Austria and Italy, in dry places<sup>i</sup>.

38. Root annual, fusiform. Stem upright, two or three feet high, often variously flexuose, round, slightly striated, hispid. Branches alternate. Leaves like those of *Erysimum officinale*, alternate, petioled, wider below, and narrowing gradually to the top into a linear lobe, pinnatifid, the lower pinnas lanceolate-linear, bluntish, toothletted, towards the upper part gradually less pinnatifid, and at length toothletted, somewhat hairy above and below, ciliate and roughish about the edge. Petioles channelled within. Petals blunt, twice as long as the calyx, yellow. Siliques in a loose raceme<sup>k</sup>.

Native of Germany, Austria, Prussia, and France. Introduced in 1787, by Mr. Zier. It flowers in August<sup>l</sup>.

39. Root annual. Stem erect, grooved, having a few reflex hairs especially towards the base. Leaves almost like those of *Pedicularis Sceptrum*, pinnatifid, with blunt pinnas obtusely and grossly toothed, the lower ones gradually smaller; the last pair embracing the stem like stipules. Flowers yellow. Siliques obtusely four-cornered, smooth.

Native of Switzerland, and distinct from *Brassica Erucastrum*<sup>m</sup>.

40. An annual plant, native of the Levant. Introduced in 1775, by Chevalier Murray. It flowers in July<sup>n</sup>.

41. Root perennial. Plant very like to *Erysimum Barbarea*, but insipid. Stem angular. Radical leaves quite entire, cordate-ovate<sup>o</sup>.—Native of the Levant. Cultivated by Mr. Miller in 1759.

42. Stem-leaves linear-lanceolate remotely and grossly toothed. It is a perennial plant, native of the Cape of Good Hope<sup>p</sup>.

43. Stems a palm or a foot in height, even. Both root and stem-leaves pinnate, even, brittle: leaflets oblong, ferrate or toothed, at the top of the petiole often confluent. Raceme oblong. Flowers on long peduncles. Petals yellow, obovate, entire, large. Calyx even. Siliques remote.—Native of Spain and Portugal<sup>q</sup>.

44. Native of New Zealand.

45. Root perennial. Stem herbaceous, a palm high, roundish, smoothish, simple, dichotomous towards the top, flowering branchlets erect. Root-leaves in tufts; stem-leaves alternate, all pinnate, composed of three or four pairs of leaflets, and an odd one, larger than the rest, kidney-form, somewhat crenate, seldom cut; the lateral ones gradually smaller, roundish, oblique, all ciliate, subsessile, somewhat remote. Floral leaves pinnatifid. Flowers white, biggish in proportion to so small a plant. It is allied to the preceding, but different.

Native of Terra del Fuego, in wet places, almost under the snow itself<sup>r</sup>.

46. Root perennial. Leaves pubescent on both sides and much veined. Anthers, when they have shed their pollen, violet-coloured<sup>s</sup>. Siliques spreading very much. It varies sometimes with the leaves quite entire<sup>t</sup>.]

Stems branching, near three feet high. Leaves about three inches long, and an inch broad, of a deep green, alternate. Flowers in loose terminating spikes, small and yellow, appearing in June. The pods ripen in August.

[Native of Germany, Austria, Switzerland, and Italy.—Cultivated 1658, in the botanic garden at Oxford<sup>u</sup>.

47. Stem somewhat branched, upright. Leaves hispid, lanceolate, gash-toothed, attenuated at the base into the petiole. Flowers yellow. Siliques linear, on long peduncles, pendulous.—Native of Barbary, near Cassa, in sands.

<sup>z</sup> Fl. rust. & Engl. bot.

<sup>a</sup> Willdenow.

<sup>b</sup> Hort. kew.

<sup>c</sup> Willdenow.

<sup>d</sup> Retzius.

<sup>e</sup> Hort. kew.

<sup>f</sup> Willdenow.

<sup>g</sup> Curtis.

<sup>h</sup> Morison prælod.

<sup>i</sup> Willdenow.

<sup>k</sup> Pollich.

<sup>l</sup> Hort. kew.

<sup>m</sup> Willdenow.

<sup>n</sup> Hort. kew.

<sup>o</sup> Linn. syst.

<sup>p</sup> Willdenow.

<sup>q</sup> Linn. mant.

<sup>r</sup> Forster.

<sup>s</sup> Linn. spec.

<sup>t</sup> Willdenow.

<sup>u</sup> Hort. kew.



48. Root biennial. Stem erect, branched, divaricate. Leaves alternate, bluntly toothed especially towards the top, and sometimes quite entire. Racemes long. Flowers yellow. Siliques filiform, short, bowed. Native of Spain.

49. Root annual. Plant a finger or a span in length, hoary-pubescent all over. Stem branched at the base. Radical leaves blunt, runcinate; stem-leaves embracing, sagittate, toothed. Racemes very long. Flowers yellow. Siliques linear, half an inch long, erect or a little spreading.—Native of the northern parts of Persia.

50. Root annual. Plant very smooth, glaucous. Leaves sharpish. Flowers small, white. Siliques thick, erect or spreading.—Native of salts in Siberia<sup>x</sup>.

51. Root annual. Stem a finger's length. Leaves linear, smooth, bluntish. Racemes terminating, pubescent, viscid. Flowers biggish, white. Siliques linear. Native of Siberia<sup>y</sup>. It varies, according to Gmelin, with yellow flowers<sup>z</sup>.

52. Root annual. Stem about a foot high, almost upright, flexuose, angular, even, somewhat branched below. Leaves wide-lanceolate or lanceolate-ovate, naked, much pointed, petioled except the upper ones. Racemes terminating and axillary, longer than the leaves. Flowers small, white, with the petals scarcely longer than the calyx. Siliques round, very slightly bowed.—Native of the East Indies<sup>a</sup>.

53. Plant a palm high, sometimes but seldom scarcely a span, branched, erect, hispid all over except the peduncles and filiques. Leaves an inch long, thickish, unequally toothed, veinless, ending in the petiole. Pedicels declining, short. Siliques length of the pedicels, linear, remote. It approaches to Gouan's *Sisymb. Erucasrum*, but differs in the form of the leaves, its hairiness, size, and in having an upright leafy stem<sup>b</sup>.—Native of Egypt.]

#### PROPAGATION AND CULTURE.

1. Water Cress is generally gathered for a spring salad in ditches or other standing or flow-flowing waters; and is also cultivated to supply the London markets. This may be easily done, by taking some of the plants from the places of their natural growth early in the spring, being careful to preserve their roots as entire as possible, and plant them in mud, letting water in upon them by degrees. They will soon flourish, and spread over a large compass; they should not be cut the first season, but suffered to run to seed; for the seeds will fall into the water, and furnish a sufficient supply of plants.

Where the water is so deep that it is not easy to plant it, procure a quantity of plants in July, just as their seeds are ripening, and throw them on the surface of the water, where they are designed to grow: the seeds will ripen, fall to the bottom and take root there without any farther care.

2, 3, 4. The other Water-Rockets may be propagated in the same manner, or by seeds sown on the banks of ditches or streams.

5, &c. Those which grow on dry land may easily be propagated, by sowing the seeds in autumn, or by permitting them to scatter; thinning them, and keeping them clean from weeds. Most of them prefer a dry soil, and some flourish best on walls.

[*SISYMBRIUM*. See *Arabis*, *Brassica*, *Cardamine*, *Erysimum*, *Mentha*.]

*SISYRINCHIUM* (of Pliny. *Σισυρίγχιον* of Theophrastus. From *σῆς* sus, and *ρνυχός* rostrum. Swine's snout. From the form of the flower.

Lin. gen. n. 1017. Reich. n. 1103. Schreb. n. 1101. & nov. act. nat. cur. 3. 344. t. 6. Cavan. diff. 6. 344. t. 190—192. Juss. 57. Bermudiana. Tournef. t. 203. Dill. elth. 41. f. 49, 48. Gärtn. t. 11.

Class. 16. 1. Monadelphia Triandria.  
(olim 20. 2. Gynandria Triandria.)  
Nat. order of *Ensatæ*. *Irides*, Juss.

<sup>x</sup> Willdenow.

<sup>y</sup> Linn. spec.

<sup>z</sup> Reichard.

<sup>a</sup> Linn. mant.

<sup>b</sup> Vahl.

#### GENERIC CHARACTER.

CAL. *Spathe* common ancipital, two-leaved: valves compressed, acuminate. *Proper* several, lanceolate, concave, obtuse, one-flowered.

COR. one-petalled; superior, six-parted: segments obovate with a point, from erect spreading: three outer alternate a little wider.

STAM. *Filaments* three, united into a subtriquetrous tube shorter than the corolla, distinct at the top. *Anthères* bifid below; fastened by the back.

PIST. *Germ* obovate, inferior. *Style* three-sided, length of the tube. *Stigmas* three thickish, awl-shaped at the top, erect.

PER. *Capful* obovate, rounded-three-sided, three-celled; three-valved; with the *partitions* contrary.

SEEDS several, globular.

#### ESSENTIAL CHARACTER.

*Spathe* two-leaved. *Cal.* none. *Pet.* six, almost equal; *Style* one. *Capf.* three-celled, inferior.

#### SPECIES.

[1. *Sisyrinchium elegans*.

Lin. spec. ed. Willd. 3. 577.

*Moræa elegans*. Jacqu. hort. Schoenbr. i. 6. t. 12.

*Scape* round one-flowered simple, leaf radical linear, acuminate shorter, petals oblong acute.

2. *Sisyrinchium collinum*.

Lin. spec. ed. Willd. 3. 578. Cavan. diff. 6. 346.

*Moræa collina*. Thunb. monogr. 11. n. 13. & prodr. 11.

Jacqu. ic. 2. t. 226.

*Scape* round somewhat branched, stem-leaf linear-acuminate shorter, petals oblong acute.

3. *Sisyrinchium grandiflorum*: Great-flowered *Sisyrinchium*.

Lin. spec. ed. Willd. 3. 578. Cavan. diff. 6. 346: t. 192. f. 2.

*Scape* round simple, spathe subtriflorous, petals obovate obtuse, leaves lanceolate plaited.]

4. *Sisyrinchium Bermudiana*. Iris-leaved *Sisyrinchium*.

Lin. spec. 1353. syst. 820. Reich. 4. 42. Willd. 3.

578. hort. cliff. 431. ups. 278. Schreb. in nov.

act. nat. cur. 3. 341. t. 6. b. & tom. 4. 145.

Lamarck encycl. 1. 403. Cavan. diff. 6. 346.

t. 192. f. 1. Pluk. phyt. t. 61. f. 2. Mill.

illustr.

*S. iridioides*. Curt. magaz. t. 94.

*Bermudiana iridis folio*, radice fibrosa. Tournef. inst.

388. Dill. elth. 48. t. 41. f. 48.

*Scape* ancipital branched leafy, spathe subquadriflorous shorter than the flowers, petals mucronate, leaves ensiform.

5. *Sisyrinchium anceps*. Narrow-leaved *Sisyrinchium*.

Lin. spec. ed. Willd. 3. 579. Lamarck encycl. 1.

403. Cavan. diff. 6. 345. t. 190. f. 2. Pluk.

phyt. t. 61. f. 1.

*S. Bermudiana* α. Lin. spec. 1353. Reich. 4. 42.

Gron. virg. 140. Ait. kew. 3. 304. 1.

*S. angustifolium*. Mill. dict. n. 2.

*S. gramineum*. Curt. magaz. 464.

*Bermudiana graminea*, flore minore cæruleo. Dill.

elth. 49. t. 41. f. 49.

*Gladiolus cæruleus hexapetalus caule etiam gladiato*.

Banist. virg. 1926. Raii hist. app. 1928. & suppl.

569. n. 6.

*Scape* ancipital winged simple almost leafless, spathe subquadriflorous unequal longer than the flowers, petals mucronate, leaves ensiform.

[6. *Sisyrinchium micranthum*. Small-flowered *Sisyrinchium*.

Lin. spec. ed. Willd. 3. 579. Cavan. diff. 6. 345.

t. 191. f. 2.

*Scape* ancipital branched leafy, spathe subtriflorous unequal nearly equal to the flowers, petals linear acuminate, leaves grassy channelled.

7. *Sisyrinchium palmifolium*. Palm-leaved *Sisyrinchium*.

Lin. spec. ed. Willd. 3. 579. syst. 820. Reich. 3. 43.

mant. 122.

*Moræa palmifolia*. Thunb. monogr. 8. n. 6.

*Scape* ancipital, flowers in spikes, leaves ensiform nerved and plaited.

8. *Sisyrinchium striatum*.

Lin. spec. ed. Willd. 3. 580. Smith ic. rar. 2.

t. 9.

*S. spi-*



*S. spicatum*. Cavan. ic. 2. 2. t. 104.  
*Moræa fertata*. Jacq. hort. Schoenbr. 1. 6. t. 11.  
*Scape ancipital leafy, flowers in spikes, petals roundish-ovate acute, leaves linear-ensiform.*

9. *Sifyrinchium ixioides*.

Forst. prodr. n. 325.  
*Ferraria ixioides*. Lin. spec. ed. Willd. 3. 582.  
*Moræa ixioides*. Thunb. monogr. 8. n. 7.  
*Scape compressed paniced at top; petals flat, the outer ones smaller by half; leaves ensiform nerved.*

10. *Sifyrinchium narcissoides*.

Cavan. diff. 6. 347. t. 191. f. 3.  
*Galaxia narcissoides*. Lin. spec. ed. Willd. 3. 583.  
*Stem erect round, spathe two-valved subquadriflorous, flowers drooping, leaves linear-ensiform.*

## DESCRIPTIONS, &amp;c.

1. Scape covered with oblong acuminate alternate spathes. There is only one procumbent linear acuminate leaf, twice as long as the scape; and one large terminating flower. Corolla yellow on the outside, marked in the middle of the three outer petals within with a large green spot; petals linear-oblong acute.—Native of the Cape of Good Hope.

2. Very like the preceding, but differs in having the scape much higher and subtriflorous, having one flower upon each branch; the leaf not procumbent but hanging down; the corolla larger and unspotted, red or pale yellow.—Native of the hills near the Cape, where it is very abundant.

3. Root bulbous. Root-leaves as well as those of the scape lanceolate and attenuated to both ends, plaited and striated. Spathe terminating, three-flowered. Corolla an inch and half in diameter, yellow; petals obovate, very blunt.—Native of Peru<sup>c</sup>.]

4. Root fibrous, from which arise some stiff sword-shaped leaves, four or five inches long and half an inch broad, of a dark green colour; from among these comes out the stalk (scape) six inches high; it is compressed, and has two borders or wings running the whole length, and three or four spear-shaped leaves embracing it; these grow erect, and are hollowed like the keel of a boat. The stalk is terminated by a cluster of six or seven flowers, on short peduncles, and inclosed in a two-leaved, keel-shaped sheath, before they open; they are of a deep blue colour with yellow bottoms; when fully expanded they are an inch over.—Native of Bermuda.

[Height from a foot to a foot and half. Leaves like those of the Iris, but smaller. Stem or scape compressed and striated like the leaves, only firmer and somewhat thicker in the middle, and branched a little at the top. Sheath simple or double. Flowers four, five or more, on short peduncles: the three inner petals are somewhat narrower, of a violet purple colour within, with yellow crenate spots at the base, and marked with deeper-purple streaks; the outside is of a pale violet, with greenish-yellow claws: the petals are blunt, ending suddenly in a point, which is shorter than in the next species. The capsules also are less blunt and rounded than in that, the flowers are larger and of a different colour, and the whole plant is bigger<sup>d</sup>.]

5. Root perennial, fibrous, from which arise many very narrow spear-shaped leaves, about three inches long, and scarcely an eighth of an inch broad, of a light-green colour. Stalks about three inches high, very slender, compressed and bordered, having short, narrow, sword-shaped, embracing leaves: they are terminated by two small pale-blue flowers, inclosed in a two-leaved sheath, upon longer peduncles than those of the preceding; flowering about the same time. The leaves, stalks and flowers of the fourth are three times as large as in this, and the sheath incloses six or seven flowers; whereas this has rarely more than two, and these expand only for a short time in the morning, but the others continue open the whole day.

[Mr. Curtis also remarks, that it is far more diminutive than the Bermudiana, with much smaller flowers, of a paler blue colour; a much hardier plant,

<sup>c</sup> Willdenow.<sup>d</sup> Dillenius.

producing abundance of flowering-stems in June and July.

Dillenius remarks, that the petals do not end so bluntly, but more gradually in a longer point; that they have fewer streaks and those only towards the base; and that they are of the same colour both within and without.

Native of Virginia and other parts of North America. Cultivated in 1693, by Mr. Jacob Bobart<sup>e</sup>.

6. This is a small plant, two inches high. Leaves linear-acuminate. Spathe two-valved as long as the flowers or a little shorter. Flowers two or three, very small, with linear, acuminate petals.—Native of Peru.

7. This very much resembles *S. Bermudiana*, but the stem is two feet high. The leaves are twice as wide, folding with five or six nerves. Glumes and flowers numerous in a terminating bundle, scarcely larger than those of Bermudiana. Style trifid beyond the middle. It is very different from *Moræa plicata*, with which it has been confounded.—Native of Brasil<sup>f</sup>.

8. Root tuberous. Stem two feet high, erect, smooth, much branched, many-flowered. Leaves sword-shaped, pointed, entire, slightly ribbed, glaucous, smooth, with a little membranous border: those next the root equitant, stem ones alternate, embracing. Flowers in terminating and lateral heads, a little drooping, very numerous but short-lived, with scarcely any smell, pale yellow streaked with purple, the colours strongest on the outside. Spathes of a single leaf, concave, carinated, acute, ribbed, with a membranous margin, the external one largest, but shorter than the flowers, and enfolding them along with the interior spathes which are much smaller, and one to each flower. Peduncles about the length of the outer spathe, triangular, single-flowered. Petals obovate, obtuse with a little point, at the base slightly connected, and spotted within, somewhat concave, with a spreading border, the three outer a little smaller. Filaments shorter than the corolla, united into a tube for more than half the length, spreading in the upper part, smooth: anthers versatile, small. Germ roundish, smooth, green: style length of the stamens, three-cleft in the upper part: stigmas notched. Capsule roundish, three-lobed; valves carinated at the back.

Sent from Italy by P. Stephens, Esq. to Mr. Forsyth. It thrives and flowers abundantly in the open ground, but its native country we have yet to learn<sup>g</sup>. Willdenow makes it the same with *S. spicatum* of Cavanilles, which is a native of Mexico; but if it comes from so hot a country, it is singular that it should thrive and flower in England in the open ground.

9. Root fibrous. Scape compressed, branched at the top, striated, smooth, erect, two feet high and more. Radical leaves very many, distich, linear, attenuated at the top, striated, smooth, erect, almost the length of the scape, on which a single leaf, or a few, similar. Flowers on the branchlets, terminating, umbelled, small, white, about three or four. Spathes lanceolate, shorter than the peduncles; which are capillary and an inch long<sup>h</sup>.

Native of New Zealand<sup>i</sup>. Thunberg has made it a *Moræa*, and Willdenow, a *Ferraria*. The former of these differs in having the stamens separate; the latter in having the style divided at the top into six parts. Mr. Salisbury unites the three genera into one. And, as Dr. Smith observes, in an order so natural as this, it is very difficult to find generic characters that shall be stable, and not set aside by new species.

10. This has the habit of a *Narcissus*, with the flower of a *Galaxia*, to which genus Willdenow has removed it from this in which it was placed by Cavanilles. It differs only in having a two-valved spathe; and has nothing in common with the genus *Sifyrinchium*, except the spathe and cohering stamens<sup>k</sup>. The corolla is white, but there is a fine variety, with the flowers streaked longitudinally within and without with deep purple.—Native of the straits of Magellan<sup>l</sup>.]

<sup>e</sup> Hort. kew.<sup>f</sup> Willdenow.<sup>g</sup> Smith.<sup>h</sup> Willdenow from Thunberg.<sup>i</sup> Forster.<sup>k</sup> Willdenow.<sup>l</sup> Cavanilles.



## PROPAGATION AND CULTURE.

4. 5. These plants are propagated by seeds and also by parting of their roots; if they are raised from seeds, these should be sown in autumn soon after they are ripe, upon an east aspected border, where they may have only the morning sun: the best way will be to sow them in drills at three or four inches distance, covering them about half an inch with light earth. In the spring the plants will appear, when their leaves will have much resemblance to Grass, therefore care should be taken that they are not pulled up as weeds by those who clean the ground. During the first summer they will require no other care but to keep them clean from weeds, unless the plants should come up so close as not to have room to grow, in which case, part of them should be drawn out to give room to the others, and these may be planted in a shady border at three inches distance, where they may remain till autumn, when they should be transplanted to the places where they are to remain, and the following summer they will flower. These plants love a shady situation and a soft, loamy, undunged soil.

The time for transplanting and slipping off the old roots is early in autumn, that they may get good roots before winter. The fifth is so hardy as to thrive in the open air in England, and is very rarely injured by cold.

[The Bermudiana (n. 4.) is a tender plant, and requires the protection of a green-house or glass-case. The anceps (n. 5.) is a hardy perennial, adapted to the open border, in which it will grow readily<sup>m</sup>.

The first and second species must be kept in the dry stove, and the rest in the bark-bed. They may all be increased by the root.

SISYRINCHIUM. See *Amaryllis*, *Ferraria*, *Galaxia*, *Gla-diolus*, *Iris*, *Ixia*, *Moræa*, *Tulipa*, *Wachendorfia*.

SITODIUM. See *Artocarpus*.

SITS f. SITS-DSJU. See *Rhus vernix*.]

SIUM (of Pliny: οτι σειεται, from its being shaken by the stream in which it grows.)

Lin. gen. n. 348. Reich. n. 378. Schreb. n. 480.

Tournef. t. 162. Juss. 222. Gärtn. t. 23.

Sisfarum. Tournef. t. 163.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbelliferae.

## GENERIC CHARACTER.

CAL. Umbel universal various in different species: partial spreading, flat.

Involucre universal many-leaved, reflex, shorter than the umbel, with lanceolate leaflets: partial many-leaved, linear, small.

Perianth proper scarcely observable.

COR. universal uniform: floscules all fertile.

Proper of five inflex-cordate, equal petals.

STAM. Filaments five simple. Anthers simple.

PIST. Germ very small, inferior. Styles two reflex.

Stigmas obtuse.

PER. none. Fruit subovate, striated, small, bipartile.

SEEDS two subovate, convex and striated on one side, flat on the other.

## ESSENTIAL CHARACTER.

Involucre many-leaved. Petals cordate. Fruit subovate, striated.

## SPECIES.

[1. *Sium filifolium*. Thread-leaved Water Parsnep.

Lin. spec. ed. Willd. 1. 1431. Thunb. prodr. 50.

*Conium tenuifolium*. Vahl symb. 3. 49.

Leaves filiform, involucre elongated.]

2. *Sium latifolium*. Broad-leaved Water Parsnep.

Lin. spec. 361. syst. 284. Reich. 1. 693. Willd.

1. 1431. hort. cliff. 98. fl. suec. n. 247. Hudf.

angl. 118. Wither. arr. ed. 3. 298. Smith brit.

312. engl. bot. t. 204. Relb. cant. ed. 2. n. 254.

Sibth. oxon. n. 294. Abbot bedf. n. 210. Fl. dan.

t. 246. Hall. helv. n. 777. Hoffm. germ. 100.

Pollich pal. n. 286. Krock. filef. n. 435. Jacqu.

austr. t. 66. Villars dauph. 2. 597. Allion. pedem.

n. 1367. Gmel. fib. 1. 200. Plenck, ic. 190.

Willich illustr. n. 39. Bauh. pin. 154.

■ Curtis.

*S. medium*. Bauh. hist. 3. 173.—item maximum latifolium, ejusd. ib. 175. 1.

*S. majus latifolium*. Ger. 200. 1. emac. 256. 1. Raii hist. 443.

*S. Dioscoridis* f. *Pastinaca aquatica major*. Park. theat. 1240. 1.

*S. latifolium foliis variis*. Merr. pin. Raii syn. 211.

*Sium*. Dod. cereal. 248. pempt. 589. Riv. pent.

*S. aquaticum majus erectum latifolium*. Mor. hist. f. 9. t. 5. f. 1. ord. 2.

*Coriandrum latifolium*. Crantz austr. 212. Roth. germ. 1. 133. 2. 349.

Leaves pinnate, leaflets oblong-lanceolate equally serrate.

3. *Sium angustifolium*. Narrow-leaved Water Parsnep.

Lin. spec. 1672. syst. 284. Reich. 1. 693. Willd.

1. 1431. Hudf. angl. 119. Wither. arr. ed. 3.

299. Smith brit. 313. engl. bot. t. 139. Lightf.

scot. 160. Relb. cant. ed. 2. n. 255. Sibth. oxon.

n. 295. Abbot bedf. n. 211. Hoffm. germ. 100.

Roth. germ. 1. 127. 2. 333. Pollich pal. n. 287.

Leers herb. n. 202. Krock. filef. n. 436. Jacqu.

austr. t. 67. Villars dauph. 2. 597. Allion. pedem.

n. 1368. Hall. helv. n. 778. Plenck, ic. 191.

Retz. obs. 1. 14. n. 29.

*S. nodiflorum*. Fl. dan. t. 247. Weig. obs. 27. Willich

illustr. 31. Krock. filef. n. 437.

*S. erectum*. Hudf. angl. ed. 1. 103.

*S. Berula*. Gouan monsp. 218.

*S. minus*. Riv. pent. t. 79.—alterum. Park. theat.

1241. 2.

*S. majus angustifolium*. Ger. emac. 256.

*S. f. Apium palustre foliis oblongis*. Bauh. pin. 154.

Raii syn. 211.

*S. umbelliferum*. Bauh. hist. 3. 172.

*S. erectum umbellatum* f. *Pastinaca aquatica*. Lob.

Raii hist. 444.

*S. aquaticum humilium foliis profunde ferratis*. Mor.

hist. f. 9. t. 5. f. 2. ord. 2.

Leaves pinnate, leaflets unequally lobed and serrate, umbels peduncled opposite to the leaves, stem erect.

4. *Sium nodiflorum*. Procumbent Water Parsnep.

Lin. spec. 361. Reich. 1. 694. Willd. 1. 1432.

hort. cliff. 98. fl. suec. n. 248. Hudf. angl. 119.

Wither. arr. ed. 3. 299. Smith brit. 313. engl.

bot. t. 699. Lightf. scot. 161. Relb. cant. ed. 2.

n. 256. Sibth. oxon. n. 296. Abbot bedf. n. 212.

Woodv. med. bot. 494. t. 182. Hoffm. germ. 100.

Roth. germ. 1. 127. 2. 334. Pollich pal. n. 288.

Sauv. monsp. 231. Villars dauph. 2. 598. Allion.

pedem. n. 1369. Weig. obs. 26. Retz. obs. 1.

14. n. 30.

*S. umbellatum repens*. Ger. emac. 256. 258. Raii

hist. 444. syn. 211. Petiv. brit. t. 26. f. 3.

*S. aquaticum repens & procumbens ad alas floridum*.

Mor. hist. f. 9. t. 5. f. 3.

Leaves pinnate, leaflets ovate equally serrate, umbels sessile opposite to the leaves, stem procumbent.

[5. *Sium repens*. Creeping Water Parsnep.

Lin. syst. 284. Willd. 1432. suppl. 181. Wither.

arr. ed. 3. 300. Smith brit. 314. Relb. cant.

ed. 2. n. 257. Sibth. oxon. n. 297. Abbot

bedf. n. 213. Jacqu. austr. t. 260. Host. syn.

158.

Leaves pinnate, leaflets roundish tooth-gashed, umbels peduncled opposite to the leaves, stem creeping.]

6. *Sium verticillatum*. Whorled Water Parsnep.

Smith brit. 314. Roth. germ. 2. 336.

*Sifon verticillatum*. Lin. spec. 363. Reich. 1. 697.

Willd. 1437. Hudf. angl. 120. Wither. arr. ed. 3.

301. Lightf. scot. 1096. t. 35. Engl. bot. t. 395.

Mill. dict. n. 4. Hoffm. germ. 101. Villars dauph.

2. 607.

*Daucus pratensis*. Dalech. hist. 718. Park. theat. 900.

n. 13. Raii hist. 459.—millefolii palustris folio.

Bauh. pin. 150.

*Oenanthe millefolii palustris folio*. Mor. umb. t. 6. f. 3.

hist. 3. 289. f. 9. t. 7. f. 10.

*Carui foliis tenuissimis, Asphodeli radice*. Tournef.

inst. 306.

Leaflets multifid-capillary in whorls.



7. *Sium Sifarum*. *Skirret*.  
*Lin. spec.* 361. *Reich.* 1. 694. *Willd.* 1433.  
*hort. cliff.* 98. *upf.* 62. *Lour. cochinch.* 179. *ed.*  
*Willd.* 223. *Plenck, ic.* 188.  
*Sifarum*. *Dod. pempt.* 681. *Ger.* 871. *emac.* 1026.  
*Raii hist.* 442.—*germanorum*. *Baub. pin.* 155.  
*Sifer vulgare*. *Park. theat.* 945. 1. *Parad. t.* 507.  
*f.* 1.  
 β. *Sium Ninsi*. *Lin. spec.* 361. *Reich.* 1. 694. *mat.*  
*med.* 117. 81. *Burm. ind. t.* 29. *f.* 1. *Thunb.*  
*jap.* 118. *Blackw. t.* 514. *Dryand. in act. Lin.*  
*roc.* 2. 228.  
*Sifarum montanum coræense*, radice non tuberosa.  
*Kæmpf. amoen.* 817. *t.* 818.  
*Leaves pinnate, floral leaves ternate.*  
 [8. *Sium rigidius*. *Virginian Water Parsnep*.  
*Lin. spec.* 362. *Reich.* 1. 694. *Willd.* 1. 1433.  
*Gron. virg.* 32. (*Pimpinella*.)  
*Oenanthe maxima virginiana*, pæoniæ feminæ foliis.  
*Mor. hist.* 3. 288. *f.* 11. *t.* 7. *f.* 1.  
*Leaves pinnate, leaflets lanceolate almost quite entire.*  
 9. *Sium japonicum*. *Japonefe Water Parsnep*.  
*Lin. syst.* 284. *Willd.* 1. 1433. *Thunb. jap.* 118.  
*Leaves pinnate, leaflets gashed, umbels terminating.]*  
 10. *Sium Falcaria*. *Decurrent Water Parsnep*.  
*Lin. spec.* 362. *syst.* 284. *Reich.* 1. 694. *Willd.*  
 1. 1434. *hort. cliff.* 98. *Gært. fruct.* 1. 104.  
*Hoffm. germ.* 100. *Roth. germ.* 1. 127. 2. 335.  
*Pollich pal. n.* 289. *Krock. files. n.* 438. *Jacqu.*  
*austr.* 3. 32. *t.* 257. *Hall. helv. n.* 782. *Sauv.*  
*monsp.* 232. *Villars dauph.* 2. 598. *Allion.*  
*pedem. n.* 1370. *Gmel. fib.* 1. 201. *Desfont.*  
*atlant.* 255.  
*Sefeli Falcaria*. *Crantz austr.* 208. *Scop. carn. n.* 354.  
*Falcaria*. *Riv. pent. t.* 47.  
*Eryngium arvense foliis ferratis*. *Baub. pin.* 386.  
*E. quartum*. *Dod. pempt.* 732.  
*Ammi perenne*. *Tournef. inst.* 305.—*repens*. *Mor.*  
*hist.* 3. 294. *f.* 9. *t.* 8. *f.* 1.  
*Crithmum umbelliferum*. *Baub. hist.* 3. 195.  
*Leaflets linear decurrent connate.*  
 [11. *Sium grandiflorum*. *Great-flowered Water Parsnep*.  
*Lin. spec. ed. Willd.* 1. 1434. *Thunb. prodr.* 50.  
*Leaves bipinnate, leaflets roundish gash-toothed.*  
 12. *Sium paniculatum*. *Panicled Water Parsnep*.  
*Lin. spec. ed. Willd.* 1. 1434. *Thunb. prodr.* 51.  
*Leaves bipinnate, leaflets linear gash-pinnatifid.*  
 13. *Sium patulum*. *Spreading Water Parsnep*.  
*Lin. spec. ed. Willd.* 1. 1434. *Thunb. prodr.* 51.  
*Leaves bipinnate, leaflets trifid, branches diffused.*  
 14. *Sium græcum*. *Grecian Water Parsnep*.  
*Lin. spec.* 362. *Reich.* 1. 695. *Willd.* 1. 1434.  
*hort. cliff.* 98. *Lour. cochinch.* 179. *ed. Willd.*  
 223.  
*Ligusticum græcum folio apii*. *Tournef. cor.* 23.  
*Leaves bipinnate, leaflets lanceolate serrate, the upper-*  
*most confluent.*  
 15. *Sium decumbens*. *Prostrate Water Parsnep*.  
*Lin. syst.* 285. *Willd.* 1. 1435. *Thunb. jap.* 118.  
*Leaves bipinnate, leaflets trifid, stem decumbent.]*  
 16. *Sium ficulum*. *Sicilian Water Parsnep*.  
*Lin. spec.* 362. *syst.* 284. *Reich.* 1. 695. *Willd.*  
 1. 1435. *Jacqu. hort.* 2. *t.* 133. *Desfont. atlant.*  
 256.  
*Myrrhis foliis pastinacæ læte virentibus*. *Tournef. cor.*  
 22.  
*Daucus pastinacæ folio ficulus*. *Zan. hist.* 78. *t.* 30.  
*Radical leaves ternate, stem-leaves bipinnate.*  
 [17. *Sium asperum*. *Rough Water Parsnep*.  
*Lin. spec. ed. Willd.* 1. 1435. *Thunb. prodr.* 51.  
*Leaves tripinnate, peduncles and pedicels rugged.*  
 18. *Sium hispidum*. *Shaggy Water Parsnep*.  
*Lin. spec. ed. Willd.* 1435. *Thunb. prodr.* 51.  
*Leaves tripinnate, petioles and peduncles rugged.*  
 19. *Sium villosum*. *Villose-leaved Water Parsnep*.  
*Lin. spec. ed. Willd.* 1. 1435. *Thunb. prodr.* 51.  
*Leaves tripinnatifid, segments ovate gash-serrate villose.*

## DESCRIPTIONS, &amp;c.

1. Stem herbaceous, erect, a foot high, scarcely branched, slender, round, smooth, slightly streaked. Leaves all simple, very narrow, a little wider and

somewhat sheathing at the base, very smooth; the lower ones four inches long or a little more; stem-leaves remote. Peduncles lateral and terminating, few, remote. Involucre five-leaved: leaflets awl-shaped, stiffish, shorter than the umbel. Involucres length of the umbellet. Umbel small, five-rayed. Umbellets eight or ten-flowered. Seeds oblong, streaked, small, smooth. Styles permanent, divaricating.—Native of the Cape of Good Hope<sup>a</sup>.

2. Broad-leaved Water-Parsnep is one of the largest among the umbelliferous tribe. Its perennial root, creeping among mud and gravel, throws up round, hollow, upright, smooth, deeply furrowed stems, four, five, and sometimes even six feet in height; clothed with alternate leaves, composed of seven, or sometimes nine, opposite, sessile, ovate or lanceolate, veined, smooth leaflets, varying much in breadth, but always very equally and neatly serrate; in which respect they differ materially from *S. angustifolium*, as well as in being much longer. Mr. Hudson well remarks, that such as grow under water are often lacinated. Umbels solitary, terminating and lateral, erect, large, flat-tish, many-flowered. Involucre of many, lanceolate, unequal leaflets, sometimes lobed and often serrate. Involucres ovate, short. Petals acuminate, inflex-cordate, white, uniform, but a little unequal in size. Fruit small, striated.

It is a plant of an acrid poisonous quality, particularly the roots<sup>b</sup>.

Native of many parts of Europe, and of Siberia. It is not of rare occurrence in rivers and fens throughout England. Mr. Doody observed it in the ditches between Rotherhithe and Deptford. Northfleet in Kent. In Cambridgeshire, the Isle of Ely, and Norfolk, not uncommon. Bedfordshire. Oxfordshire. Moors near Pitchcroft, Worcester. Pool in Nottingham-park. In all the ditches near a pool of water called Brayford, near Lincoln, &c. In the Stour, Froome and Piddle, Dorsetshire. First observed in England in *Phyt. brit.* It flowers in July and August.

3. Root perennial, creeping, so as to occupy much space. It is smaller and weaker than the preceding. Stem upright, with whorls of radical fibres in its lower part under water, round, striated, smooth, much branched above, leafy. Leaves alternate, simply pinnate: leaflets numerous, sessile, the lowermost pair remote from the rest, and smaller, at least in the lower leaves, in which also the leaflets are obliquely heart-shaped at the base; otherwise they are lanceolate, often so deeply lobed as to become hastate, pointed, very irregularly and sharply serrate, and very smooth: the end one commonly trifid. Umbels solitary, opposite to each leaf, peduncled, erect, hemispherical, peduncles divaricated, somewhat shorter than the adjoining leaf. General involucre of many drooping leaves, which are occasionally entire, serrate or pinnatifid; the partial ones ovate and more entire. Calyx of five minute teeth, scarcely visible. Petals white, uniform and almost equal. Fruit small, smooth, slightly ribbed, ovate<sup>c</sup>.

Dr. Withering remarks, that this and the *latifolium* are readily distinguishable by the specific characters, but that the trivial names of *broad* and *narrow* leaved are ill appropriated because tending to mislead, for neither the leaves nor leaflets of the latter are narrower than those of the former, and if there is a difference it is generally the reverse of what the trivial names would lead us to expect.

It was originally considered by Linneus as a variety of the *latifolium*, and was first established as a distinct species by Mr. Hudson<sup>d</sup>. It was however considered as distinct by Miller, Ray, Rivinus, Morison, and the old botanists in general.

Native of most parts of Europe. Frequently found in Britain, in ditches and rivulets; in Cambridgeshire, Norfolk, Bedfordshire, Oxfordshire; Dorsetshire in the Stour; Kingston Pool, near Stafford; King's Park, meadows and ditches near Edinburgh. It flowers in July and August.

<sup>a</sup> Vahl.<sup>b</sup> Smith brit. & engl. bot.<sup>c</sup> Idem.<sup>d</sup> Engl. bot.



Doody considered it as a specific in scrophula, especially the expressed juice<sup>\*</sup>: and Dr. Withering observes, that it certainly possesses active properties which ought to be inquired into.

4. Root perennial, creeping. Stems procumbent or floating, often creeping, various in length, branched, round, hollow, slightly striated, smooth, leafy. Leaves unequally pinnate: leaflets from five to nine, sessile, ovate, all neatly and equally serrate; the odd one largest, and sometimes united with the neighbouring pair. Umbels lateral, each singly opposite to a leaf, nearly sessile, composed of from five to seven divaricated rays. Umbellets bearing twelve flowers or more. General involucre one-leaved; often entirely wanting: partial, of several ovate concave leaflets, as long as the pedicels. Flowers small, greenish white, with slight traces of a calyx. Fruit ovate<sup>†</sup>.

Native of many parts of Europe. Common in Britain, in ditches and rivulets; flowering in July and August.

This plant is not admitted into the Materia Medica of any Pharmacopœia, except that of London, where it is received in the character of an antiscorbutic, or rather as a corrector of acrid humours, especially when manifested by cutaneous eruptions and tumours in the lymphatic system. The best proofs of its efficacy are from Dr. Withering.—A young lady, six years old, was cured of an obstinate cutaneous disease, by taking three large spoonfuls of the juice twice a day: and I have repeatedly given to adults, says the doctor, three or four ounces every morning, in similar complaints, with the greatest advantage. It is not nauseous, and children take it readily if mixed with milk. In the dose I have given it, it neither affects the head, the stomach, nor the bowels<sup>‡</sup>.

This plant therefore, if it should be eaten for Water Cress, does not seem to be very dangerous, or to require all that caution which Mr. Miller prescribes. For the difference between them see the article *Sisymbrium Nasturtium*; and the 13th and 21st plates to the letters on the Elements of Botany.

5. Stems prostrate, creeping, round, striated, leafy. Leaves unequally pinnate: leaflets roundish, sometimes wedge-shaped, tooth-gashed and variously lobed, veined; the end one three-parted. Umbels opposite to a leaf, peduncled. Umbellets few, divaricating, many-flowered. Involucres and involucrets many-leaved, ovate, nerved, bent down. Calyx indistinct. Fruit roundish, compressed<sup>§</sup>.

According to Host, the leaflets are opposite, sessile, ovate-roundish, unequally serrate, the end one, for the most part, more or less three-lobed. Involucres and involucrets six-leaved or nearly so. Willdenow remarks, that this plant resembles *Sison imundatum*, but that the leaves are wider, blunter and uniform; and that the umbels are four-rayed, with a general involucre.

Native of Bohemia in wet meadows, and of Austria on the banks of the Danube. In England, it has been found in Cambridgeshire, on Coldham common near Cambridge, by Mr. Relhan; on Bullington-green, and Cowley-bottom, near Oxford, by Dr. Sibthorp; on Goldington-green, and Stevington-bogs, in Bedfordshire, by Dr. Abbot; in wet places in the south of Scotland by Mr. Dickson; and at Fiskerrow, five miles from Edinburgh, and in abundance on the moist parts of Guillon Links, East Lothian, by Dr. Hope. It flowers from June to August.

6. Root perennial, consisting of several oblong tubers, tapering to a point. Stem from twelve to eighteen inches high, erect, round, striated, smooth, little branched and almost naked. Leaves mostly radical and very remarkable, consisting of a simple rib, along which are arranged pairs of deeply cloven leaflets, the numerous segments of which are linear, acute, extremely narrow, pointing in all directions so as to form whorls, and that as truly as the flowers do in the Mints and other whorled plants properly so called; for those grow only on two sides of the stem, though

they seem to embrace it all round. Umbels terminating, erect, of eight or ten rays, with a general involucre of five or six ovate, deflected, short leaflets. Partial umbels more dense, and nearly flat, with similar involucre of more numerous leaflets. Calyx indistinct. Petals white, inflex-cordate, uniform and nearly equal. Fruit ovate-roundish, slightly compressed, deeply furrowed, crowned with the short recurved styles. Seeds slightly, but not pleasantly aromatic<sup>\*</sup>.

On account of its many-rayed umbels, many-leaved involucre and involucrets, and cordate petals, Dr. Smith has removed this plant from the genus *Sison* to this of *Sium*, to which it seems more properly to belong.

Native of Germany, France, the Pyrenees, and Britain, in moist meadows in the western parts of Scotland and Wales; in the latter, as far as I know, it was first observed to grow abundantly about St. David's, by the late Canon Holcombe; or in Glamorganshire, by the late Rev. Sir John Cullum, Bart. and by Mr. Pennant in almost every moist meadow in Caermarthenshire and Pembrokeshire abundantly. In Scotland it was first found by Dr. Houstoun in moist meadows about Greenock plentifully: and since, in many like places it has occurred in Nithsdale and Galloway, and also in Annandale, particularly in the meadow between the farm-house of Stank in Ruthwell, and the bathing-place on the shore, by Dr. Burges. It has also of late been discovered in the Isle of Man, by the Rev. Mr. Davies, of Beaumaris in Anglesey<sup>†</sup>. In my herbarium there is a specimen sent by Houstoun, and in the paper that accompanies it he says, that it grows plentifully near Greenock, and a village about two miles thence called Gourack; he remarks, that it has roots of two sorts, the one bulbs like those of *Asphodelus* or *Oenanthe*, the others fibrous and creeping, somewhat like those of the common Dog-grass.]

7. The root of the common Skirret is composed of several fleshy tubers as large as a man's little finger, and joining together in one head. The lower leaves are pinnate, having two or three pairs of oblong leaflets terminated by an odd one. The stalk rises a foot high, and is terminated by an umbel of white flowers, which appear in July, and are succeeded by striated seeds like those of Parsley, which ripen in autumn.

[Our English name *Skirret* seems to be a corruption from the old name *Skirwort*. *Skir* may be corrupted from the barbarous Latin *Chervillum*, the Spanish *Cherimia*, or the French *Cherui*.

β. *Sium Nissi* of Linneus and Thunberg is the same plant, or at most a variety of our Skirrets. Linneus took it up from Kämpfer's figure, which certainly represents *Sium Sisarum*. It is probable that the Japanese, being imposed upon by the Chinese, have taken this for the plant which furnished the Gingseng: but we are now certain, from the figure drawn by Father Jartoux, on the spot where this famous root is collected, that it is the root of *Panax quinquefolium*. See his figure in vol. 10. of *Lettres edifiantes*, copied in *Philos. trans.* vol. 28. t. 5. and in *Description de la Chine par du Halde*, fol. edit. vol. 2. p. 154<sup>‡</sup>. See also *Panax quinquefolia* in this Dictionary.

Loureiro describes the stem as three feet high, almost upright, round, striated, almost simple. Upper leaves ternate, serrate-gashed, smooth. Flowers white; general and partial umbels many-leaved, entire. Seeds ovate, striated.—Native of China and CochinChina, in watery places.

It appears from Gerarde's herbal that it was cultivated here in 1597<sup>§</sup>.] Formerly the roots were more used than they are at present; being esteemed wholesome and nutritive, but flatulent: their sweet taste is disagreeable to many palates. [They were eaten boiled, and stewed with butter, pepper and salt; or rolled in flour and fried; or else cold with oil and vinegar, being first boiled<sup>¶</sup>.

8. Stem stiffish. Leaves unequally pinnate, with

\* Smith brit. & engl. bot.

† Lightfoot.

‡ Dryand, in Linn. trans.

§ Hort. kew.

¶ Parkinson.

\* Ray syn.

† Smith brit. & engl. bot.

‡ Woodville.

§ Smith ex Linn. fil.



five or six pairs of leaflets; which are lanceolate, stiffish, and have a few teeth towards the top. Petioles channelled. Flowers small.

Native of Virginia<sup>a</sup>. Introduced in 1774, by Mr. William Young. It flowers in July and August<sup>d</sup>.

9. Stem erect, flexuose, branched at top. Leaves pinnate, smooth; the lowest largest: pinnae of different shapes, oblong, ovate, entire, gashed, spreading: upper ones very small, with lanceolate entire leaflets. Umbels terminating the branches.

Native of Japan, in the island Nipon, flowering in June<sup>e</sup>.]

10. Roots creeping, and spreading very far under ground, thick, fleshy, and tasting like those of Eryngo. The leaves are divided into linear segments, and their base embraces the stalks, which rise two feet high, and are terminated by large flat umbels of white flowers; these appear in July, but the seeds do not often ripen here.

[General involucre eight-leaved bent back; leaflets linear, entire: partial, seven or eight-leaved. General umbel of fifteen; partial of about sixteen rays<sup>f</sup>. Fruit small, ovate-oblong, striated, crowned with the permanent calyx, and within that by a tubercle bearing the style and fenced round with small scales. Seeds semicylindrical, scored on one side with five rounded furrows; marked in the middle with a capillary streak, approximating pale; on the other side flat: the interstices between the grooves deepish, narrow, ash-coloured.

S. Sifarum (n. 7.) has an elliptic fruit, with the stylerous tubercle, but no vestige of the calyx. Seeds five-cornered, acuminate at both ends, commonly curved in when ripe: ribs five, very narrow, linear, distant, straw-coloured or yellowish; the interstices between them wide, flattish, ferruginous or brown<sup>g</sup>.

S. Falcaria is a native of many parts of Europe; also of Asia and Africa.—Cultivated by Mr. Miller in 1759. It flowers in July and August<sup>h</sup>.

11. 12. 13. Natives of the Cape of Good Hope, where they were found by Thunberg<sup>i</sup>.

14. Flowers yellow. Native of Greece. Loureiro has a species under this name, but that is more probably the same with *S. decumbens* of Thunberg, for *S. græcum* of Tournefort and Linneus has an erect jointed stem, and yellow flowers, whereas Loureiro describes his plant as having the branches procumbent and sometimes even creeping, and the flowers white, without any general involucre, and the partial only one-leaved<sup>k</sup>.

15. Stem decumbent, dwarfish. Leaves radical, on long petioles, smooth, bipinnate: leaflets trifid. Umbel terminating, almost simple. Seeds ovate, obtuse with the styles permanent, striated, smooth.

Native of Japan, on the island of Nipon, near Jedu and Fakona<sup>l</sup>.]

16. Lower leaves pretty broad, and of a lucid green. Stem two feet high, terminated, in July, by an umbel of yellow flowers.

[It is a very smooth plant, with an upright stem, branched at the base and slightly striated. Umbel flat, with unequal rays. Involucres many-leaved, with linear-filiform acute leaflets. Seed elongated, smooth, striated, semicylindrical<sup>m</sup>.

Native of Sicily and the hills near Algiers. Cultivated by Mr. Miller.

17. 18. 19. Natives of the Cape of Good Hope, where they were found by Thunberg<sup>n</sup>.

#### PROPAGATION AND CULTURE.

2—6. Being marsh or water plants, if cultivated in gardens, must be placed in tubs filled with water, having earth in the bottom, or by the sides of canals or ponds.]

7. This plant is cultivated two ways, first by seeds, and afterward by slips from the root: the former method I think the more eligible, because the roots which are raised from seeds, generally grow larger than

those raised by slips, and are less subject to be sticky. The seeds should be sown the latter end of March or the beginning of April, either in broad cast or in drills; the ground should be light and moist, for in dry land the roots are generally small, unless the season proves very moist. If the seeds are good, the plants will appear in five or six weeks after they are sown, and, when they have put out their leaves so as to be well distinguished from the weeds, the ground should be hoed over to destroy the weeds in the same manner as is practised for Carrots; and where the seeds are sown in broad cast, the plants should be cut up, leaving them at the same distance as Carrots. Those sown in the drills should be also thinned to the distance of four inches, and the ground hoed over to destroy the weeds. This should be repeated three times, as is usually done for Carrots, and if well performed in dry weather, will keep the ground sufficiently clean unless much rain should fall about midsummer, for the leaves will spread and cover the ground. In autumn, when the leaves begin to decay, the roots will be fit for use, and will continue till they begin to shoot in the spring, when they will become sticky, as do those which run up to seed the first summer.

To propagate this plant by offsets, dig up the old roots in the spring, before they begin to shoot, and slip off the side shoots, preserving an eye or bud to each: plant them in rows one foot asunder and four inches distant in the rows.

10. The least part of the roots will grow, so that it will soon multiply of itself.

16. Sow the seeds soon after they are ripe.

[SIUM. See *Cardamine*, *Cicuta*, *Sison*, *Thapsia*.

SKIMMI. See *Illicium*.

SKIMMIA. (*A Japanese vernacular name from Kämpfer.*)

Lin. gen. Schreb. n. 200. Thunb. fl. jap. 4. nov.

gen. 57. Juss. 425.

Class. 4. 1. Tetrandria Monogynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, very small, permanent, almost four-parted to the base: segments ovate, acute.

COR. Petals four, ovate, concave, minute.

STAM. Filaments four, very short.

PIST. Germ superior. Style single.

PER. Berry ovate, umbilicate, indistinctly grooved, smooth, farinaceous-pulpy within, four-valved.

SEEDS four, subtrigonal, or externally convex, oblong, white.

Obs. Perianth seldom five-parted.

#### ESSENTIAL CHARACTER.

Cal. four-parted. Pet. four, concave. Berry four-seeded.

#### SPECIES.

1. Skimmia japonica.

Lin. syst. 157. Willd. 1. 671. Thunb. jap. 62.

Kämpf. amoen. 5. 779. ic. select. t. 5.

#### DESCRIPTION, &c.

Stem shrubby, erect, smooth. Branches alternate, four-cornered. Leaves at the ends of the branches, alternate, frequent, oblong, waved, entire, obscurely crenate towards the top, erect, the margin bent back, a finger's length, above green and wrinkled, beneath pale and dotted, evergreen with an aromatic taste. Petioles semicylindrical, thickish, short. Flowers terminating, in panicles. Peduncles round, thickening, short.

Native of Japan, near Nagasaki and elsewhere. The fruit is ripe in December<sup>o</sup>.

SKINNERA. See *Fuchsia*.

SKULL-CAP. See *Scutellaria*.

SLIPPER, LADY'S. See *Cypripedium*.

SLIPPERWORT. See *Calceolaria*.

SLOANA. See *Sloanea*.

SLOANEA. (*So named by Plumier, in memory of Sir Hans Sloane, Bart. Physician to the King, and President of the Royal Society; author of the Natural History of Jamaica, &c.*)

Lin. gen. n. 655. Reich. n. 711. Schreb. n. 888.

Aubl. guian. 533. t. 212. Swartz prodr. 82.

Juss. 291. Sloana. Plum. 15.

<sup>o</sup> Thunb. jap.

<sup>a</sup> Linn. spec.

<sup>f</sup> Pollich.

<sup>i</sup> Thunb. prodr.

<sup>m</sup> Desfontaines.

<sup>d</sup> Hort. kew.

<sup>g</sup> Gærtner.

<sup>k</sup> Willdenow.

<sup>n</sup> Thunb. prodr.

<sup>e</sup> Thunberg.

<sup>h</sup> Hort. kew.

<sup>l</sup> Thunb. jap.



## S L O

Class. 13. 1. Polyandria Monogynia.  
Nat. order of *Amentaceæ*. *Tiliaceæ*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted: *segments* ovate, a little unequal.

COR. none.

STAM. *Filaments* numerous (above 100) very short, inserted into a villose receptacle. *Anthems* oblong, growing to the side of the filaments.

PIST. *Germ* oblong, angular. *Style* simple. *Stigma* five-cleft, acute,

PER. *Capsule* large, roundish, echinate with deciduous prickles, five-celled, five-valved: *partitions* opposite to the valves.

SEEDS solitary or in pairs, oblong, involved in a berried aril.

OBS. *The number of parts varies from three to six.*  
*Aubl. Sw.*

## ESSENTIAL CHARACTER.

Cal. one-leaved, from five to nine-cleft. Cor. none.

*Anthems* growing to the filaments below the top.

*Caps.* echinate, from three to six-celled, from three to six-valved. *Seeds* two in a berried aril.

## SPECIES.

1. *Sloanea dentata*.

*Lin. spec.* 730. *Willd.* 2. 1155. *Swartz prodr.* 82. *obs.* 213.

*S. Plumierii.* *Aubl. guian.* 1. 536.]

*S. amplis castaneæ foliis, fructu echinato.* *Plum. gen.* 49. *ic.* 244.

*Castanea Sloanea.* *Mill. dict. n.* 3.

*Leaves ovate, stipules cordate-triangular serrate.*

[2. *Sloanea Massoni*.

*Lin. spec. ed. Willd.* 2. 1115. *Swartz prodr.* 82. *descr.* 938.

*Leaves cordate-elliptic, stipules linear, calyx five-parted, bristles of the capsule very long.*

3. *Sloanea finemariensis*.

*Lin. spec. ed. Willd.* 2. 1155. *Swartz prodr.* 82. *Aubl. guian.* 534. *t.* 212.

*S. Aubletii.* *Swartz descr.* 940.

*Leaves roundish-ovate quite entire, capsules ovate bristly opening from the top.*

## DESCRIPTIONS, &amp;c.

1. The trunk of this tree rises to forty or fifty feet, and is two feet in diameter. The leaves are large like those of the Chestnut. The flowers also are very large, indented at the edge, oval and ending in a point, on a long pedicel, having two stipules deeply toothed, at the base. They grow in bunches from the axils<sup>a</sup>.

Native of South America:] according to Mr. Miller, of South Carolina, whence he says the fruit with the outer covers were sent to John Duke of Bedford, they were round and as large as a tennis-ball, armed all over with strong spines, and divided regularly into four cells, each containing one small Chestnut. He thinks that Plumier must have found this tree in Louisiana, the heat of the West India islands being too great for it. [If the *Sloanea dentata* be the same with the *Castanea Sloanea* of Miller, he cultivated it in 1756. Aublet says, that in Guiana it flowers in november.

2. This is a tall tree, with alternate leaves more than a foot long, angular-toothed, nerved, smooth on both sides, somewhat coriaceous, on long round pubescent petioles. Flowers in axillary racemes towards the end of the branchlets, much shorter than the leaves, many-flowered, nodding, on long peduncles mostly two together, bearing each one biggish green flower.—It differs from the preceding in having the leaves rounded at the end; the stipules linear, not cordate-deltoid; the flowers smaller with the calyx commonly five-leaved; and the capsules with longer bristles.

Native of the West Indies. Found in the island of St. Christopher by Masson.

3. Height forty or fifty feet, with a cloven ferruginous or cinereous bark. Leaves alternate, about a foot long, slightly waved at the edge, nerved and

<sup>a</sup> Aublet.

## S M I

veined, smooth on both sides, coriaceous, on petioles almost the length of the leaves, round, spreading, even, thickened at the base and under the leaf. Stipules long, acuminate, deciduous. Racemes axillary, shorter than the petioles, many-flowered. Flowers small, on short one-flowered peduncles, with a single little bracte at the base. Capsule the size of a large Walnut, four or five-celled and valved, the valves red within. Seeds solitary, covered with a red pulpy aril.

Native of South America and the West Indian islands. Found in Guiana by Aublet, and in the island of St. Christopher's by Masson<sup>r</sup>.

SLOE TREE. See *Prunus*.]

SMALLAGE. See *Apium*.

SMILAX (of Pliny. *Σμύλαξ* of Dioscorides. Derivation unknown.)

*Lin. gen. n.* 1120. *Reich. n.* 1225. *Schreb. n.* 1528.

*Tournef. t.* 421. *Juss.* 42. *Gartn. t.* 16.

Class. 22. 6. Dioecia Hexandria.

Nat. order of *Sarmentaceæ*. *Asparagi*, Juss.

## GENERIC CHARACTER.

## \* Male.

CAL. *Perianth* six-leaved, spreading bell-shaped: *leaflets* oblong, approximating at the base, bent back and spreading at the tip.

COR. none, unless the calyx be taken for it.

STAM. *Filaments* six, simple. *Anthems* oblong.

## \* Female.

CAL. as in the male, deciduous.

COR. none.

PIST. *Germ* ovate. *Styles* three, very small. *Stigmas* oblong, bent back, pubescent.

PER. *Berry* globular, three-celled.

SEEDS two, globular.

## ESSENTIAL CHARACTER.

Cal. six-leaved. Cor. none.

FEM. *Styles* three. *Berry* three-celled. *Seeds* two.

## SPECIES.

1. *Stem prickly angular.*1. *Smilax aspera.* *Rough Smilax.*

*Lin. spec.* 1458. *Reich.* 4. 254. *hort. cliff.* 458.

*Gron. orient.* 316. *Scop. carn. n.* 1221. *Gouan*

*hort. monsp.* 505. *Ger. prov.* 136. *Villars dauph.*

3. 272. *Allion. pedem. n.* 2115. *Affo arag.*

*n.* 959.

α. *S. asp. simplicifolia.* *Common Smilax* or *Rough Bindweed.*

*Ait. kew.* 3. 401. α.

*S. aspera.* *Matth.* 1211. *Baub. hist.* 2. 115.

*Ger.* 709. 2. *emac.* 859. 2.

*S. asp. fructu rubente.* *Baub. pin.* 296. *Tournef. inst.* 654.

*S. asp. rutilo fructu.* *Clus. hist.* 1. 122.

*S. asp. fructu rubro.* *Park. theat.* 173. *t.* 174. *f.* 1. *Raii hist.* 655.

*S. aspera minus spinosa, fructu nigro.* *Baub. pin.* 236. *Raii hist.* 656. 2.

*S. asp. nigro fructu.* *Clus. hist.* 1. 113. *Park. theat.* 173. *n.* 2.

*S. asp. lusitanica.* *Ger.* 711. 3. *emac.* 860. 3. *cum ic.*

β. *S. asp. auriculata.* *Ear-leaved Smilax* or *Rough Bindweed.*

*Ait. kew.* 3. 401. β. *Pluk. phyt. t.* 110. *f.* 3.

*Stem prickly angular, leaves toothed and prickly cordate nine-nerved.*

2. *Smilax excelsa.* *Tall Smilax.*

*Lin. spec.* 1458. *Reich.* 4. 255.

*S. orientalis, sarmentis aculeatis excelsas arbores scandens, foliis non spinosis.* *Tournef. cor.* 45. *Buxb. cent.* 1. 18. *t.* 27.

*S. aspera.* *Alp. ægypt. ed.* 2. 140. *t.* 141. *ed.* 1. 55 & 56. *ed.* 3. 68. *t.* 49?

*Stem prickly angular, leaves unarmed cordate nine-nerved.*

[3. *Smilax zeylanica.* *Ceylon Smilax.*

*Lin. spec.* 1459. *syst.* 887. *Reich.* 4. 255. *fl. zeyl.*

*n.* 364. *Burm. ind.* 313. *zeyl.* 22. *Gartn. fruct.*

1. 59.

<sup>r</sup> Swartz.



- China amboinensis. *Rumph. amb.* 5. 437. t. 161.  
Stem prickly angular, leaves unarmed, stem-leaves cordate, branch-leaves ovate-oblong.]
4. *Smilax Sarfaparilla*. Medicinal *Smilax* or *Sarfaparilla*.  
*Lin. spec.* 1459. *Reich.* 4. 255. *hort. cliff.* 459.  
*mat. med.* 214. *Woodv. med. bot.* 528. t. 194.  
*Gron. virg.* 190. 156. *Blackw. t.* 393. *Regnault bot. Pluk. phyt. t.* 111. f. 2. *Raii suppl.* 345. n. 6.  
*S. aspera peruviana* f. *Sarfaparilla*. *Baub. pin.* 296. *Raii hist.* 656.  
*S. peruviana Sarfaparilla*. *Ger.* 709. 1. *emac.* 859. 1.  
*S. asp. peruana*. *Park. theat.* 173. t. 174. f. 3.  
Stem prickly angular, leaves unarmed ovate retuse-mucronate three-nerved.
- [5. *Smilax oblongata*.  
*Swartz prodr.* 59. *descr.* 673.  
Stem prickly angular, leaves oblong acuminate smooth three-nerved, nerves prickly underneath.]
2. Stem prickly round.
6. *Smilax China*. Chinese *Smilax*.  
*Lin. spec.* 1459. *Reich.* 4. 256. *mat. med.* 214.  
*Gmel. it.* 3. 32. t. 6. *Blackw. t.* 433. *Gron. orient.* 317. *Brown. jam.* 359. 1. *Thunb. jap.* 152. *Lour. cochinch.* 622. ed. *Willd.* 763. *Kämpf. amoen.* 781. t. 782. *Pluk. amalth. t.* 408. f. 1.  
*China radix*. *Baub. pin.* 896. *Park. theat.* 1578. *Raii hist.* 657.  
*C. vulgaris officinarum*. *Ger. emac.* 1618.  
*C. michuacanensis* f. *Smilax aspera minor*. *Plum. ic.* 183.  
Stem prickly roundish, leaves unarmed ovate-cordate five-nerved.
- [7. *Smilax rotundifolia*. Round-leaved *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 256.  
Stem prickly round, leaves unarmed cordate acuminate five or seven-nerved.]
8. *Smilax laurifolia*. Bay-leaved *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 257. *Gron. virg.* 193. 156.  
*China altera aculeata*, foliis oblongis cuspidatis. *Plum. ic.* 85.  
Stem prickly round, leaves unarmed ovate-lanceolate three-nerved.
9. *Smilax tamnoides*. Black Briony-leaved *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 257. *Catesb. car.* 1. t. 52.  
Stem prickly round, leaves unarmed cordate oblong seven-nerved.
10. *Smilax caduca*. Deciduous *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 257. *Lour. cochinch.* 622. ed. *Willd.* 764.  
Stem prickly round, leaves unarmed ovate three-nerved.
3. Stem unarmed angular.
- [11. *Smilax bona nox*. Ciliated *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 257. *Pluk. phyt. t.* 111. f. 1.  
*S. aspera Indiae occidentalis*. *Baub. pin.* 296.  
*β. S. caroliniana*. *Pluk. phyt. t.* 111. f. 3.  
Stem unarmed angular, leaves ciliate-prickly.
12. *Smilax herbacea*. Herbaceous *Smilax*.  
*Lin. spec.* 1460. *Reich.* 4. 258. *Gron. virg.* 193. 156. *Raii suppl.* 345. n. 10. *Pluk. phyt. t.* 225. f. 4.  
Stem unarmed angular, leaves unarmed ovate seven-nerved.
13. *Smilax tetragona*. Square-stalked *Smilax*.  
*Lin. syst.* 888. *suppl.* 427.  
Stem unarmed four-cornered, leaves cordate five-nerved acuminate unarmed.
4. Stem unarmed round.
14. *Smilax lanceolata*. Spear-leaved *Smilax*.  
*Lin. spec.* 1461. *Reich.* 4. 258. *hort. cliff.* 459. *Catesb. car.* 2. t. 84. *Lour. cochinch.* 623. ed. *Willd.* 764.  
Stem unarmed round, leaves unarmed lanceolate.
15. *Smilax Pseudo-China*. Bastard Chinese *Smilax*.  
*Lin. spec.* 1461. *Reich.* 4. 258. *hort. cliff.* 459. *Gron. virg.* 193. 156. 120. *Brown. jam.* 359. 2.

- Sloan. jam.* 1. 31. t. 143. f. 1. *Thunb. jap.* 152. *Lour. cochinch.* 623. ed. *Willd.* 765. *Plum. ic.* 82. *Pluk. phyt. t.* 110. f. 5.  
*China spuria nodosa*. *Baub. pin.* 297. *Raii hist.* 658. *Pseudo-China*. *Ger. emac.* 1618.  
Stem unarmed round, leaves unarmed, stem-leaves cordate, branch-leaves ovate-oblong five-nerved.
16. *Smilax Ripogonum*.  
*Forst. prodr. n.* 372.  
*Ripogonum scandens*. *Forst. gen.* 25.  
Stem unarmed round rooting, leaves ovate-lanceolate acuminate five-nerved, flowers hermaphrodite.
17. *Smilax purpurata*.  
*Forst. prodr. n.* 373.  
Stem unarmed round dichotomous, leaves cordate-acute acuminate clawed quite entire five-nerved, peduncles axillary umbelliferous.]
18. *Smilax aristolochiaefolia*.  
*Mill. dict. n.* 7.  
*S. aspera*, aristolochiae foliis longioribus, ad basin auriculatis. *Houft. Mfs.*  
Stem prickly round, leaves unarmed sagittate bluntish three-nerved.
19. *Smilax spinosa*.  
*Mill. dict. n.* 8.  
*S. viticulis asperis*, foliis oblongis, nervis foliorum spinosis. *Houft. Mfs.*  
Stem prickly round, leaves ovate-lanceolate, nerves of the leaves prickly underneath.
20. *Smilax virginiana*.  
*Mill. dict. n.* 9. *Pluk. phyt. t.* 110. f. 4.  
Stem prickly angular, leaves lanceolate unarmed acuminate.
21. *Smilax canellæfolia*.  
*Mill. dict. n.* 10. *Pluk. phyt. t.* 110. f. 5.  
Stem unarmed round, leaves unarmed ovate three-nerved.
22. *Smilax humilis*.  
*Mill. dict. n.* 11. *Catesb. car.* 1. 47.  
Stem unarmed round, leaves unarmed ovate-cordate three-nerved, flowers corymbed.
23. *Smilax hederæfolia*.  
*Mill. dict. n.* 12. *Pluk. phyt. t.* 225. f. 3.  
Stem unarmed round, leaves unarmed, stem-leaves cordate, racemes ovate-oblong.

## DESCRIPTIONS, &amp;c.

1. Roots perennial, composed of many thick fleshy fibres, spreading wide, and striking deep. Stems several, slender, angular, armed with short crooked spines, and having clasps on their sides, by which they fasten themselves to any neighbouring plant for support, and rise five or six feet high. Leaves stiff, heart-shaped, and acute-pointed, three-quarters of an inch broad at the base and about two inches long, of a dark green, marked with five longitudinal nerves, and the edges set with a few short reddish spines. Flowers axillary in short bunches, small and whitish. Those on the female plants are succeeded by red berries which ripen in autumn. [The berries are sometimes black; and there is a variety which has the leaves eared at the base.]

Native of the South of France, Italy, Spain, Carniola; near Tripoli, and between Rama and Joppa.—Cultivated in 1656, by Mr. John Tradescant, junior. It flowers in September.

The druggists in the South of Europe often sell the roots of this species for those of *Sarfaparilla*. (n. 4.) They have the same qualities, but in an inferior degree; and may be distinguished by being larger, more porous, much less compressed, not so well packed, and fastened by thread or oziers.\*]

2. Roots like those of the preceding. Stems four-cornered and prickly, mounting to the tops of trees by their clasps. Leaves two inches long, and an inch and three quarters broad at the base, having five longitudinal nerves, but no spines on their edges. The flowers and fruit are like those of the first sort. Native of Syria.

[3. Petioles two-toothed, not cirrhone. Clasps from the axils or rudiment of the peduncle.—

\* Hort. kew.

\* Villars.



Native of Ceylon<sup>a</sup>. Introduced in 1778, by Patrick Ruffel, M.D.\*

Loureiro has a species, under the name of *Smilax perfoliata*, which, as he says, seems to be allied to Rumphius's plant, which Linneus makes to be synonymous with his *Sm. zeylanica*: it differs however from that in having perfoliate stipules and five-nerved leaves. It is found on the woody hills of Cochinchina.

Desfontaines has a species, under the name of *S. mauritanica*, which is not the same with the excelsa, as appears from comparing the plant with the specimens of that in Tournefort's and Vaillant's herbariums. The stem is prickly, angular and scandent; the leaves cordate, mucronate, unarmed or very seldom prickly, marked with about seven nerves, and the berries are red. It is allied to *S. aspera*, but the stem is higher, the leaves three or four times as large and not spotted. They vary, some being prickly, others not, some are rounded at the end, but most are acute and mucronate.

Native of Algiers near Bone, and of mount Atlas.

4. Root perennial, divided into several branches, which are somewhat thicker than a goose quill, straight, externally brown, internally white, and three or four feet in length. Stems shrubby, long, slender, scandent. Leaves alternate, pointed, with long tendrils at the base. Flowers lateral, usually three or four together upon a common peduncle<sup>y</sup>.

Native of America (Peru, Brasil, Mexico, Virginia.) Cultivated in 1691, by Mr. Foster, according to Plukenet. It flowers in July and August<sup>z</sup>. The root, as a medicine, was introduced into Spain, according to Caspar Bauhin, about the year 1573, but Monarda informs us, that it was brought from New Spain to Madrid twenty or thirty years before that. The common name is of Spanish origin, from Zarza red, and Parilla a little vine.

Sarsaparilla, at its first introduction, was considered as an undoubted specific in syphilitic and some chronic disorders; but whether owing to a difference of climate or other causes, European practitioners soon found that it by no means answered the character which it had acquired in the Spanish West Indies, and therefore it became very much neglected. Many physicians however still consider it as a medicine of much efficacy, and assert that the lues venerea is much sooner subdued, by giving Sarsaparilla along with Mercury. It is in frequent use at most of the London hospitals; and Dr. Woodville relates, that he has known patients, after the use of Mercury, much sooner restored to health by this root, than could have been accomplished by any other medicine with which we are acquainted, especially when employed in powder.

This root is also recommended in rheumatic affections, scrophula, and cutaneous complaints where an acrimony of the fluids prevail. It may be given in decoction or powder, and should be continued in large doses for a considerable time<sup>a</sup>.

5. Native of the West Indies, in the Caribbee islands, St. Vincent. Stem frutescent, scandent. Branches subdivided, diverging, round, rigid, prickly, with raised decurrent lines between the prickles, which are stout, remote, thicker at the base, stretched out. Leaves alternate, veined, quite entire, rigid, on short petioles sheathing at the base and keeled. Flowers in peduncled umbels many together. Peduncles shorter than the petioles: pedicels the length of the peduncles, one-flowered. Flowers small, greenish. Berry roundish, the size of a black Currant, blackish blue<sup>b</sup>.]

6. Stems taper, very strong, armed with short stiff spines, and rising twenty feet high by their clasps. Leaves thick, four inches long, and three inches and a half broad at their base, ending in an obtuse point, and having five longitudinal veins. Flowers in close bunches. Berries red.

[Stem round, branched, with clasps in pairs, and a few very short scattered prickles. Leaves acute,

three-nerved, smooth, alternate, seldom cordate or retuse; without any stipules. Flowers in small axillary umbels. Berry small, round, red, one-seeded. Root horizontal, creeping far and wide, with oblong tubers, knobbed and warted, sometimes branched, pale or reddish within, half a foot long, roundish, scattered<sup>c</sup>. According to Rochon, the root is as large as a child's hand, twisted, full of knots, reddish on the outside, flesh-coloured in the heart, and destitute of smell. It must be chosen full, heavy and compact, of a reddish colour, and free from rottenness; for it is much subject to be gnawed by worms. It is employed with success as a medicine in the province of Ouanfi in China, where it abounds. The Chinese use it for food, instead of Rice; and this contributes not a little to render them lusty<sup>d</sup>.

Native of China, Cochinchina and Japan] Mr. Miller, who cultivated it in 1759, says, that he had it from Carthage in New Spain; and that it was the same which he received from China by the title of China-root.

[Browne says, it is frequent in the more cool inland parts of Jamaica, where it rises from a thick porous root, and climbs by a pretty slender rigid stem to the top of the tallest trees in the woods; that it has a few prickles towards the bottom, divides into many branches at the top, and throws out its winding tendrils from the foot-stalks of the leaves; that the root is commonly used in Jamaica, and observed to answer as well as that from the East Indies; that it is of a sheathing nature, and a very fit ingredient in all diluting apozems; that the plant might easily be propagated so as to supply the European markets, but what grows wild is more than sufficient to supply the inhabitants, and serves frequently to feed the hogs, which are said to live chiefly upon it, when there is a scarcity of wild fruit.

7. Stem naked, flexuose, with a very few straight prickles. Leaves naked, five-nerved, wider than long, acute, on short petioles, with two filiform clasps.

Native of Canada, where it was found by Kalm<sup>e</sup>. Cultivated before 1760, by Archibald Duke of Argyll<sup>f</sup>.]

8. Stalk thick, taper, rising by clasps ten or twelve feet high. Leaves thick, three inches and a half long, and an inch and half broad. Flowers axillary in round bunches, and succeeded by black berries.

[Linneus remarks, that the leaves, as to their consistence, are the thickest of any in the genus.

Native of Virginia and Carolina. Cultivated by Mr. Miller in 1739. It flowers in July<sup>g</sup>.]

9. Stems taper. Leaves four inches long, and two inches and a half broad at their base, having seven longitudinal veins: the flowers come out in long loose bunches from the side of the stalks, and the berries are black.

[Native of North America. Cultivated in 1739, by Mr. Miller. It flowers in June and July<sup>h</sup>.

10. Stem naked, flexuose, with a few straight prickles black at the tip. Leaves annual, acute, on short petioles, from which spring two capillary clasps. Umbels of flowers below the leaves, on peduncles which are scarcely longer than the petiole.

Native of Canada<sup>i</sup>. Introduced in 1775, by Mr. William Young<sup>k</sup>.]

Mr. Miller has a species under the same name, but without any reference to Linneus. He says that it grows naturally at Carthage in New Spain; that it has strong taper stalks armed with a few short spines; that the leaves are thick, unarmed and heart-shaped, five inches long, and three inches and a half broad at their base, ending with an acute point; and that it climbs to the height of thirty feet.

[Loureiro has also a *S. caduca*, and refers to Linneus, and also to Tournefort, inst. 694. n. 3.—The stem is very prickly at the base, and the clasps are in pairs from the petioles. Leaves all broad-ovate, re-

<sup>a</sup> Lin. syst.    <sup>x</sup> Hort. kew.    <sup>y</sup> Woodville.    <sup>z</sup> Hort. kew.  
<sup>a</sup> Woodville.    <sup>b</sup> Swartz.

<sup>c</sup> Loureiro.    <sup>d</sup> Memoir on the Chinese trade, p. 449.  
<sup>e</sup> Linn. spec.    <sup>f</sup> Hort. kew.    <sup>g</sup> Idem.    <sup>h</sup> Idem.  
<sup>i</sup> Linn. spec.    <sup>k</sup> Hort. kew.



ruse, smooth, alternate. Stipules none. Flowers in small lateral umbels.

Native of the woods of Cochinchina.—It is not probable that the same species is indigenous of three climates so different as that, the Spanish West Indies and Canada.

11. Native of North America. Introduced about 1778, by Mr. William Young. It flowers in June and July<sup>1</sup>.

12. Native of North America. Cultivated in 1669, by the Dutchess of Beaufort. It flowers in July<sup>m</sup>.

The leaves have the form of the hederaceous plants, but not the consistence, for they are thin. The little umbels of small flowers are on very long slender peduncles, from the bosoms of the leaves. It was brought to England by Vernon and Kreig, at their return from Maryland<sup>n</sup>.

Plukenet's figures 3 and 4 are wrong marked, and should be transposed to agree with the names under the plate; the figure at top marked 4 is *Phytolacca decandra*.

13. Stem four-cornered, altogether flexuose. Petioles the length of the earlets or lobes of the heart of the leaf. Leaves narrower than in most of the species<sup>o</sup>.

14. Stem herbaceous, unarmed, round, short, very branching, scandent, cirrhose. Leaves quite entire, smooth, three-nerved, alternate. Root filiform, long, not tuberous<sup>p</sup>.

Supported on trees and shrubs, clasping them with their tendrils. Leaves long, and narrowed at both ends, thick, stiff and shining, with a single rib in the middle, alternate at wide distances. At the ends of the smaller branches are produced greenish-white flowers in tufts, succeeded by globular mucilaginous red berries, each containing a very hard round stone. These serve as food to birds<sup>q</sup>.

Native of Virginia, Carolina and Cochinchina.—Introduced in 1785, by Mr. William Young<sup>r</sup>.

15. Stem shrubby, very long, slender, with few scandent branches. Leaves small, the lower cordate, the upper ovate-lanceolate, three-nerved, quite entire, flat, with the margin bent back. Flowers in lateral umbels. Berries red. The root is horizontal, simple, thick, short, tubercled, with many, long, undivided fibres<sup>s</sup>. According to Browne, the roots are small, and divided into a number of slender branches. He thinks it to be very like the *Sarsaparilla* of Piso, p. 278. Thunberg remarks, that there are two, three, four, or five seeds in a berry.

Native of Virginia, Jamaica, China and Cochinchina.—In the latter they use the stem for making baskets and other wicker ware<sup>t</sup>.

In Chinese it is named *Cum Kong Cunn*, and is frequently used by them instead of the true China root. A small quantity of it even in cold water tinges of a deep red; whereas the true root yields a light yellow brown<sup>u</sup>.

16. Forster, in his genera, made this a new genus, under the name of *Ripogonum*, from *ῥιψ*, *ῥιπος*, *vimen*, and *γυνν*, *genu*, a joint; being a vimineous, jointed plant, as indeed most of the *Smilac*es are, to which genus he afterwards referred it. The leaflets of the calyx are lanceolate, acute and almost erect; the anthers are linear, quadrangular, three times as long as the calyx, erect; the germ globular; the style filiform of the same length with the calyx, and the stigma blunt; the berry globular and two-seeded; the seeds solitary and hemispherical.—Native of New Zealand.

17. Native of New Caledonia<sup>x</sup>.

In the appendix to the Journal of a voyage to New South Wales by John White, Esq. Surgeon General to the settlement, a shrub is figured under the name of the Tea tree of New South Wales, Sweet Tea Plant, or *Smilax glycyphylla*. The leaves are about two inches long, ovate-lanceolate, pointed, entire, marked with three longitudinal ribs, and many transverse elevated veins, smooth and shining above, glaucous beneath, with a thick cartilaginous edge. They

have the taste of liquorice root accompanied with bitter, and the infusion is said to be good for the scurvy, and not unpleasant. It is judged to belong to this genus, but the leaves only having been seen, the generic and even the specific character cannot be ascertained.]

18. The 18th sort grows naturally at La Vera Cruz in New Spain; this has a thick, taper, prickly stalk, which climbs up the neighbouring trees to the height of thirty or forty feet. The leaves are thick, stiff, and unarmed; they are seven inches long, and have two round ears at their base, where they are three inches and a half broad, but the other part of the leaves are two inches broad at their top, where they are rounded; they have three longitudinal veins, and stand on short foot-stalks.

19. The 19th sort grows also naturally at La Vera Cruz; this has slender, taper, prickly stalks, which fasten themselves to any neighbouring support by their clasps, and rise eight or ten feet high. The leaves are four inches and a half long, and two and a half broad in the middle; they have no spines on their edges, but their midrib and veins on their under side are armed with short reddish spines.

20. The 20th sort grows naturally in Jamaica. The stalks of this are slender, angular, and prickly; the leaves are spear-shaped, ending in acute points; they are three inches long, and half an inch broad, having no spines; their base is a little rounded, but they have no ears.

21. The 21st sort grows naturally in Jamaica; this has thick, fleshy, creeping roots. The stalks are taper and unarmed; these climb up the neighbouring trees and bushes to the height of ten or twelve feet. The leaves are ovate and end in acute points; they are five inches long and three broad, and have three longitudinal veins, but no spines.

[Miller has the same synonym of Plukenet under his *S. canellæfolia*, which Linneus refers to his *S. Pseudo-China*. See n. 15.]

22. The 22d sort grows naturally in Carolina; this has taper unarmed stalks which rise three or four feet high. The leaves are ovate-heart-shaped, about three inches long, and almost two broad, rounded at their points, and have three longitudinal veins. The flowers come out from the wings of the stalk at every joint, standing upon short foot-stalks, formed in a round bunch; these are succeeded by roundish red berries.

23. The 23d sort grows naturally in Jamaica, and also in Maryland. The stalks of this are ligneous, taper, and unarmed; these have very long clasps, by which they fasten to any neighbouring support, and rise twenty feet high. The leaves are some ovate and others heart-shaped; they are about three inches and a half long, and two and a half broad. The flowers come out from the wings of the stalk in oblong bunches; these are succeeded by red berries.

[Miller, under his *hederæfolia*, has given Linneus's character of *S. Pseudo-China*, with a reference to Plukenet's figure, which Linneus attributes to his *S. herbacea*, n. 12.]

#### PROPAGATION AND CULTURE.

These plants are many of them preserved in the gardens of the curious for the sake of variety, but some of them may so be disposed as to make them ornamental, because those sorts which grow naturally in North America, and the two first sorts, are so hardy as to thrive in the open air in England; and as they retain their verdure all the year, if the plants are placed on the borders of woods or groves in gardens, and their branches properly supported, they will screen the nakedness of the ground under the trees from sight, and in winter, when their leaves are in beauty, they will make a pleasing variety, when the plants are properly intermixed with other evergreens; and as some of the sorts will rise five or six feet high, they will shut out from view any disagreeable objects.

Those sorts which require a stove to protect them in winter are little esteemed, because they require much room; and as their flowers have no beauty to recommend them, few persons care to be at the trouble of preserving them for that of their leaves, because there

<sup>1</sup> Hort. kew.    <sup>m</sup> Idem.    <sup>n</sup> Ray.    <sup>o</sup> Linn. suppl.  
<sup>p</sup> Loureiro.    <sup>q</sup> Catesby.    <sup>r</sup> Hort. kew.    <sup>s</sup> Loureiro.  
<sup>t</sup> Idem.    <sup>u</sup> Blake, MS.    <sup>x</sup> Forster.



are many other plants whose leaves make a better appearance, and the plants do not require so much room, so these plants are rather the proper furniture of botanic gardens than those of pleasure.

They are all propagated by seeds, which must be procured from the countries where they naturally grow, for there are none of these plants which produce ripe seeds here. Those sorts which have been brought from the north of America, sometimes produce flowers in England, but the summers here are neither warm enough, nor of a proper duration to ripen their seeds, so that these are propagated by parting their roots; for when the roots have obtained strength, they spread very far in the ground, and send up stalks at a distance from the old roots, whereby they may be greatly increased when the sorts are once obtained. The best time for transplanting and parting their roots is early in autumn, that the offsets or young plants may have time to get good roots before the frost comes on, and if after they are planted, the cold should come on earlier, or be more severe than ordinary, if the surface of the ground about their roots is covered with some old tanners bark or mulch to keep the frost out of the ground, it will preserve them; but these roots should not be parted oftener than every third or fourth year, for unless the roots are large, there will be few stalks to each, and they will make but little appearance.

The tender sorts must be kept in pots, and plunged into the tan-bed of the bark-stove, in order to have them strong; for although they will live in moderate warmth in winter, they will make but little progress, and their stalks will be short, their leaves small, and the plants weak, so will make but a poor appearance; therefore, unless they can be allowed room in the warm stove, and constantly kept in the tan-bed, they will not be worth preserving.

All the sorts grow naturally under hedges and in woods, therefore they should be disposed in such a manner, as to imitate their places of growth, and not place them in the open sun, where they will not thrive; therefore the hardy kinds should be placed under the shade of trees, and the tender ones may be placed between the pots which contain tall plants, whose branches may screen them from the sun. Such of these plants as are tender must be frequently watered in hot weather, and should then have a large share of air admitted to them, but in winter they must be watered sparingly, for their roots are apt to rot with too much wet.

When the seeds of these plants are obtained from abroad, they should be sown in pots filled with fresh light earth, and plunged into a moderate hot-bed, observing to water the earth frequently to keep it moist, because the seeds, being hard, will not vegetate without a considerable share of moisture; these generally remain in the ground a whole year before they grow, so that if the plants do not come up the first season, the pots should be kept clean from weeds all the summer, and in winter the hardy sorts should be sheltered from frost under a common frame, and the tender ones plunged into the bark-bed in the stove: the following spring they must be again plunged into the hot-bed, which will bring the plants up very soon. When the plants are come up, they must be constantly kept clear from weeds, and frequently watered in warm weather, and toward the end of May the hardy sorts should be inured to the open air by degrees, and in June they may be removed out of the bed, and placed abroad in a sheltered situation, where they should remain till the frost comes on in autumn, when they must be removed into shelter. If the pots are plunged into an old tan-bed under a frame, where they may be protected from the frost, and in mild weather be exposed to the open air, they will thrive much better than with more tender treatment.

The tender sorts should be plunged between the other pots in the bark-bed of the stove, where they should remain all the winter. These plants should remain untransplanted in the seed-pots till the following spring, when they should be turned out of the pots, carefully separated, and planted into pots filled with fresh earth; and if the hardy sorts are plunged into a

very temperate hot-bed, it will cause them to take new root very soon, and greatly strengthen the plants; but the tender sorts should be plunged into a good hot-bed of tanners-bark to bring the plants forward; that they may get strength before winter, when they must be treated in the manner before directed.

The hardy sorts should be kept in pots for two or three years that they may be sheltered in winter, by which time they will have strength enough to bear the cold in the open air; so in the spring they may be turned out of the pots, and planted where they are designed to remain, observing, if the spring should prove dry, to refresh them now and then with water, as also to lay some mulch about them to prevent the earth from drying; and while the plants are young, if some mulch is laid about their roots in winter, it will be a sure method to preserve them.

[SMILAX. See *Cissampelos*, *Convolvulus*, *Ipomæa*, *Phaseolus*, *Quercus*, *Urticaria*.

SMITHIA. (So named in honour of James Edward Smith, M.D. F.R.S. &c. President of the Linnean Society, Possessor of the Linnean collection, author of several useful and splendid works.)

Lin. gen. Schreb. n. 1760. p. 309. Ait. kew. 3. 512.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, two-lipped: segments ovate-lanceolate, almost equal.

COR. papilionaceous. Standard obcordate. Wings oblong, obtuse, a little shorter than the standard. Keel linear-oblong, cloven at the base, length of the wings.

STAM. Filaments ten, united into two equal bodies. Anthers oblong.

PIST. Germ contracted at the base of the calyx. Style capillary, permanent. Stigma simple.

PER. Legume inclosed within the calyx, composed of from four to seven joints; distinct, connected by the permanent style, orbicular, muricated, one-seeded.

SEEDS kidney-form, compressed, smooth.

#### ESSENTIAL CHARACTER.

Legume with distinct one-seeded joints, connected by the style. Stam. divided into two equal bodies.

#### SPECIES.

1. *Smithia sensitiva*. Annual *Smithia*.

Ait. kew. 3. 496.

#### DESCRIPTION, &c.

Root annual. Stem decumbent, round, even. Branches spreading very much. Leaves alternate, abruptly pinnate, composed of from four to ten ovate-oblong leaflets, bristly on the edge and along the rib beneath. Petiole very short; rachis bristly. Stipules in pairs, permanent, semi-lanceolate above the insertion, quite entire, acuminate; below the insertion bifid: one segment blunt, the other longer, acuminate. Racemes axillary, from three to six-flowered. Peduncle longer than the petiole, filiform. Pedicels shorter than the calyx. Bracte under each of the pedicels, like the stipules, but less produced downwards: bractes under the calyx two, resembling the exterior calyx, ovate-lanceolate, muricate. Calyx muricate with bristle-bearing tubercles. Corolla yellow.

Native of the East Indies, and introduced in 1785, by John Gerard Koenig, M.D. It flowers in October.

SMYRNIUM. (*Σμύριον* of Dioscorides, from the city of Smyrna: or, from *σμύρα* the same with *μύρα*, the root yielding a gum like Myrrh.)

Lin. gen. n. 363. Reich. n. 393. Schreb. n. 495.

Tourn. t. 168. Juss. 219. Gertn. t. 22.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

#### GENERIC CHARACTER.

CAL. Umbel universal unequal, becoming daily bigger. Partial erect.

Involucre universal none. Partial none.

Perianth proper scarcely apparent.

COR. universal uniform. Floscules of the disk abortive.

Proper of five lanceolate petals, slightly bent in, keeled.



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STAM. Filaments five, simple, length of the corolla.  
 Anthers simple.  
 PIST. Germ inferior. Styles two, simple. Stigmas two, simple.  
 PER. none. Fruit oblong, striated, bipartile.  
 SEEDS two, lunulate, on one side convex, marked with three angles, flat on the other.

## ESSENTIAL CHARACTER.

Petals acuminate, keeled. Fruit oblong, striated.

## SPECIES.

1. *Smyrniium perfoliatum*. *Perfoliate Alexanders*.  
*Lin. spec.* 376. *Reich.* 1. 720. *Willd.* 1. 1467.  
*hort. cliff.* 104. *ups.* 66.  
*S. peregrinum rotundo f. oblongo folio*. *Baub. pin.* 154. *prodr.* 82.  
*S. amani montis*. *Dod. pempt.* 698.  
*S. creticum*. *Ger.* 869. *emac.* 1024. *Park. theat.* 930. *f.* 2. *Raii hist.* 437.  
*Stem-leaves simple embracing.*
- [2. *Smyrniium ægyptiacum*. *Egyptian Alexanders*.  
*Lin. spec.* 376. *yst.* 290. *Reich.* 1. 720. *Willd.* 1. 1467. *amoen.* 4. 270. *cent.* 25.  
*Floral leaves two simple, cordate quite entire.*
3. *Smyrniium laterale*. *Side-flowering Alexanders*.  
*Lin. spec. ed. Willd.* 1. 1467. *Thunb. prodr.* 51.  
*Stem-leaves ternate gashed ferrate, umbels lateral sessile.*
4. *Smyrniium Olusatrum*. *Common Alexanders*.  
*Lin. spec.* 376. *Reich.* 1. 720. *Willd.* 1. 1467.  
*hort. cliff.* 105. *Gærtn. frust.* 1. 101. *Sauv. monsp.* 262. *Allion. pedem. n.* 1346. *Desfont. atlant.* 264. *Lamarck illustr. t.* 204. *Huds. angl.* 126. *Wither. arr. ed.* 3. 310. *Smith brit.* 328. *engl. bot. t.* 230. *Relb. cant. ed.* 2. n. 272. *Sibth. oxon. n.* 312. *Dicks. hort. ficc.* 9. 2. *Regnault ic. Blackw. t.* 408. *Plenck ic. t.* 220.  
*Smyrniium*. *Matth.* 773. *valgr.* 2. 130. *Tournef. inst.* 316. *Riv. pent. t.* 69. *Raii syn.* 208. *Petiv. brit. t.* 24. *f.* 1.  
*S. femine magno nigro curvo*. *Mor. hist.* 3. *f.* 9. *t.* 4. *f.* 1. *umb. t.* 1. *f.* P. p.  
*Hipposelinum*. *Dod. pempt.* 698. 1. *Ger.* 864. *emac.* 1019. *Raii hist.* 437.  
*H. f. Smyrniium vulgare*. *Park. theat.* 930 *f.* 1.  
*H. Theophrasti, f. Smyrniium Dioscoridis*. *Baub. pin.* 154.  
*Macerone quibusdam Smyrniium, femine magno nigro*. *Baub. hist.* 3. 2. 126.  
*Petroselinum alexandrinum*. *Trag.* 436.  
*Stem-leaves ternate petioled ferrate.*
5. *Smyrniium apiifolium*. *Smallage-leaved Alexanders*.  
*Lin. spec. ed. Willd.* 1. 1468.  
*S. creticum paludapii folio*. *Tournef. cor.* 23.  
*S. creticum*. *Mill. dict. n.* 4.  
*Stem-leaves wedge-shaped obtuse trifid toothed.*
- [6. *Smyrniium aureum*. *Golden Alexanders*.  
*Lin. spec.* 377. *Reich.* 1. 720. *Willd.* 1. 1468.  
*Egopodium foliis caulinis summis novenis*. *Lin. hort. cliff.* 107.  
*Angelica acadiensis flore luteo*. *Dodart mem.* 55. *Raii hist.* 1868.  
*A. humilior & minor flore luteo*. *Mor. hist.* 3. 281. *n.* 13.  
*β. S. foliis caulinis decompositis acuminatis*. *Gron. virg.* 148.  
*S. aureum, lobis ternis quinifve, marianum*. *Pluk. mant.* 173.  
*Leaves pinnate ferrate, hinder ternate; all the flowers fertile.]*
7. *Smyrniium integerrimum*. *Entire-leaved Alexanders*.  
*Lin. spec.* 377. *Reich.* 1. 721. *Willd.* 1. 1468.  
*S. fol. caulinis ternatis petiolatis, foliolis oblongo-ovatis integerrimis*. *Gron. virg.* 148.  
*Stem-leaves doubly-ternate quite entire.*

## DESCRIPTIONS, &c.

1. The lower leaves are superdecompounded, and the leaflets are in threes, ovate and indented. Stem smooth, hollow, three feet high, dividing towards the top into two or three branches. At each joint is placed one large orbicular leaf, the base of which is embracing; these are of a yellow colour, and their edges are entire. The branches are terminated by

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small umbels of yellowish flowers, on pedicels of unequal lengths.

Mr. Miller names this *S. rotundifolium*, and distinguishes the long-leaved variety under the name of *S. perfoliatum*.—The lower leaves of this, he says, are larger, the stalk is not so high, the stem-leaves are much larger, cordate-ovate and indented, and their texture is thinner. The umbels and seeds are smaller. He affirms that he has cultivated both many years, and has not found either of them alter: [And yet, says Parkinson, both sorts have risen in my garden from one kind of seed, and therefore I hold them to be one.

Native of Candia and Italy. Ray found it in Sicily, near Punto Cerciolo, not far from Puzzallu.—It groweth, says Gerarde, in my garden (1596) in great plenty.—It is a biennial plant, and flowers in may. The leaves are not properly perfoliate, but embracing:

2. Native of Egypt.

3. Native of the Cape of Good Hope.

4. Root biennial, fleshy, branched. The whole herb of a pale bright green, (often, says Withering, of a sickly yellowish cast,) smooth, succulent, in flavour something like Celeri, but more strong and bitter. Stem round, strong, deeply grooved. Upper leaves ternate, lower triternate; leaflets wide, varying in form, gashed and ferrate, subpetioled. Common petiole dilated at the base, ventricose and nerved. Umbels terminating, globular, many-rayed. Flowers small, numerous, irregular, greenish yellow<sup>a</sup>. Fruit large, black, remarkably gibbous, deeply grooved: each seed semilunate, thick, with three acute-angled and almost winged ribs on the back, and somewhat wrinkled between the ribs; the belly prominent with a longitudinal groove in the middle<sup>a</sup>.

Native of France, Spain, Italy, Belgium, and Britain. It is rather a maritime plant, and is found near our coast in many places; as about Scarborough castle, and about Dover, common. Ray says it is common in Anglesea; and Pennant, that it almost covers the S. W. end of the island, where it is greedily eaten when boiled, by sailors returning from long voyages. It is very common in all the western counties, and in the flat parts of Gloucestershire. About Poole, on the ramparts going into Wareham, and in many other places in Dorsetshire. It occurs also about many inland towns, as Nottingham, York, Bury, Newmarket, and about Mackerell's tower, Norwich; Bungay in Suffolk, several places in Cambridgeshire, near Benfington, in Oxfordshire, between Great Comberton and Wollershill, at Hill Croome and Pirton in Worcestershire. In the neighbourhood of London, about Deptford, Vauxhall and Battersea. Cliffe in Kent. Cowley in Middlesex. In Scotland, upon the coast at Dunghlas, on the edge of Berwickshire.

It was noticed as indigenous of England by Turner. Parkinson says it was first found wild in some of the Isles about our own land by Mr. William Quicke, a worthy apothecary in his time, who gave him and Mr. William Cois a famous gentleman, and a great lover of plants, some of the seeds.

This plant was formerly eaten in various parts of Europe, either as a salad or pot-herb, whence, and from its blackness, the name *olusatrum*. Ray says it was called *Alexanders*, because in Italy and Germany it had long been denominated *herba alexandrina*; having been supposed to be brought from Alexandria. It flowers in may; and by the middle of july the stalks are dried up, but remain laden with large black seeds.<sup>b</sup>]

5. The lower leaves of this are smaller than those of the preceding, and more like those of Smallage. The stalk rises higher, and grows more erect. The lower stem-leaves are large and ferrate; they stand by threes at the joints; their base set close, having no foot-stalks: the upper leaves are of the same form, but stand by pairs. The umbels are much smaller, and the seeds are less.—Native of Crete or Candia.

6. Root perennial, black, and thick with clustered fibres. Stems several, striated, angular, a palm and

<sup>a</sup> Smith.

<sup>a</sup> Gærtner.

<sup>b</sup> Engl. bot.



half in height, from the bottom of which arise petioles, membranaceous at the base, and then triangular, subdivided into three petioles, the middle one bearing five toothletted leaflets, and the other two, three only. Some of the stems emit branchlets from the axils of the leaves. Each stem and branch is terminated by an umbel of very small yellow flowers. Seeds brown, striated, not unlike those of Caraway. The whole plant is acrid, bitter and aromatic<sup>c</sup>.

Native of North America. (Dodart says, it was sent by Richer, who was commissioned by the King of France to Acadia and Cayenne.) It was cultivated here before 1699, by Mr. Jacob Bobart<sup>d</sup>; to whom it was sent by Sherard from the Paris garden. He describes it as not more than eighteen inches or two feet in height; the leaves very like those of Podagraria, divided by threes, acute, equally and not deeply serrate. Umbels flat, of golden or yellow flowers. Seeds small, oblong, striated, approaching very near to those of Podagraria<sup>e</sup>.

7. Root perennial. Stem a foot and half high, even, little branched. Leaves almost like those of Aquilegia or Columbine, triternate, oblong-ovate, smooth, quite entire, glaucous-green. Florets in the disk of the umbels male.

Native of Virginia<sup>f</sup>. Mr. Miller has this species, but without any description.

#### PROPAGATION AND CULTURE.

These plants are most of them biennial, perishing after their seeds are ripe; they flower in June, and their seeds ripen in August.

The fourth is that which was ordered for medicinal use, but is seldom now prescribed; and at present is seldom cultivated in gardens, though formerly it was greatly used in the kitchen, before Celery was so much cultivated, which has taken place of Alexanders, and entirely supplanted it. The other sorts are preserved in botanic gardens for variety, but may be cultivated for the use of the kitchen. The first sort is much preferable to the fourth for blanching, and will be tenderer, and not quite so strong.

All these plants may be propagated by sowing their seeds upon an open spot of ground in August, as soon as they are ripe; for if they are preserved till spring, they often miscarry; or at least do not come up until the second year; whereas those sown in autumn rarely fail of coming up in the spring, and will make much stronger plants than the other.

The common sort, when cultivated for the table, should be treated in the following manner:

In the spring the plants should be hoed out, so as to leave them ten inches or a foot apart each way; and during the following summer, they must be constantly cleared from weeds, which, if permitted to grow among them, will draw them up slender, and render them good for little. In February following the plants will shoot up again vigorously, at which time the earth must be drawn up to each plant, to blanch them, and in three weeks after they will be fit for use, when they may be dug up, and the white part preserved, which may be stewed and eaten as Celery.

[SNAIL-FLOWER. See *Phaseolus Caracalla*.

——— TREFOIL. See *Medicago*.

SNAKE-GOURD. See *Tricosanthus*.

——— PIPE. See *Equisetum*.

——— ROOT. See *Aëtea*, *Aristolochia*, *Eryngium*, *Polygala*, *Veratrum*.

——— WEED. See *Polygonum Bistorta*.]

SNAP-DRAGON. See *Antirrhinum*.

[———, American. See *Barleria*.

SNAP-TREE. See *Justicia*.]

SNEEZE-WORT. See *Achillea*.

[SNOWBALL TREE. See *Viburnum*.

SNOWBERRY. See *Chiococca*.]

SNOWDROP. See *Galanthus*, [and *Leucoium*.

——— TREE. See *Chionanthus* and *Halesia*.

SOAP BERRY. See *Sapindus*.

SOAPWORT. See *Saponaria*.

Soccus. See *Artocarpus*.

SODA. See *Salsola*.

SOFT GRASS. See *Holcus*.

SOJA. See *Dolichos Soja*.

SOLANASTRUM. See *Solanum sodomaeum*.

SOLANDRA. (So named by the younger Linneus, in honour of Daniel Charles Solander, a Swede, and disciple of Linneus, L.L.D. F.R.S. Under Librarian of the British Museum, Librarian to Sir Joseph Banks, whom he accompanied in his voyage round the world. He died in 1782.)

Lin. gen. Schreb. n. 1732. p. 793. Lin. fl. Swartz

act. holm. 1787. t. II. prodr. 42. Salisb. in

Linn. trans. 6. 99. t. 6.

Class. 5. 1. Pentandria Monogynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, large, angular, permanent, three-cleft or five-cleft: segments lanceolate, erect.

COR. one-petalled, funnel-form, very large: tube bell-shaped, ventricose, a little shorter than the calyx: border five-cleft; segments roundish, waved, patulous.

STAM. Filaments five, filiform, length of the tube, ascending at the top. Anthers oblong, versatile.

PIST. Germ superior, oval. Style filiform, longer than the stamens, bent in. Stigma obtuse, bifid: segments ovate.

PER. Berry oval, conical at top, smooth, four-celled.

SEEDS very numerous, oblong, nestling.

#### ESSENTIAL CHARACTER.

Cal. bursting. Cor. clavate-funnel-form, very large. Berry four-celled, many-seeded.

#### SPECIES.

1. *Solandra grandiflora*. Great-flowered Solandra.

Lin. spec. ed. Willd. 1. 936. Swartz act. holm.

1787. p. 300. t. II. prodr. 42. descr. 1. 387.

t. 9. Ait. kew. 1. 228. Salisb. in trans. linn. 6.

100. t. 6. Meen exot. bot. t. 6.

Stramonium scandens flore luteo. Plum. ic. ined.

#### DESCRIPTION, &c.

This is a small tree from twelve to twenty feet high, with a branching trunk, and a cloven ash-coloured bark, green within. The wood is spongy. The branches are loose, bent down, divaricating, very long. The leaves are in clusters towards the ends of the branchlets, obovate-oblong, acute, quite entire, smooth, thickish and somewhat succulent, from three to seven inches in length, on round smooth petioles, five times shorter than the leaves. Flowers terminating, subsessile, subsolitary, very large. Peduncles very short, thick, round, smooth, one-flowered. Calyx from two to three inches long, subquinquefid, as the fruit ripens bursting to the base into three or five segments. Tube of the corolla greenish white. Border ten times shorter than the tube, patulous, pale flesh-colour, somewhat irregular, veined: the opening four inches in diameter; segments wide, very bluntly waved, crenulate at the edge, almost equal the upper ones being scarcely larger. Filaments inserted into the base of the tube, yellow: anthers large, ferruginous. Germ smooth: style ascending at the top and yellow: lobes of the stigma roundish, green. Berry often the size of a hen's egg, but thicker below, acuminate with the permanent base of the style, smooth and even, white, pulpy and red within. Seeds black. The very handsome sweet flowers appear in the months of January and February. The fruit ripens in August, and is of a sweet subacid flavour.

Native of Jamaica, on very large trees, or in the fissures of rocks, scandent and subparasitical. It is known there by the name of Peach-coloured Trumpet Flower<sup>z</sup>.

Mr. Salisbury describes it as a shrub from nine to twenty feet in height. The root brown, running out far, very much branched, of a spongy woody substance. Stem ash-coloured, scandent, round: branches many, bent variously, some of them very long: the stem is more or less rooting, cloven; at top pale green, pubescent and viscid; the wood spongy. Leaves close, alternate, frondose: petioles purplish-green, re-

<sup>c</sup> Ray hist. fron. Dodart. <sup>d</sup> Hort. kew. <sup>e</sup> Mor. hist.

<sup>f</sup> Linn. spec.

<sup>z</sup> Swartz.



curved a little, femicylindric, pubescent, and viscid, concave above with the middle line eminent: surface green above, paler beneath, much longer than the petioles, spreading very much and recurved, obovate-lanceolate, quite entire, acuminate, viscid and pubescent on both sides, a little shining, flattish, fleshy: nerves several, the middle one thicker and uniting with the petiole: they are produced and fall every year. Flowers fragrant, nodding, solitary, or sometimes but seldom two or three together. Peduncles pale green, terminating the branchlets; thick, four or five lines in length, obconical, jointed at the insertion, very minutely viscid-pubescent. Receptacle pale green, uniting with the peduncle, than which it is shorter and thicker, indistinctly angular, very minutely viscid-pubescent. Calyx pale purplish green, inserted into the margin of the receptacle, three inches long or more, erect, tubular, five-cornered with the side a little concave, in the time of flowering shortly and unequally cloyen at two or three of the angles, afterwards as the fruit swells frequently more deeply to the very base: segments erect, half-lanceolate, quite entire, a little acuminate; minutely viscid-pubescent especially within; on the outside somewhat shining: permanent. Corolla inserted into the margin of the receptacle, seven or eight inches long: tube pale yellow green, a little shorter than the calyx, declining towards the lower side of it, scarcely three lines in diameter at bottom, widening gradually above, five-cornered, depressed a little on the outside where the filaments are inserted: limb or border for the most part whitish, much longer than the tube; funnel-form below, but quickly swelling out very much, so that the opening of the throat is about two inches in diameter; then being curved back, it is four inches and a half over at the upper opening, and is shortly five-cleft; the undivided part is indistinctly ten-cornered, five of the corners being continued from the lower ones of the tube and coloured on the inside with a dusky-purple fillet, the remaining five springing from the insertion of the filaments, much more slender and having a very indistinct fillet or none at all: the segments are of a bright purplish colour on the outside with the interstices minutely suborbicular at the base, and very finely ciliate; the outmost semiorbicular, repand, flat; the three inner larger, widening on one side, gash-crenate and curled; the inner one very large, semiorbicular, the whole of it very elegantly curled and notchletted: it is smooth on the outside at bottom and the rest is even: it is coriaceous and deciduous. Filaments very pale yellowish green with a dusky purple base, inserted into the mouth of the tube, decurrent, about half the length of the border, curved in, approximating, awl-shaped, smooth. Anthers very pale yellowish green with the sides purple, inserted at the base and there shortly cloven, erect, a little lunulate, four-cornered, with a short dagger-point, two-celled; valves four, the two anterior ones a little narrower and straighter; they open laterally, and after flowering become of a dusky purple, a little less, unequally ovate, very much compressed: the pollen is of a very pale yellow colour. Style purplish at the tip, round and smooth. Stigma pale green, compressed, pubescent, finely channelled. Fruit of a very pale yellowish green, superior to the disk of the receptacle, pyramidal, smooth and even, from an inch and half to two inches in length, ovate, four-celled almost to the top, and then two-celled, two of the partitions gradually failing; there are two central receptacles, on long stipes, deeply two-lobed, variously repand-sinuous. The seeds are sessile on all sides about these, ferruginous, kidney-form, dicotyledonous<sup>b</sup>.

The above may serve as an example of very minute and accurate description.—This plant was introduced here by Mr. Masson in 1781, and flowers in march<sup>c</sup>.

SOLANDRA. See *Hibiscus*, *Lagunaa*, *Triguera*.

SOLANIFOLIA. See *Circaa*.

SOLANI FRUCTU. See *Rauwolfia*.

<sup>b</sup> Linn. trans. 6.

<sup>c</sup> Hort. kew.

SOLANO CONGENER. See *Paris*, and *Trillium*.

SOLANOIDES. See *Rivina*.]

SOLANUM (of Pliny, &c. Derivation uncertain. Some derive it from Sol, the sun; others say it is q. Sulanum, from Sus, being supposed to be serviceable in disorders of swine: both conjectures are improbable.)

Lin. gen. n. 251. Reich. n. 268. Schreb. n. 337.

Tournef. t. 62. Juss. 126. Gært. t. 131.

Melongoena. Tournef. t. 65. Lycoperficon.

Tournef. t. 63.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*. *Solanææ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, half-five-cleft, erect, acute, permanent.

COR. one-petalled, wheel-shaped: tube very short: border large, half-five-cleft, from reflex flat, plaited.

STAM. Filaments five, awl-shaped, very small. Anthers oblong, converging, subcoalescent, opening at the top by two pores.

PIST. Germ roundish. Style filiform, longer than the stamens. Stigma blunt.

PER. Berry roundish, smooth, dotted at the top, two-celled; with a convex fleshy receptacle on each side.

SEEDS very many, roundish, nestling.

ESSENTIAL CHARACTER.

Cor. wheel-shaped. Anthers subcoalescent, opening at top by a double pore. Berry two-celled.

SPECIES.

1. Unarmed.

[1. *Solanum laurifolium*. Bay-leaved Nightshade.

Lin. syst. 223. Willd. 1. 1025. suppl. 148.

Stem unarmed arboreous, leaves petioled ovate-oblong tomentose beneath, panicle terminating dichotomous divaricating.]

2. *Solanum verbascifolium*. Mullein-leaved Nightshade.

Lin. spec. 263. syst. 223. Reich. 1. 510. Willd.

phyt. 1. p. 5. n. 17. Jacqu. hort. 1. p. 5. t. 13.

Pluk. phyt. t. 316. f. 1. Lour. cochinch. 128.

ed. Willd. 159.

S. bahamense. Mill. dict. n. 24.

S. arboreum verbasci folio. Plum. spec. 4.

Stem unarmed shrubby, leaves ovate tomentose quite entire, corymbs bifid terminating.

[3. *Solanum auriculatum*. Ear-leaved Nightshade.

Lin. spec. ed. Willd. 1. 1025. Ait. kew. 1. 246.

Vahl symb. 3. 38. L'Herit. solan. t. 1.

S. mauritianum. Scop. insubr. 3. 16. t. 8.

Stem unarmed shrubby, leaves ovate acuminate tomentose quite entire, stipules cordate, corymbs bifid terminating.

4. *Solanum pubescens*. Pubescent Nightshade.

Lin. spec. ed. Willd. 1. 1026. Willd. phytog. 1. 5. n. 18. t. 3.

Stem unarmed tomentose shrubby, leaves ovate decreasing at the base quite entire pubescent, racemes subumbellated axillary.

5. *Solanum bombense*. Tierra Bomba Nightshade.

Lin. spec. ed. Willd. 1. 1026. Jacqu. amer. 49.

Stem unarmed frutescent, leaves oval attenuated to both ends quite entire, racemes cymed.]

6. *Solanum Pseudo-Capsicum*. Shrubby Nightshade or Winter Cherry.

Lin. spec. 263. Reich. 1. 510. Willd. 1. 1026.

hort. cliff. 61. upf. 48. Kniph. cent. 6. n. 87.

S. fruticosum bacciferum. Baub. pin. 166. Raii hist. 673.

S. frut. americanum dictum Amomum Plinii. Park. theat. 353. f. 1. parad. 431. t. 429. f. 7.

Amomum Plinii. Ger. 289. emac. 361.

Pseudocapsicum. Dod. penit. 718.

Stem unarmed shrubby, leaves lanceolate repand, umbels sessile.

[7. *Solanum microcarpum*. Small-fruited Nightshade.

Lin. spec. ed. Willd. 1. 1026. Vahl symb. 2. 40.

S. diphyllum. Forsk. descr. 63. n. 134.

Stem unarmed shrubby, leaves ovate-lanceolate, umbels lateral peduncled.

8. *Solanum terminale*. End-flowering Nightshade.

Lin. spec. ed. Willd. 1. 1027. Vahl symb. 2. 40.

Forsk. descr. 45.

Unarmed frutescent, leaves lanceolate-ovate mostly quite entire hairy, umbels terminating.

9. *Solanum*



9. *Solanum pauciflorum*. Few-flowered Nightshade.  
*Lin. spec. ed. Willd.* 1. 1027. *Vahl ecl.* 1. 20.  
 Leaves ovate quite entire, branches and calyxes ten-toothed tomentose, peduncles axillary in pairs one-flowered.
10. *Solanum diphyllum*. Two-leaved Nightshade.  
*Lin. spec.* 264. *Reich.* 1. 511. *Willd.* 1. 1027.  
*vir. cliff.* 15. *hort. cliff.* 61. *Pluk. phyt. t.* 111.  
*f.* 4. *Jacqu. collect.* 2. 331. *ic. rar. t.* 322.  
 Stem unarmed shrubby, leaves in pairs, one smaller than the other, flowers in cymes.
11. *Solanum fugax*. Fugacious Nightshade.  
*Lin. spec. ed. Willd.* 1. 1027. *Jacqu. collect.* 4. 123.  
*ic. rar. t.* 324.  
 Stem unarmed shrubby dichotomous divaricating, leaves lanceolate quite entire smooth, peduncles solitary axillary one-flowered, calyx ten-toothed.
12. *Solanum geminatum*. Two-flowered Nightshade.  
*Lin. spec. ed. Willd.* 1. 1027. *Vahl ecl.* 1. 21.  
 Leaves ovate quite entire, calyxes ten-toothed smooth, peduncles axillary in pairs one-flowered, stem scandent.
13. *Solanum retrofractum*. Broken Nightshade.  
*Lin. spec. ed. Willd.* 1. 1028. *Vahl ecl.* 1. 21.  
 Leaves ovate smooth, branches axillary retrofracted, umbels axillary and terminating sessile, calyxes truncate.
14. *Solanum stellatum*. Starry Nightshade.  
*Lin. spec. ed. Willd.* 1. 1028. *Jacqu. collect.* 3. 254.  
*ic. rar. t.* 325.  
 Stem unarmed shrubby scandent flexuose, leaves ovate smooth acuminate, peduncles subgeminat one-flowered axillary, calyxes unequally toothed.]
15. *Solanum Dulcamara*. Woody Nightshade or Bittersweet.  
*Lin. spec.* 264. *syft.* 223. *Reich.* 1. 511. *Willd.* 1. 1028. *hort. cliff.* 60. *fl. suec. n.* 201. *mat. med.* 66. *Woodv. med. bot.* 97. *t.* 33. *Huds. angl.* 93. *Witber. arr. ed.* 3. 253. *Smith brit.* 256. *engl. bot. t.* 565. *Curt. lond.* 1. *t.* 14. *abr. t.* 19. *Relb. cant. ed.* 2. *n.* 202. *Sibth. oxon. n.* 243. *Fl. dan. t.* 607. *Gunn. norv. n.* 23. *Hoffm. germ.* 78. *Roth. germ.* 1. 95. 2. 245. *Pollich pal. n.* 228. *Krock. siles. n.* 345. *Hall. belv. n.* 575. *Scop. carn. n.* 257. *Villars dauph. 2.* 494. *Allion. pedem. n.* 461. *Gmel. fib. 4.* 94. *Desfont. atlant. 193.* *Dubam. arb. 2. t.* 72. *Blackw. t.* 34. *Ludw. est. t.* 58. *Bulliard herb. t.* 23. *Berg. phyt. 1. t.* 113. *Plenck, ic.* 119.  
*S. scandens.* *Neck. gallob.* 119.  
*S. sc. f. Dulcamara.* *Bauh. pin.* 167. *Tournef. inst.* 149. *Garid.* 445.  
*S. lignosum f. Dulcamara.* *Park. theat.* 349. *t.* 350. *Raii hist.* 672 *syn.* 265.  
*Amara dulcis.* *Ger.* 279. *emac.* 350. *Lob. obs.* 136. 4. *ic.* 266. *Tabern. ic.* 893.  
*Dulcis amara.* *Trag.* 816.—*flore cæruleo & albo.* *Best. exst. æst.* 2. 16. *f.* 2, 3.  
*Vitis sylvestris.* *Camer. epit.* 986. *Matth.* 1282.  
*Glycypicros f. Dulcamara.* *Bauh. hist.* 2. 109. 2.  
*La Morelle grimpante.* *Regnault bot. ic.*  
 β. *Dulcamara flore albo.* *Park. theat.* 349. 2. *Ger.* 279.  
 γ. *S. lignosum, f. Dulcamara marina.* *Raii syn.* 265.  
 δ. *S. dulcamarum africanum, foliis crassis hirsutis.* *Dill. elth.* 365. *t.* 273. *f.* 252.  
*S. africanum.* *Mill. dict. n.* 26.  
 Stem unarmed frutescent flexuose, upper leaves hastate, racemes cymed.
- [16. *Solanum triquetrum*. Triangular-stalked Nightshade.  
*Lin. spec. ed. Willd.* 1. 1029. *Cavan. ic.* 3. 30. *t.* 259.  
 Stem unarmed frutescent three-sided, leaves cordate acuminate smooth, umbels opposite to the leaves subpeduncled.
17. *Solanum scandens*. Scandent Nightshade.  
*Lin. syft.* 224. *ed. Willd.* 1. 1029. *suppl.* 147.  
 Unarmed, stem twining, leaves cordate ovate hanging down very soft beneath, peduncles terminating.
18. *Solanum lyratum*. Lyrate-leaved Nightshade.  
*Lin. syft.* 224. *ed. Willd.* 1. 1029. *Thunb. jap.* 92.  
 Unarmed herbaceous erect, leaves lyrate-hastate tomentose.
19. *Solanum Tegore*. Guiana Nightshade.  
*Lin. spec. ed. Willd.* 1. 1030. *Aubl. guian.* 1. 212. *t.* 84.  
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- Stem unarmed shrubby very hirsute, leaves petioled, the lower pinnatifid-sinuate, the upper cordate, racemes simple axillary.
20. *Solanum quercifolium*. Oak-leaved Nightshade.  
*Lin. spec.* 264. *syft.* 223. *Reich.* 1. 511. *Willd.* 1. 1030.  
 Stem unarmed subherbaceous angular flexuose rugged, leaves pinnatifid, racemes cymed.
21. *Solanum laciniatum*. Cut-leaved Nightshade.  
*Lin. spec. ed. Willd.* 1. 1030. *Ait. kew.* 1. 247. *Curt. magaz. t.* 349.  
*S. aviculare.* *Forst. prodr. n.* 107. *escul. n.* 12.  
 Stem shrubby unarmed very smooth, leaves pinnatifid, segments lanceolate acute, panicles axillary by twos or threes.
22. *Solanum radicans*. Rooting Nightshade.  
*Lin. spec.* 264. *Reich.* 1. 512. *Willd.* 1. 1031. *Dec. 1. t.* 10.  
 Stem unarmed herbaceous even roundish prostrate rooting, leaves pinnatifid, racemes cymed.
23. *Solanum havanense*. Havannah Nightshade.  
*Lin. syft.* 223. *Reich.* 1. 512. *Willd.* 1. 1031. *mant.* 47. *Jacqu. amer.* 49. *t.* 35. *piet.* 29. *t.* 48. *Swartz obs.* 82.  
 Stem unarmed frutescent, leaves oblong-lanceolate quite entire shining, racemes axillary.
24. *Solanum triste*. Dull Nightshade.  
*Lin. syft.* 223. *spec. ed. Willd.* 1. 1031. *Jacqu. amer.* 50. *t.* 40. *f.* 2. *piet.* 30. *t.* 49. *Vahl symb.* 3. 38.  
 Stem unarmed frutescent, leaves lanceolate-oblong subrepand smooth, racemes subcymed.
25. *Solanum recemosum*. Waved-leaved Nightshade.  
*Lin. syft.* 223. *Reich.* 1. 512. *Willd.* 1. 1031. *mant.* 47. *Jacqu. amer.* 50. *t.* 36. *piet.* 30. *t.* 50.  
 Stem unarmed frutescent, leaves lanceolate repand waved, racemes long straight.
26. *Solanum corymbosum*. Ovate-leaved Nightshade.  
*Lin. spec. ed. Willd.* 1. 1031. *L'Herit. solan. t.* 3. *Jacqu. collect.* 1. 78. *ic. rar. t.* 49. *Ait. kew.* 1. 248. *Retz. obs.* 5. 22.  
 Stem unarmed suffruticose, leaves ovate-lanceolate entire acuminate at the base, flowers corymbed.
27. *Solanum quadrangulare*. Square-stalked Nightshade.  
*Lin. syft.* 224. *Willd.* 1. 1032. *suppl.* 147. *Thunb. prodr.* 36.  
 Stem unarmed frutescent four-cornered, leaves ovate entire and angular, flowers panicled.
28. *Solanum repandum*. Repand-leaved Nightshade.  
*Lin. spec. ed. Willd.* 1. 1032. *Forst. prodr. n.* 105.  
 Stem unarmed subherbaceous flexuose even, leaves ovate repand tomentose, peduncles axillary cymed.]
29. *Solanum bonariense*. Tree Nightshade.  
*Lin. spec.* 264. *syft.* 223. *Reich.* 1. 512. *Willd.* 1. 1032. *mant.* 205. *Dill. elth.* 364. *t.* 272. *f.* 351.  
 Stem almost unarmed shrubby, leaves ovate-oblong sinuate-repand rugged.
30. *Solanum macrocarpon*. Smooth fleshy-leaved Nightshade.  
*Lin. syft.* 223. *Reich.* 1. 513. *Willd.* 1. 1032. *mant.* 205. *Mill. fig.* 196. *t.* 294. *Plum. spec.* 4. *ic.* 224. *f.* 2.  
 Stem unarmed suffruticose, leaves wedged repand smooth.
31. *Solanum tuberosum*. Tuberous-rooted Nightshade, or common Potato.  
*Lin. spec.* 265. *Reich.* 1. 513. *Willd.* 1. 1033. *vir. cliff.* 15. *hort. cliff.* 60. *ups.* 48. *Kniph. cent.* 6. *n.* 88. *Knorr. del.* 2. *t.* 9. 10. *Berg. phyt. t.* 231. *Plenck, ic.* 121. *Blackw. t.* 523. & 587. *Fl. rust. t.* 139.  
*S. tuberosum esculentum.* *Bauh. pin.* 167. *phytop.* 301. *prodr. t.* 89. *Matth. ed.* 1. 758. *Raii hist.* 675. *Mor. hist. f.* 13. *t.* 1. *f.* 19. *Tournef. inst.* 149.  
*Lycopersicon tuberosum.* *Mill. dict. n.* 7.  
*Battata virginiana.* *Ger.* 781. *emac.* 927. *Park. parad.* 516. *t.* 517. *f.* 3.  
*Papas americanum.* *Bauh. hist.* 3. 621.  
*P. peruanorum.* *Best. exst. aut.* 3. 1. *f.* 1.



- Arachidna* Theoph. forte, Papas Peruanorum. *Clus. hist.* 2. 79.  
 Le Pomme de terre. *Regnault bot. ic.*  
*Stem unarmed herbaceous, leaves pinnate quite entire, peduncles subdivided.*
32. *Solanum pimpinellifolium*. Burnet-leaved Nightshade.  
*Lin. spec.* 265. *Reich.* 1. 513. *Willd.* 1. 1033. *amoen.* 4. 268.  
*Lycopersicon pimpinellifolium*. *Mill. dict. n.* 4.  
*Stem unarmed herbaceous, leaves pinnate quite entire, racemes simple.*
33. *Solanum Lycopersicum*. Love-Apple, or Tomato.  
*Lin. spec.* 265. *syst.* 224. *Reich.* 1. 513. *Willd.* 1. 1033. *vir. cliff.* 15. *hort. cliff.* 60. *ups.* 49.  
*Lour. cochinch.* 130. *ed. Willd.* 161. *Lamarck illustr. n.* 2330. *t.* 115. *f.* 2. *Kniph. cent.* 4. *n.* 82. *Plenck, ic. t.* 122.  
*S. pomiferum fructu rotundo striato molli.* *Baub. pin.* 167. *Raii hist.* 675. *Mor. hist. f.* 13. *t.* 1. *f.* 7.  
*Lycopersicon Galeni*. *Tournef. inst.* 150. *t.* 63. *Mill. dict. n.* 1.  
*L. esculentum*. *Mill. dict. n.* 2.  
*L.* 2. 3. *Brown. jam.* 175.  
*Pomum amoris*. *Camer. epit.* 821. *Rumph. amb.* 5. 416. *t.* 154. *f.* 1. *Blackw. t.* 133.  
*P. amoris majus fructu rubro & luteo*. *Park. parad.* 379. *t.* 381. *f.* 3. *Best. eyf. aut.* 1. 2. *f.* 1.  
*Poma amoris*. *Ger.* 275. *emac.* 346.  
*Aurea Mala*. *Dod. pempt.* 458. 1.  
*Mala aurea odore foetido, quibusdam Lycopersicon.* *Baub. hist.* 3. 620.  
*La Pomme d'amour*. *Regnault bot. ic.*
- β. *Solanum racemosum cerasorum forma*. *Baub. pin.* 167. *prodr.* 90. *Jacqu. hort.* 1. 4. *t.* 11.  
*Pomum amoris minus f. Mala Ethiopica parva.* *Park. parad.* 379.  
*Stem unarmed herbaceous, leaves pinnate gashed, racemes two-parted leafless, fruits smooth.*
- [34. *Solanum Pseudo-Lycopersicum*. False Tomato.  
*Lin. syst.* 224. *Willd.* 1. 1034. *Jacqu. hort.* 1. *t.* 11.  
*Stem unarmed herbaceous, leaves pinnate gashed, racemes simple, fruits subvillose.]*
35. *Solanum peruvianum*. Peruvian Nightshade.  
*Lin. spec.* 265. *Reich.* 1. 514. *Willd.* 1. 1034. *Jacqu. collect.* 2. 284. *ic. rar. t.* 327. *Lour. cochinch.* 131. *ed. Willd.* 162.  
*Lycopersicon peruvianum*. *Mill. dict. n.* 5.  
*L. pimpinellæ folio*. *Feuill. peruv.* 3. 37. *t.* 25.  
*Stem unarmed herbaceous, leaves pinnate gashed tomentose, racemes two-parted leafy, berries somewhat hairy.*
- [36. *Solanum montanum*. Mountain Nightshade.  
*Lin. spec.* 266. *Reich.* 1. 514. *Willd.* 1. 1034.  
*S. tuberosum minus, atriplicis folio, vulgo Papa montana.* *Feuill. peruv.* 3. *t.* 46.  
*Stem unarmed herbaceous, leaves subcordate repand.*
37. *Solanum rubrum*. Red Nightshade.  
*Lin. syst.* 224. *Reich.* 1. 514. *Willd.* 1. 1034.  
*Nelen tsjunda*. *Hort. malab.* 145. *t.* 73.  
*Stem unarmed subperennial, leaves in pairs ovate quite entire, peduncles subumbelled.*
38. *Solanum nodiflorum*. Knot-flowered Nightshade.  
*Lin. spec. ed. Willd.* 1. 1035. *Jacqu. collect.* 2. 288. *ic. rar. t.* 326.  
*Stem unarmed shrubby, leaves smooth ovate acuminate at both ends, umbels peduncled extrafoliaceous.]*
39. *Solanum nigrum*. Common or Garden Nightshade.  
*Lin. spec.* 266. *syst.* 224. *Reich.* 1. 514. *Willd.* 1. 1035. *vir. cliff.* 15. *hort. cliff.* 60. *ups.* 48. *fl. suec. n.* 200. *mat. med.* 66. *Woodv. med. bot. suppl. p.* 37. *t.* 226. *Gertn. fruct.* 2. 239. *Huds. angl.* 92. *Wither. arr. ed.* 3. 254. *Smith brit.* 256. *engl. bot. t.* 566. *Curt. lond.* 2. *t.* 14. *Relb. cant. ed.* 2. *n.* 203. *Sibth. oxon. n.* 244. *Fl. dan. t.* 460. *Hall. belv. n.* 576. *Hoffm. germ.* 79. *Roth. germ.* 1. 95. 2. 244. *Pollich pal. n.* 229. *Krock. files. n.* 346. *Neck. gallob.* 118. *Scop. carn. n.* 258. *Villars dauph.* 2. 494. *Allion. pedem. n.* 462. *Desfont. atlant.* 194
- Gron. virg.* 24. *Bulliard herb. t.* 67. *Berg. phyt. i.* 111. *Plenck, ic.* 120.
- α. *Solanum vulgatum*. Common Nightshade.  
*S. officinarum*. *Baub. pin.* 166. *Tournef. inst.* 148.  
*S. vulgare*. *Park. theat.* 346. 1. *Raii hist.* 672. *syn.* 265.—*f. offic.* *Mor. hist. f.* 13. *t.* 1. *f.* 1.  
*S. hortense*. *Fuchf. hist.* 686. *Trag.* 303. *Camer. epit.* 812. *Matth.* 1069. *Dod. pempt.* 454. 1. *Lob. obs.* 133. 2. *ic.* 262. *Ger.* 268. 1. *emac.* 339. 1. *Blackw. t.* 107.  
*S. hortense f. vulgare*. *Baub. hist.* 3. 608.  
*S. sativum*. *Tabern. ic.*
- β. *S. patulum*. Spreading Nightshade.  
*S. procerius patulum, vulgaris fructu*. *Dill. elth.* 367. *t.* 275. *f.* 355.  
*S. brasiliense Aguara-quiya dictum*. *Raii hist.* 672. *Branches round smooth, leaves quite entire smooth.*
- γ. *S. villosum*. Yellow-berried Nightshade.  
*Mill. dict. n.* 2. *Hoffm. germ.* 79.  
*S. annuum hirsutius baccis luteis*. *Dill. elth.* 366. *t.* 274. *f.* 353. *Mor. hist.* 3. 520. *n.* 3.  
*S. lanuginosum hortensi f. vulgari simile*. *Raii hist.* 672.  
*S. ægyptiacum*. *Forsk. descr.* 46. *Vahl symb.* 2. 40. *Branches round villose, leaves angular subvillose.*
- δ. *S. guineense*. Large black-berried Nightshade.  
*Mill. dict. n.* 7.  
*S. guineense, fructu magno instar cerasi*. *Dill. elth.* 366. *t.* 274. *f.* 354. *Branches angular toothed, leaves quite entire toothed.*
- ε. *S. virginicum*. Small black-berried Nightshade.  
*Swartz obs.* 83. *Brown. jam.* 174. 6.  
*S. scabrum*. *Mill. dict. n.* 6. & forte, americanum, *n.* 5.  
*S. nigrum vulgari simile, caulibus exasperatis*. *Dill. elth.* 368. *t.* 275. *f.* 256. *Branches angular toothed, leaves repand smooth.*
- ζ. *S. judaicum*.  
*Branches with prickles bent in and repand naked leaves.*
- η. *S. rubrum*. Red-berried Nightshade.  
*Mill. dict. n.* 4.  
*S. americanum vulgari simile, acinis rubris*. *Rand. Stem unarmed herbaceous smooth, leaves oblong-ovate acuminate toothed smooth, umbels nodding.* *Ait. kew.* 1. 249.
- θ. *S. hirsutum*. Hairy Nightshade.  
*Vahl symb.* 2. 40. *Forsk. descr.* 46. *n.* 51.—*memphiticum.*  
*Branches round, leaves quite entire hirsute.*  
*Stem unarmed herbaceous, leaves ovate, tooth-angular, racemes distich nodding.*
40. *Solanum æthiopicum*. Ethiopian Nightshade.  
*Lin. spec.* 265. *syst.* 224. *Reich.* 1. 515. *Willd.* 1. 1036. *amoen.* 4. 307. *Jacqu. hort.* 1. 4. *t.* 12. *Lour. cochinch.* 130. *ed. Willd.* 160. *Thunb. jap.* 92.  
*S. pomiferum, fructu rotundo striato duro*. *Baub. pin.* 167. *Baub. hist.* 3. 620. *Raii hist.* 673. *Tournef. inst.* 150. *Pluk. phyt. t.* 226. *f.* 4.  
*S. pomiferum herbariorum*. *Lob. ic.* 264. *Park. theat.* 352. 1.  
*Lycopersicum æthiopicum*. *Mill. dict. n.* 3.  
*Mala æthiopica*. *Ger.* 276. *emac.* 347. *Park. theat.* 352. *n.* 3. *t.* 353. *f.* 3.  
*Stem unarmed herbaceous, leaves ovate repand-angular, peduncles fertile one-flowered drooping.*
41. *Solanum Melongena*. Large-fruited Nightshade or Egg Plant.  
*Lin. spec.* 266. *syst.* 224. *Reich.* 1. 515. *Willd.* 1. 1036. *Lour. cochinch.* 130. *ed. Willd.* 161. *Desfont. atlant.* 195. *Plenck, ic. t.* 123.  
 α. *S. pomiferum fructu oblongo*. *Baub. pin.* 167. *Pluk. phyt. t.* 226. *f.* 2. *Raii hist.* 673.  
*Melongena ovata*. *Mill. dict. n.* 1.  
*M. fructu oblongo violaceo, albo, luteo & suave-rubente*. *Tournef. inst.* 151.  
*Mala infana*. *Trag.* 894. *Fuchf. hist.* 533. *Dod. pempt.* 458. *Ger.* 274. *emac.* 345.—*fyriaca.* *Park. theat.* 352. *n.* 2. *t.* 353. *f.* 2.  
 β. *Melongena teres*. Taper-fruited Melongena.  
*Mill. dict. n.* 2.  
*M. fructu tereti violaceo*. *Tournef. inst.* 151.  
 γ. *Me-*



- γ. *Melongena incurva*. Crooked-fruited *Melongena*.  
*Mill. dict. n. 3.*  
*M. fructu incurvo*. *Tournef. inst. 152.*  
*Solanum pomiferum fructu incurvo*. *Baub. pin. 167.*  
*Baub. hist. 3. 619. Raii hist. 674.*  
*Stem unarmed herbaceous, leaves ovate tomentose, peduncles pendulous incrassated, calyxes unarmed.*
42. *Solanum subinerme*. Spear-leaved *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1037. Jacqu. amer. 50.*  
*t. 40. f. 3. Swartz prodr. 47. descr. 1. 453.*  
*Ait. kew. 1. 250.*  
*S. laurifolium*. *Mill. dict. n. 20. sec. Swartz.*  
*S. frutescens americanum non spinosum lauri folio,*  
*flore racemoso cæruleo. Houst.*  
*Stem almost unarmed shrubby, leaves lanceolate-elliptic*  
*quite entire smooth above tomentose beneath, cymes*  
*mealy.*
- [43. *Solanum longiflorum*. Long-flowered *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1037. Vahl ecl. 1. 20.*  
*Unarmed, leaves elliptic entire attenuated subtomentose be-*  
*neath, racemes lateral, corollas five-parted.*
44. *Solanum muricatum*. Warty *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1037. Ait. kew. 1. 250.*  
*L'Herit. solan. t. 6.*  
*Melongena laurifolia, fructu turbinato variegato.*  
*Feuill. it. 2. 735. t. 26.*  
*Stem almost unarmed suffruticose rooting, shoots warted,*  
*leaves oblong-lanceolate entire pubescent.*  
*2. Prickly.*
45. *Solanum insanum*. Round-fruited prickly *Nightshade*.  
*Lin. syst. 224. Reich. 1. 516. Willd. 1. 1037.*  
*mant. 46. Gron. orient. 62. Swartz obs. 83.*  
*S. spinosum fructu rotundo. Baub. pin. 167. Raii*  
*hist. 674. n. 9.*  
*S. pomiferum, magno fructu ex albo & atropurpureo*  
*nitente foliis & calyce spinosis. Pluk. phyt. t. 226. f. 3.*  
*Trongum hortense. Rumph. amb. 5. 238. t. 85.*  
*Stem prickly herbaceous, leaves ovate tomentose, pedun-*  
*cles pendulous incrassated, calyxes prickly.*
46. *Solanum torvum*.  
*Lin. spec. ed. Willd. 1. 1038. Swartz prodr. 47.*  
*descr. 1. 456. Pluk. phyt. t. 225. f. 6?*  
*S. indicum. Lin. spec. ed. 1. 187.*  
*Stem prickly shrubby, prickles crooked, leaves subcordate*  
*ovate sinuate tomentose, rachis prickly, calyxes un-*  
*armed.*
47. *Solanum volubile*. Twining *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1038. Swartz descr. 458.*  
*S. scandens. Swartz prodr. 47.*  
*S. scabrum. Vahl ecl. 1. 22.*  
*Stem prickly shrubby scandent, leaves angular, petiole,*  
*rachis and calyx prickly.*
48. *Solanum ferox*. Malabar *Nightshade*.  
*Lin. spec. 267. Reich. 1. 516. Willd. 1. 1039.*  
*Stem prickly herbaceous, leaves cordate angular tomentose*  
*prickly, berries rough-haired covered with the calyx.]*
49. *Solanum campechiense*. Yellow-spined *Nightshade*.  
*Lin. spec. 267. syst. 225. Reich. 1. 516. Willd.*  
*1. 1059. mant. 340. vir. cliff. 15. hort. cliff. 61.*  
*upf. 49.*  
*S. acanthifolium. Mill. dict. n. 14.*  
*S. campechiense, calycibus echinatis. Dill. elth. 361.*  
*t. 268. f. 347.*  
*S. americanum spinosum herbaceum, acanthi folio, flore*  
*amplo cæruleo. Houst. Mss.*  
*Stem shrubby prickly rough-haired, leaves cordate-oblong*  
*five-lobed toothed, calyxes very prickly.*
- [50. *Solanum fuscum*. Purple-spined *Nightshade*.  
*Lin. spec. 268. Reich. 1. 517. 22. β. Willd. 1.*  
*1039. Jacqu. collect. 1. 51. ic. rar. t. 42.*  
*S. americanum caule & pedunculo nigro foliis acanthi*  
*spinosis. Boerb. lugdb. 2. 68.*  
*Stem herbaceous prickly, leaves cordate-ovate sinuate-*  
*lobed obtuse with the lobes somewhat angular, the upper*  
*prickles coloured.]*
51. *Solanum mammosum*.  
*Lin. spec. 267. Reich. 1. 517. Willd. 1. 1040.*  
*vir. cliff. 15. hort. cliff. 61. upf. 49. Pluk. phyt.*  
*t. 226. f. 1. Merian surin. t. 27. Lour. cochinch.*  
*131. ed. Willd. 162.*  
*Stem prickly herbaceous, leaves cordate angular-lobed,*  
*villose and prickly on both sides.*
- [52. *Solanum hirtum*. Rough-haired *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1040. Vahl symb. 2. 40.*  
*Shrubby prickly, leaves cordate-angular tomentose prickly,*  
*peduncles lateral aggregate with the calyxes very bir-*  
*sute.*
53. *Solanum paniculatum*. Panicle *Nightshade*.  
*Lin. spec. 267. Reich. 1. 517. Willd. 1. 1040.*  
*Jurepeba. Pif. bras. 181.*  
*Stem and petioles prickly, leaves sinuate-angular smooth*  
*above, flowers panicled.*
54. *Solanum aculeatissimum*. Prickly *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1040. Jacqu. collect. 1. 100.*  
*ic. rar. t. 41.*  
*Stem shrubby very prickly, leaves cordate five-lobed and*  
*sinuate somewhat hairy, calyxes somewhat prickly.]*
55. *Solanum virginianum*. Virginian *Nightshade*.  
*Lin. spec. 267. syst. 225. Reich. 1. 518. Willd.*  
*1. 1041. Dill. elth. 360. t. 267. f. 346. Pluk.*  
*phyt. t. 62. f. 3. Mor. hist. 3. 521. n. 14.*  
*Planta spinosissima virginiana boraginis flore. Raii*  
*hist. 674. & 1876.*  
*S. pomiferum frutescens africanum spinosum, &c.*  
*Raii hist. 1799.*  
*Stem erect prickly, leaves pinnatifid prickly all over, seg-*  
*ments sinuate obtuse ciliate at the edge, calyxes prickly.*
- [56. *Solanum Jacquinii*. Jacquin's *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1041.*  
*S. virginianum. Jacqu. collect. 2. 285. ic. rar. t. 332.*  
*Stem decumbent diffused prickly, leaves pinnatifid prickly*  
*all over, segments sinuate obtuse naked at the edge,*  
*calyxes prickly.*
57. *Solanum xanthocarpum*. Yellow-fruited *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1041. Schrad. & Wendl.*  
*fert. hannov. 1. 8. t. 2.*  
*Stem decumbent diffused prickly, leaves pinnatifid prickly*  
*stellate-pubescent, segments sinuate acute naked at the*  
*edge, calyxes prickly.*
58. *Solanum coagulans*.  
*Lin. spec. ed. Willd. 1. 1042. Vahl symb. 2. 41.*  
*Forst. descr. 47.*  
*Stem prickly shrubby, leaves oblong repand-sinuate tomen-*  
*tose prickly, lobes rounded entire.]*
59. *Solanum jamaicense*. Jamaica *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1042. Swartz descr. 1. 454.*  
*Mill. dict. n. 17?*  
*Stem prickly shrubby, leaves wedged wider in the middle*  
*obtuse-angled tomentose on both sides, rachises and ca-*  
*lyxes prickly, prickles bent back.*
60. *Solanum indicum*. Indian *Nightshade*.  
*Lin. spec. 268. syst. 225. Reich. 1. 518. Willd.*  
*1. 1042. hort. cliff. 61. fl. zeyl. n. 94. Burm.*  
*zeyl. t. 102. Lour. cochinch. 131. ed. Willd. 162.*  
*Gertn. fruct. 2. 240. Pluk. phyt. t. 225. f. 6.*  
*S. ind. spinosum, flore boraginis. Dill. elth. 362.*  
*t. 270. f. 349.*  
*Stem prickly shrubby, leaves wedge-shaped angular sub-*  
*villose quite entire, prickles straight.*
- [61. *Solanum carolinense*. Carolina *Nightshade*.  
*Lin. spec. 268. syst. 225. Reich. 1. 518. Willd.*  
*1. 1043. vir. cliff. 15. hort. cliff. 61. Jacqu.*  
*collect. 2. 287. ic. rar. t. 331.*  
*S. carol. spinosum, boraginis floribus spicatis. Dill.*  
*elth. 362. t. 269. f. 348.*  
*Stem prickly annual, leaves hastate-angular, prickles*  
*straight, racemes loose.*
62. *Solanum sinuatum*. Sinuate-leaved *Nightshade*.  
*Lin. spec. ed. Willd. 1. 1043.*  
*Stem shrubby round prickly, leaves bipinnatifid-sinuate vil-*  
*lose prickly on both sides, calyxes villose prickly.]*
63. *Solanum sedomum*. Black-spined *Nightshade*.  
*Lin. spec. 268. syst. 225. Reich. 1. 519. Willd.*  
*1. 1043. vir. cliff. 15. hort. cliff. 61. upf. 49.*  
*fl. zeyl. n. 75. Thunb. prodr. 37. Kniph. cent. 4.*  
*n. 83. Herm. lugdb. 573. t. 575. Pluk. phyt.*  
*t. 316. f. 4. Mor. hist. 3. 521. f. 13. t. 1. f. 15.*  
*Stem prickly shrubby round, leaves pinnatifid-sinuate spar-*  
*sedly prickly naked, calyxes prickly.*
- [64. *Solanum capense*. Cape *Nightshade*.  
*Lin. syst. 226. Willd. 1. 1044. suppl. 147. Thunb.*  
*prodr. 37.*  
*Stem prickly shrubby round, leaves sinuate-pinnatifid*  
*prickly naked, segments alternate entire obtuse.*



65. *Solanum marginatum*. *White Nightshade*.  
*Lin. syst.* 226. *Willd.* 1. 1044. *suppl.* 147. *Murr.*  
*in comm. gott.* 1783. p. 11. t. 4. *Jacqu. collect.* 1.  
50. *ic. rar.* 1. t. 45.  
*Prickly, leaves cordate repand with a white edge.*
66. *Solanum stramonifolium*. *Broad-leaved Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1044. *Jacqu. misc.* 2. 298.  
*it. rar.* 1. t. 44. *Ait. kew.* 1. 252.  
*Stem prickly-shrubby, leaves cordate angular-lobed entire almost unarmed somewhat tomentose beneath.*
67. *Solanum Vespertilio*. *Canary Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1045. *Ait. kew.* 1. 252.  
*L'Herit. solan.*  
*Stem prickly shrubby, leaves cordate entire, corollas somewhat irregular, lower anther more produced.*
68. *Solanum sanctum*. *Palestine Nightshade*.  
*Lin. spec.* 269. *syst.* 225. *Reich.* 1. 519. *Willd.* 1.  
1045. *Vahl symb.* 2. 41. *Pluk. phyt.* t. 316. f. 2.  
*S. incanum.* *Forsk. descr.* 46.  
*Stem prickly shrubby, prickles tomentose and leaves obliquely ovate repand.*
69. *Solanum hybridum*. *Mule Nightshade*.  
*Lin. syst.* 225. *Willd.* 1. 1045. *Jacqu. hort.* 2.  
t. 113.  
*Stem prickly shrubby, leaves ovate almost unarmed acute repand, when young having a violet-coloured meal on the back and at the edge.]*
70. *Solanum tomentosum*. *Woolly Nightshade*.  
*Lin. spec.* 269. *syst.* 226. *Reich.* 1. 519. *Willd.*  
1. 1045. *hort. cliff.* 61.  
*S. africanum spinosum, folio canescente undulato.*  
*Triumf. præl.* 46. t. 6. *Raii suppl.* 355.  
*S. foliis & caule spinosis.* *Morif. blæs.* 310.  
*S. spinosum maxime tomentosum.* *Bocc. sic.* 8. t. 5.  
[*S. Solanum coccineum.* *Scarlet woolly Nightshade*.  
*Lin. syst.* 225. *Willd.* 1. 1046. *β.* *Jacqu. misc.* 2.  
329. *ic. rar.* 1. t. 43.  
*Stem prickly shrubby, prickles acerose, leaves cordate unarmed subrepand, when young having a purple meal on them.*
71. *Solanum polygamum*. *Polygamous Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1046. *Vahl symb.* 3. 39. t. 55.  
*Stem, petioles and leaves prickly, leaves ovate oblong mostly entire somewhat rugged above, tomentose beneath.]*
72. *Solanum bahamense*. *Bahama Nightshade*.  
*Lin. spec.* 270. *Reich.* 1. 520. *Willd.* 1. 1046.  
*hort. cliff.* 61. *Dill. elth.* 363. t. 271. f. 350.  
*Sloan. jam.* 1. 38. t. 11. f. 3.  
*S. fruticosum.* *Mill. dict. n.* 18.  
*Stem prickly shrubby, leaves lanceolate repand obtuse bent back at the edge, racemes simple.*
73. *Solanum obscurum*. *Obscure Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1046. *Vahl symb.* 2. 41.  
*Leaves elliptic-lanceolate flat villose beneath, racemes lateral, stem and petioles prickly.*
74. *Solanum giganteum*. *Tall Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1046. *Jacqu. collect.* 4. 125.  
*S. niveum.* *Vahl symb.* 2. 42. *Thunb. prodr.* 46.  
*Stem prickly shrubby, prickles tomentose, leaves lanceolate acute unarmed smooth above, tomentose and hoary beneath, racemes dichotomous cymed terminating.*
75. *Solanum flexuosum*. *Waving-branched Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1047. *Vahl ecl.* 1. 22.  
*Leaves geminate elliptic-lanceolate somewhat rugged entire, underneath with the petioles prickly, flowers four-stamened.*
76. *Solanum lanceæfolium*. *Lance-leaved Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1047. *Jacqu. collect.* 2. 286.  
*ic. rar.* t. 329.  
*Stem shrubby scandent prickly, leaves geminate oblong attenuated to both ends somewhat rugged prickly beneath, flowers five-stamened.*
77. *Solanum lanceolatum*. *Lanceolate Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1047. *Cavan. ic.* 3. 23.  
t. 245.  
*Stem shrubby tomentose prickly, leaves narrow-lanceolate quite entire tomentose beneath unarmed, panicle terminating.*
78. *Solanum eleagnifolium*.  
*Lin. spec. ed. Willd.* 1. 1048. *Cavan. ic.* 3. 22. t. 243.  
*Stem shrubby petioles and leaves lanceolate obtuse tomentose beneath subaculeate, racemes lateral.*
79. *Solanum polyacanthos*.  
*Lin. spec. ed. Willd.* 1. 1048. *Vahl ecl.* 1. 24.  
*Lamarck encycl.* 2. 23. *Plum. ic.* 218. t. 224.  
f. 1.  
*S. parviflorum.* *Cavan. ic.* 3. 19. t. 236.  
*Very prickly, leaves linear-lanceolate subrepand subsessile obtuse, peduncles axillary one-flowered, prickles like needles.]*
80. *Solanum igneum*. *Red-spined Nightshade*.  
*Lin. spec.* 270. *syst.* 226. *Reich.* 1. 520. *Willd.*  
1. 1048. *Jacqu. hort.* 1. 5. t. 14. *Pluk. phyt.*  
t. 225. f. 5.  
*β. S. igneum parvifolium.* *Vahl ecl.* 1. 23.  
*Stem prickly shrubby, leaves lanceolate acuminate rolled back at the base on both sides, racemes simple.*
81. *Solanum Milleri*. *Miller's Nightshade*.  
*Lin. spec. ed. Willd.* 1. 1049. *Jacqu. collect.* 4. 209.  
*ic. rar.* 2. t. 330.  
*S. trilobatum floribus parvis.* *Lin. spec.* 270.  
*S. Schiru-Schuna.* *Mill. dict. n.* 32.  
*Stem shrubby prickly, leaves smooth pinnatifid with about five lobes quite entire prickly, peduncles one-flowered subgeminate.*
- [82. *Solanum trilobatum*. *Three-lobed Nightshade*.  
*Lin. spec.* 270. *syst.* 226. *Reich.* 1. 520. *Willd.*  
1. 1049. *Burm. ind.* 57. t. 22. f. 2. *Pluk. phyt.*  
t. 316. f. 5.  
*Stem prickly shrubby, leaves wedgeform-angular subtrilobate obtuse smooth, flowers racemed.*
3. *Thorny.*
83. *Solanum lycioides*.  
*Lin. syst.* 226. *Reich.* 1. 521. *Willd.* 1. 1050.  
*mant.* 46. *Jacqu. collect.* 1. 96. *ic. rar.* t. 46.  
*Stem shrubby thorny, leaves elliptic.*
- Species from Loureiro.
84. *Solanum biflorum*. *Two-flowered Nightshade*.  
*Lour. cochinch.* 129. *ed. Willd.* 159.  
*Stem unarmed shrubby, leaves ovate villose, peduncles in pairs..*
85. *Solanum album*. *White Nightshade*.  
*Lour. cochinch.* 129. *ed. Willd.* 159.  
*Trongum agreste album.* *Rumph. amb.* 1. 8. c. 48.  
p. 241.  
*Stem unarmed suffruticose, branches prostrate, leaves oblong angular, peduncles many-flowered.*
86. *Solanum dichotomum*.  
*Lour. cochinch.* 129. *ed. Willd.* 160.  
*Stem unarmed suffruticose, leaves cordate-lanceolate, peduncles dichotomous.*
87. *Solanum procumbens*.  
*Lour. cochinch.* 132. *ed. Willd.* 163.  
*Stem prickly suffruticose procumbent flowers heaped terminating.]*
- Houstoun's species from Miller.
88. *Solanum angustifolium*. *Narrow-leaved Nightshade*.  
*Mill. dict. n.* 15.  
*S. americanum spinosissimum herbaceum anguriæ folio, flore luteo.* *Houst.*  
*Stem prickly shrubby, leaves pinnate-laciniate tomentose, prickly on both sides, peduncles axillary two-flowered.*
89. *Solanum quercifolium*. *Oak-leaved Nightshade*.  
*Mill. dict. n.* 16.  
*S. amer. frutescens & spinosum, quercus folio, baccis rubris.* *Houst. Mss.*  
*Stem prickly shrubby, leaves oblong sinuate-pinnate prickly, umbels sessile.*
90. *Solanum scandens*. *Twining Nightshade*.  
*Mill. dict. n.* 19.  
*S. amer. scandens & frutescens flore magno cæruleo fructu rubro.* *Houst. Mss.*  
*Stem unarmed frutescent flexuose, leaves ovate tomentose beneath, flowers solitary axillary.*
91. *Solanum Houstoni*. *Houstoun's Nightshade*.  
*S. carolinienae.* *Mill. dict. n.* 21.  
*S. amer. frutescens & spinosum, foliis infra tomentosis, flore magno cæruleo.* *Houst. Mss.*  
*Stem prickly shrubby, leaves ovate sinuate-toothed tomentose beneath, prickles every way straight, umbels sessile terminating.*
92. *Solanum*



92. *Solanum umbellatum*.*Mill. dict. n. 27.**S. amer. frutescens non spinosum, foliis oblongis subtus incanis, floribus umbellatis. Houst.**Stem frutescent unarmed, leaves lanceolate quite entire hairy underneath, umbels erect terminating.*93. *Solanum racemosum*.*Mill. dict. n. 28.**S. amer. fruticosum glabrum, foliis subrotundis subtus incanis, floribus racemosis. Houst. Mjs.**Stem unarmed shrubby, leaves ovate quite entire tomentose underneath, umbels erect terminating, calyxes obtuse lanuginous.*

## DESCRIPTIONS, &amp;c.

[1. This is an unarmed tree. Leaves a span long, quite entire, brown. Panicle solitary, dichotomous, composed of one-ranked racemes. Berries black.—Native of South America, in large woods<sup>k</sup>.

2. This is an unarmed tree, above the height of a man, with a trunk as thick as the human arm. The ends of the branches, the leaves, peduncles and calyxes are covered with a thick nap. Peduncles terminating, erect, always bifid, with the branches again bifid. Flowers white, inodorous<sup>l</sup>.

Native of America, and, according to Loureiro, of Cochinchina. Jacquin found it in the mountain woods of Martinico, and says that it flowers there in november.]

According to Miller, it was sent by Catesby from the Bahama islands, but he confounds it with the *bahamense* of Dillenius, which is a prickly species. See n. 72. But his description belongs to this species. It rises with a smooth shrubby stalk six or eight feet high, covered with a brown bark, and divides into many branches, which have spear-shaped leaves three inches and a half long, and an inch and half broad; they have a few sinuated indentures on their edges, and end in acute points; they are smooth, and of a light-green colour. The flowers are produced in small umbels from the side of the stalks, standing erect; they are pretty large, white, and the petal is cut into five star-pointed segments.

[3. This is very like the preceding, but has the leaves very long-pointed, and differs in the stipules, the colour of the flower, and in having a shorter petiole<sup>m</sup>.—Vahl says, that it differs only in having a pair of axillary leaflets.

Native of the islands of Madagascar, Mauritius and Bourbon. Introduced in 1773 by Mons. Richard. It flowers here in april<sup>n</sup>.

4. This also resembles the second species, but differs in having the leaves pubescent decreasing at the base and smaller; the flowers raceme-umbelled; the racemes opposite to the leaves; the flower larger and purple.—Native of the East Indies<sup>o</sup>.

5. This is a small upright tree about twelve feet high. The leaves when it is young are often a foot long. Flowers small, white, in racemes only half the length of the leaves.

Found by Jacquin in coppices of the island of Tierra Bomba near Carthagena in America<sup>p</sup>.]

6. This rises with a strong woody stalk four or five feet high, and divides into many slender stiff branches, having spear-shaped leaves turning backward. The flowers are white, and grow in small umbels, or singly on the side of the branches, to which they sit close; they appear from june to september, and are succeeded by berries as large as small cherries, which ripen in winter. There are two varieties, one with red, and the other with a yellowish fruit. It is a native of the island of Madeira.

[Gerarde says, we have this rare and pleasant plant, called Tree Nightshade, in our gardens, rather for pleasure than profit, or any good quality as yet known. It is kept in pots and tubs in houses during the extremity of winter, and is set abroad in march or april. Parkinson says, that many gentlewomen call the fruit Winter Cherries; and this name has superseded the other.

7. Branches tomentose at the end. Leaves three or four inches long, an inch and half wide at the base, smooth, not at all repand, when young somewhat tomentose. Umbels many-flowered. Peduncle very short: pedicels an inch long. Corolla white, hairy on the outside. Anthers saffron-coloured. Berries smooth, red, a little larger than a pepper-corn.—It differs from the preceding in having broad quite entire leaves, the umbels peduncled, and the fruit only one third of the size. It may however be only a variety.—Native of Egypt.

8. Stems decumbent, branched. Branches round, warted, villose at top. Leaves petioled, two inches long, acute at both ends, simply veined, villose, especially underneath, waved and somewhat toothletted about the edge, ciliate: leaves on the branchlets oblong and more hairy. Peduncle terminating, erect, three inches long: umbels in threes, peduncled, alternate, having from seven to nine flowers: pedicels unequal, filiform, scurfy and villose, as are also the peduncles, calyxes and corollas. Calyx five-toothed: segments equal, lanceolate, obtuse, smooth within.—Native of Arabia Felix<sup>q</sup>.

9. Branches herbaceous, round, villose below, above axillary, as are also the branchlets, tomentose with a ferruginous-yellowish-nap. Leaves very remote, two or three inches in length, two together on the branchlets, one several times smaller than the other, oblong or ovate, little attenuated, acute, those which are more advanced smooth above, and without veins, but paler beneath and veined; the younger ones have a ferruginous nap on them. Petioles half an inch long, ferruginous-tomentose. Peduncles axillary, two together, one a quarter of an inch long flowering first, the other shorter. Flowers drooping, ferruginous-tomentose. Calyx bell-shaped, short, truncate, ten-toothed: teeth linear, little shorter than the calyx itself. Corolla smooth, length of the peduncle.—Native of the island of Martinique<sup>r</sup>.

10. This is an evergreen stinking shrub two or three feet high, with a trunk the size of a finger, woody round and blackish, and brown branches: the whole unarmed and smooth. Branches and leaves mostly stretched out horizontally. Most of the leaves two together, on short petioles, by the side of each other; one lanceolate, bluntish, entire, from two to four inches long, the other about an inch, obovate, very blunt, sometimes emarginate. Common peduncles very short, lateral, many-flowered, forming a sort of cyme; the proper peduncles pendulous at the back of the leaves. Flowers small, with a five-toothed calyx: corolla white, deeply five-parted; segments lanceolate, acute. Berry globular, smooth, succulent, orange-coloured, the size of a Chich-Pea. Seeds whitish-yellow. It flowers the whole summer, and the seeds ripen in winter<sup>s</sup>.

Native of the West Indies. Cultivated by Mr. Miller in 1759<sup>t</sup>.

11. This also is a shrub, the height of a man and much branched. Trunk the size of a finger, round, having a blackish dotted bark. Branches mostly dichotomous, divaricating very much, the younger smooth, the older roughened. Leaves lanceolate, on very short petioles, alternate at the joints, quite entire, appearing smooth to the naked eye, but indistinctly villose when examined by a magnifier, two inches long. Peduncles from the forking of the branchlets or opposite to a leaf, solitary, one-flowered pendulous, slender, an inch long. Calyx small, bell-shaped, truncate, ten-freaked. Corolla wide, wheel-shaped, spreading very much, with a yellow five-rayed star, the acute points of which stretch out beyond the border. The flowers open about five o'clock in the morning and close in a short time, remaining so for a few days and then falling off. Anthers yellow. Style longer than the stamens, awl-shaped, thick, white. Stigma yellow. Native of the Caracas<sup>u</sup>.

12. This is an unarmed shrub, with round smooth branches, appearing slightly mealy at top when examined

<sup>k</sup> Linn. suppl.<sup>l</sup> Jacquin.<sup>m</sup> Willdenow.<sup>n</sup> Hort. kew.<sup>o</sup> Willdenow.<sup>p</sup> Jacquin.<sup>q</sup> Vahl, symb.<sup>r</sup> Vahl, ecl.<sup>s</sup> Jacquin.<sup>t</sup> Hort. kew.<sup>u</sup> Jacquin.



with a magnifier. Leaves alternate, two inches long, attenuated, acute, smooth on both sides, obscurely veined, on smooth petioles half an inch in length. Peduncles first four, then two, growing out farther along with the branchlet, filiform, one flowering first, the length of the petiole, the other shorter. Calyx smooth, subcampanulate, three times shorter than the corolla, ten-toothed: teeth linear-subulate, equal. Corolla smooth. This and the next species approach to *S. fugax*.—Native of Cayenne, where it was found by von Rohr.

13. Stem seeming to be twining, shrubby, unarmed. Branches round, smooth, flexuose, even: branchlets axillary, alternate, bent back as if broken, rigid, bearing leaves and flowers at the top, sometimes forked. Leaves alternate, attenuated, quite entire, simply and obscurely veined, an inch and half long, often two at the end of the branchlets, one smaller than the other. Petiole shorter by half than the branchlet. Peduncles filiform, an inch long or rather less, aggregate, axillary, four, at the ends of the branchlets five or six, one-flowered. Calyx truncate, entire, smooth. Corolla five-cleft, three times as long as the calyx: segments ovate.—Allied to *S. geminatum*, but differing in having stouter branchlets bent back as if broken, more peduncles, toothless calyxes, and smaller flowers. Native of South America<sup>x</sup>.

14. This is a shrub higher than a man, evergreen, weak, scandent, smooth and unarmed. Stems several, the thickness of a reed or of a finger, brown, springing from a brown root as big as the fist. Branches numerous, round, divaricating. Leaves alternate, lanceolate or ovate-lanceolate, acuminate, quite entire, on short petioles, bright green, from two to four inches long. Peduncles one-flowered, axillary, mostly two together, sometimes three or only one, slender. Flower elegant but without scent. Calyx small, obtuse, and cut into many unequal parts. Corolla large, spreading very much, thin, rounded, blue with a five-rayed star, green and protuberant beneath so as to be like a calyx and exterior corolla; its acute points stretch beyond the border. Anthers yellow. Style green. Stigma capitate, bifid. Berry globular, the size of a pea<sup>y</sup>.

According to Willdenow, it seems to differ from the preceding, to which it is allied, in the size of the flower, and in the calyx. In his specimen the peduncles are in twos, threes and fours, always axillary, without any terminating ones, and the calyx is four, five or six-toothed, with the teeth unequal.

15. Root perennial, woody, according to Dr. Beddoes, smelling like the Potato. Stem shrubby, roundish, branched, twisted and climbing to the height of several feet. Leaves alternate, petioled, ovate-lanceolate, quite entire, smooth, soft, veiny; the lower cordate, the upper more or less hastate. Flowers in racemes or cyme-shaped panicles, but not properly in cymes, opposite to a leaf or terminating, nodding, very elegant, purple with two green dots at the base of each segment, and the segments reflexed. Anthers large, yellow or lemon-coloured and connate. Berries elliptic, scarlet, very juicy, bitter and poisonous<sup>z</sup>. Seeds flat, somewhat kidney-shaped, of a yellowish colour. The stem is thinly set with small pointed tubercles. The younger branches are often purple. The proper peduncles are bulbous at the base, or grow out of a kind of socket. The calyx is purplish, with blunt segments. The mouth of the corolla is dark and shining, and the segments are lanceolate. The filaments are very short and of a dark purple colour. The anthers have two holes at the top of each, out of which the pollen is discharged<sup>a</sup>. At the first opening of the flower they are readily separable, but afterwards growing drier, they will sooner tear than be disjointed<sup>b</sup>.

Native of Europe, Africa and Siberia, in moist hedges, shady places and the sides of ditches; flowering in June and July. The berries are ripe in September and October.

The roots and stalks of Woody Nightshade, upon

being chewed, first cause a sensation of bitterness, which is soon followed by a considerable degree of sweetness; whence this plant obtained the names of *Dulcamara* and *Bittersweet*. The berries excite vomiting and purging<sup>c</sup>. Floyer says that thirty of them killed a dog in less than three hours, remaining undigested in his stomach. As they are common in hedges, and may be mistaken by children for red currants, this circumstance is the more worthy of notice. In such a case it is advisable to pour down as much warm water as possible, to dilute the poison and provoke vomiting, till farther assistance can be had.

The old botanists recommend this plant as a medicine in many diseases. Ray informs us, that the inhabitants of Westphalia, make use of a decoction of the whole plant as their common drink, with success against the scurvy<sup>d</sup>. Boerhaave says, it is a medicine far superior to China and Sarsaparilla, as a sweetener and restorative: and Linneus, that an infusion of the young twigs is an admirable medicine in acute rheumatisms, inflammations, fevers, and suppression of the lochia. Dr. Hallenberg advises it in ischiatic and rheumatic pains, jaundice, scurvy, and lues venerea. They direct a pint of boiling water to be poured upon two drams of the stalks sliced and dried; after standing half an hour, it must be boiled ten or fifteen minutes. The dose is two tea-cups full or more morning and evening<sup>e</sup>. Haller observes that the *Dulcamara* partakes of the milder qualities of common or garden Nightshade, joined to a resolvent and saponaceous quality. Murray and Bergius regard it as promoting all the secretions. The latter confines its use to rheumatism and retention of the menses and lochia. But according to other good authorities, it has been applied with advantage in some obstinate cutaneous affections.—Dr. Cullen says, we have employed only the slender twigs, but some parcels of these were very mild and inert, others considerably acrid. In the latter state we have employed a decoction of them in the cure of rheumatism, sometimes with advantage, but at other times without any effect. Though the *Dulcamara* be inserted in the catalogue of diuretics, it has never appeared to us as powerful in this way; for in all the trials made here, it has hardly ever been observed to be in any measure diuretic. The twigs should be gathered either in spring or autumn, but will be found most powerful in the latter season. If used dry, a somewhat larger dose must be taken. This plant is generally given in decoction or infusion; and to prevent its exciting vomit, it should be diluted with milk; small doses also are recommended at the beginning, for large ones have been found to produce convulsions, delirium, and palsy of the tongue<sup>f</sup>. Mr. Saunders, author of an elegant introduction to Botany, published in 1792, has, in the course of an extensive country practice, used the *Dulcamara* with great success, and without the inconveniences just mentioned<sup>g</sup>.

β. It is sometimes found with flesh-coloured and with white flowers.] Miller says, the leaves of this are woolly, and that the difference is constant.

γ. On the sea coast it has the leaves hairy, according to Hudson. Ray says, that Dr. Brown, fellow of Magdalen College, Oxford, a very skilful botanist, confirmed to him that this plant differed from the common Woody Nightshade in its whole habit.—Lhwyd found it near Uysni river in Caernarvonshire; but it is on the southern coasts of our island in many places<sup>h</sup>.

δ. Willdenow affirms, that Dillenius's African Sol. *Dulcamara* is without doubt a distinct species. The flowers are larger, opening only about noon, of a paler colour, the segments less acuminate and not reflexed; the branches end in many peduncles, dichotomously divided and subdivided; towards the top they are angular and rough, below they are round, hairy and less rough. Leaves on the flowering-branches smaller, pointed at both ends and entire; on the barren branches bigger, and wider at the base, the lower ones entire

<sup>x</sup> Vahl, ecl.

<sup>y</sup> Jacquin.

<sup>z</sup> Smith.

<sup>a</sup> Curtis.

<sup>b</sup> Withering.

<sup>c</sup> Woodville.

<sup>d</sup> Curtis.

<sup>e</sup> Withering.

<sup>f</sup> Woodville.

<sup>g</sup> Engl. bot.

<sup>h</sup> Ray syn.



and roundish, the upper angular, not unlike those of Ivy: both alternate, frequent, thick, rigid; set all over with abundance of hairs, so short as to be felt rather than seen, green on both sides, here and there tinged with dusky purple; veins few springing obliquely from the midrib. None of the leaves appear to be hastate; by the figure.

Native of the Cape of Good Hope. It was sent from Holland to Sherard's garden at Eltham, where it was cultivated about 1726<sup>1</sup>.]

Mr. Miller remarks that the leaves are shorter, thicker and more indented.

Besides these varieties, there is one with variegated leaves, which is preserved by those who are curious in collecting striped-leaved plants.

[16. Stem spread on the ground, branched, four feet long, mostly tender and smooth, as is the whole plant. Leaves alternate; the lower ovate-acuminate; the upper cordate-lanceolate; commonly hanging down: petioles several times shorter than the leaves. Flowers hanging down in umbels, on a very short bifid peduncle: the pedicels half an inch in length. Corolla white, very deeply divided into five linear curled segments. Berries globular, the size of a pea, pendulous. It flowers in the royal garden at Madrid in September<sup>k</sup>. Willdenow remarks, that the umbel is very shortly peduncled and four-flowered.

17. Stem herbaceous, round, twining. Leaves alternate, petioled; ovate or cordate, remote. Raceme terminating, composed of three or four simple ones. Calyx scarcely divided. Corolla wheel-shaped, with the petals lanceolate and recurved. Anthers erect, perforated at the top. Berry globular, the size of a Cherry, with a short calyx, contracted and gibbous under the fruit with five swellings.—Native of Surinam, where it was found by Dahlberg<sup>1</sup>.

18. The whole plant is closely and darkly tomentose. Stem round, little flexuose, with a few alternate branches. Leaves scattered, ovate, the lower ones lyrate-pinnatifid, the upper hastate, an inch long, the lateral segments almost opposite, four seldom more, entire, the end one larger, acuminate, entire. Petiole a little shorter than the leaf. Flowers axillary towards the top, and terminating, in a subdichotomous panicle. Pedicels and calyx smooth. Anthers yellow, perforated.

Native of Japan near Nagasaki; flowering in September and October<sup>m</sup>.

19. This is a plant five or six feet high, with a woody round stem, having trichotomous branches, and forming a thick bush. Leaves alternate, the lower ones very large and wide, divided into several broad acute lobes; the largest are fifteen inches long and ten wide; they are green and soft: petiole cylindrical, two inches long. Leaves on the branches cordate, ending in a point, downy like the others: the largest of these are seven inches long and three inches wide: petiole an inch in length or a little more. Flowers between the forks of two branches, very small, many together on a common villose peduncle; pedicels very short. Corolla deeply divided into five narrow sharp segments. Berries globular, yellowish, almost the size of a walnut. Seeds flattened and rounded. All parts of the plant exhale a very disagreeable odour.

Native of Guiana, by the banks of the river Sinemari; flowering and fruiting in October. Called Tegoré by the Galibis<sup>n</sup>.

20. This is sister to *S. Dulcamara*. Stems angular, erect, rugged. Leaves oblong, decurrent into the petiole, veined, smooth, rugged beneath, pinnatifid. Peduncles branched. Corollas violet-coloured, blunter than in *Dulcamara*, with two greenish spots at the base of each lobe. Anthers yellow, shorter than the style. Berries ovate<sup>o</sup>. It resembles *S. radicans* (n. 22.) but differs in having the leaves rugged, the stem erect, the flowers panicle-corymbed and much larger<sup>p</sup>.

Native of Peru. Introduced in 1787, by Mons. Vaire. It flowers in July<sup>q</sup>.

21. Leaves smooth almost as in *Lactuca perennis*. Flowers violet-coloured, the same size as in *Geranium pratense*; with the segments of the corolla emarginate. Anthers separate; not cohering as in most of the species. Berries yellowish-green; the size of a small Plum<sup>r</sup>.

Native of New Zealand, where it was found by Sir Joseph Banks, and was introduced in 1772. It flowers in July and August<sup>s</sup>.

Mr. Curtis, who cultivated and figured it; observes that it is a plant of some beauty, and remarkable for receding from the common character of the genus, in having the anthers widely separate from each other: also that the pulp of the berries is sweet, tasting in a small degree like a Fig.

*S. aviculare* of Forster is supposed to be the same with this. He describes the berries as fulvous, the size of a large Plum, acid with little sweetness and somewhat mawkish. The natives of New Zealand devour them greedily; birds are very fond of them; and the Europeans did not entirely disdain them.—The stem is upright, branched, and a yard high: the branches herbaceous, smooth, roundish, nearly the size of a finger, and short. Leaves alternate, sinuate-pinnatifid, a foot long, composed of three pairs of opposite, smooth, entire segments, of a deep green colour. Petioles semicylindrical, smooth, spreading, scattered. Corymbs terminating, two or three, few-flowered. Peduncle roundish, upright; pedicels six or seven, scattered, one-flowered, round, smooth, spreading, proportional in height, jointed as it were into the peduncle. Flowers an inch in diameter, purple with yellow anthers<sup>t</sup>. Forster does not notice the separation of the anthers, but says that they converge into a tube.

22. This plant agrees with *S. quercifolium* in many circumstances, but differs in the following.—The stem is diffused, rooting and smooth; the leaves are smooth; the leaflets five and ovate; the racemes simple and few-flowered; the flowers smaller, white purplish beneath and not spotted; the berries globular, twin, yellow.—Native of Peru<sup>u</sup>. Introduced in 1771, by Mons. Richard. It flowers in July and August<sup>x</sup>.

23. Stem shrubby, three or four feet high, with upright, round, smooth branches. Leaves alternate, petioled, oblong, wedged at the base, with a short blunt tip, entire, nerved, smooth on both sides, pale beneath, thicker. Racemes terminating, solitary, containing from four to seven flowers. Peduncles one-flowered, short. Calyx parted half way; segments oblong, permanent, white at the edge. Corolla biggish, blue; the border half-five-cleft and spreading, the segments wide and plaited. Filaments very short. Anthers converging, yellow, having two pores at the top<sup>y</sup>.

According to Jacquin, it is an upright shrub, five feet high, with few branches. Peduncles two or three-flowered, lateral, few. Flowers handsome, but without scent, almost an inch in diameter, spreading very much, having scarcely any tube, the border divided into very short wide segments, emarginate with a point. Anthers thick, blunt at each end, not contiguous. Berry ovate, shining bright, deep blue, containing a little watery juice but hardly any pulp. Seeds kidney-form, compressed, fastened to a fleshy-pulpy receptacle, which grows on each side along the middle of the partition. In habit and fructification it is between *Solanum* and *Capficum*.

Found at the Havanna by Jacquin, flowering in January; and by Swartz in Jamaica, flowering in June. He says that Jacquin's figure is not a very good one.

24. This is an upright shrub, eight feet high and not handsome. Leaves acute, dark green, petioled, alternate, seven or eight inches long. Racemes lateral, thick, an inch and half long, simple or bifid, warted with the falling off of the pedicels that first come out. Flowers small, white, forming a sort of cyme. Berries globular, of a dirty yellow colour<sup>z</sup>.

Vahl says that the branches are round and smooth:

<sup>1</sup> Dill. clth.

<sup>k</sup> Cavanilles.

<sup>1</sup> Linn. suppl.

<sup>m</sup> Thunberg.

<sup>n</sup> Aublet.

<sup>o</sup> Linn. spec.

<sup>p</sup> Willdenow.

<sup>q</sup> Hort. kew.

<sup>r</sup> Willdenow.

<sup>s</sup> Hort. kew.

<sup>t</sup> Forst. escul.

<sup>u</sup> Linn. dec.

<sup>x</sup> Hort. kew.

<sup>y</sup> Swartz.

<sup>z</sup> Jacquin.



the leaves elliptic-lanceolate, nerved and veined, running a little down the petiole, entire or obscurely repand. Peduncles lateral, an inch long, many-flowered. Calyx short and smooth, with rounded segments. Divisions of the corolla lanceolate.—Native of Martinique.

25. This is a branching upright shrub, four feet high. Leaves shining, petioled, alternate. Racemes simple, lateral, erect, the length of the leaves; the pedicels erect in the flower, pendulous in the fruit. Flowers without scent. Corolla snow-white, cut very deeply into lanceolate-oblong segments. Berries red, the size of a small pea<sup>a</sup>.

Linneus remarks, that it resembles *S. bahamense* very much.—Native of the West Indies. Introduced in 1781 by Mr. Francis Masson<sup>b</sup>.

26. Stems several, the thickness of a reed or more, round, woody and perennial at bottom, herbaceous and annual above, branched, erect or weak and decumbent, having the habit of *S. Dulcamara*. Leaves smooth, acute, alternate, fetid. Racemes opposite to the leaf, slender, bifid, trifid or quadrifid, many-flowered, shorter than the leaves. Flowers small. Corolla blue: segments both of that and the calyx bluntish. Berry orange-coloured, the size of a small pea. Seeds few, pale<sup>c</sup>.

Native of Peru. Introduced in 1786, by Monf. Thouin. It flowers in July<sup>d</sup>.

According to Retzius, the stem is two feet high, suffrutescent, weak, angular, naked, becoming shrubby in the stove. Leaves scattered, ovate, naked, mostly entire but sometimes three-lobed; in the stove lanceolate. Cymes from the upper axils, short, formed of simple and compound racemes. Flowers small, purple. Berries small, black.

27. This differs principally in having a four-cornered hirsute stem. The leaves are often decurrent and thus the corners of the stem are curled. It varies with lanceolate entire leaves.—Native of the Cape of Good Hope<sup>e</sup>.

28. Native of the Marchesas and Society Isles<sup>f</sup>.

29. Stem shrubby, a fathom high and more, almost unarmed, having only a few prickles on the stem when it is tender, flexuose, brown. Leaves deltoid, subrepand, lanceolate, wide, naked, rugged. Peduncles lateral, subquinquefid, subumbelled. Flowers white, large, nodding, tomentose on the outside. Anthers yellow. Berries of the same size as those of *Sorbus aucuparia* or Mountain Ash<sup>g</sup>.]

Stem woody, ten or twelve feet high, covered with a purplish bark almost smooth. At the top it divides into several branches which grow erect. Leaves wedge-shaped, sinuated. Flowers in large umbels at the end of the branches, large and white; the petal is angular, but not divided at the brim. Berries small, yellow when ripe.

[Native of Buenos Ayres. Cultivated in 1727, by James Sherard, M.D.<sup>h</sup> It was raised in the Eltham garden from berries on a dried specimen sent from Buenos Ayres, and flowered the year above mentioned, in september, the year following it flowered sooner, and the third year in June<sup>i</sup>.

30. Stem stiff, a foot high, the thickness of a finger, perennial, even. Branches annual, erect. Leaves oleraceous, large, obtuse. Flowers large, blue, bell-shaped, erect, on short peduncles, many of them barren. Berries the size of an apple, globular, yellow, subsessile<sup>k</sup>.

Stem taper and smooth, of a deep green colour when young, but afterwards the lower part becomes woody, and has a brown bark. It rises from two to three feet high, and sends out branches irregularly on every side. Leaves oblong-ovate, smooth, four or five inches long, and three inches broad in the middle, irregularly sinuate, ending obtusely, of a deep-green colour, on short foot-stalks, placed without order on the branches. Peduncles axillary, short, having frequently two small leaves below the flowers,

which are generally clustered together at the top, sitting close to the foot-stalks. Flowers large, of a fine blue colour, spreading almost flat, and having five corners. Anthers oblong, orange-coloured. Fruit roundish, smooth, almost as large as a walnut, of a deep-green colour, changing when ripe to a pale yellow. It begins to flower in June, and there is a succession of them till winter<sup>l</sup>.—Native of Peru. Cultivated in 1759, by Mr. Miller<sup>m</sup>.

31. The Potato is well known for its tuberous root. Stem from two to three feet in height, succulent, somewhat angular, striated, slightly hairy, frequently spotted with red, branched; the branches long and weak. Leaves interruptedly pinnate, having three or four pairs of leaflets, with smaller ones between, and one at the end larger than the rest; the leaflets are somewhat hairy, and dark green on the upper surface. The flowers are either white or tinged with purple; or, as old Gerarde describes them, of a light purple, striped down the middle of every fold or welt with a light show of yellowness. The fruit is a round berry, the size of a small plum, green at first, but black when ripe, and containing many small flat roundish white seeds.

The Potato, now so generally cultivated in Europe, appeared at the end of the 16th century, as a curiosity in botanic gardens. Gerarde (in 1597) informs us, that he received roots of it from Virginia, otherwise called Norembega; which grew and prospered in his garden, as in their own native country. He calls it Potato of America or Virginia, to distinguish it from the Spanish Potato (*Convolvulus Batatas*), which was then much better known, and called exclusively Potatoes, Potatus, or Potades, from the Spanish name Battata<sup>n</sup>.

Though it be pretty clear that the Potato came to us from Virginia, yet it does not follow that it is originally indigenous of that country; but it is more probable that it is a native of Peru, whence the Spaniards might have it immediately. Pet. Cieca, Gomara and Acosta inform us, that in the neighbourhood of Quito there is a plant with tuberous roots, called Papas, of which the inhabitants make a sort of bread, and that they also eat them both boiled, and roasted in the embers. These are supposed to be, not the Spanish, but our common Potato: as also those which the Virginians call Openanck or Openawk.

The Potato which was so common in Italy in and before the 16th century was doubtless the Spanish or *Convolvulus Batatas*; for it is said to have been eaten as commonly with mutton as Turneps or Parsneps, and even to have been used for feeding hogs. If this had been our common Potato, how, as Clusius remarks, could the knowledge of this root have been so late in coming to us; and how could they have been ignorant of it at Padua, till he sent it to them from Frankfort.

Clusius himself owed his first acquaintance with the Potato to Philip de Sivry, Lord of Walhain, &c. in Flanders, who sent him two roots, with the fruit, to Vienna, in the beginning of the year 1588, and the year following, a drawing of a branch with the flower. De Sivry had it the year before from a friend of the Pope's Legate in Flanders, under the name of Tartufoli, by which appellation the Italians distinguish all roots that are tuberous like Truffles. James Garet, junior, also sent Clusius a drawing of the whole plant, but the figure which this celebrated botanist gives in his *Rariorum Plantarum Historia* (1631), is from a living plant in his own possession<sup>o</sup>.

Caspar Bauhin (in prodr.) relates, that he had a coloured drawing of the plant from Scholtz, in 1590, under the name of Pappas Hispanorum. Not finding any description of it, he described and figured it in his *Phytopinax* and in his edition of *Matthiolus*. He also sent the figure to Clusius, who however does not mention having received it from Caspar Bauhin. This celebrated author says that the *Solanum tube-*

<sup>a</sup> Jacquin. <sup>b</sup> Hort. kew. <sup>c</sup> Jacquin. <sup>d</sup> Hort. kew.  
<sup>e</sup> Linn. suppl. <sup>f</sup> Forster. <sup>g</sup> Linn. mant.  
<sup>h</sup> Hort. kew. <sup>i</sup> Dil. elth. <sup>k</sup> Linn. want.

<sup>l</sup> Mill. fig.

<sup>m</sup> Hort. kew.  
<sup>n</sup> Clus. hist.

<sup>o</sup> Flora rustica.



rosam esculentum came from Virginia into England, and thence into France and other countries<sup>2</sup>.

Lifter, in his journey to Paris (10th Dec. 1698) informs us, that the Potato was then scarcely to be found in the French markets, which was so great a relief to the people of England: but that there was store of Jerusalem Artichokes<sup>3</sup>: which root seems to have been almost as commonly cultivated in England at the end of the 16th and the beginning of the 17th century, as the Virginian Potato has been in the 18th.

It was cultivated in France about the year 1742: but in 1749 it was treated with great contempt both in the country and at Paris, and left wholly to the lower people. Afterwards however it became quite the fashion for a time, and then fell again into disrepute. In 1771 Monf. Faiguet presented to the Academy of Sciences a loaf of bread made of Wheat, Rie and Potatoes in equal quantities. In 1778, Monf. Parmentier made bread of Potatoes only. In 1781, biscuit was made of them by Monf. Parmentier the younger<sup>4</sup>.

The Potato made its fortune in Germany much sooner. For Clusius says, in the year 1601; "ea plerisque Germaniæ hortis satis vulgaria dudum facta." Bread is said to have been made with it there so early as 1731. I saw it extensively cultivated in the open fields of Suabia in 1780.

In Italy the Potato has never been much esteemed; nay the prejudice against it was so great, that when a ship-load of the roots was sent from England some years since to Naples, to relieve the inhabitants in a famine, it is said that the people chose rather to starve than to purchase them. They have however since grown wiser, at least in the northern parts of that country.

The Potato was certainly introduced into Ireland and England towards the end of the 16th or at the beginning of the 17th century, and was cultivated to considerable extent by the middle of the 17th. Sir Lucius O'Brien assured Mr. Arthur Young, that there was no doubt of its having been in Ireland long before the time of Sir Walter Raleigh: and it is even said, that venerable Bede, or some other old writer, gives a description of the food of the common Irish in such terms as are applicable to nothing but Potatoes. Some attribute their introduction to Sir Francis Drake, who died the 28th of January, 1590, aged fifty: others to Captain John Hawkins, so early as 1565, from Santa Fe<sup>5</sup>. There seems to be little or no authority for the above assertions; and as to the last, the Potatoes of Hawkins were certainly *Convolvulus Batatas* or Spanish Potatoes, as may be seen from Hawkins's own account of them in Hakluyt<sup>6</sup>.

Mr. Miller says the Potato was first introduced from America about the year 1623. I am at a loss to conceive why he has assigned so late a period to its introduction, when it is plain that it was cultivated by Gerarde in 1597. Dr. Campbell (polit. surv. 2. 95.) says, it appears that it was brought into Ireland about the year 1610.

The most probable account seems to be, that the celebrated and much to be lamented Sir Walter Raleigh first introduced this very useful root into Ireland on his return from Virginia in 1584. In Gough's edition of Camden's Britannia, it is expressly affirmed, that Sir Walter planted them at Youghall in the county of Cork<sup>7</sup>; where he had an estate. In Holt's characters of the Kings and Queens of England, is an apocryphal account of Sir Walter's mistaking the fruit for the part that was to be eaten, and despairing of his acquisition upon finding that to be unpalatable; but that he afterwards discovered the root to be grateful and nourishing, on ordering the ground to be turned over. We have also the old story so often told of other vegetables, that they came into Lancashire, by the accidental shipwreck of a vessel.

Nearly the same account is given by Professor Matthias Christian Sprengel, in his book on the origin of the Negro Slave Trade<sup>8</sup>.

There is an evident incongruity in these two accounts, that the Potato was first imported into Ireland by Hawkins in 1565, and planted there by Sir Walter Raleigh. And we know that Hawkins's Potatoes were not the *Solanum*, but the *Convolvulus Batatas*; a totally different plant, as was mentioned above.

Better authority than these may be derived from the minutes of the Royal Society of Dec. 13, 1693, where it is said:—"the President (Sir Robert Southwell) related that Potatoes were brought into Ireland by his grandfather, who had them from Sir Walter Raleigh, after his return from Virginia:" this was in the year 1584; and that great man was beheaded in 1618.

It is generally agreed that the Potato quickly passed over from Ireland into Lancashire, where it has been cultivated ever since with extraordinary diligence, and improvement, both as to the time of coming to market, and the superior excellence of new varieties raised from seed.—It is said to have been forty years before it was much planted about London, and then it was considered merely as a rarity<sup>9</sup>.

Parkinson, in 1629, says that Potatoes of Virginia, are dressed in the same ways as the Spanish kind: that is, being roasted under the embers, peeled and sliced, they were put into sack with a little sugar; or they were baked with marrow, sugar, spice, &c. in pies; or they were preserved and candied by the comfit-makers; and thus dressed were esteemed almost as delicate as the former<sup>10</sup>. This author mentions three sorts of Potatoes, as well known among us, the Spanish, the Virginian, which some foolishly call the Apples of youth, and the Canadian, which some ignorant and idle head has called Artichokes of Jerusalem. Much of the history and qualities of the first has been attributed to the second.

Muffet, in 1655, says that Potado roots are now so common and known amongst us, that even the husbandman buys them to please his wife<sup>11</sup>.

Soon after this the importance of this root was so well understood, that at a meeting of the Royal Society, March 18th, 1662-3, a letter was read from Mr. Buckland, a Somersetshire gentleman, recommending the planting Potatoes in all parts of the kingdom, to prevent famine. This was referred to a Committee, and in consequence of their report Mr. Buckland had the thanks of the Society; such members as had lands were entreated to plant them, and Mr. Evelyn was desired to mention the proposal at the close of his Sylva<sup>12</sup>.

I do not find that this truly patriotic gentleman complied with this desire, or that he has mentioned the Potato, except in the Appendix to his Acetaria: where he says that the small green fruit, being pickled, is an agreeable Sallet. But the root being roasted under the embers, or otherwise, opened with a knife, the pulp is buttered in the skin, and seasoned with a little salt and pepper. Some eat them with sugar together in the skin, which has a pleasant crimpness. They are also stewed and baked in pies, &c.

Worlidge, in 1687, says, that Potatoes are very usual in foreign parts, and are planted in several places of this country to a very good advantage. He adds, I do not hear that it hath been as yet essayed, whether they may not be propagated in great quantities for food for swine or other cattle.

Potatoes, says Houghton, were first brought out of Virginia by Sir Walter Raleigh, and he stopping at Ireland, some were planted there, and thrived very well and to good purpose; for in their succeeding wars, when all the corn was destroyed, this supported them. From thence they were brought to Lancashire, where (in 1699) they are very numerous, and

<sup>2</sup> Halle. 8vo. in German. Translated in Cambridge Chron. for June 23d, 1787. Campb. polit. survey, 1. 246.

<sup>3</sup> Campb. polit. surv. 2. 95. <sup>4</sup> Parad. 518.

<sup>5</sup> Health's Improvement, by Thomas Muffet, 1655.

<sup>6</sup> Birch's hist. of the Roy. Soc. 1. 207, 213. Camp. polit. survey, 2. 95.

<sup>7</sup> Bauh. prodr. <sup>8</sup> P. 149. <sup>9</sup> Vie privée des Français.

<sup>10</sup> Holt's characters of the Kings of England, vol. 3. Gentl. mag. for 1789, p. 437.

<sup>11</sup> Vol. 3, p. 507.

<sup>12</sup> Ibid. See Smith's ancient and present state of Cork.



now they begin to spread all the kingdom over. They are a pleasant food boiled or roasted, and eaten with butter and sugar<sup>c</sup>.]

Mr. Miller's account is, that this plant has been much propagated in England within thirty or forty years past, although it was introduced from America about the year 1623, yet it was but little cultivated in England till of late; these roots being despised by the rich, and deemed only proper food for the meaner sort of persons; however they are now generally esteemed by most people, and the quantity cultivated near London exceeds, I believe, that of any other part of Europe.

[This was written in 1759, which carries the culture of the Potato to any extent, as far back as about the year 1720. But it seems more probable, as well as more consonant to the accounts we have in various authors, that this useful root, like Turneps and Clover, was diffused gradually in Great Britain, after its first introduction from Ireland into Lancashire; though it must be confessed that notwithstanding what Muffet says of its being common in 1655, it does not seem to have made much progress during the Commonwealth, when Clover, Turneps, &c. were so forcibly recommended by the writers on husbandry. Neither Bligh nor Markham made mention of it; and Hartlib, in the Appendix to his Compleat Husbandman, (1659) Alphabet of Interrogatories relating more particularly to Ireland, has only these words—"Potatoes. Where "any store sown, when brought over first; and by "whom; what uses made of them, what time to be "taken up, and how to be preserved?"

Mr. Ray, in 1686, says no more of the Potato, than that the roots are dressed in the same manner as Spanish Potatoes.

Sharrock, in 1672, enumerates Potatoes among those plants that may be propagated by offsets.

It is apparent that this useful root had little respect paid it in the 17th century: for Mr. Evelyn, in his *Kalendarium Hortense*, under february, says, "Plant "Potatoes in your worst ground:" and under november—"take up your Potatoes for winter spending, "there will enough remain for a stock, though never "so exactly gathered<sup>d</sup>."

Edward Lisle, Esq. whose observations on husbandry were made in 1694 to the time of his death in 1722, has made no mention of the Potato. And Mortimer, in 1708, only inserts it in his *Monthly Kalendar*, to be sown in february; and says the root is very near the nature of the Jerusalem Artichoke, but not so good or wholesome, and that it may prove good food for swine<sup>e</sup>.

Bradley, in 1720, speaks of Potatoes as roots of less note than Horse-Radish, Radish, Scorzonera, Beets and Skirret; but as they are not without their admirers, he will not pass by the method of their culture in silence<sup>f</sup>.

London and Wise, in the *Complete Gard'ner*, published in 1719, do not so much as mention the Potato<sup>g</sup>.

All this serves to show, that it was not attended to as it deserved till the 18th century was considerably advanced. I can well remember, that about the middle of the century, it was wholly unknown as an esculent root in many parts of the country, that even in and about London it did not generally make its appearance at table, and that it was not used at all by the common people or in feeding of cattle.

John Billingsley, Esq. the reporter for Somersetshire under the Board of Agriculture, published in 1798, says that "thirty or forty years ago, it was an "extraordinary thing to see an acre of Potatoes in one "spot, and in one man's possession; whereas there "are now many parishes in that county which can "produce fifty acres. Nay that the writer of the "report has grown thirty or forty acres for several "years successively, and once had upwards of a hundred acres in one year."

The Suffolk reporter, Arthur Young, Esq. Secretary to the Board (1797) informs us that "this root has not been cultivated in that county till within a few years; that he has had it on a large scale, and Mr. Mure, of Saxham, on a larger; that in general Potatoes are not much attended to, but that they increase and promise to be much better established; that the Rev. Mr. Nesfield, of Wickhambrook, has earnestly pressed the culture of it on his parishioners for near forty years, with little effect till lately."

In the North Riding of Yorkshire, says Mr. Tuke, the reporter for that district (1800). "Potatoes first became an object of field husbandry here not more than forty years since; before which time they were little known beyond the garden of the gentleman; within that period they have got universal possession, from the table of the rich to the daily board of every cottage; with all the lower orders, they constitute the most essential article of their sustenance; and at this time there is not probably one article, the produce of the country, that could not with less inconvenience be spared than the Potato, so universal is its use, so cheap and nutritious the food that it affords."

We may therefore safely affirm that it was not till some time after the middle of the 18th century, that the Potato came to be generally used as an esculent root through the greater part of England.

In the year 1796, it was found by inquiries made in each parish, that about seventeen hundred acres were cultivated for the supply of the London markets, chiefly in Barking, Little Ilford, Eastham, Leyton and Westham, in the county of Essex. In the last parish alone five hundred acres were cropped with them<sup>h</sup>. Besides these, large quantities are imported into London from Hull and other places.

As the 18th century advanced to a close, the use of the Potato became general among all ranks of people; and two scarce years (1795 and 1799) have rendered its utility so conspicuous, that it is now cultivated by farmers and cottagers in most parts of the kingdom.

Dr. Christopher Merrett, whose work was published in 1667, says that Potatoes were then planted in many fields in Wales<sup>i</sup>. He does not inform us in what parts of the principality. In the agricultural reports for North Wales (1794), I find that in Flintshire Potatoes are planted, where the soil admits, as a preparation for Wheat; that in Anglesey they are imported from Ireland; that in Caernarvonshire they are cultivated on a small scale; and in Merionethshire, less than they ought to be, though Mr. Corbet has raised immense crops there, worth twenty pounds an acre. In Cardiganshire alone, of all the counties in the principality, it is said that they are universally cultivated; making, with Barley bread, the chief sustenance of the poor. A few years ago a large portion of what were used, was annually imported from Liverpool. Of late the quantity has been inconsiderable; and those imported are brought chiefly for change of feed.

The Potato, says Dr. Anderson, from Ireland passed over to Scotland; and the man has not been dead many years who first introduced the culture into the peninsula of Cantire. He lived near Cambleton. From him the city of Glasgow obtained a regular supply for many years, and from him also the natives of the Western Highland and Isles obtained the first plants, from which have been derived those abundant supplies on which the people there now principally subsist. Being once known at Glasgow, the culture soon spread abroad; but so lately were they introduced as a field crop in the east of Scotland, that I myself remember the first field that was planted with Potatoes in that neighbourhood, which was only five miles from Edinburgh<sup>k</sup>.

If we may judge from the late agricultural surveys, the culture of this root, on a large scale, has made a rapid progress. Dr. Smith, the reporter for the county of Argyll relates, that Potatoes have been long and

<sup>c</sup> Collections, 2. 468.

<sup>d</sup> Edit. 9. 1699.

<sup>e</sup> Edit. 2. p. 470 and 613.

<sup>f</sup> New Improvements, part 3. p. 132. ed. 3.

<sup>g</sup> Edit. 7.

<sup>h</sup> Lysons, env. of London, 4. 575.

<sup>i</sup> Pinax rerum, naturalium Britannicarum.

<sup>k</sup> Recreations in Agriculture, &c. by James Anderson, LL.D. vol. 2. p. 382.—1800.



much cultivated there; most of the inhabitants living chiefly upon them for more than three fourths of the year. Dr. Thomson, in his view of the agriculture of the county of Fife informs us, that about sixty years ago, the Potato was chiefly to be seen in gardens; few were planted in the fields. It is only within the last twenty or thirty years that its value has been well understood, and the cultivation of it has become general. Potatoes were first cultivated in the fields of Mid-Lothian about the year 1744; they had not been long introduced, even into gardens, before that time. They are now (1795) in every farm; but few are raised for sale above six miles from Edinburgh, or other towns; the expense attending their carriage being too great to admit of bringing them from a farther distance. There may be from twelve hundred to fifteen hundred acres cultivated.

The culture of Potatoes is carried to a great extent in the county of Perth, especially in the Highlands.

Potatoes, says the Rev. Dr. Robert Douglas in his general view of Roxburgh and Selkirk (1798), about forty years ago, were not raised in the fields, except on narrow beds, in deep marshy spots. And a gentleman, now dead, remembered, that some years before 1745, he was admitted as a great favour into a garden to see Potatoes growing.

So little was the attention paid to the improvement of this plant, that Mr. Miller, in his last folio edition of his Dictionary in 1768, and his last quarto edition of 1771, makes no mention of any varieties, except those which occur in all the old authors: namely, one with a red root, and another with a white root.

To enumerate all the varieties which have been raised from seed, would be useless, because they are continually passing away, and giving place to others that have more favour, if not more merit, for a time. But the following are known at present in different parts of the country.

Apple; one of the Kidney sort. Ireland and the Isle of Man.

Black or Blackmoor. Fit for cattle and the table. A late sort, and keeps well till august. It affords more starch than some others, and is of greater specific gravity. The outer coat is footy, but when rubbed it appears of a dark or bright purple. It will grow in a heavy moist soil.

Brown, Early.

Champion. For cattle and the table. In 1784 it was preferred in Essex, because it did not curl. Comes early. Called also Globe-white.

Cluster or conglomerate, called also Suffolk or Howard: called Hog Potato in Kent. Red and streaked with red within. Taste saccharine.

Cluster, White. Yellowish within, white on the outside. Conglomerate like the red.

Commonwise. Irish.

Copperplate: hardy and strong. Isle of Man.

Cornwallis. Suffolk.

Crones. Irish.

Cumberland Early. Large, prolific, well flavoured; ripens early enough to admit of another crop.

Dun, Golden and Long, Irish.

Dutch upright.

Goldendabs. Yellow and kidney-like, somewhat bell-shaped.

Golden-dun. See Dun.

Goldfinders. Yellow within, kidney-like, with a scurfy rind, not unlike the old Ruffet. A good sort, cultivated in the midland counties.

Goldentags.

Henley, Early. Round, not deeply indented at the eyes, dirty white, skin smooth and fine but not silky, seldom exceeding a large hen's egg in size.

Horse-legs. Somersetshire.

Hog. See Surinam.

Irish Blue.

Kentish. Seedling. Very large and white<sup>1</sup>. Other varieties raised from seed have the names of the

persons who first raised them. As Bayley's seedling; middle-sized, white and mealy; exceeding well-flavoured.

Kidney. There is a great variety of Kidnies, both white and red: as the Lincolnshire. Red-nose, large and small; neglected in Essex so long since as 1784, on account of its being subject to the curl<sup>m</sup>. True. White. Flat White, called by some the true Spanish. Superfine White; said to be the earliest Potato in Lancashire, where they sometimes raise four crops in a year of this variety on the same ground. For other Kidnies see White and Red, and Manley.

Killamancas: in Lothian.

Magpye.

Manley, White. Large, white; mealy and well-tasted.

Ox-noble; for cattle. Large, prolific, apt to be hollow. Called in some places white Surinam, and confounded with the White Cluster, from which however it differs. See Surinam.

Peach.

Pheasant-eye.

Pink-eye or Redstreak, hardy and strong; late and best for eating in the spring; in use till the beginning of July. Pink-nose the same probably with Red-nose Kidney.

Pomgranate. Dark purple. Hard, solid and heavy. Keeps well, and is good for cattle: Probably the same with the Black.

Quakerwise. Irish.

Red. Blood Red. Irish Red, or painted Lord: late, plentiful. Old winter Red: peculiarly good in spring, when others have lost their flavour; it never has the curl. Rough Red. Purple. Red French; Irish. Red-snout or Red-nob; large, prolific and well-flavoured; but becomes strong-tasted in spring<sup>n</sup>. For other varieties see Kidney.

Royal. See Cumberland early.

Ruffet, white and red: for winter use.

Scotch, white and gray.

Silverskin.

Spanish. See Kidney.

Surinam or Hog Potato, called in some places the cluster, and confounded with the true Cluster. Very prolific and adapted to the use of stock. White and Red. The White of some places seems to be the same with the Ox-noble. The Cluster, Ox-noble and Surinam are all called Hog Potatoes in different counties, and are used indifferently for feeding cattle and hogs. Cow Potato of Staffordshire the same with the Red Surinam.

Tartar. Pale red streaked with white, especially at the top end; round and hollow-eyed.

Tawny.

White. Aylesbury, called also Winter white and white blossom; good for the table, larger and producing a more bulky crop than the Champion. English White; Irish. French White; Irish. Lady White. Long White. Manley White. Munster White; Irish. Oblong flat White. Round White. Rough White. Scotch White. See Cluster, Kidney, Manley, Ox-noble, and Surinam.

Yam. A coarse Potato, raised principally for horses, prolific and growing on indifferent land<sup>o</sup>. It is a bad name because it makes a confusion with the West Indian Yam properly so called. Dioscorea batava.

Several of the above varieties are probably the same under different names: and some which are different have the same name in different districts. Such as they are they form a list of the Potatoes now or lately in cultivation. The desire of improvement and the thirst for gain are daily prompting men to raise new varieties, especially about Manchester and Liverpool; and if old varieties be wearing out, it is the more necessary to raise new ones from seed.

This Virginian Potato, when first known in Europe, was endued with all the fancied properties of the

<sup>1</sup> Kent's view of Norfolk, app. 195. 8vo. edit. Bath papers, 4. 298.

<sup>m</sup> Marshall's midl. 1. 248.

<sup>n</sup> Idem.

<sup>o</sup> Agric. view of Roxb.



Spanish; but on the contrary was reprobated by some as causing the leprosy. The present age is contented to respect this root as a wholesome and nutritious food. The farinaceous varieties make a good starch, and bread either mixed with wheat flour or even alone. But all the varieties are best eaten plain boiled or baked, whether applied to our own use or that of our domestic animals.

32. Habit, stature, &c. of *S. Lycopersicum*. Fruit like that of its variety  $\beta$ . But it differs altogether from *S. Lycopersicum* in having the stem smooth without any hairs scattered over that or the peduncles, the leaves smooth entire cordate not at all gashed or toothed as in that. However as it agrees upon the whole in structure, it may perhaps come from that. The structure of the peduncles is the same as in *tuberosum*, *Lycopersicum* and *peruvianum*, with the pedicels also jointed, and the raceme naked, as in the two former, not leafy as in the last<sup>p</sup>.—Native of Peru.]

Mr. Miller says it is somewhat like the *Lycopersicum*, but that the leaves have some smaller leaflets between the large ones, and have not that rank disagreeable odour which the other has; that the leaflets are shorter, broader, and not cut, having only some obtuse indentures towards the base; that the fruit is not so large, but round and smooth, and late before it ripens.

33. This is an annual plant, with an herbaceous, branching, hairy stalk, rising to the height of six or eight feet, if supported, otherwise the branches will fall to the ground. Leaves pinnate, of a very rank disagreeable odour, composed of four or five pairs of leaflets terminated by an odd one, cut on their edges, and ending in acute points. Flowers axillary on pretty long peduncles, each sustaining several yellow flowers, forming a single long bunch.

[The fruit is smooth, but varies in form, size and colour; which has given occasion to Miller to make two species.] The one commonly cultivated in the South of Europe to put into soups and sauces, to which it imparts an agreeable acid flavour. The fruit in this is very large, compressed both at top and bottom, and deeply furrowed all over the sides, red or yellow.

$\beta$ . The other round, about the size of a large Cherry, either yellow or red. [Loureiro describes the berry in Cochinchina as white, middle-sized, roundish, three-lobed and smooth.

Native of South America. Cultivated in 1596 by Gerarde. It flowers from July to September<sup>q</sup>, or till stopped by the frost, and the fruit ripens from the end of July, till autumnal frosts come on.

[34. Leaflets wrinkled, hairy, toothed and gashed, unequal<sup>r</sup>. Berry not grooved, less than in the preceding, yellow<sup>s</sup>.—Native of St. Helena. Annual.

35. Root perennial; stem scarcely or very little shrubby above the root. Leaves hoary, pinnate without any small leaflets between the larger ones. Racemes two-parted with an ovate leaflet to each pedicel. Corollas bright yellow, much bigger than in *S. Lycopersicum*<sup>t</sup>.—Native of Peru.

According to Loureiro it is wild in the gardens of Cochinchina; the flowers are of a gold colour, and the berry is saffron-coloured, hairy, small, roundish, compressed, three-celled, many-seeded and esculent.]

Miller says it is annual, and has a very branching herbaceous stalk, spreading out into many divisions, and not so hairy as *S. Lycopersicum*; the leaves have a greater number of leaflets, which are much shorter and more indented on their edges, where they are a little waved, and are downy. The flowers stand upon very long peduncles, which branch out and support a great number of flowers at the top; the style is longer than in the other species, and remains on the top of the fruit, which is late in ripening. The seeds of this and of n. 32. were sent from Peru by Mons. Jos. de Jussieu to the royal garden at Paris; and were imparted to Miller by his brother Dr. Bernard de Jussieu.

36. Native of Peru.

37. Native of the island of St. Helena.

38. This is an unarmed upright shrub, ten feet high, smooth; weak; branches round, subdichotomous, erect, knobbed at the divisions. Leaves alternate, petioled, ovate, acute, quite entire, thin, green on both sides, veined, decurrent more or less along the petiole, the longest half a foot in length. Common peduncles filiform, an inch and half long, patulous, round, green, umbelled, lateral from the knots of the branches below the leaves. Proper pedicels about six, one-flowered, filiform, a third of an inch in length. Flowers small. Calyx minute, green; leaflets oblong, obtuse, flat. Petal white, yellow at the base, deeply five-cleft, segments lanceolate, acute; spreading very much. Berry globular, the size of a small pea, dark-coloured, smooth and shining. Seeds whitish. It is called Bret by the Malays, who cultivate it as a pot-herb<sup>u</sup>.—Native of the island of Mauritius.

39. Root annual, much branched. Stem branched, spreading, leafy, angular, sometimes winged, and often of a woody hardness, surviving the winter in our mildest seasons as in hot climates. Leaves alternate, petioled, ovate, repand, lengthened out at the base, somewhat downy. Umbels lateral, from the interstices of the stem between the leaves, nodding, downy, bearing a few white flowers, smelling like musk. Berries globular, black when ripe; sometimes yellow<sup>v</sup>.] Miller says there are two varieties of the common Nightshade growing naturally in England. The most common, an upright branching plant, with oval acute-pointed smooth leaves, and black berries: the other, a low branching plant with indented leaves, and greenish-yellow berries. [The latter has lacinated leaves, according to Gærtner; who describes the berry as globular, subvillose, yellowish, subdiaphanous, two-celled, having a membranaceous partition, connate with the receptacle, which is fleshy and solid, growing close to the middle of the partition. Seeds about twenty-five in each cell, ovate-acuminate, beaked, compressed, girt with a membranaceous rim, and wrapped up in a soft yellowish transparent pulp.

This species is common in Europe, Africa and America, both in cultivated and waste ground, especially on dunghills; flowering from June to September. It varies in size, as well as in the hairiness of its leaves; but may be known at first sight, when in perfection, by the bunches of flowers or fruits hanging from the spaces between the joints of the stem and branches<sup>w</sup>.

There is little doubt of the herb and berries being both poisonous, though some persons have eaten them without any bad effects following.

The whole herb is fetid, narcotic, and promotes perspiration and urine. From one to three grains of the dried leaves infused in boiling water, and taken at bed-time, occasions a copious perspiration, increases the secretion by the kidneys, and generally purges more or less the following day. These properties, judiciously applied, render it capable of doing essential service in several diseases, as inveterate ulcers, scrophula, &c. and even in dropsies; as may be seen in Mr. Gataker's treatise on the Solanum published in 1757. Too large a quantity occasions violent sickness, with head-ach, giddiness, drowsiness, and other dangerous symptoms. In short, its effects on the nervous system are so uncertain, and sometimes so considerable, that it must ever be administered with the greatest caution. Mr. Bromfield, an eminent surgeon, so far from approving of the Solanum, declares that the cases in which he tried it were much aggravated by it: and his opinion has prevailed so far, that it seems now to be little used. This is perhaps to be lamented, since it might probably be of service in diseases, where the medical practitioner could otherwise do little more than sympathize with his distressed patients.

The leaves, applied externally, abate inflammation and assuage pain. With the Arabians it is a common application to burns and ulcers; and if it be

<sup>p</sup> Linn. amoen.

<sup>q</sup> Hort. kew.

<sup>r</sup> Jacquin.

<sup>s</sup> Willdenow.

<sup>t</sup> Linn. spec.

<sup>u</sup> Jacqu. collect.

<sup>v</sup> Smith.

<sup>w</sup> Engl. bot. & Curt. lond.



the *Στρογγυλὸς κηπίος* of Dioscorides, it was used anciently as a discutient and anodyne in various affections of the skin, tumefactions of the glands, ulcers, and disorders of the eyes. As a ridiculous application of this plant it may be mentioned, that an ointment made of the leaves with hog's lard was used by Solano de Luque, a famous Spanish physician, about two centuries since, in the cure of consumptions. The patient was to be buried for some time up to the chin in the earth, and afterwards rubbed with this ointment\*.—The genuine properties of this plant, *Solanum Dulcamara* or woody Nightshade, and *Atropa Belladonna* or deadly Nightshade, seem to be nearly the same.

Besides the varieties of the common Nightshade already mentioned there are others so considerable as to have induced Mr. Miller to make several distinct species; and Dr. Withering, to suspect that Linneus had confounded different species under the name of *Solanum nigrum*, till he was convinced of the contrary by the judicious remarks of the Abbé Correa de Serra. In Portugal and other warm climates the stem is woody, and the plant is biennial if not perennial.]

Mr. Miller is of opinion that our common Nightshade, although it is now become a very troublesome weed in many gardens near London, yet is not a native of this country, but was brought originally from America, whence the greater part of the species have been introduced into Europe.

[Dillenius has described and figured several varieties: as

β. Which is three cubits and more in height, with a stout stem as thick as the human thumb at bottom, green, round and smooth, striated and as it were angular, branching from a foot or two feet from the bottom to the top, and these subdividing. Leaves smooth, entire, like those of the Guinea variety, only in that the stem-leaves are much larger. It is an annual plant, although so stout and lofty. It is distinguished from the common sort by the branches spreading, and extending themselves very wide. It seems to be the *Aguara-quiya* of Marcgraaf.

γ. The whole plant is covered with soft hairs, the ends of the branches especially are lanuginose with long hairs, through which the purple colour of the branches shines; nay the flowers themselves are woolly on the outside and at the edges. The plant is larger and stouter, and the flowers are somewhat bigger than in the common sort. The stems are sometimes upright, but are commonly lower with the branches reclining. Berries dusky green, when ripe saffron-coloured, not round but oblong. The leaves are dusky green above, but paler beneath. Bobart and Ray had it from Morgan. The native place was unknown to them. If it be the same with the *ægyptiacum* of Forskahl, it is indigenous of Egypt.]

Mr. Miller has two species which seem to be the same with this variety. *S. villosum*, n. 2.—*S. offic. acinis puniceis*. *Baub. pin.* 166. and secondly, *S. luteum*, n. 3.—*S. offic. acinis luteis*. *Baub. pin.* 166.—The former rises with an erect branching stalk three feet high. Leaves oval, angular, indented and smooth. Flowers white. Berries yellow. Seeds from Barbadoes.—The latter rises with hairy branching stalks two feet and a half high. Leaves woolly, oval, spear-shaped, acute-pointed, indented on the edges. Flowers like those of the preceding. Berries of the same size and shape, but of a red colour. Seeds from America.

δ. This rises with a strong thick herbaceous angular stalk two feet and a half high, dividing into short thick branches. Leaves oblong, oval, smooth, near five inches long, and three and a half broad, having a few indentures, and standing upon pretty long foot-stalks. Flowers larger than in the common sort. Berries the size of the common black Cherry.—Native of Guinea.

[Dillenius remarks, that there are blunt spines here and there at the angles of the stem, which is upright

and not branched; that the leaves resemble those of *Atropa Belladonna*, and are smooth except that they have a few slender hairs on the upper surface, deep green above, paler beneath; those on the middle of the stem much bigger than the branch-leaves. Flowers small, white or sometimes slightly tinged with violet, greenish at the claws. Anthers dusky or brownish. Berries globular, almost as large as black Cherries, but more depressed, green at first, but black and shining when ripe. Seeds whitish, compressed, lying in a violet-coloured pulp. It is an annual plant.

ε. This differs from variety β. in not rising so high, and in being less branched and spreading; the upper leaves are sinuated, the middle and lower lacinated, and not unfrequently divided as in *Lycopus* or water Horehound; the flowers are somewhat bigger, and more of a violet colour; the stems are more angular, and roughened or spiny at the angles. The leaves are deep green, and the lower ones not unlike those of *Stramonium* or Thorn-apple. The flowers become paler and at length white. The berries are round, at first green, but black when ripe. It is an annual plant, native of Virginia<sup>a</sup>.

Swartz remarks that the prickles at the angles are very small and recurved. According to him it is the sixth *Solanum* or branched *Caleloo* of Browne, who says that it is very common in the low lands of Jamaica, seldom rising more than two or three feet from the root; that it has none of the virose smell and narcotic quality of the European Nightshade, and is daily used for food, being found a pleasant and wholesome green; that the only difference between the two plants is the length of the common foot-stalks, and the length and smoothness of the branches, except that the European seems to grow more twiggy and luxuriant.]

Miller says, the stalks rise three feet high, and divide into spreading branches; they are angular, furrowed, and have a few short spines; the leaves are oval and entire, six inches long and five broad, dark green and on long foot-stalks; flowers small, white; berries small and black.

The *americanum*, n. 5. is probably not different from this: the stalks are angular, upwards of three feet high, and divide into a few slender spreading branches; leaves oval, acute-pointed, smooth, deep green, having a few indentures on their edges; flowers few in each umbel, small, white on the inside, and purplish without; berries small and black.

[ζ. This is supposed to be a mere variety of the preceding.]

η. This has taller and smoother stalks than the preceding; leaves dark-green, smooth, oval, acute-pointed, angularly indented on the edges; flowers in nodding lateral umbels; berries smooth and red. The seeds came from the West Indies.

[θ. Fruit black. Native of Egypt<sup>b</sup>.

Linneus regards these varieties as hybridous offsprings or mules; Willdenow thinks that they may be distinct species, since they are not altered by culture.

40. Root annual. Stem stiffish. Leaves like those of *S. bonariense* (n. 29.), a hand in length, blunt. Fruit red, large, depressed, so deeply furrowed as to be in a manner cut into lobes, hard<sup>c</sup>.

Branches diffused. Leaves ovate-oblong, sinuate-repand. Flowers solitary, violet. Calyx and corolla six-cleft. Stamens six. Berry spheroidal, six-lobed, large, smooth, white or purple<sup>d</sup>. Jacquin observed prickles on the stem, ribs of the leaves, and calyxes.]

Stem erect, a foot and half high, dividing into several branches. Leaves oval, angular, from three to four inches long, and almost three inches broad in the middle, placed alternately on pretty long foot-stalks, which have one or two short spines upon them, as there is also upon the midrib of the leaves. The flowers come out singly upon peduncles from the side of the branches; they are white, and are succeeded by red striated fruit, firmer than those of the other sorts, and about the size of cherries.

<sup>a</sup> Withering, Engl. bot. Curtis, Woodville.

<sup>a</sup> Dill. elth.

<sup>b</sup> Forsk.

<sup>c</sup> Linn. spec.

<sup>d</sup> Loureiro.



[Native of China, CochinChina and Japan, where it is cultivated for the table.—It was cultivated here before 1597 by Gerarde<sup>e</sup>: who says the seeds were brought unto us out of Spain, and that his plants perished at the first approach of winter. He, with other old authors, derived its original from Ethiopia, and Linneus continued the mistake in his trivial name.]

41. Stem annual, thick, twisted, two feet high, with the branches reclining. Leaves ovate, sinuate, large, few, scattered, on thick petioles. Flowers pale violet; peduncles axillary, thickened, bent down; one-flowered, most commonly solitary, but not unfrequently two or three together. Berry large, shining, two-celled, many-seeded, esculent. Varieties of it are, 1. With an oblong violet-coloured fruit. 2. With an oblong white large fruit. 3. With a globular violet-coloured fruit. 4. With a globular white or variegated fruit<sup>f</sup>.]

Mr. Miller has four species of *Melongena*, the three first of which are unarmed, and differ in the shape of the fruit; the fourth is prickly.

They are all annual plants, with an herbaceous stem, becoming a little woody, rising near three feet high, and sending out many side branches. Leaves in the first and second oblong-ovate, seven or eight inches long and four broad, woolly, slightly sinuated but not indented on their borders, standing without order upon very thick foot-stalks: in the third the leaves are more deeply sinuated. The flowers come out singly from the side of the branches. The calyx is armed with strong prickles on the outside. Corolla blue. In the first the fruit is ovate, about the size of a swan's egg, of a dark purple on one side, and white on the other: sometimes it is white, whence this species is called the Egg-plant; or yellow, or pale red. In the second, the fruit is commonly eight or nine inches long, taper and straight; purplish or white. In the third, it is oblong and incurved, yellowish, and largest at the end. The fourth differs greatly from the others; the stalk and leaves being armed with very strong thorns; the leaves larger, and deeply jagged on their sides; the flowers larger, and of a deeper blue colour; the fruit long, taper and white. The seeds were sent from India.

The fruit of the first of these is commonly eaten by the inhabitants of Asia, Africa and America. It is cultivated in the gardens of Spain by the title of *Barenkeena*; the Turks, who also eat it, call it *Badinjan*; the Italians *Melanzana* (*Mala infana*), and the inhabitants of the British islands in the West Indies, *Brown John* or *Brown Jolly*.

[But the Brown Jolly or Bolangena of Jamaica, is, according to Browne, a rough prickly sort. The plant, he says, lives some years, and seldom rises above three or four feet in height. It was first introduced by the Jews, and bears a number of large berries, which being sliced, pickled for a few hours, and then boiled to tenderness, are used instead of greens.]

In the East Indies, the fruit is broiled, and being peppered and salted, is reckoned very delicious. But it is remarked by Dr. Ruffel, that though *Melongena* is cultivated in the Levant for eating, it is the insanum which they grow in the East Indies for that purpose.

Loureiro however insists, that the insanum of Linneus is not specifically distinct from *Melongena*; having observed prickles on the latter from the same seed with the smooth ones, and in the same garden. The plants appear to be mostly unarmed, but some are prickly, either on the calyx, the leaves, stem or branches. Rumphius had made the same observation before.

The Egg-plant is a native of Asia, Africa and America, where the climate is warm enough. It was cultivated before 1597 by Gerarde<sup>e</sup>: under the name of *Mala infana*, mad or raging Apples. It must be sown in April, says he, in a bed of horse-dung, as Muskmelons are. It grows in Egypt almost every where; and bore fruit of the bigness of a goose egg one extraordinary temperate year, in the garden of a worshipful merchant, Mr. Harvy, in Lime-street.

42. This is a shrub from four to six feet high, with a round branching smoothish stem, covered with a mealy down, especially the branches. Leaves petioled, alternate, ovate or oblong, acuminate at both ends, three or four inches long, smooth above, more or less tomentose beneath. Racemes an inch long, lateral, many-flowered: peduncles clustered, cymed, one-flowered. Flowers biggish, blue: segments of the calyx blunt; of the corolla spreading and lanceolate. Berries globular<sup>h</sup>.]

Stem shrubby, smooth, six or seven feet high, sending out woody branches on every side, which have a smooth brown bark. Leaves ovate, acute-pointed, entire, woolly on their under side, four inches long, and two inches and a half broad. Flowers collected into umbels which stand erect, and come out from the side or at the end of the branches: they are of a light blue colour, and are succeeded by round berries, the size of small black cherries, which are yellow when ripe.

[Native of the West Indies. Discovered by Houftoun at Campeachy, and by Jacquin at Carthagen.—Introduced in 1778 by Mr. Gilbert Alexander<sup>i</sup>: but cultivated by Miller before 1733.]

43. This is a shrub, with round branches, smooth below, but of a dirty ash-colour above with minute stellate villose hairs. Leaves alternate, remote, three or four inches long, obtuse and almost equal at the base, attenuated at the tip, somewhat rugged on the upper surface with stellate hairs visible only with a magnifier; the older leaves almost smooth, obscurely veined: underneath more villose with a dirty nap, especially the younger ones. Petioles half an inch long, hoary. Peduncles lateral towards the top, the first short and recurved, then gradually longer and straighter. Pedicels alternate, eight to ten, half an inch long. Calyx tomentose-hoary; with five awl-shaped teeth, four times as short as the corolla; which is almost an inch wide, and deeply five-cleft: segments linear-lanceolate, attenuated, obtuse, tomentose without, smooth within.—Found at Cayenne by von Rohr<sup>k</sup>.

Vahl seems to think this scarcely different from the preceding, yet it appears to be distinct in the inflorescence, calyx and corolla<sup>l</sup>.

44. Native of Peru. Introduced in 1785, by Mons. Thouin<sup>m</sup>.

45. Annual. Very nearly allied to *S. Melongena*. Stem scarcely branched, with a stellate nap on it. Leaves subsinuate. Peduncles solitary, one-flowered, pendulous, thickened. Fruit large.—It differs from that in having prickles scattered over the stem, a few straight prickles on both sides of the leaves, and the calyx very prickly<sup>n</sup>. Notwithstanding these differences, Loureiro thinks they are the same species. See n. 41.

This is the sort which is cultivated in the East Indies for eating. One much-esteemed variety in some provinces is called *Mandia*. The flower is small, of a dusky purple colour: the fruit is yellow, roundish, the size of an Orange; the leaves and calyx prickly.

It has been introduced into the West Indies for culinary purposes, says Swartz. The peduncles are short, one-flowered, prickly, incrassated: the corollas blue, large, and nodding; the fruit the size of a goose's egg, ovate, very smooth, yellow white or blue. It varies in the gardens, with an unarmed stem, and rugged-hirsute leaves hoary with meal behind.

46. This is a shrub, a fathom in height, with round tomentose prickly branches. Prickles awl-shaped, wider at the base, a little bent back, and as it were tomentose. Leaves alternate, often two from one point, cordate-ovate, acute, sinuate-angular, with the sinuses angular and the lobes sharpish, tomentose with very short stellate green hairs, and beneath with longer whitish ones, prickly along the rachis. Prickles scattered, distant, from a wider base, compressed, awl-shaped. Petioles round, tomentose, defended beneath with straight scattered prickles. Racemes lateral, compound, panicle-form, peduncled, with the flowers

<sup>h</sup> Swartz.

<sup>i</sup> Willdenow.

<sup>l</sup> Hort. kew.

<sup>m</sup> Hort. kew.

<sup>k</sup> Vahl.

<sup>n</sup> Linn. mant.

<sup>e</sup> Hort. kew.

<sup>f</sup> Loureiro.

<sup>z</sup> Hort. kew.



pedicelled, cymed. Peduncles and pedicels round, unarmed, tomentose. Calyx bell-shaped, unarmed, subvillose, scarcely three lines in length; segments ovate, acuminate. Corolla white; border an inch in diameter. It varies with unarmed leaves, the petioles only having here and there prickles on them. It resembles *S. indicum* very much; but differs in having the leaves quite unarmed above, and the rachis only prickly underneath; the racemes more branching; and the calyxes unarmed.

Native of Jamaica, Hispaniola, and the Bermuda islands, in hedges.

47. Stem shrubby, climbing, branched, round, prickly. Leaves three or four inches or a span long, lanceolate-ovate, toothletted at the edge, rough above, beneath hispid with ferruginous hairs, nerved not rigid. Petioles flatted a little, prickly backwards, as is also the midrib: prickles small, recurved. Racemes lateral, alternate with the petioles, shorter than the leaves, simple, many-flowered, loose: pedicels half an inch long, alternate, approximating, one-flowered. Calyx five-cornered, five-toothed, ferruginous-pubescent, prickly, reflexed. Corolla larger, blue; segments long, tomentose beneath. Filaments scarcely any: anthers length of the corolla, erect, contiguous, thicker below, alternating at top, perforated by two pores. Berry placed on the permanent calyx, umbilicate.

Vahl conjectures that his *scabrum* is allied to this; and Willdenow unites them with a mark of doubt.—Vahl thus describes his *scabrum*. It is a shrub, with round flexuose branches, somewhat rugged with obscure stellate hairs, armed with recurved compressed yellow smooth short prickles. Leaves three together on the same side of the branch, one four or five inches long, the second three inches, and the third sometimes scarcely an inch in length; the larger two inches wide, elliptic, acute at the base, bluntish at the tip, subsinuate with two or three angles on each side, stellate-hairy and rugged on both surfaces, paler beneath on account of the stars of hairs being closer; the midrib prickly on both sides: small prickles on the face of the branches. Rudiment of a branchlet in the axils, with leaves tomentose of a dirty yellow colour. Petiole half an inch or an inch long, prickly. Racemes lateral, solitary, two inches long, when the lower flowers are past, bent back. Pedicels half an inch long, filiform, sometimes armed with a needle-like prickle, when fruit-bearing curved upwards, covered with stellate hairs, as are also the peduncle and calyxes. Calyx short, prickly; prickles frequent, needle-like: segments lanceolate, acuminate. Segments of the corolla linear, tomentose-hoary on the outside. Berries small, smooth.

Found in the woods of Hispaniola by Swartz; and in the West Indies by von Rohr.

48. Stature of *S. Melongena*. Leaves wide, petioled, having upright prickles on the veins, villose above, tomentose beneath. Petioles, peduncles and calyxes prickly. Peduncles axillary, simple, short. Calyxes bell-shaped, tomentose, armed with stout prickles, covering the whole berry. Berries very rough-haired.—Native of Malabar.

49. This resembles the *virginianum* (n. 55.) in its leaves and manner of growth, but the whole plant is hairy, the flowers paler and a little smaller, the fruit bigger and not variegated, but white when ripe. It grows from a foot to two feet in height, with the branches scattered on every side, from round angular, dusky purple towards the sun, armed with frequent brownish or whitish prickles. Leaves large, variously lacinated, covered all over with soft hairs, whitish green underneath with more prickles, which are whitish or yellowish. Two or three flowers come out together on a common peduncle, each on a slender pedicel, of a middling size, pale purple, in a very prickly calyx. Berries large, at first green, then white and shining. Some of the flowers are male, others female; the latter appear first, and have more prickly calyxes; both are on the same common peduncle, and have all the parts; but in the former the style and germ are abor-

tive, and in the latter, the anthers have no pollen. It is not unusual with some of the other species to have barren flowers. The whole plant is prickly, and besides this, the branches, petioles and peduncles are covered with a thick nap. It is an annual plant; and rose from seed sent by Houstoun from Campeachy.

According to Swartz, this is the *acanthifolium* of Miller, who says that] it was discovered by Houstoun at La Vera Cruz in New Spain, whence he sent the seeds to England, which succeeded in the Chelsea garden.—It rises with a prickly herbaceous stalk near two feet high, dividing into two or three branches, closely armed with slender yellow spines of unequal lengths. Leaves six inches long, and three inches and a half broad, bright green and deeply sinuated; the veins armed with yellow erect spines on both sides. Flowers very large, of a fine blue colour. Berries round, as large as common cherries, marbled with white and green. Calyx armed with spines like a hedgehog. It flowers in July and August, and the fruit ripens late in the autumn.

50. Annual. Branches variously spiny, brownish on the side next the sun. Leaves repand, sinuate, obtuse, green on both sides, with spines on the upper surface of a bright purple colour, frequently girt with a pale band. The peduncles have stouter spines on them. Flowers violet-coloured.

This is wrongly united with the preceding in *Sytema Vegetabilium* and *Mantissa*. The description of *S. campechiense* in the *Mantissa* belongs to this species: it is as follows.

Stem a foot high, becoming shrubby, round, hairy, prickly, annual as well as the root; prickles straight, spreading, scattered, purple; hairs spreading, of the same length with the prickles. Leaves petioled, cordate, laterally five-lobed to the middle, the leaves obtuse, the sinuses blunter, elevated, spreading: the larger veins on both sides have a few straight prickles on them: the midrib is white or purple. Petioles the length of the leaves, prickly and hairy, purple on their upper side, and having raised dots scattered over them. Peduncles lateral, prickly, two together, the one having one flower only, the other commonly four flowers. Corollas white or blue. Filaments the length of the anthers, white. Anthers yellow, with a paler yellow beak. In the flowers that first come out the calyx is more prickly, and the anthers have no pollen. Native of America.]

51. This rises with a prickly herbaceous stalk three or four feet high; the spines are strong and crooked; the leaves are large, angular, woolly, and armed with the like spines; the flowers are produced in bunches from the side of the stalks; they are of a pale blue colour, and are succeeded by yellow fruit, the shape and size of a Catharine Pear inverted. The plant is annual here. It grows common in all the West-India islands, where it is called Batchelor's Pear. See Dillen. elth. 363.

[Linneus says Virginia and Barbadoes, and remarks that the leaves are equal in length and breadth, and bluntish.

According to Loureiro, it is wild in Cochinchina. He describes the stem as annual, hard, thick, five feet high, erect, prickly, tomentose, branched; the leaves as very large, roundish, angular-lobed, often cordate, prickly on both sides, cinereous-villose, scattered; the flowers as white, on lateral many-flowered peduncles; the calyx as very hairy but without prickles; the berry as middle-sized, round, yellow, hispid. It cannot well be the same with Miller's.

52. Stem shrubby, tomentose above, prickly: prickles straight, small, needle-like, scattered. Leaves blunt, with one or three unequal blunt angles on each side, tomentose on both surfaces, soft, whiter beneath: prickles scattered on the nerves both above and below, half an inch in length, stouter than on the stem, smooth, straight. Petioles an inch long, prickly. Peduncles above, leafy, several; aggregate, half an inch long, one-flowered, very hirsute. Segments of the calyx ovate, acute, very hirsute on the outside; as is



also the corolla, but that is smooth within; it is twice as long as the calyx, and three of the segments are a little longer than the other two.—Found by von Rohr on the island of Trinidad<sup>1</sup>.

53. Stem and petioles white-tomentose, with few straight naked prickles. Leaves tomentose, wide, cordate, deeply angular, sharpish, unarmed, smooth above. Panicle terminating, compound, tomentose, unarmed, as is also the calyx.—Native of Brasil<sup>2</sup>.

54. Allied to *S. campechiense*, but the leaves are covered with thin shining hairs pressed close, the lobes of the segments have more rarely one or two large teeth, the calyxes have the prickles thinly dispersed, and the corolla is of a different figure.—Native of America<sup>3</sup>.

55. This differs from *S. sodomeum* in having angular branches, but it is also annual. Spines copious, snow-white. Fruits small, variegated with green and white<sup>4</sup>.]

Annual, shrubby, prickly, about three feet high, sending out a few slender branches. Flowers large, blue, with prickly calyxes. Berries almost the size of black Cherries.

[According to Dillenius, it is a foot and half or two feet in height, with a stem as thick as a swan's quill, of a dusky red colour, bending down at the joints, and extending its branches sideways; the leaves are on long prickly petioles, in shape they are like those of *Acanthus*, but smaller, bright and deep green, smooth and somewhat shining on both sides, marked with white veins, and having long white prickles on the nerves, and along the edges on the larger leaves. Flowers six or seven in a sort of short spike, stained with violet. Filaments very short: anthers more separate than in most of the species. Calyxes very prickly. Berries of an oblong spheroidal form.

Native of America. Cultivated in 1656 by Tradescant, in whose garden Ray saw it.

56. Sufficiently distinct from the preceding, in having smooth leaves, not ciliate or prickly at the edge, and the stem decumbent not erect. It varies with the segments of the leaves scarcely sinuate.—Native of the East Indies. Annual.

57. This is very like the preceding, but yet is different: the prickles on the stem are fewer, the leaves and flowers larger, the segments of the leaves more acute, and the leaves and younger branches are covered with stellate hairs.—Native of the Cape of Good Hope. Annual<sup>5</sup>.

58. Stem tomentose, hoary, as is the whole plant: prickles scattered, needle-like, yellow, smooth, straight. Leaves remote, two inches long, blunt, shorter on one side of the base, having three or four wide rounded quite entire lobes on each side; they are veinless on the upper surface, and for the most part unarmed; simply veined beneath, with needle-like prickles on the midrib, seldom on the veins. Petiole an inch and half long, with prickles scattered all over it. Racemes commonly opposite to the leaves, almost upright, eight-flowered. Peduncle rigid, an inch and half long: pedicels half an inch in length, reflexed, unarmed, as is also the peduncle. Calyx tomentose, very prickly, permanent: the prickles on it are stouter than on the rest of the plant. Berries globular, the size of a hazel nut.—Native of Arabia Felix<sup>6</sup>.

59. Stem a fathom in height, branched, prickly: branches flexuose, round, tomentose, prickly. Leaves in pairs, alternate, on very short petioles, wedged at the base, widening towards the upper part, angular (but the angles so blunt as to be sometimes obliterated) sharp at the top, entire at the edge, scarcely repand, nerved, tomentose and somewhat rugged on both sides, whiter beneath, and the midrib or rachis there prickly. Prickles stout, short, reflexed, pale. Racemes lateral, much shorter than the leaves, simple, many-flowered: flowers pedicelled, subcymed; pedicels length of the raceme, crowded in two rows, filiform, one-flowered, loose, tomentose, prickly. Calyx minute, prickly. Corolla small, pale blue or white; with the segments

reflexed and tomentose without. Berry roundish, first green veined with black, but wholly black when ripe, smooth, having a dot at the top, size of a red Currant.

It differs from *S. indicum* in having the leaves more tomentose, and angular without sinules; the pedicels numerous, the flowers small, and especially the prickles subrecurved. It very much resembles *S. tomentosum*, but the leaves in that are cordate, and the prickles straight.—Native of Jamaica and Hispaniola, in waste places<sup>7</sup>.]

Miller has a species under this name; but it is doubtful whether it be the same. He says it rises with a shrubby woolly stalk five or six feet high, armed with short recurved thorns, and garnished with oval woolly leaves six inches long and four broad, angularly sinuate, and having a very few short crooked spines upon the midrib on the under side. The flowers are in small umbels fitting close to the side of the branches; they are small and yellow, and are succeeded by small round berries of a saffron colour when ripe.

60. Stem shrubby, two or three feet high, sending out several woody branches, armed with short, strong, yellowish spines; leaves an inch and half long, and an inch broad, woolly on both sides, and angularly indented, armed with spines on both sides along the midrib. The flowers come out in longish bunches from the side of the stalks, they are blue and like those of *S. sodomeum*. Berries round, of a gold colour, as large as cherries.

[Height a cubit or a cubit and half. Stem the thickness of a finger, with an ash-coloured bark, and brownish, shorter and fewer spines than on the leaves; on which they are more frequent along the midrib and principal veins, especially on the upper surface, they are also of a pale green colour. The leaves are sinuate, like the next species, but more deeply, they are wider also and blunter: the younger ones are tomentose and somewhat hoary, but afterwards become green, only paler underneath; thick, and covered closely with hairs which are so short and thin that they are detected rather by the touch than the sight. Flowers five or six on a long common peduncle, like those of the next species, but of a deeper colour, and not so frequent on a spike of the same length; they are bigger than those of *Borago*, curled towards the edges, of a purplish blue colour; calyx hirsute, with narrow reflexed segments. Peduncles sometimes with, and sometimes without spines. Fruit pear-shaped; the seeds being sent from Barbadoes under the name of Batchelor's Pear<sup>8</sup>.

If so, Miller's *mammosum* is probably this species.

Gartner describes the berry as a little larger than that of *Asparagus*, of a colour from orange tending to red: the cuticle papery but hardish: the pulp watery. Receptacle oblong, flattish, growing every where to the partition. Seeds about twenty, compressed, ovate-kidneyform, pale.

Loureiro also says that the berry is small, roundish and saffron-coloured. Dillenius therefore is probably mistaken as to the fruit. Perhaps he was misled by Robert's figure, which was not drawn for this species.

Native of the East and West Indies, and of Cochinchina.

61. Stem in a manner shrubby, but yet annual. Leaves rugged, scarcely tomentose, entire at the base, sinuate with sharpish angles, and spines on the midrib, not at the sides. Racemes longer than the leaves, loose, simple<sup>9</sup>. Berries round, the size of a large pea, yellow when ripe<sup>10</sup>.

Native of Carolina. This and the preceding were cultivated by James Sherard, M.D. in 1732. They flower in July<sup>11</sup>.

62. Stem erect, shrubby, villose, covered with very numerous awl-shaped prickles. The thicker prickles white, the more slender brown. Leaves bipinnatifid or double-sinuate, with the lobes blunt and quite entire, villose, armed with prickles on both sides. Petiole

<sup>1</sup> Vahl. <sup>2</sup> Linn. spec. <sup>3</sup> Willdenow. <sup>4</sup> Linn. syst.  
<sup>5</sup> Willdenow. <sup>6</sup> Vahl.

<sup>7</sup> Swartz. <sup>8</sup> Dillenius. <sup>9</sup> Linn. spec. <sup>10</sup> Dillenius.  
<sup>11</sup> Hort. kew.



villose, prickly. Cyme extrafoliaceous, few-flowered. Peduncles very villose, prickly. Calyx villose, prickly, bell-shaped, covering the berry. Corolla yellow. Anthers distant. Berry the size of a Cherry, villose and armed with prickles. It differs from *S. Sodomium*, in having villose bipinnatifid leaves, yellow corollas, and berries covered by the calyx.<sup>a</sup>]

63. This has a strong thick shrubby stalk, which rises from two to three feet high, sending out many short thick branches, closely armed with short strong yellow spines on every side; the leaves are about four inches long and two broad; they are cut almost to their midrib in obtuse segments, which are opposite, regular, and formed like winged leaves; these segments have several obtuse indentures on their edges; they are of a dark green colour, and armed with the same sort of spines as those on the stalks, on both sides. The flowers come out in small bunches on the side of the branches, they are blue, and larger than in the *tomentosum* (n. 70;) appear in June and July, and are succeeded by round yellow berries, as large as Walnuts. It grows naturally at the Cape of Good Hope.

[It is remarked in *Systema Vegetabilium* that the leaves are naked on both sides.—It was cultivated in 1731, by Mr. Miller.<sup>b</sup>

64. This plant is rough with abundance of prickles. Native of the Cape of Good Hope, where it was found by Thunberg.

65. Stem shrubby, white tomentose, with slender straight scattered prickles. Leaves cordate, repand, green above, with a wide white margin, white-tomentose beneath, with straight prickles on both sides. Flowers racemed, bell-shaped, plaited, tomentose, white, like those of *S. tuberosum*, or the common Potato. Calyxes unarmed; when fruit-bearing prickly. Native of Abyssinia<sup>c</sup>: of Africa, found by James Bruce, Esq. and introduced in 1779. It flowers most part of the summer.<sup>k</sup>

66. Trunk arboreous, six feet high, the thickness of the thumb, round, ash-coloured, rough to the touch by invisible tubercles. Prickles very abundant on both surfaces of the leaves, petioles, stem and branches; on the stem mostly recurved, the rest straight. Leaves wide and large, with the petiole a foot long, cordate, alternate, lobed, acute, villose and soft on both sides; the lobes sublanate and acute; the petioles round, rough and villose. Common peduncles short, on the stem and branches spreading horizontally: many pedicels springing from them circularly. These and the calyxes are somewhat villose and unarmed. Segments of the calyx very small and roundish. Corolla pale purple or whitish; segments lanceolate, long and spreading very much. Germ roundish, very hirsute.<sup>l</sup>

Jacquin says that this plant came up from seed sent from the East Indies, about the year 1776:—but it is a native of the West Indies; and was introduced here in 1778, by Mess. Kennedy and Lee: it flowers from June to September.<sup>m</sup>

67. Native of the Canary islands, where it was found by Mr. Francis Masson. It was introduced in 1779; and flowers here in March and April.<sup>n</sup>

68. Stem tomentose, ash-coloured, with thick straight short yellowish prickles, tomentose except at the end. Leaves ovate, shorter on one side of the base, tomentose, thick, blunt; the young ones pinnately sinuate, whitish at the edge, having three prickles on the rib. Petioles prickly underneath. Peduncles from the side of the stem: the primary pedicel with the calyx spiny, the rest male and unarmed. Corolla like that of Borage, purplish-blue.—Native of Palestine.<sup>o</sup>

69. This is shrubby, two feet high, and branched. Trunk round, the thickness of a finger, smooth, woody and ash-coloured at bottom, the rest green. Branches spreading very much, the upper part covered with a mealy nap. Leaves ovate, acute, tomentose on both sides, repand-angular or more entire,

pale-green, waved, petioled, commonly more produced on one side of the base, when young having a violet-coloured meal on the edge and at the back. Peduncles tomentose, dusky-violet, racemed, a few others umbelled, and very few one-flowered. Calyx tomentose. Corolla wrinkled; pale blue, with a wide border divided to the middle into five, six or ten parts. Some flowers, as in many species of *Solanum*, are abortive. Fruit roundish, depressed, shining, indistinctly unequally or scarcely at all grooved, unarmed, pendulous; orange-coloured with a thick coriaceous rind, mostly without seed. Prickles smooth, stout; straight or recurved on the stem and branches, but few; fewer or none on the midrib and principal veins; very rare on the calyxes, racemes and petioles.<sup>p</sup>.—Native of Guinea.]

70. Stem shrubby, two feet high, dividing into several woody branches, armed with sharp thorns. Leaves ovate, woolly, having angular indentures on their edges; they are an inch and half long, and more than an inch broad. The flowers are produced in small loose axillary bunches; they are blue and large, appear in June and July, and are succeeded by round berries as large as common Cherries, of a gold colour, but turning black when ripe.

[Stem and whole plant tomentose, with very narrow naked prickles. Leaves green on both sides, cordate, obtuse, repand, commonly spiny along the midrib only: the young ones come out with a violet-coloured meal on the edge composed of stellate hairs. Berries fulvous, the size of a Gooseberry.<sup>q</sup>

β. Trunk two feet high, the thickness of the little finger, without hairs, but having a few short prickles on it. Branches spreading, round, armed with straight awl-shaped brownish prickles. Leaves wide-ovate, subtomentose on both sides, dirty green, blunt, repand; alternate, petioled; the midrib on both sides and the petiole thinly set with prickles. Racemes opposite to a leaf, short, almost unarmed, tomentose, simple. Calyx small, tomentose, almost unarmed, deeply cut into five ovate and very spreading segments. Corolla deeply five-cleft, several times longer than the calyx; white or pale purple; segments ovate-lanceolate, acute. Berry the size of a Pea, red turning to a dirty orange-colour. Seeds pale with some yellowness.<sup>r</sup> It came to Jacquin from the Paris garden, under the name of *S. coccineum*. But it differs only in having whitish flowers, and a smaller fruit of a scarlet colour; for the leaves are not at all different. In the common *tomentosum* there are sometimes prickles and sometimes none, and they are either very tomentose or have only a thin nap over them.<sup>s</sup> It is a native of the Cape of Good Hope, and was cultivated in 1731, by Mr. Miller.<sup>t</sup>

71. Stem shrubby; branches round, below smooth with an ash-coloured bark, above tomentose and yellow, as are also the branchlets. Leaves petioled, two or three inches long, having sometimes a sinus or two, but mostly entire, veined on the upper surface, marked with lines along the nerves, rugged with minute stellate hairs: beneath nerved, tomentose with a yellowish nap, acute or obtuse, subcordate at the base with a small sinus, and often shorter on one side of it. Spines on the branches, petioles, and frequently on the upper surface of the leaves, scattered, straight, a quarter of an inch long, smooth, shining, yellow. Racemes lateral, peduncled, few-flowered, with a yellow nap on them, sometimes bifid. Calyx short. Corollas tomentose on the outside, a little longer than the calyx, with ovate segments. There are often only four stamens; and some of the flowers are male.—Native of the island of Santa Cruz. West.<sup>u</sup>]

72. This rises with shrubby stalks three or four feet high, dividing into several irregular branches, which have a gray bark, and are armed on every side with slender erect spines of a gray colour. Leaves an inch and half long, and half an inch broad, smooth, and a little indented or waved on their edges. Flowers in long bunches from the side of the stalk, upon long

<sup>a</sup> Willdenow.<sup>b</sup> Hort. kew.<sup>c</sup> Linn. suppl.<sup>d</sup> Hort. kew.<sup>e</sup> Jacquin. misc.<sup>f</sup> Hort. kew.<sup>g</sup> Idem.<sup>h</sup> Linn. spec.<sup>i</sup> Jacquin.<sup>j</sup> Linn. spec.<sup>k</sup> Jacquin.<sup>l</sup> Willdenow.<sup>m</sup> Hort. kew.<sup>n</sup> Vahl.



peduncles, of a fine blue colour. Berries saffron-coloured, the size of peas.

[Cultivated in the Eltham garden, from seeds sent from the isle of Providence, one of the Bahama's\*. It is also a native of Jamaica.

73. Shrubby. Branches purple, smooth at bottom, tomentose at top, prickly: prickles reflexed, yellow, smooth few. Leaves two inches long or more, acute at both ends, entire, a little shorter at the base on one side, flat at the edge, quite entire, having a few small stellate hairs on the upper surface, slightly tomentose underneath, having sometimes a small prickle or two, but for the most part unarmed. Petiole an inch long, tomentose, prickly: prickles awl-shaped, straight, fewer. Racemes above leafy, short, nodding, tomentose. Corollas villose on the outside, segments linear. Found by von Rohr in Cayenne<sup>1</sup>.

74. This is a tree fifteen feet high, with the trunk as thick as the human arm or thicker, round, upright, ash-coloured, with short stout prickles, which are tomentose and spring from a wide base. Branches the same, but the younger tomentose and hoary. Leaves scattered, unarmed, lanceolate, acute, quite entire, wrinkled, smooth above, tomentose and hoary beneath, half a foot long, on tomentose unarmed petioles an inch in length. Racemes terminating, with the branches lengthened out beyond them, round, all unarmed together with the flowers, tomentose, mostly twice dichotomous, three inches long. Pedicels many, directed one way, pendulous during flowering, but upright and an inch long when in fruit. Calyx small, bell-shaped, tomentose, hoary, five-toothed. Corolla violet-purple, spreading very much: segments oblong, acute, flat. Filaments very short. Berry roundish, shining, the size of a pea, red. Seeds roundish, compressed, whitish, several<sup>2</sup>.

Vahl remarks that his *niveum* is allied to Swartz's *S. subinermis*, but is of a different country, and has very prickly branches, with the leaves snow-white underneath. Native of the Cape of Good Hope.

75. This is a shrub, with round flexuose branches, having two warts at intervals, below unarmed and smooth, above somewhat villose, hoary, with a few small prickles. Leaves in pairs, one from five to seven inches in length, the other smaller by half, sharp at both ends, a little narrower on one side of the base, somewhat rugged on both surfaces with indistinct stellate hairs, somewhat shining and unarmed on the upper, paler on the under surface with prickles along the midrib: prickles mostly near each other in pairs, but sometimes solitary and distant, small, yellow, smooth, recurved. Petioles an inch long, one a little shorter than the other, having a few villose hairs scattered over them, and frequent prickles underneath. Peduncles lateral, filiform, half an inch long, ash-coloured. Pedicels umbelled (probably becoming racemed,) a little longer than the peduncle, unarmed. Calyx also unarmed, mealy and somewhat villose, ash-coloured, with awl-shaped segments. Corolla deeply four-cleft, with linear, somewhat villose segments. Filaments four. Anthers linear, almost the length of the corolla.—It is very nearly allied to *S. obscurum*, which has also geminate leaves; but differs in having the branches more rigid and flexuose, the leaves larger and more attenuated, the prickles more frequent on the petioles, and four stamens. Nor is it very different from *S. lanceæfolium*, but it seems to be different in having flexuose branches, more sparingly prickled, and four stamens.

Native of Cayenne, where it was found by von Rohr<sup>3</sup>.

76. Stem round, upright, woody, with a dusky cinereous bark, weak at top, ten feet high, branched, green and shining above. Branches the same, weak and hanging down unless supported. Prickles on the stem and branches very numerous, short, recurved, from a wide compressed base awl-shaped, pungent, orange-coloured at the tip. Leaves in pairs, lanceolate, acute at both ends, quite entire, shining on both

sides, but a little rugged to the touch on account of some white stellate sessile hairs, visible only with a magnifier: these are found also on the stem and branches. The leaves are dark green and unarmed on the upper surface, paler green on the under and prickly along the midrib only, from four to eight inches in length. Petioles about an inch and half long and prickly. Racemes lateral, sharp, unarmed. Calyx short and green, deeply cut; segments lanceolate-acuminate patulous. Petals white and deeply cut into lanceolate acute segments<sup>4</sup>.

Native of South America.—Willdenow suggests that it is perhaps a variety of the preceding.

77. Stem branched, covered with scattered prickles. Leaves three inches long, brown above, tomentose and unarmed beneath. Flowers blue, large. Peduncles and calyxes unarmed.—Native of Mexico.

78. Stem and petioles tomentose; midrib of the leaves beset all over with very short capillaceous prickles. Leaves very like those of *Elæagnus angustifolius*.—Native of South America<sup>5</sup>.

79. Stem shrubby, round, the thickness of a pigeon's quill, villose-subtomentose with yellow stellate hairs; branches and midrib of the leaves on both sides, having abundance of smooth, straight prickles, a quarter of an inch in length, yellow with a brown tip. Leaves an inch and half long, narrow, equal at the base, subrepand or entire, having small stellate villose hairs on both sides, somewhat rugged, green. Peduncles solitary, very short. Calyx stellate-villose, unarmed. Segments of the corolla linear, villose on the outside. Stamens a little shorter than the petals. Berries globular, smooth, shining, the size of a Coriander seed<sup>6</sup>.—Native of the island of Dominica.

80. This resembles *S. Bahamense* very much, but the flowers are white, not violet; the leaves are acuminate, not bluntish; the spines are stouter, more abundant, and of a fiery red colour<sup>7</sup>.]

Stem three feet high, dividing at the top into several branches, which are closely armed with straight gold-coloured spines on every side. Leaves from two to three inches long, and three quarters of an inch broad, having a few angular indentures, and their midrib armed with a row of the like spines as those upon the stalks, and standing erect. Flowers in long bunches from the side of the stalks, white and succeeded by red berries almost as large as the small black Cherry.

[Native of South America. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from march to november<sup>8</sup>.

β. This is a small shrub. Stem round, scarcely the thickness of a pigeon's quill, smooth. Branches alternate, spreading, rod-like, stellate-villose at top. Prickles scattered over the stem, branches, and midrib of the leaves on both sides, near half an inch in length, a little wider at the base, round, rigid, purple, shining. Leaves on short petioles, an inch or an inch and half long, quite entire, at the base a little revolute and narrower, bluntish, appearing to have villose stellate hairs on both sides when examined by a magnifier, rugged, veinless: above green, when full grown almost naked, marked with lines along the nerves, which stand out underneath, and there the leaves are paler, the hairs being closer; the tender leaves are subtomentose. Racemes lateral and terminating, simple. Peduncle filiform, loose, two inches long or a little more. Pedicels remote, scarcely an inch long, thickened upwards; when bearing fruit reflexed. Segments of the corolla narrow, villose on the outside. Berries smooth, even, shining, the size of a Coriander seed.—It is very nearly allied to *S. igneum*, and differs from it chiefly in the stem and branches being more tender; the leaves several times smaller and less attenuated; and the prickles twice or thrice as long.—Sent from the island of Santa Cruz by West<sup>9</sup>.

81. Distinct from the next species by its pinnatifid leaves, much smaller white flowers, and other marks. It seems to be allied to *S. capense*, and yet to be different<sup>10</sup>.

\* Dill. elth.

<sup>1</sup> Vahl.

<sup>2</sup> Vahl. ecl.

<sup>3</sup> Jacqu. collect.

<sup>4</sup> Jacqu. collect.

<sup>5</sup> Hort. kew.

<sup>6</sup> Willdenow.

<sup>7</sup> Vahl. ecl.

<sup>8</sup> Linn. spec.

<sup>9</sup> Willdenow.



This, which is the *trilobatum* of Linneus's species, is named by Jacquin *Solanum Milleri*, being supposed to be his *S. Schia-Schuna* (n. 32.) Miller describes it thus.] It is an annual plant, rising with a prickly stalk near two feet high, sending out a few branches without order. Leaves oblong, indented like winged leaves. Flowers in long bunches from the side of the stalks; they are small, white, and succeeded by red berries the size of small Cherries, which ripen in the autumn. He says it grows naturally on the coast of Malabar: [but according to others it is a native of the Cape of Good Hope, and perennial.]

82. Stem suffrutescent, high, narrow. Leaves small, smooth, obtuse, three or five-lobed, and sometimes but seldom lobed at the base. The stem, petioles, leaves and peduncles have reflexed prickles. Peduncles one-flowered. Calyxes very small, sometimes with prickles and sometimes without. Style ascending. Flowers large, violet-coloured. Berries small, like those of Elder <sup>h</sup>.

Linneus suspected that this and the preceding were two different species, though he did not separate them; but the leaves are never pinnatifid, the flowers are in racemes, four times as large and more, and of a violet colour<sup>i</sup>. Willdenow having seen only the East-Indian plant, which is very well figured by Burmann, does not undertake to determine whether the Jamaica plant be the same. If it be, this species is native both of the East and West Indies.

83. This is a shrub with the appearance of *Lycium*. Stem unarmed, but all the branches end in a spine. Leaves small, lanceolate-ovate or broad-lanceolate, less acute, even on both sides, petioled. Corollas wheel-shaped, slightly five-cleft. The calyx has five acuminate teeth. Anthers shorter than the corolla, yellow, erect, gaping at the top. Stigma ascending. Flowers lateral, solitary. Supposed to be a native of Peru<sup>k</sup>.

84. Stem three feet high, with diffused branches. Leaves sharpish, quite entire, villose on both sides alternate. Flowers white, lateral; peduncles in pairs with one flower on each. Calyx ten-cleft, with awl-shaped segments. Berry small, roundish, red.—Native of China and Cochinchina.

85. Branches long and twisted. Leaves scattered, petioled. Flowers lateral, white. Berries middle-sized, globular, green spotted with white, esculent. The root is accounted good in the tooth-ach.—Native of Amboyna and Cochinchina.

86. Stem hairy, diffused, branched. Leaves alternate, quite entire, tomentose, petioled. Flowers lateral, on dichotomous peduncles. Berries small, globular, red.—Native of China; about Canton.

87. Stem long, closely set with prickles, branched. Leaves ovate, five-lobed, villose on both sides, with short, curved, very sharp prickles scattered over them. Flowers pale violet, small, peduncled. Calyx four-cleft. Corolla wheel-shaped, four-parted. Berry very small, round, deep red, shining, many-seeded.—Native of Cochinchina<sup>l</sup>.]

88. Stems shrubby, trailing, two feet long, armed with long yellow spines, and covered with a gray bark. Leaves near four inches long, and almost two broad, very finely cut in form of winged leaves almost to their midrib; they are woolly, and armed along the veins with long slender yellowish spines on both sides. Peduncles axillary, two or three inches long, each for the most part sustaining two large yellow flowers, in very prickly calyxes; succeeded by small round berries, the size of gray peas, and marbled green and white.—Discovered by Houstoun at La Vera Cruz in New Spain.

89. Stem shrubby, five or six feet high, armed with short recurved spines, and covered with a smooth brownish bark. Leaves oblong, six inches in length, and two and a half in breadth, regularly sinuated on both edges in form of winged leaves; these rise by two or three from the same point, and stand erect; they are armed with a few short spines along the midrib on both sides. The flowers come out in small loose

bunches from the side of the branches, to which they fit close; they are small and white; the berries are about the size of those of Juniper, and when ripe are red. This also was found by Houstoun at La Vera Cruz.

90. Stalk shrubby, climbing, ten or twelve feet high, covered with a smooth brown bark, and dividing into several branches. Leaves ovate, woolly on their under side, but of a dark green on their upper; they are two inches long, and an inch and half broad. The flowers come out singly from the axils; they are large, of a fine blue colour, not divided into segments, but have five angles, each ending in a point. Berries round, about the size of gray peas, and red when ripe. Discovered by Houstoun at La Vera Cruz.

91. Stalk shrubby, four feet high, having a white downy bark, and armed on every side with straight brown spines. Leaves three inches asunder, ovate with sinuate indentures, two inches long, and an inch and quarter broad, woolly on their under side, on prickly foot-stalks; midrib armed with two or three small spines, sometimes on both sides; all erect. Flowers in a sessile umbel at the end of the branches; large, of a fine blue colour, in woolly calyxes. Berries round, the size of large peas, round when ripe. Discovered by Houstoun at La Vera Cruz.

92. Stalk woody, ten or twelve feet high, sending out many branches, which have a light gray bark, and are smooth. Leaves five inches long, and an inch and half broad in the middle, drawing to a point at both ends; of a deep green colour on their upper side, but hoary on their under. The flowers are produced in large umbels at the end of the branches; they are small, star-pointed, and white; their anthers, which fill up the mouth of the tube, are purple. Berries the size of middling peas, yellow when ripe. Discovered by Houstoun at Campeachy.

93. Stalk shrubby, covered with a light-brown bark, and dividing into several irregular woody branches. Leaves ovate, four inches long, two and a half broad, smooth, dark-green on their upper side, but woolly on their under. Flowers in large erect umbels at the end of the branches; pretty large, and white. Berries round, the size of small Cherries, sitting in the blunt woolly calyx, and turning yellow when ripe.—Discovered at Carthagen in New Spain by Houstoun.

#### PROPAGATION AND CULTURE.

2, 29, 55, 61, 63, 70, 81, and the species from the Cape of Good Hope, require an open airy glass-case or warm greenhouse in winter, but in summer may be placed abroad in a sheltered situation.

2 and 29, may be increased by cuttings planted in a shady border, during any of the summer months; when rooted, take them up, plant them in pots, and place the pots in the shade, till they have taken new root.

55, 61, 63, 70, 81. Sow the seeds on a hotbed, managing them as directed for the more tender sorts; with this difference, that they may be much sooner exposed to the air, and should not be brought up so tenderly. They are preserved for their odd appearance; and their fruits being ripe in winter, afford a variety then in the greenhouse; and their leaves and flowers being remarkable in their colour, shape, &c. they deserve a place in every good collection of plants.

6. Sow the seeds in a pot of rich earth in the spring, place it in a moderate hotbed, and water the earth frequently. When the plants are come up, plant them in another moderate hot-bed, covered with rich earth about six inches thick, at six inches distance every way; arch the bed over with hoops, cover it occasionally with mats, to shade the young plants from sun and cold, and water them frequently.

When the plants have acquired strength, and the season becomes favourable, inure them by degrees to the open air, and expose them fully to it in June, when they should be taken up, with a ball of earth to the root of each plant, and placed separately in pots filled with rich earth in a shady situation, and frequently watered until they have taken new root; after which

remove

<sup>h</sup> Linn. spec.

<sup>i</sup> Willdenow.  
<sup>l</sup> Loureiro.

<sup>k</sup> Linn. mant.



remove them to a more open exposure among other exotic plants, giving them plenty of water in dry weather.

In the winter remove them into the greenhouse, placing them in the coldest part where they may have as much free air as possible in mild weather, for they require only to be sheltered from severe frost, and are so hardy as many times to endure the cold of our ordinary winters abroad.

Shift the plants annually about the end of april, paring the roots round, cutting off all the mouldy fibres next the pot, and filling up the pots with fresh rich earth, to strengthen the flowers, and cause plenty of fruit, which being of the shape and size of Cherries, are commonly called Winter Cherries by the gardeners.

15. The varieties of the Woody Nightshade may be easily propagated by laying down the branches, or by planting cuttings in the spring upon a moist soil, where they will soon take root, and may afterwards be transplanted where they are to remain.

The African variety, which is probably a distinct species, must be preserved in the greenhouse in winter, and treated like n. 6.

### 31. The POTATO,

Is generally propagated by its roots, which multiply greatly if planted in a proper soil. The common way is, either to plant the small roots or offsets entire, or to cut the larger roots into pieces, preserving a bud or eye to each; but neither of these methods is what I would recommend, for when the smaller offsets are planted, they generally produce a greater number of roots, but these are always small; and the cuttings of the larger roots are apt to rot, especially if wet weather happens soon after they are planted; therefore what I would recommend is, to make choice of the fairest roots for this purpose, and to allow them a larger space of ground, both between the rows, as also in the rows, plant from plant; by which method I have observed, the roots have been in general large the following autumn.

The soil in which this plant thrives best, is a light sandy loam, not too dry or over moist; this ground should be well ploughed two or three times, in order to break and divide the parts; and the deeper it is ploughed, the better the roots will thrive. In the spring, just before the last ploughing, there should be a good quantity of rotten dung spread on the ground, which should be ploughed into the ground the beginning of march, if the season proves mild, otherwise it had better be deferred till the middle or latter end of that month; for if it should prove hard frost after the roots are planted, they may be greatly injured, if not destroyed thereby: but the sooner they are planted in the spring, after the danger of frost is over, the better it will be, especially in dry land. In the last ploughing, the ground should be laid even, and then the furrows should be drawn at three feet distance from each other, about seven or eight inches deep. In the bottom of this furrow the roots should be laid at about one foot and a half asunder; then the furrow should be filled with the earth which came out, and the same continued through the whole field or parcel of land, intended to be planted.

After all is finished, the land may remain in the same state till near the time when the shoots are expected to appear above ground, when the ground should be well harrowed over both ways, which will break the clods, and make the surface very smooth; and by doing of it so late, it will destroy the young weeds, which, by this time, will begin to make their appearance; and this will save the expense of the first hoeing, and will also stir the upper surface of the ground, which, if much wet has fallen after the planting, is often bound into a hard crust, and will retard the appearance of the shoots.

As I have allotted the rows of Potatoes at three feet distance, it was in order to introduce the hoe-plough between them, which will greatly improve these roots; for by twice stirring and breaking the ground between these plants, it will not only destroy the weeds, but also loosen the ground, whereby every shower of rain will

penetrate to the roots, and greatly improve their growth; but these operations should be performed early in the season, before the stems or branches of the plants begin to fall and trail upon the ground, because after that, it will be impossible to do it without injuring the shoots.

If these ploughings are carefully performed between the rows, and the ground between the plants in the rows hand-hoed, it will prevent the growth of weeds, till the haulm of the plants cover the ground; so that afterward there will be little danger of weeds growing so as to injure the crop; but as the plough can only go between the rows, it will be necessary to make use of a hoe to stir the ground, and destroy the weeds in the rows; and if this is carefully performed in dry weather, after the two ploughings, it will be sufficient to keep the ground clean until the Potatoes are fit to take up.

In places where dung is scarce, many persons scatter it only in the furrows, where the roots are planted; but this is a very poor method, because when the Potatoes begin to push out their roots, they are soon extended beyond the width of these furrows, and the new roots are commonly formed at a distance from the old, so will be out of the reach of this dung, and consequently will receive little benefit from it. And as most of the farmers covet to have a crop of Wheat after the Potatoes are taken off the ground, so the land will not be so thoroughly dressed in every part, nor so proper for this crop, as when the dung is equally spread, and ploughed in all over the land, nor will the crop of Potatoes be so good. I have always observed, where this method of planting the Potatoes has been practised, the land has produced a fine crop of Wheat afterward, and there has scarce one shoot of the Potatoe appeared among the Wheat the following season, which I attribute to the farmers planting only the largest roots; for when they have forked them out of the ground the following autumn, there have been six, eight, or ten large roots produced from each, and often many more, and scarce any very small roots among them; whereas, in such places where the small roots have been planted, there has been a vast number of very small roots produced; many of which were so small as not to be discovered when the roots were taken up, so have grown the following season, and have greatly injured whatever crop was on the ground.

The haulm of these Potatoes is generally killed by the first frost in the autumn, when the roots should be taken up soon after, and may be laid up in sand in any sheltered place, where they may be kept dry, and secure from frost. Indeed the people who cultivate these roots near London, do not wait for the decaying of the haulm, but begin to take up part of them as soon as their roots are grown to a proper size for the market, and so keep taking up from time to time, as they have vent for them. There are others likewise, who do not take them up so soon as the haulm decays, but let them remain much longer in the ground; in which there is no hurt done, provided they are taken up before hard frost sets in, which would destroy them, unless where the ground is wanted for other crops; in which case, the sooner they are taken up the better, after the haulm is decayed. When these roots are laid up, they should have a good quantity of sand or dry earth laid between them, to prevent their heating; nor should they be laid in too large heaps, for the same reason.

The kitchen-gardeners and farmers who live in the neighbourhood of Manchester, cultivate great quantities of this root, as the inhabitants of that populous town consume abundance of them, and are much fonder of them than of any other esculent plants; which has occasioned an emulation among the cultivators, of endeavouring to outvie each other, in getting the roots of a proper size for the table early in the season: in order to obtain this, they have made choice of those roots which produced the first flowers, and have left them to ripen their seeds, which they have sowed with great care; and the plants so raised, have generally been forwarder than the other; and by frequently repeating



peating of this, they have so much improved the forwarding of the roots, as to have them fit for use in two months after planting; so that great improvements may be made by this practice, of many esculent plants, by persons who are curious and careful in trying the experiments.

## [SOIL.]

That a dry soil is much to be preferred for Potatoes, seems well ascertained. Where ground is not naturally so, attention should be had by all possible means to lay it dry. In wet spots this root is always watery, inferior both in quantity and quality. It is certainly improper for very strong land, and will not grow to any purpose on a deep blue clay. In a heavy moist soil, the Black Potato, if any, ought to be planted: and the Howard has been found to prosper on a wet hungry gravel. Loams are preferable for this crop, but there is a difference of opinion upon the quality of this soil best adapted to it. Some recommend a rich loam; whilst others say that very rich loams may indeed produce great crops and large roots; but that they are always inferior in flavour and mealiness to those which are raised on lighter soils. The soil about Ilford in Essex however, on which the best crops are grown, is a strongish loam, not quite approaching to clay.

The soil which I (says Dr. Hunter) would prefer above all others, for this plant, is the same which Columella recommends for vines. Neither too stiff and untractable, nor too light and crumbling, yet rather of the crumbling kind; neither too poor nor too rich, yet inclining to richness; neither too flat nor too hilly, but rather gently rising; neither quite dry, nor yet surcharged with moisture. With such a soil, and proper management, a noble return may be expected; and the nearer any soil approaches to this, the more suitable it will be to the cultivation of the Potato. But even from soils, not blessed with all these desirable qualities, very beneficial crops may be obtained, if a little more labour and pains are bestowed upon the necessary operations<sup>m</sup>.

It is pretty generally known that an old grass ley, lay or layer is an excellent preparation for Potatoes, without dung. In Ireland it is a very general method of breaking up old grass land, to let it at very high rents to the labouring people to plant Potatoes on. They either plough or dig it; the produce is largest with the latter operation; but whether so much larger as to balance the difference of expense may be doubted. If there be no dung, the land must be good or the lay old. After all, many do not esteem this so good a way as on stubble. In Lancashire, a sward or fresh lay is reckoned most desirable. Old lay near Frodsham in Cheshire is let to labourers at the rate of 16l. an acre, and no manure allowed. At Knutsford in that county, old grass dug produced five hundred bushels an acre.

Many parts of Waste lands, Commons and Heaths may be broke up with advantage for this purpose, either by ploughing directly, or by paring and burning.

Mosses, Bogs and Moor-lands are well adapted to the culture of Potatoes, when properly drained; their parts being easily separable, and the roots finding plenty of room to extend, and swell to their full size. In Ireland very considerable improvements have been made in this way, and it has been found that no soil produces a larger quantity of Potatoes than black moss, or peat mixed with earth, that very great crops are gained from bogs well drained, that they escape the frost, when they are killed in the highlands, and that these lands make excellent meadows. In Scotland also and the north of England, the Potato culture for improving mossy soil is generally acknowledged to be of great advantage, and to be the best means of bringing such waste lands into culture. The crops in many instances have been said to be even larger and more productive than in lower and more cultivated districts<sup>n</sup>.

<sup>m</sup> Essays, 2. p. 302.

<sup>n</sup> Young's Irish tour. Agric. Reports, and Report of the Committee of the Board of Agriculture, p. 7.

On Woodlands grubbed, no other crop seems better adapted than Potatoes, to bring the land into order, for culture of any sort: the soil being sufficiently broken by the planting and taking up, and rendered perfectly clean by repeated hoeings.

In young Plantations of trees, the intervals cannot be put to a better use than to plant them with Potatoes, the season after the young trees are put into the ground. In Shropshire, Lord Clive allows the neighbouring cottagers to plant them; and if it be new ground, no manure is put in for the first two years. The culture is of great use to the young trees, but the Potatoes are not continued above three years. Mr. Coke also, of Holkham in Norfolk, permits the labourers to plant Potatoes in his young plantations, and finds the cultivation beneficial to his trees. In all cases where the benefit to the planter and to the poor seems to be so reciprocal, as in this practice, it is much to be wished that the same system may be adopted<sup>p</sup>.

Almost every farmer may procure this advantage for himself or his labourers, by planting or permitting to be planted Potatoes, in the corners of arable inclosures, where the plough cannot reach, on balks, headlands and other vacant patches of ground; which, when fresh, will bring a tolerable crop, without manure; the land, after the Potatoes are off, is ready for any other crop; and the labourers can plant and clean them in the mornings and evenings.—Or the farmer may make the crop the joint property of himself and his workmen; he finding land, manure and sets, and they the labour: the produce to be equally divided<sup>q</sup>.

## MANURING.

The richer the land, the more abundant will be the crop, provided the soil be proper for it. Good fresh land may do without manure, but let not the farmer trust too much to the strength of his soil, to the exclusion of manure. Dung is the most used for Potatoes, and is in general the best manure they can have. Horse-dung well rotted is by many reputed the best; next to that hog-dung; and after that night-soil and other sorts of animal dung. In Essex from fifteen to twenty loads of rotten dung, are laid upon an acre, just before planting. Some good judges direct not less than twenty loads, of thirty bushels each, well rotted<sup>r</sup>. In Cheshire they lay from twenty to forty tons upon a statute acre. In Westmoreland, one hundred loads on a customary acre of 6760 square yards<sup>s</sup>. Mr. Dann prefers long dung, twenty-two loads to the acre<sup>t</sup>. In Lancashire long dung from the yard is used; but dung from great towns is supposed to produce most effect<sup>u</sup>.

Limestone gravel is the general manure in many parts of Ireland. From three to four hundred one-horse cart-loads are laid on an acre. They spread it on the fallow, after the first ploughing. The expense is about 1l. 1s. 6d. and it will last from fifteen to twenty years<sup>v</sup>.

Lime is sometimes used, but in general it is condemned as a manure for Potatoes. It has had however a good effect, mixed with peaty earth, at a much cheaper rate than dung<sup>w</sup>. In Dumfriesshire liming is reputed essential to prevent the rot, from which they had suffered greatly before they adopted this practice, but never since<sup>x</sup>. And fresh lime sown over the surface two days after planting is a preservative from the grub<sup>y</sup>. Lime, marl, soaper's ashes and rags are affirmed by some to do little good, and in some instances to do harm, by making the roots scabby<sup>z</sup>. If lime be applied to the Potato crop, it ought to be laid on the surface, and wrought there by the hoeing, or laid on the land with the preceding crop; because if it be much about the roots, although it may not hurt the flavour, it generally frets the skin<sup>a</sup>.

On many parts of the coast and in the Isle of Man they use Sea-weed or Sea-ware, (called in the West Ore-weed,) and sea-sand, with or without dung. In

<sup>p</sup> Young's ann. 10. 324.

<sup>q</sup> Report Committee, p. 10.

<sup>r</sup> Marshall's Midl. Counties, 92 & 133.

<sup>s</sup> Bath 6. 346.

<sup>t</sup> Reports.

<sup>u</sup> Transf. arts, 10. 77.

<sup>v</sup> Lancashire report.

<sup>w</sup> Young's tour, passim.

<sup>x</sup> Transf. Arts. 19. 183.

<sup>y</sup> Reports.

<sup>z</sup> Young's ann. 1. 398.

<sup>a</sup> Somersf. report and Bath papers.

<sup>b</sup> Perth report, 175.



some parts of Scotland they affirm, that with this manuring, the roots are inclined to be tough and watery.

Coal-ashes and the sweepings of streets may be useful in heavy soils. Some persons are said to have had good crops by using saw-dust, fern or leaves of trees, and furze, or green broom chopped small, for manure. The refuse of peat-stacks, peat-ashes and wood-ashes, foot and bones are affirmed to be excellent; also the rubbish of mud-walls or cob. Gypsum or plaster or alabaster, was used by Mr. Weston of Leicester.

Green crops, of Vetches, Clover, &c. covered in by planting, form a good manure for Potatoes.

In the course of Mr. Young's experiments on manure for Potatoes, it appeared that Urine yielded the most abundant crop. Upon which he remarks, that dunghills ought to be managed in such a manner as to save, if possible, every drop of it<sup>d</sup>.

When dung is used as a manure for Potatoes, the mode of application is different. Some lay it only in the places where the sets are put, others all along the furrows, others again spread it equally over the land: some place the sets over the dung, and others under it. The former is the better mode; and where plenty of dung can be procured or afforded, it is far preferable to spread it equally, for the sake of the ensuing crop.

#### TILLAGE.

##### 1. *On Lazy Beds.*

In this method of tillage, the land is laid out in beds with the spade, five, six, eight or ten feet wide, having trenches between them from two to three feet and a half and even four feet in width, sometimes eighteen or twenty inches in depth. When these trenches are marked off with a line and spade, the dung is laid on the bed, and then the sets in rows across the bed, at such distances as to allow room for a hoe. The first spit from the trench is laid on the Potatoes, with the grassy side downwards, if the land be new; a second spit of mould is taken and spread over to fill up the openings. When the young shoots appear, another sprinkling of earth is given from the trenches; and the hoe succeeds when it is necessary<sup>e</sup>.

This practice, which is general in Ireland, especially among the cottars, may be adopted with propriety upon bogs, mosses and moors partially or wholly drained, and upon such rough soils as are difficult to plough. A good method with such lands, is to pare and burn the surface, and to add lime to the ashes. Strike the land into straight beds six feet wide, with intervals of two feet, or two feet and a half. Lay the sets twelve inches square on the beds, and cover them two or three inches deep with spades from the intervals; when the plants appear, cover them again in the same manner, one and a half or two inches more. Keep them clean by one hand-hoeing and successive weeding. They may be taken up with the plough by splitting the beds, and filling the former intervals; converting the open furrows left in the middle of the former beds into drains, deep enough to leave the land dry in winter.

Near Dublin, they make the beds seven feet broad; the trenches three feet and a half wide, and from eighteen to twenty inches deep, to bring up some limestone gravel; they always lay on 320 one-horse loads of dung, six to a ton<sup>f</sup>.

In some parts of Scotland and the Western Islands this method has been adopted. Also in the Isle of Man, on coarse soils: the beds from six to ten feet wide; the trenches from two to three feet; the manure spread on the surface of the beds; the cuttings placed at ten inches asunder, on the dung, and covered with the earth out of the trenches; when the plants appear, they give a second covering of finer mould; the two together four inches deep: after this they hoe and weed<sup>g</sup>.

In England, the lazy-bed method has not been received, except in a few districts. It is practised however in Cheshire: they plough the land before Christ-

mas; in april they plough it across and harrow it, then plough it deeply into beds five feet wide: at the end of april or the beginning of may, the sets are dibbled in eight or ten inches asunder. In three weeks, or as soon as the buds appear, trenches are dug between the beds, and the plants covered with two inches of soil, spread equally: they are then hoed and weeded; and the crop is dug out<sup>h</sup>. By this method the Frodsham plants are allowed to produce the greatest quantity in the kingdom<sup>i</sup>. Mr. Billingsley, on comparative experience, prefers this method to drilling. He makes his beds five feet wide, the alleys or intervals three feet, the sets are placed a foot apart, covered not more than three inches with earth<sup>k</sup>. Mr. Parkinson, of Doncaster, produced from lazy-beds 2904 pecks, and by common digging only 1210: superiority of the former 1694 pecks<sup>l</sup>. Mr. Macro on the contrary, an experienced farmer in Suffolk, found that sets planted in the Irish fashion yielded the least, though planted the thickest of any. In subsequent experiments therefore he dropped this method, finding it to be far the most expensive, and to leave the land very uneven<sup>m</sup>: nor will it ever probably be generally adopted in England<sup>n</sup>.

Dr. Hunter has given some experiments recommending one, two, three or more sets to be planted in small hillocks, after the manner of Hops, at four feet square. On the 14th of april he cut a large white Potato into seventeen sets, which were planted in as many hillocks. The plants were earthed up, and on the 14th of october the crop was taken up. The produce was ten pecks of sizeable Potatoes. Three or four sets were put into other hillocks, but did not produce a greater crop than the others<sup>o</sup>.

##### 2. *By Drilling.*

The method of drilling by the plough in large concerns, and by the hoe in small ones, appears to be much the cheapest, and in general is the best. It is usually practised in England by those who plant Potatoes on a great scale.

Soils liable to be wet during the winter should be ploughed in autumn, so as to lie dry. In the spring plough and harrow flat. In march, april or may, according to the season, and the nature of the land, draw furrows three feet asunder, lay dung in them, not less than twenty tons to the acre; on this drop the sets nine inches asunder. If the land be stiff, cover the dung and sets by drawing the earth over them with hand-hoes, adding more afterwards with the plough; if it be light and friable, they may be covered with the plough. Keep the intervals clean by ploughing or horse-hoeing, for six or eight weeks after the Potatoes appear, afterwards by hand-hoeing: hand-hoe the rows when young, and afterwards weed them. Take up the crop by opening the rows with a plough, harrowing and picking more than once. In gardens and small concerns, it may be taken up with the spade or the three-pronged fork.

Lands prepared and dunged for Wheat that could not be sown, or where the plant has been destroyed or too much damaged to stand, are ready without farther manuring to receive Potatoes in this mode of culture: for which the above general directions may suffice.

It may be however a satisfaction to some persons to be acquainted with the particular practice of eminent agriculturists, which they may adapt to their own peculiar circumstances. Several of them therefore are here inserted.

Mr. Young's directions in his Irish tour are as follow. Suppose the land to be a stubble. Spread the dung or compost equally over the whole, in quantity not less than sixty cubical yards to a plantation acre. If the land be quite dry lay it flat, if inclinable to wetness arch it gently; in this first ploughing, which should be given at the end of february or the beginning of march, the Potatoes are to be planted. Women are

<sup>h</sup> Chester report, 20.

<sup>i</sup> Lancaster report, 28.

<sup>k</sup> Young's ann. 21. p. 5, 6. Bath papers, vol. 6.

<sup>l</sup> Report Comm. Agr. p. 24.

<sup>m</sup> Young's ann. 7. 505, 506.

<sup>n</sup> See Hunter's Essays, p. 304.

<sup>o</sup> Idem, p. 337: see Bath papers, 3. 373.

<sup>d</sup> Annals, 9. 654.

<sup>e</sup> Perth report, 172.

<sup>f</sup> Young's Irish tour, 1. p. 7.

<sup>g</sup> Reports.



to lay the sets in every other furrow, at the distance of twelve inches close to the unploughed land, that the horses may tread the sets on them. There should be women enough to plant one furrow whilst the ploughman is turning another; the furrows should not be more than five inches deep, nor broader than nine inches, because when the Potatoes come up they should be in rows eighteen inches asunder. The furrows should also be straight, that the rows may be so for horse-hoeing. Having finished the field, harrow it well to lay the surface smooth and break all the clods, and if the weather be quite dry any time in a fortnight after planting, run a light roller over it followed by a light harrow. About a fortnight before the Potatoes appear, go over the whole surface of the field with a shim, the cutting edge of which is two feet long, going not more than two inches deep; this loosens the surface mould, and cuts off the young weeds that may be just coming up. When the Potatoes are three inches high, horse-hoe them with a shim that cuts twelve inches wide, and goes three inches deep, and immediately after hand-hoe the rows, cutting the surface well between plant and plant, and also the space missed by the shim. Repeat both these operations when the plants are six or seven inches high; and in about three weeks after give a hand hoeing, directing the men gently to earth up the plants, but not to lay the mould higher to their stems than three inches. After this nothing more remains to be done than sending women in to draw out any weeds that may appear by hand.

These directions suppose the soil to be light and dry: Potatoes never answering, in Mr. Young's opinion, on clays or strong wet soils. Wheat is intended to follow the Potatoes; then Turneps; next Barley; then Clover, and lastly Wheat again, to be followed by Potatoes.

The following is the mode adopted by Thomas King, Esq. of Kingston in the county of Wicklow, for several years, in the culture of Potatoes.

The land for drill Potatoes should be dry, and cleared of all impediments to the plough. The best preparatory crop, if the land be in grass, is that of lay-oats. In ploughing the ground, lay the sod all one way, with a turn-wrest plough, rather deeper than the staple soil, and harrow in the Oats immediately. As soon after these are off as convenient, plough the stubble well and deeply; if with the Kentish turn-wrest plough, so much the better. Early in the ensuing spring, harrow well in dry weather, and then cross-plough: previous to planting, harrow well again, and lay the ground as flat as possible.

If the land inclines one way much more than another, run the drills up and down hill, that they may be effectually moulded on both sides by the hoe-plough; but if the ground be flat, or not much inclining, run the drills north and south. The drills should be three feet asunder. Having determined that side of the field where it is intended to begin, measure nine yards from the line of the first intended drill, and on the ninth yard let a row of car-loads of dung be laid from one end to the other, allowing a sufficient headland at each end for the plough and horses to turn upon: which headlands, after the horse-hoeing is finished, may be sown with Turneps, or any other crop suitable to the season. When the first load of dung is laid down, let the next horse be drawn up, until his head reaches the former load, and in like manner to the end of the row: such a row is a good dressing for the Potatoes, and a succeeding crop of Wheat. It is supposed that two Irish car-loads contain little more than an English one-horse cart-load.

When the dung is all out, and sets prepared, six men and as many boys should be placed along the drill, at equal distances. The drills may be made by a good swing-plough going and returning in the same furrow, in a line perfectly straight, and as deep as the soil will permit, observing always, that if the ground hangs one way, the last stroke in opening the drill should throw the mould out from the highest side of

the land; which clears the drill much better than when the last stroke throws the mould against the drill, and much depends upon the drill being very clean. As the plough passes the first boy in completing the drill, he should begin dropping sets, not farther than five inches asunder, the Potatoes having sufficient room to spread sideways. As the sets are dropped, each man covers his portion with dung from the first row. If after the first drill is made, the driver walks in, making the second drill quite close to the first, and keeps his horses close up to his shoulder, the drills will be exactly three feet asunder: but if the ploughman and driver be not expert, then it will be necessary to set up marks at due distances. By the time the first drill is planted and dunged, the plough will have opened another, which is to be planted and dunged as the former; and by the time the plough comes to the ninth drill, the first row of dung, will or ought to be exhausted.

It is not necessary to cover the drills until the planting is finished. A light harrow, somewhat raised by being bushed, so as to prevent the harrow-pins from reaching the dung, which it would otherwise drag out of the drills, drawn across, will effectually cover them: much better indeed than the usual method of covering with the plough, and then harrowing to level: or the drills may be covered by a board edgeways, four inches deep, and four feet long, with a handle like that of a rake. Covering with the plough leaves the land uneven; the Potatoes in consequence come not up in regular rows, which is a great inconvenience in horse-hoeing.

When the plants are up so as distinctly to see the entire drill, the mould should be turned from the plants by a light sowing-plough; at first from one side of the drill only; and in three or four days, when that mould is returned, then from the other side. The plough should be run up as close to the plants as possible. If both sides were stripped at the same time, and unfavourable weather should happen, the plants would be materially injured.

Previous to the second horse-hoeing, which ought to be done in about a week from the former, the Cultivator, Nidget or Shim should be run between the drills, to cut all the weeds in the intervals, and to raise mould for the next horse-hoeing. If any weeds should appear in the row, they should be picked out by hand.

The horse-hoeing, by which the mould is thrown up to the plants, should be performed at least four times, each time going and returning in the same interval; that is, once from and three times to the plants; but the oftener they are horse-hoed the better, unless the planting be very late; then horse-hoeing keeps the Potatoes too long in a growing state, and there is not time for them to ripen fully.

A plough with a double mould board should be used for finishing; it should be very narrow in the sole, the mould boards high, and at the upper part as wide behind as the interval, so as to press the mould home to the stems on both sides at the same time. The intervals, when finished, should resemble a celery-bed; deep at least as the staple mould, and neatly cleaned up on both sides.

The whole expense of an acre thus planted is under five guineas; whereas in the common ridge way it amounts to fourteen pounds. The land is more improved by a drill crop with one hundred loads of dung, than by four hundred in the ridge way. Three drills are equal in produce to the best ridge, and generally much better.

The principal improvements of the above culture are, the ascertaining the proper quantity and due distance of the dung:—drawing out the dung before any drills are made: suffering nothing to touch the drills when opened until they are planted and dunged; and then covering them again by cross-harrowing.

In Lancashire, a sward or fresh lay is preferred, but not always to be obtained. Good crops have been frequently raised from lands exhausted. The ground being previously cleaned by ploughings, and planted in April, if the ground can be got into condition, in drills,



drills, about three feet distant, and from nine to twelve inches asunder in the rows, the sets are placed immediately upon long dung from the yard, &c. ; but dung from great towns produces a wonderful effect upon lands not accustomed to that article.

The crops are kept clean from weeds by the plough, first by turning a furrow, left for that purpose, towards the young plants, as soon as they appear, and afterwards by turning the same furrow back from each side of the drill. Sometimes the crop, if very foul, is harrowed with a small triangular harrow, running through each drill. After the weeds have been so exposed, the furrow is turned back again, and sometimes the same plough, or a double-wristed one, runs up each drill once more ; besides the destruction of weeds, the soil, by those operations, is loosened, and exposed to the sun and air, by which the crop is greatly improved<sup>a</sup>.

In Kent, the dung is ploughed in, and then furrows are made twenty inches apart, in which pieces of Potatoes are dropped, fourteen inches asunder, by hand, and then covered by splitting the furrows, or sometimes with a planting-hoe. Or they are dibbled in, and the pieces dropped in every other furrow after the plough, whilst turning in the dung.

In Northumberland the drills are from thirty-two to forty inches distant ; and the sets are placed twelve inches asunder ; the dung is laid upon them, and the soil is turned upon the whole, by the plough splitting the one-bout ridges. The crop is kept clean by hand-hoeing, and ploughing between the drills. As the stems advance, they are earthed up by a common or double mould-board plough<sup>a</sup>.

In Lincolnshire, Mr. Cartwright ploughs before Christmas, again in march, and in april : the land being properly cleaned, about the middle of april, the dung (twelve three-horse loads to an acre) is carted out ; as soon as this is spread on three acres, three ploughs begin ; and the length of the furrows being divided into sixteen equal parts, one woman being stationed in each division ; and a man being fixed to every four women, he rakes the dung on to the Potatoes, after the women have laid the sets in the furrows, a little on one side, to be out of the tread of the horses. After planting, they are rolled down with a light roller. When they come up, harrow them lengthwise with light harrows. In three or four weeks horse-hoe them ; and when the weeds are dead, repeat it : then hand-hoe the rows. In a week or thereabouts, earth up with double mould-boards : and repeat this in two or three weeks after. Lastly, in august hand-weed them<sup>a</sup>.

In the North Riding of Yorkshire Potatoes are generally cultivated as a fallow crop ; of course the land is winter-ploughed, and made clean from weeds, as early in the spring as the season will admit. The sets are placed at ten inches distance in the furrows, the land having been set out in one-bout ridges with the plough. The manure (from ten to twenty cart-loads on an acre) being either set in heaps in the field, whence women and children take it in baskets and lay it in the furrows over the sets ; or spread over the ridges, when it is pulled into the furrows with a moulding rake or hoes. They are then covered with earth by the plough dividing the ridge, and making a fresh one over the Potatoes. As soon as the plants make their appearance, the ridges are harrowed down, and remain in that state about a week ; they are then earthed up, and in a week or two as much of the earth from the sides of them is ploughed down, as can be done, without leaving the roots too bare ; after this, the tops of the ridges are carefully hand-hoed, and the earth which was ploughed from the ridges is again ploughed to them : if afterwards weeds should grow, they are again hand-hoed or weeded, after which the earth is drawn up to the top of the ridges. The stems having by this time got to a considerable size, soon overcome all weeds, and consequently require no farther attention till the time of taking up<sup>a</sup>.

In the county of Argyll in Scotland, Potatoes are

commonly planted on poor ground, after a crop of Oats. The ground is ploughed in winter and early in spring, and again a short time before it is planted. It is also twice harrowed in the intervals. The drills are from thirty to thirty-six inches asunder ; the dung is laid in the furrows between them, generally over, but sometimes under the sets, which are placed from six to eight inches distant. The drills are then split to either side, and the new drills formed over the Potatoes where the furrows were before. In about three weeks, the ground is harrowed across the drills, and after the plants are come up, the earth is taken from them with the plough ; soon after, it is put to them again ; and after this they are twice hoed, earthing up the soil about the plants as much as may be, and going over it with the hand-hoe, to destroy the weeds which the plough may have left.

Some lay on the dung before the first, and some before the second ploughing. In this way it is more intimately mixed with the soil, and will be of more service to the succeeding crop, than when laid in one place at the bottom of the drill, where much of its substance must sink down beyond the reach of the plough. When the dung is mixed with the earth, the Potatoes are drier ; but they grow larger when all the dung is close to them. But the addition to quantity will not compensate for the defect in quality.

In any part of a field that inclines to wet, it is better to dibble in the sets into about half the depth of the drill, than to lay them in the bottom, where they will be apt to perish. Perhaps they are in general buried too deep, which makes them long in coming up, and later in ripening<sup>a</sup>.

In the county of Fife, Potatoes being usually cultivated as a cleansing crop, they are introduced after white crops, as Wheat or Oats. The ground is commonly ploughed at the beginning of winter, and as completely loosened and pulverized as possible, by repeated ploughings. Those who take land from the farmers seldom make the drills above eighteen or twenty inches asunder, from an apprehension that wider drills will lessen the quantity of the produce. But farmers, who do not labour under that prejudice, generally make the rows three feet, or at least two feet and a half distant, and place the sets from eight to ten inches asunder in the row. By this method, whilst an equally large crop is produced, an opportunity is afforded for repeated horse-hoeings, which in cleaning foul land are more effectual than all the dressing that can be given merely with the hand-hoe. In some cases the land is laid into three-foot ridges, and the dung spread along the furrows. The sets are then dropped on the dung at proper distances. To lay the sets in the furrow before the dung is spread, is a good method, and sometimes practised. The sets are covered either by ploughing the whole intermediate ridges at once, or by a single furrow from each side, leaving the rest untouched till ten days or a fortnight after.

Sometimes before planting the ground is harrowed, and the dung spread over the whole surface as evenly as possible. On each side of the ridge, beginning at one side of the field, a furrow is opened, and the sets dropped along it : they are then covered with the plough ; and after that, the plough goes twice or thrice round the ridge, before planting again, so as to bring the rows to their proper distance. And thus they proceed with every ridge, till the whole be completed. But it may happen, that if the hands employed in planting are too few, the plough must stand still for some time ; or if they are sufficiently numerous to keep the plough constantly at work, then they must stand idle all the time the plough is employed in tilling the spaces between the rows. To save time and labour therefore, the planting should be carried on upon two ridges at the same time ; so that when the planters are at work on the one ridge, the plough may be employed on the other. And thus the farmer is not under the necessity of having more hands than can be kept constantly at work.

<sup>a</sup> Report, p. 57.

<sup>a</sup> Reports.

<sup>a</sup> Report, p. 142.

<sup>a</sup> Report, 149, 151, 152.

<sup>a</sup> Report, p. 88.



The ground is harrowed, when the Potatoes begin to appear, or a little before, to destroy the seed weeds. As soon as the rows can be distinctly observed, the earth is tilled away from the Potatoes; the plough, in this operation, being brought as near the plants as possible, consistently with their safety. This contributes not only to destroy weeds, but to loosen the ground about the plants. The hand-hoe is employed to stir the ground, and destroy the weeds between the plants. If the land be stiff, and bound together with root-weeds, such as couch-grass, &c., these are torn up with the three-pronged hoe. In about ten days after, and when the weather is dry, the earth is laid back to the plants with the double mould-board drill plough. The number and season of subsequent ploughings depend upon the state of the land and the weather: but the last ploughing is generally done with the broad sharp share, and pretty deep. After which the mould may be drawn close to the stems with light broad-teethed iron rakes, eighteen inches long in the head. Instruments of this kind will perform the work more expeditiously, and perhaps more completely, than hand-hoes<sup>\*</sup>.

In Mid-Lothian the ground is previously well pulverized by frequent tillage; and it is always the driest soil that is chosen, without regard to the preceding crop. The mode of culture is uniformly in drills, from eighteen inches to four feet distant from one another; and from nine inches to twelve, plant from plant. The dung is, in some cases, spread over the whole field; in others, it is confined to the rows: sometimes it is applied to the preceding crop, which is thought to make the best eating Potatoes, although rather less in quantity<sup>†</sup>.

The Rev. Mr. Close recommends the following culture, the result of various experiments made for five years successively. The land being well pulverized by two or three good harrowings and ploughings, is then manured with fifteen or twenty cart-loads of dung to the acre, before it receives its last earth. Then it is thrown on to what the Suffolk farmers call the *trench balk*, which is narrow and deep ridge work, about fifteen inches from the centre of one ridge to the centre of the next. Women and children drop the sets in the bottom of every furrow fifteen inches apart; men follow, and cover them with large hoes, a foot in width, pulling the mould down so as to bury the sets five inches deep; they must receive two or three hand-hoeings, and be kept free from weeds; always observing to draw the earth as much as possible to the stems of the young plants. By this method, the sets will be fifteen inches square from each other.

If Potatoes be grown as a preparation for Wheat, the rows should be two feet two inches from each other. Hand-hoe only the space from plant to plant in each row: then turning a small furrow from the inside of each row by a common light plough; and afterwards with a double-breasted plough with one horse, split the ridge formed by the first ploughing, thoroughly to clean the intervals. This work should not be done too deep the first time, to avoid burying the tender plants; but the last earth should be ploughed as deep as possible; and the closer the mould is thrown to the stems of the plants, the more advantageous it will prove. The land, by the summer ploughings, will be prepared to receive seed-wheat immediately, and almost ensure a plentiful crop<sup>‡</sup>.

Arthur Young, Esq. planted four acres with Potatoes on a poor gravelly loam; an oat stubble on broad flat lands. These were ploughed into the four feet ridge the beginning of november, and so left for winter. April the 14th following it was ploughed again reversing the ridges, and immediately on this ploughing 283 loads of farm-yard compost were carted into the furrows; the sets were planted in one row, twelve inches asunder, along the middle of the dung, by women and children: a plough followed, which taking off a slice from the sides of each ridge covered the Potatoes and the dung. There being much grass

and weeds in several parts of the field, the operation of reversing the ridges was not completed then, that the sun might have more power on the land, but the second bout was done in a fortnight after, which left the ridges in their first form.

The 18th and 19th of june, the plants being about six inches high, a furrow was turned from the sides of each ridge, leaving the plants upon a slip of a foot wide. This part of the horse-hoeing system appeared necessary before the hand-hoes went to work; for it turns every large knot of grass and weeds from the plants into the middle of the intervals, where they are much more easily destroyed, and it leaves the plants far easier to hoe. Upon this they were hand-hoed; and on the first of july the intervals were harrowed flat with the horse-hoe harrow, some parts of the field twice and thrice in a place, to tear the grass in pieces, which it did so effectually, breaking the clods at the same time, that the sun killed much of the rubbish. July the 5th they were hand-hoed a second time; and as this was the last time, and every weed was therefore to be eradicated, it was done by the drag. As soon as the weeds of this hoeing were dead, the rows were earthed up with the double mould-board plough. Lastly, on the 20th of august and the following days they were hand-weeded.

Mr. Young finding from several small experiments, that he had hitherto given his crops too much room to have a large produce, was led to try half an acre in another mode; the soil a good dry sandy loam: the operations were most of them performed at the same time as those described above. It was a barley stubble left through the winter, on which fifty loads of compost were spread over the whole surface; the plough then went in, and in reversing the former flat lands, every other furrow was planted, the sets at twelve inches asunder; and as the plough carried nine inches, the Potatoes of course were in rows eighteen inches apart. Women laid, (not dropped,) the sets close to the unploughed side of the furrow, to escape as much as might be the horses feet: as soon as planting was finished, the land was harrowed twice, then rolled with a barley roller, and harrowed once again, leaving it in fine order. In about a fortnight or a little more, there was great appearance of seed-weeds coming up; as these threatened a heavy expense of hoeing, they were cut off with the horse-hoeing shim. Nothing could answer better than this operation; care however should be taken that the tool do not go so deep as to cut off any shoots that do not appear; nor should it be done but in dry weather. It was then harrowed, and when the plants were three inches high the rows were hand-hoed: directly after the intervals were horse-hoed with a shim, that cut only twelve inches wide. Both these operations were repeated once, and at the end of august a hand-weeding being given, the crop carried a superior appearance. The produce was 550 bushels to the acre; whereas in the experiment above related it was only 390. The mode therefore here pursued of planting in closer rows is to be preferred, unless a field should be exceedingly full of root-weeds, in which case wide intervals are useful for horse-hoeing<sup>§</sup>.

Mr. Young, in his latter experiments, carried on his dung, spread it, and ploughed it in early in november, being convinced by experience, that upon all soils, inclinable to wet, the manure should be carted and spread either in the autumn or during a hard frost, lest the season should be wet at planting time, and the ground therefore poached by the horses.

Mr. Young's last experiment was on twelve acres and a half, a cold but friable loam upon a clay-marl bottom, making the field wet for want of draining, having borne a crop of Oats. In november he spread 298 loads of farm-yard compost over eight acres; the rest not manured at all. The whole was ploughed immediately. The first of may it was ploughed clean, and harrowed after the ploughs; to try a new method of planting, in which the mould would fall in the lightest manner possible on the sets, the land was struck with the common plough into furrows two feet asunder,

\* Report, p. 182.

† Report, p. 107.

‡ Bath papers, 3. 104.

§ Trans. Arts, 3. 49, &c.



and the sets being dropped in these at twelve inches apart, were covered by running a pair of harrows up and down the furrows, and were then rolled and harrowed again. Nothing could work finer, drier, or in a manner more promising for a crop. One acre and a half was planted in this manner with the white cluster Potato; two acres with the champion, a very fine table Potato that never curls, and the rest of the field with the red cluster. June the 2d, &c. the surface was cut with the great shim. It was the 16th before the rows were up plain enough to horse-hoe; they were shimmed, and on the 19th harrowed across, without damaging them. The 24th they were hand-hoed the first time. July 21st they were hand-hoed again, and shimmed a second time. The season had been for some time exceedingly wet, so that the weeds grew apace. The crop was hand-hoed again in August, and earthed with the double mould board plough. The White cluster did not produce nearly equal to the Red: and the dunged part of the field, yielded double the crop of red cluster, to that which was not dunged<sup>b</sup>.

It is well known that good crops of Potatoes can be obtained on grass lands, but some rabbit-warrens and wastes may also be broken up for this purpose with success. We have an instance of this near Crawley in Suffex, where part of a rabbit-warren was inclosed, densed, and one crop of Oats taken from it; but the crop was so indifferent, that the land was again thrown open to the warren for two years. In October, 1796, it was again inclosed and ploughed up. It lay fallow till the middle of March, 1797; it was then harrowed, and in a few days afterwards cross-ploughed. It remained in that state till the first week in April, when it was again harrowed, and in a few days after ploughed a third time; in about ten days more it was harrowed a third time, and laid up in ridges for the reception of dung. Twelve cart-loads of indifferent fold-yard dung were then laid upon it; and before the 25th of April twenty bushels to the acre of a mixed kind of Potatoes were planted upon it. In June the land was once hoed, and the Potatoes earthed up. The produce, taken up in October, was rather more than 250 bushels to the acre, and it was applied to feeding and fattening cattle: 280 bushels being reserved for sets, to plant on fourteen acres of warren land, without dung<sup>c</sup>. No account of this second experiment having appeared, perhaps it did not succeed to Mr. Seaton's wishes.

One of the easiest ways of bringing waste lands into culture, is by planting them with Potatoes, especially where it is not thought expedient to pare and burn. Cottagers and labourers might assist in this improvement, under proper regulations; for no great quantity of manure would be required at first breaking up, and they might collect fern and weeds, which mixed with their ashes and offal, and some of the best mould or rotted turf, would make a good compost, to put in the drills or holes which are to receive the sets. But perhaps such lands may be better set by the following mode of

### 3. *Dibbling.*

This is practised on a large scale about Ilford and other places in Essex. The preparation here is an autumnal ploughing, dunging in the spring about fourteen loads an acre, spread on the field just before the second ploughing, on which they plant. Immediately after the plough, a man dabbles across the land, followed by a woman who drops the sets; the rows fourteen inches by fourteen or fifteen, and some twelve square. They are hand-hoed twice. They mow Clover and plough it up in July to plant immediately. Some persons have taken two crops on the same land in a year; putting one in as soon as the other is taken up. They also plough and plant land, cleared of winter tares for soiling, and often get good crops from such late planting. Some farmers have tried putting them in with a plough, and taking them up in the same manner, but from experience are convinced that the other method is much superior<sup>d</sup>.

Towards the western parts of Cornwall, about Pen-

zance, &c. they produce two crops of Potatoes in a year. They plant the kidney about Christmas, or a few weeks sooner, which they draw in May, and then, in the same ground, plant the apple Potato. But this mode of forcing crops is not to be generally recommended. By the common mode of planting at the end of April and beginning of May, after paring and burning, 450 to 600 Winchester bushels are no uncommon produce. The soil and climate of this part of the kingdom are adapted to this plant, the summers being always moist, and the ground warm and dry. The western isles of Scotland are fully as moist, if not more so than Cornwall, or the western parts of Ireland. The isles of Canna, Tiree, &c. have most excellent crops of Potatoes, with the same kind of dressing as is used in Cornwall, that is, sea-sand, ore-weed and dung. These islands are however comparatively much colder than Cornwall, and yet their produce, in the article of Potatoes, is greatly superior to the inland parts of Scotland in the same latitude. The produce of Potatoes, in the west of Ireland, is also known to be extremely abundant.

In the isles of the Hebrides mentioned above, the soil is dry and porous, containing a great mixture of sea or shell sand, and is much of the same nature as the soil about Penzance and other parts of the west of Cornwall. All this proves the propriety of cultivating Potatoes where the soil is dry and the climate moist<sup>e</sup>.

In the Midland counties, the practice in planting Potatoes, runs much upon dibbling. Contrary to the practices of most other districts, says Mr. Marshall, they almost invariably succeed turf. The plough is seldom if ever used. The soil is broken up with the spade: sometimes in two shallow spits, throwing the sward, and the dung, if any be used, to the bottom; covering them, in the gardener's manner, with the under spit: but generally in one full spit, merely inverting the sward, fitting the spits to each other, and leaving a smooth even surface of clear free soil. On this the plants are dibbled very thick, about the middle of April: they are hoed once, twice, or as often as circumstances may require; the crop mostly being managed in a gardenly manner.

Potatoes are sometimes grown two years together on the same land; and in this case it is said to have been found, that dibbling in the sets, on the stale surface, as left, on taking up the first crop, or only levelled with the harrow, without any previous ploughing or digging, is the most eligible way of putting in the second crop<sup>f</sup>.

Dr. Wilkinson, of Enfield, on soil generally rejected as improper for Potatoes, being a pebbly loam, produced 400 bushels to the acre by dibbling. On a clover-ley, he had twelve loads of dung, spread immediately from the fold-yard on each acre. The sets were put in with a dibble, on one ploughing: the rows eight inches asunder, and the sets six inches apart in the rows. The planting was done between the 5th and 22d of May. The field was hoed twice before the plants had risen to any size above ground. This checked the growth of the weeds, and was the only hoeing that could be given, on account of the small intervals between the sets. The field was soon entirely covered with the stems, which smothered great part of the weeds, though the wet season which followed occasioned them to spring uncommonly thick<sup>g</sup>.

Dibbling may very properly be practised on grass land, on a clover-lay, on wastes and moors, on sands and very light dry loams in general; but on lands inclined to be stiff and to retain wet, or in wet seasons, it is a very bad method. The hole made with a dibbler or setting-stick, especially if it be shod with iron, hardens and glazes the earth round it, leaves a hole at the bottom, which if rain ensue soon after may probably be filled with water, whilst the sides are so hardened that the tender fibres of the roots will not easily strike into them. Whereas in drawing a drill, the earth is left in a fine pulverized state, and the set is afterwards lightly covered with similar earth,

<sup>b</sup> Transl. arts. 4. 95.

<sup>c</sup> Ibid. 17. 160.

<sup>d</sup> Young's ann. 2. 98.

<sup>e</sup> Frazer in Young's ann. 23. p. 61.

<sup>f</sup> Vol. 1. p. 249.

<sup>g</sup> Young's ann. 20. 457.



and consequently the roots have fine soil to strike into<sup>h</sup>.

#### 4. *By the Hoe.*

At Sandy in Bedfordshire, a parish of farming gardeners, they plant Potatoes in a singular way. They dig or hoe holes, and dropping a set in each, cover them by the earth of the next row of holes: they rise about one foot square<sup>i</sup>.

In the North Riding of Yorkshire, though the practice of covering them with the plough is very common; yet the ridges are sometimes hoed down upon the sets by hand<sup>k</sup>. This is commonly done in other places, for small and garden crops, when not set with a dibbler.

Of all the above methods drilling is in general the best, and that by lazy-beds the worst, at least where the sub-soil or under-stratum of earth is not good. The Sandy method is very slovenly; all the others may in particular circumstances have the preference. But when the ground is not of any great extent, trenching, though the most expensive, is far preferable to the rest, and will often more than repay the additional expense<sup>l</sup>. This is commonly practised in kitchen gardens.

#### PLANTING.

The method of planting Potatoes, depends upon the mode of tillage that has been previously adopted, and has already been described, as to its general process. The sets may be put in too deep, and if they are out of all influence of sun and air, will be apt to fail, and their quality at best will be inferior: they ought not however to be exposed so as to have any part above ground. They should not be deeper than four inches or four inches and a half in any soil; but in a dry warm one they need not be put in so shallow as in that which is stiffer and more retentive of wet<sup>m</sup>. Three inches is thought by many to be fully sufficient, and if rains should wash the earth from them, it will afterwards be hoed up to the stems in course. The roots should be well looked after, for they will frequently find out the sets, and make great depredation on the crop<sup>n</sup>. Field mice also sometimes do much damage. Though earthing up be a very useful process, yet that may be carried too far, if the sets should thus be buried too deep<sup>o</sup>.

The cheapest and most expeditious method of planting, is by two ploughs following each other, the horses not going in the furrow, and waiting at the ends till the sets are dropped in. Four women and four children are sufficient to drop after the two ploughs, which, as they return, of course cover the sets, and leave a fresh furrow open for the next row. By this method two acres and a half may be planted in a day at the expense of 11s. 6d. an acre. A proper opportunity, after planting, should be taken, to draw a harrow over the ground<sup>p</sup>.

If the ground be moist, strong or heavy, it should be thrown into ridges of four or five feet each, and the sets planted on the top of the ridges. The depth of the furrows also should in this case not be more than three or four inches at the most; but in a very light dry soil, they may be five inches deep<sup>q</sup>.

Early Potatoes, in Lancashire are generally planted in beds, in rows about eight inches distant, and the sets four or five inches separate, because early Potatoes, being of a less size, require a smaller space; but the advanced price these early crops obtain at market, render them a profitable article to the cultivator; who, besides his profit from the Potatoes, has his ground prepared for another crop the same season. This is sometimes Turneps succeeded by Wheat. Or early Potatoes for sets are planted; which, being got up in november, are immediately cut up into sets, and preserved in oat-shells (vulgarly called meal-shudes) or sawdust; where they remain till march, when they are planted, after having had one spit taken off, and planted

with another, of a length sufficient to appear above ground in the space of a week.

But the most approved method is, to cut the sets, and put them on a room-floor, where a strong current of air can be introduced at pleasure, the sets laid thinner, namely about two lays in depth, and covered with the like materials, about two inches thick: this screens them from winter frosts, and keeps them moderately warm, causing them to vegetate; but at the same time admits air to strengthen them and harden their shoots; the doors and windows should be opened in mild weather; they should be frequently examined, and when the shoots are sprung an inch and half or two inches, one half of their covering should be carefully removed with a wooden rake or with the hands, taking care not to disturb or break the shoots. Light is requisite as well as air, to strengthen the shoots; on which account a greenhouse has the advantage of a room, but a room answers very well with a good window or two in it, and if to the sun still better. In this manner they remain till the planting season, having all the air possible given them, when it can be done with safety from frost. By this method the shoots at the top become green, leaves spring out, and they are moderately hardy. They are then planted in rows by a setting stick, the holes being carefully raked up; and thus they are enabled to bear a little frost without injury. The earliest Potato is the superfine white Kidney, from which four crops have been raised on the same ground; having sets from the repository ready to put in as soon as the others are taken up. A fifth crop is sometimes raised on the same land the same year, of transplanted winter Lettuce. The first crop must have a covering in frosty nights<sup>r</sup>.

In Cheshire they also practise raising early Potatoes and having two crops; keeping sets of the earliest sorts in a warm place, where they may sprout at least three inches by the beginning of march, covering them with straw or rushes in frosty nights. They plant them carefully with the sprouts on, in drills, on a light soil, the end of the sprout being just under the surface. These yield a crop in the middle of may<sup>s</sup>. The same practice is followed in Cornwall, and sometimes in the neighbourhood of London. But no good farmer, will take two successive crops of Potatoes off the same ground in one season.

#### Sets.

Mr. Miller is decidedly for planting large Potatoes entire; but he has had few followers. There is no doubt but that a good crop of fine roots may be obtained this way, in good ground, if sufficient room be given them: but a much greater quantity will be produced from large pieces judiciously cut. Mr. Billingsley, the agricultural reporter for Somersetshire, affirms that whole Potatoes have been tried, and found not to answer. He recommends, as many others do, and seemingly with good reason, large cuttings from the biggest and finest Potatoes.

Robert Beaton, Esq. of Kilrie in Fifeshire, took one of the largest Potatoes he could get, and planted it whole in his garden without dung, the produce was seventy-two bulbs, above twenty nearly as large as the original; the remainder of different sizes, gradually decreasing to about the size of a Walnut. Next season he planted the whole of the produce also uncut, setting the largest in the front row, the next largest in the second, and so on. He found not only that the stems of the largest bulbs were by far the strongest, but that their produce also was much the greatest; none of them producing bulbs larger than their respective original. Whether the Potato would have produced more if it had been cut into sets, this experiment does not attempt to ascertain, but Mr. Beaton observes, that unless it would have produced a great deal more when cut, the advantages are in favour of setting them whole, by saving much labour, and occupying a less space of ground. The largest Potatoes being often found nearest the surface, he proposes a quere, whether if these were taken away with-

<sup>h</sup> Report comm. agr. p. 27.

<sup>i</sup> Young's ann. 18. 225.

<sup>k</sup> Report, 152. note.

<sup>l</sup> Hunter's Essays, 303.

<sup>m</sup> Bath papers, 1. 27.

<sup>n</sup> Idem, 6. 347.

<sup>o</sup> See Hunter's Essays, 305.

<sup>p</sup> Dann in Transf. arts, 10. 78.

<sup>q</sup> Hunter's Essays, 311.

<sup>r</sup> Report, p. 61.

<sup>s</sup> Ibid. p. 18.



out injuring the stems, five or six weeks before the time of raising the whole crop, the smaller ones would not grow to a much larger size? Since these experiments, Mr. Beatson has always planted his Potatoes whole<sup>c</sup>.

The Rev. Mr. Higson, vicar of Bath Easton, planted, on the same day, and in the same ground, whole Potatoes in ranks, at the distance of three feet square, and cuts of the same kind at eighteen inches square. The four years following he planted whole Potatoes at the distance of two feet and a half square, and cuts at eighteen inches. The whole sets were earthed up three or four times, that is, as long as the haulm would stand, and a few ranks of the cuts were earthed up also. The whole sets always produced a greater crop than the cuts, in proportion to the quantity of ground; and the Potatoes were larger and fairer. There was little or no difference in the produce of the cuts, whether the ranks be earthed up or not<sup>d</sup>.

The experiments of Mr. Joseph Wimpey turn out clearly in favour of cuts. He selected the largest and finest Potatoes, one half of which he planted whole, the other half was cut into pieces of a moderate size. The acreable produce was rather in favour of the latter; but then it is also to be considered that these also will plant nearly four times the ground that the whole sets do, which is a consideration in planting on a large scale, or when Potatoes are dear, as they often are in the spring<sup>e</sup>.

Dr. Anderson's experiments tend to prove that the produce depends greatly upon the size of the sets. By varying the weight of them from two ounces downwards, he found that the produce from the same number of sets of the largest was ten times the amount in weight of that from the smallest sets. The latter indeed may be planted closer, and therefore the difference will not be so great: but then it is more difficult and expensive to cultivate a field where the plants are close, and the bulbs being much smaller, are less valuable weight for weight. There can be no doubt but that the same ground, with the same manure and culture, will yield a crop of at least double the amount, with sets not under two ounces, that it will with very small ones. Dr. Anderson therefore condemns the use of thin slices from the surface; and still more the practice of planting shoots without any part of the bulb<sup>f</sup>.

Experience proves, says Mr. King, that the best cuttings or sets is to be had from the largest Potatoes. Small ones have nearly as many eyes as large ones of the same sort. But a good set, part of a large Potato, all other things equal, will produce a stronger and better plant than part of a small Potato. Each eye should be cut out by two cuts of a sharp knife: which leaves the sets stronger than is generally done by the common way of cutting, or rather slicing off the set with one cut of the knife; and many more sets will be obtained. If the Potatoes be large, there will still remain, after the sets are taken out, ten or twelve stones weight out of twenty; which may be profitably used for pigs, cows or horses. No part should be cut, which has not a very apparent eye in it; nor is the stalk end proper for sets<sup>g</sup>: or indeed either end, called by some the nose and tail.

It has been remarked by some farmers, that there are two kinds of eyes in every Potato, the one prolific, the other not; the former sunk deep in the bulb, and producing a strong vigorous shoot; the latter not sinking so deep, and always having a little swelling in the middle, from which a few weak shoots spring forth, that even in favourable circumstances yield but a scanty crop in comparison with the former. This remark yet requires to be ascertained by experiment<sup>h</sup>.

Mr. Billingsley recommends the use of large sets, picking out the finest Potatoes for this purpose, and slicing them in half from the crown to the root. His trials have all led him to prefer such sets to whole

ones<sup>i</sup>: but his method of slicing them is thought by some to be the worst method of any.

The sets should lie some time before they are planted, otherwise they will be apt to rot. But if they be thrown into a heap, they will heat, by which if they are not destroyed they will be weakened, and, in the opinion of some, produce the curl and a poor crop.

Mr. Hollins advises, that in cutting Potatoes for sets, care should be taken not to cut them entirely through, but when the knife has penetrated about half way, the other half should be broken off. This operation will show whether the Potato has proper vegetative power or not; if the knife enters easily, and the Potato breaks off soft, then it is fit for a set; but if the knife enters with some difficulty, and the Potato breaks off harsh and rough, though it may not appear to want sap, it will remain whole in the ground, or produce curled leaves<sup>j</sup>.

Mr. William Payne thinks the common mode of cutting for sets, a most improvident and thoughtless waste. Instead of cutting away the whole, no more than is necessary for extracting the eye needs to be taken; and thus the consumption for sets will be comparatively trifling: for out of three or four sacks of Potatoes, the eyes judiciously cut, generally amounting to less than two bushels, would be quite sufficient for planting an acre, and would of course leave the rest of the root for use. Mr. Payne has proved this mode for many years, with as good crops as others<sup>k</sup>. It was not uncommonly practised in the late years of scarcity; and the eyes were taken out with a little iron scoop, such as cooks use for taking out small pieces of carrot and turnep for their haricoes. But this mode being inconsistent with the result of Dr. Anderson's experiments, comparative trials should be made, before we can come to a satisfactory decision.

Potatoes may be raised from the parings, cut thick, as Turneps generally are for the table; and thus about two thirds of the substance may be left for eating. Mr. John Wagstaffe, of Norwich, planted, about eighteen inches asunder, ten whole Potatoes, about the size of turkey eggs; and at an equal distance, parings of about fourteen, from somewhat larger roots. The produce was, from the ten whole Potatoes 29 lb. 4 oz.: and from the parings 29 lb. 12 oz. Two of the largest, weighing together 31 oz. arose from the parings: the two largest from the whole ones weighed 25 oz.<sup>l</sup>

Potatoes may also be raised from the shoots, which are commonly produced in the spring, fall off in moving or cutting, and are commonly thrown away. The Rev. Dr. Maunsell has given the following directions for their culture.—In the month of march open the heaps of Potatoes, and if the shoots be sufficiently strong, that is, about six inches long and in a healthy vivid state, let them be carefully picked off, and given to children of about ten years old to plant in drills, seven or eight inches asunder, with the root downward; put a small quantity of dung upon each shoot, and then cover them lightly with earth, to keep out any slight frost; when the shoots throw out their leaves, and are about four inches above ground, give them a covering, leaving about two inches of the green stock above ground, and as they proceed in growth, let them be covered as before, till the earth between the ridges raises the drill at least twelve or fourteen inches high. If there be occasion to open the heaps before the time of planting, the shoots, taken off with care, laid in small bundles, and covered with earth, will remain in a vegetative state for a month. The Potato in the mean while is left entire for the sustenance of man or cattle<sup>m</sup>.

Six acres and thirteen rods of land were thus planted at Petworth in Sussex with good success. Drills were drawn, and children dropped the shoots horizontally into the drills, so as to touch each other at both ends; a man then covered them with a hoe. The shoots were from one foot to a foot and half in length.

<sup>c</sup> Report Comm. Agr. app. n. 10. p. 165.

<sup>d</sup> Bath papers, 1. 28.

<sup>e</sup> Idem, 5. 230. & 6. 206.

<sup>f</sup> Idem, 4. p. 2, &c. and Report Comm. agr. app. n. 5. p. 112.

<sup>g</sup> Idem, app. n. 3, p. 92.

<sup>h</sup> Idem, app. n. 11. p. 166.

<sup>i</sup> Bath papers, 6. 346.

<sup>j</sup> Transf. Arts, 11. 76.

<sup>k</sup> Young's ann. n. 197. p. 76.

<sup>l</sup> Transf. Arts, 7. 93.

<sup>m</sup> Young's ann. n. 222. p. 650.



The plants shot up from every joint, so that ten or more sprang from one shoot, but the longest succeeded the best. They were earthed up three times in the course of the summer. The weeds, which were numerous, were pulled up and laid between the rows, and where most weeds were laid the plants were strongest, and the produce greatest, owing to the putrefaction of the vegetables, which afforded nourishment to the plants, and kept them moist. A bushel of shoots having been thrown into a hole filled with dead leaves and the mowings of turf, two months after were found to be alive and in a forward state of vegetation: this fortunate accident gave occasion to preserve the shoots afterwards, by putting them into a hole, and covering them with mould.

Mr. Lockett, of Donnington near Newbury, put three Potatoes, on the 17th of December, into a small cask, placed in a cellar: the 10th of March he took off fifteen shoots from them, and set them with a dibbler, about one foot square: the 16th of April he took twenty-one shoots more from the same Potatoes, and planted them as before: on the 22d of May he again took twenty-five shoots, and planted them also: he then washed and boiled the three Potatoes, which proved very good to eat. From these sixty-one shoots he had as many Potatoes as weighed 92 lb. though the roots did him much damage.

After a mild winter, about the month of May, he goes over the fields where Potatoes had been planted the preceding year, and pulls up from among the corn all the shoots produced by the Potatoes which had escaped the diggers; and these shoots he plants in the same manner as directed above.

On the 18th of May, 1772, Mr. Ellery near Manchester, transplanted a number of sprouts into an Onion bed that had failed, about a foot and half asunder. In October they were taken up, and for size, quantity and quality, exceeded all he ever had in the common way.

On the 2d of January in the same year, Mr. Kirk, of Wilderspool, near Manchester, having made a hot-bed for Potatoes, about forty of the sets being left were hung up in a kitchen, and there remained unnoticed till about the 25th of April; when observing the basket, and perceiving something green on the edge of it, he took it down, and found that the Potatoes had sprouted half a yard in length, and that many very small bulbs were formed on the fibrous roots which had grown out. He planted them in his garden, in a rich sandy soil without manure; putting the roots into the ground three inches deep, and laying down the stems horizontally, covering them with two inches of soil, and leaving the tops uncovered. He found that these produced larger Potatoes than the roots in the hot-bed. He took them all up, and picked off the large bulbs, which amounted to from four to twelve on each root; and then he set the roots again on the same ground. This he has successfully practised for many years, sometimes even twice, and has had a third crop at Michaelmas. When this method is tried, the roots must be watered on the evenings of hot days.

In January the year following he made a second trial with a larger quantity; by placing many Potatoes of early sorts on a thick layer of gravelly soil close to each other, over an oven, slated over, but open to the south-west, and covering them two inches deep with the same earth. At the end of April he took them up, and found the stems a foot long or more. He was very careful both in taking them up and planting them, not to injure the delicate fibres. He manured them, but in all other respects treated them in the manner above described; many of the fibrous roots having then Potatoes formed upon them, nearly as large as walnuts. By one sharp night's uncommon frost, they were nearly destroyed. However fresh stems grew up in a few days, and he gathered from them on the 3d of June, finer Potatoes than were sold at that time in Manchester from 1s. to 1s. 6d. the lb. being the produce of hot-beds.

After taking off the larger Potatoes, he planted the roots for a second crop, and in September obtained a very large produce. He weighed the increase of many separate roots, from 4 lb. 8 oz. to 14 lb. 12 oz. the Potatoes being the largest of the forward sorts he ever saw.

#### Quantity.

The quantity of Potato sets required to plant an acre has not been well ascertained: it must depend much on the size of the cuttings, and the distance at which they are planted. On a comparison between whole Potatoes and cuttings, Mr. Joseph Wimpey ascertained that thirty-seven bushels and a half of the former, and twenty bushels and a half of the latter, were required to plant an acre. In different districts of England I find the quantity varying from fifteen to thirty bushels.

|                                  |            |       |
|----------------------------------|------------|-------|
| In the North Riding of Yorkshire | 15 bushels |       |
| In Suffolk                       | 15 or 16   | —     |
| In Durham                        | 16         | —     |
| In Suffex                        | 18         | —     |
| In the Isle of Man               | 18 to 20   | —     |
| Dr. Wilkinson at Enfield         | 20         | —     |
| In Essex                         | 24         | —     |
| In Kent                          | 18 to 30   | —     |
| In Lincolnshire                  | 30         | —     |
| In Wiltshire                     | 4½ to 6    | sacks |
| In Somersetshire                 | 5 to 8     | —     |
| In Nottinghamshire               | 7          | —     |
| Mr. Billingsley                  | 8          | —     |

} 240 lb.  
each.

The sacks are probably three bushels each.

In Scotland they reckon chiefly by bolls. In Roxburgh and Tweeddale they plant two bolls. In Argyll, two bolls, making ten barrels. In Fife, three bolls to a Scotch acre. In Galloway, 11 cwt.

In Ireland, they reckon by barrels, which measure differs in different districts: and accordingly the quantity directed for setting an Irish acre varies from four to nine barrels. I find the following:—4 barrels each 6 cwt.—4 barrels each 64 stones.—4 barrels, each 5½ cwt.—6 barrels, of 48 stone.—8 barrels of 20 stones.—9 barrels.—14 barrels, each 20 stones.—12 pecks, each 56 lb.—10 bushels of 3 cwt. each.—30 to 40 bushels.

To form some judgment of the above quantities, it is necessary to remark, that an

Irish plantation acre and an half equal 2 acres English.

Cunningham acre to the English nearly as 15 to 13.

Cornish acre equal 1½ statute acre English.

Irish Barrel equals 4 bushels English or 32 stones.

— near Dublin, equal 20 stones or 280 lb. or 4 English bushels.

— at Westport, 12 cwt. or 16½ pecks.

— at Ballyshannon, 10 peck, each 5 ft. 4 lb.—

In the country they give 6 stones.

Bristol Barrel, contains 4 bushels heaped, weighing 22 stones; or 6 bushels strike measure, weighing 15 stones each.

Scotch Boll equals 16 pecks, each weighing 24 lb. avoirdupois, or 384 lb.

— Teviot, equals 30 stones, or 420 lb.

— Fife, 24 Dutch stones. The barley firlet used for measuring, half heaped or as many as can be laid on with a shovel.

— Roxburgh,  $\frac{2}{3}$  larger than the standard: equal 7 bushels, 3 pecks, 11 pints and a fraction English standard measure.

English Bushel, heaped, weighs from 70 to 75 lb. In Lancashire, 90 lb.

— Sack or Bag, holds 3 bushels heaped, weighing 240 lb.

#### Distances.

The best distance at which the rows of Potatoes may be placed has by no means been ascertained, and practical men have differed much on the subject: it must after all be governed in some degree by circumstances, such as the quality of the soil, the quantity of manure laid on, the sort of Potato intended to be cultivated, the method of management, whether by the horse-hoe or by common hoeing, &c. We find

<sup>2</sup> Young's ann. 28. 324.

<sup>3</sup> Trans. Arts, 13. 207.

<sup>1</sup> Hunter's Essays, 408, 412.



directions given for distances of rows, varying from eight inches to six feet: thirty inches is very commonly prescribed, and is much practised both in our northern counties and in Scotland. For horse-hoeing three and even four feet are good distances. Mr. Mayo, of Battel in Suffex, prefers three feet to four; Mr. Hassel on the contrary thinks four feet better than three. Circumstances may induce a preference to four feet, but three is sufficient for the horse-hoe to work in, and is adopted by the best practitioners. Mr. Young commenced with wider intervals; but had greater crops when he adopted such as were narrower. Dr. Anderson has very well remarked, that some Potatoes send their bulbs downwards to a considerable depth, whilst others push them upwards so as to be in danger of coming above ground: some again push out their fibres very far, and produce bulbs only at a distance from the stem, whilst others produce the whole in a close cluster at the bottom of the stem<sup>k</sup>. It is evident that these different varieties require a different soil, culture and management, and that it would be absurd to plant the third and fourth at the same distances.

The following are the intervals between the rows of Potato sets adopted in several districts and by different practitioners:

- 8 inches; and 6 inches from set to set: by Dr. Wilkinson, of Enfield.
- 12 inches; in the Isle of Wight.
- 12 to 15 inches; in Suffolk.
- 15 inches; with sets 9 inches asunder: Sunderland.
- 18 inches to 4 feet; sets 9 to 12 inches asunder: in Mid Lothian.
- 18 or 20 inches, with sets 12 inches asunder: or, 30 inches, or 3 feet; with sets 8 or 10 inches asunder. County of Fife. The narrow intervals by labourers; the wide by farmers.
- 20 inches, and 10 in the rows. Kent.
- 24 inches. Suffolk.
- 24 to 30 inches, and 10 or 12 inches in the rows. West Lothian.
- 24 to 36 inches; 12 inches in the rows, Durham: 10 inches, Isle of Man: 8 inches, Selkirkshire.
- 30 to 33. Clydesdale.
- 32 to 40; 12 inches in the rows. Northumberland.
- 3 feet; Lancashire, Berwickshire, Dumbartonshire; 9 or 12 inches in the rows: Lancashire.
- 3 to 4 feet. Elgin.
- 4 feet. Wiltshire and Ayrshire: 6 inches in the rows, in Wilts.
- 5 or 6 feet. Herefordshire.
- Every third furrow; and 4 inches asunder in the rows. Nottinghamshire.
- One bout ridges; and 10 inches asunder in the rows. North Riding of Yorkshire.

These distances are mostly taken from the Agricultural Reports, and doubtless vary occasionally in the same county or district, in the practice of persons more or less enlightened.

*Times.*

The practice under this head varies extremely, from the middle of march to the beginning or even middle of june. April however is the most usual month for planting the common sorts of Potatoes for the general crop; and that is the prime season for it in Lancashire. In order to have them come early, they are planted in march, january, and even october. But these are in hot-beds. Early planting may succeed when the spring frosts do not happen to be severe; but that being seldom the case, it is hardly prudent to risk very early planting for the main crop. Frosts however often happen in may, and sometimes in june, which injure the crop more or less; but these seldom destroy it, and cannot be avoided. In the season for planting, the sort of Potato, the soil and situation, and the quantity and quality of manure are to be considered.

In Lancashire, april is the prime season for producing a crop of good Potatoes for the table, because this vegetable requires a certain portion of time, to

acquire that degree of maturity, which renders it peculiarly mellow and farinaceous; yet it is frequently planted as late as may or even june, and yet produces abundant crops, but not of the same matured quality, as those planted at a more early season.

The apprehension of frosts sometimes operates against planting at an early season; yet good planters risque the chance of frosts in order to obtain superior quality<sup>l</sup>.

The following times, among many others, have been registered:

- March to the first week in may. Kent.
- March, at the end, or beginning of april. Ireland: but
- April, the middle, to the middle of may is most common; and more are planted after the first of may than before it.
- April, the first or second week; found to be most advantageous, by the Rev. Mr. Close, of Trimley in Suffolk.
- April, the two last weeks. Roxburgh.
- April or beginning of may. Perth.
- April, the end, or beginning of may. Middlesex and Cheshire. Argyll.
- April, the middle, to the middle of may, sometimes beginning of june. Fife and Clydesdale.
- April, the end, and all may. North Riding of Yorkshire.
- April and may. Somersetshire.
- April to june the first. Mid-Lothian.
- May, the beginning: the best time on a large scale. *Bath papers*, 2. 357.
- May the 22d planting at Sandy in Bedfordshire.
- May to the end; though the sooner they are planted the better.
- June the beginning; (*Bath papers*, 2. 356.) and middle. Suffolk. (*Young's annals*, vol. 23. p. 32.)

For early Potatoes, they plant sometimes in october; and if any severe frost should come without snow, they are covered with peas-haulm, bean-stalks, straw, or other light covering. The crop is dug up in april or may; and another immediately put in, which is taken up in october<sup>m</sup>.

For Potatoes raised in hot-beds, the sets are put in about Christmas, or in january. These come to market in april, may and june.

#### PRODUCE.

The general produce that may be expected from an English statute acre, in a soil adapted to Potatoes, and properly managed, is from 300 to 400 bushels. Some persons have produced more under peculiar circumstances; as far as 700, and even 1080 bushels; but no prudent man will reckon upon such extraordinary crops. No satisfactory average can be drawn, unless crops were selected and classed, according to soil, management, &c. I find averages registered from 240 to 480 bushels. Mr. Young struck an average of eleven years experiments on the Cluster Potato, of 332 bushels on an acre. From forty cases selected from the Agricultural Reports, *Young's Annals*, the *Bath Papers*, &c. I found an average of 384½ bushels. And selecting instances from the Report of the Committee of Agriculture, twenty in a class, I obtained the four following results—361. 365. 290. 400. which, taken together, give an average of 354 bushels. These three averages again give a general average of 357 bushels nearly.

Mr. Henry Harper, of Bank-Hall in Kirkdale, Lancashire, gets 240 bushels of Scotch and Pink-eye Potatoes on a statute acre of old arable; and 320 bushels of the Ox-noble or Cluster: the bushel weighing 90 lb. On fresh land, from which a crop of Oats was taken, he had 320 bushels of the former, and 480 of the latter<sup>n</sup>.

Mr. Lodge, of Great Blakenham in Suffolk, has from 360 to 525 bushels (weighing 66 lb. each) of Ox-nobles, on an acre<sup>o</sup>.

In the Lancashire Report it is said, that the produce of a statute acre, on a medium, is from 200 to 300 bushels, but then the bushel weighs 90 lb.

<sup>l</sup> Report, 58.

<sup>m</sup> Bath papers, 1. 29.

<sup>n</sup> Trans. Arts, 16. 199.

<sup>o</sup> Young's annals, n. 198. p. 200.



The average crop in Lincolnshire is said to be 480 bushels, each weighing 80 lb. and yet 330 bushels of Ox-nobles on an acre is called an extraordinary crop; and 70 sacks or 210 bushels, a middling one. On warp land they get 100 sacks or 300 bushels; and in Axholm, on new land, 80 sacks or 240 bushels on an acre<sup>p</sup>.

In the Midland, according to Mr. Marshall, 300 to 400 bushels is reckoned a fair good crop; but he has no reason to doubt of 600 bushels an acre having been produced in two or three instances.

Mr. Bucke, of Worlington in Suffolk grew 432 bushels to the acre of the Dutch upright and Pink-nose sorts; and the year following 628 bushels of Champions<sup>q</sup>.

In the North Riding of Yorkshire, from 200 to 300 bushels an acre, of the table sorts, are esteemed a good crop: those cultivated for cattle, will generally produce more by 50 or 100 bushels on an acre<sup>r</sup>.

The Rev. H. J. Close, of Trimley in Suffolk, says that on land well managed, the sets 15 square inches from each other, 15 bushels to the acre; the produce, on a good mixed loamy soil, will amount to 300 bushels<sup>s</sup>.

Sir Thomas Beevor had 346 bushels to the acre of the White Champion; 648 of a sort from Manchester; and after the rate of 1080, of a new sort from Liverpool, lately raised from feed<sup>t</sup>.

From 8 to 15 tons is reckoned a crop in Essex; 10 tons, 126 lb. to the hundred has been a crop ascertained there. Twenty-five tons or 275 sacks of the Red Cluster have been obtained, but that was in an old hop-yard, well dunged<sup>u</sup>.

In Scotland from 30 to 40 bolls is a common crop. Thirty is in some parts accounted a large average: in others 40, on a Scotch acre. In Fife they have from 50 to 70; but the average is supposed to be 40 bolls. In Clydesdale upwards of 24 tons have been taken on an acre; but the produce is frequently below half that quantity<sup>v</sup>. In Perth, Sir William Stirling, of Ardoch has often raised 40 bolls on an acre of light moor<sup>w</sup>. In Roxburghshire the average return is from 36 to 40 bolls on an acre: and their boll is somewhat larger than the standard boll of Scotland.

In Ireland they expect 300, or from 300 to 400 bushels. They commonly reckon by barrels; which, in general, contain 4 bushels. In different parts of Young's Irish tour we have from 28 to 120 barrels assigned as the produce of an acre: 100 to 120 barrels is said to be a middling produce; and we have two averages of 64 and 82. The following crops, among others, are registered.

|     |         |    |     |                                      |
|-----|---------|----|-----|--------------------------------------|
| 80  | Barrels | at | 32  | stones.                              |
| 60  | —       | —  | 20  | ft.                                  |
| 40  | —       | —  | 64  | ft.                                  |
| 60  | —       | —  | 21  | ft.                                  |
| 50  | —       | —  | 5½  | cwt.                                 |
| 26  | —       | —  | 10  | cwt.                                 |
| 50  | —       | —  | 48  | ft.                                  |
| 50  | —       | —  | 18  | ft.                                  |
| 40  | to 80   | —  | 20  | ft.                                  |
| 108 | —       | —  | 252 | lb.                                  |
| 100 | —       | —  | 20  | ft.                                  |
| 120 | —       | —  | 20  | stones; of the Cluster.              |
| 28  | —       | —  | 16  | pecks; 60lb. to the p <sup>k</sup> . |
| 80  | to 100  | —  | —   | Bristol barrels.                     |
| 144 | to 249  | —  | —   | pecks, of 56 lb.                     |

It should be recollected that the Irish acre is bigger than the English.

The produce of a single Potato is very great, if all the advantages of garden culture be given it. One Cluster Potato cut into 24 pieces produced 165 lb. One Howard Potato cut into 4 sets, yielded 90 bulbs, measuring 2 pecks, and weighing 31 lb.<sup>z</sup> One Potato from Quebec produced 132 bulbs, weighing 39 lb.

A large Potato cut into 9 pieces, planted in a garden with dung, by earthing up and laying the shoots,

produced 575 sizeable bulbs, which weighed 8 ft. 8 lb. And a large white Potato, cut into 17 sets, and planted in hillocks, at 4 feet distance, produced 10 pecks of sizeable Potatoes.

Single Potatoes are also sometimes of an extraordinary size and weight. One of the variety called the Golden Dab, measured 9½ inches long, 8 inches broad, and 2 feet in circumference: the weight was 8½ lb. averdupoise. Another weighed a pound heavier<sup>a</sup>. Sir William Fordyce sent a Potato weighing 8 lb. 6 oz. to the emperor Joseph.

An estimate of the produce that may be expected from an acre of Potatoes is imperfect, unless we take into consideration the expense of growing them, and the value when grown, either as an article for the market, or for home consumption.

The expenses vary much with circumstances, but with good management ought not to exceed 10l. Three hundred bushels at 1s. 3d. which may be considered as a middle crop, and a middle selling price, is 18l. 15s.; even at 1s. it is 15l.: consequently here is a profit of from 5l. to 8l. 15s. on an acre.

In Essex the expenses run very high, even to 15l. 11s. or upwards of 30s. a ton, supposing the crop to be 10 tons; if they are sold at 40s. the ton, which is the lowest price at the London market, this leaves a profit of near 5l. But the price is frequently double<sup>b</sup>.

The Rev. Mr. Close's account of his crop is more advantageous:

|                                    |   |    |    |    |   |
|------------------------------------|---|----|----|----|---|
| Expenses                           | - | -  | 7  | 0  | 8 |
| Sold 20 sacks (3 bush.) at 7s. 6d. | 7 | 10 | 0  |    |   |
| 20 ————— at 9s.                    | 9 | 0  | 0  |    |   |
| 24 ————— at 5s.                    | 6 | 0  | 0  |    |   |
|                                    |   |    | 22 | 10 | 0 |
| Profit                             | - | 15 | 9  | 4  | c |

Mr. Wimpey states the produce, expense and profit of two statute acres thus:

|   |   |    |   |     |    |   |
|---|---|----|---|-----|----|---|
| Produce 750 bushels, deducting 75 bushels for tithe paid in kind, leaves 675, at 1s. the bushel | - | -  | - | 33  | 15 | 0 |
| Expenses  | - | -  | - | 13  | 7  | 3 |
| Profit on 2 acres   | - | 20 | 7 | 9   |    |   |
| Profit on 1 acre  | - | 10 | 3 | 10½ | d  |   |

Mr. W. Pitt, of Pendeford.

|                                  |   |   |   |   |    |       |
|----------------------------------|---|---|---|---|----|-------|
| Produce 300 bushels (80lb. each) |   |   |   |   |    |       |
| at 1s.                           | - | - | - | - | 15 | 0 0   |
| Expenses                         | - | - | - | - | 9  | 3 6   |
|                                  |   |   |   |   |    | <hr/> |
| Profit                           | - |   |   |   | 5  | 16 6  |

Prime cost 7d. ¼ the bushel.

|                             |   |    |    |   |  |  |  |
|-----------------------------|---|----|----|---|--|--|--|
| Again:                      |   |    |    |   |  |  |  |
| Produce 225 bushels, at 1s. | - | 11 | 5  | 0 |  |  |  |
| Expenses                    | - | 6  | 11 | 9 |  |  |  |
| Profit                      | - | 4  | 13 | 3 |  |  |  |

Prime cost 7d.

The Rev. Mr. Abdy, on an acre of Woodland stubbed up.

|                            |   |    |    |   |  |  |  |
|----------------------------|---|----|----|---|--|--|--|
| Produce 563 bushels, at 1s | - | 28 | 3  | 0 |  |  |  |
| Expenses                   | - | 16 | 13 | 6 |  |  |  |
| Profit                     | - | 11 | 9  | 6 |  |  |  |

Again, on half an acre near his house.

|                             |   |    |    |   |  |  |  |
|-----------------------------|---|----|----|---|--|--|--|
| Produce 320 bushels, at 1s. | - | 16 | 0  | 0 |  |  |  |
| Expenses                    | - | 6  | 19 | 8 |  |  |  |
| Profit on half an acre      | - | 9  | 0  | 4 |  |  |  |

<sup>p</sup> Report, p. 143, 145, 146.

<sup>q</sup> Young's ann. 5. 252.

<sup>r</sup> Report, 153.

<sup>s</sup> Bath papers, 3. 105.

<sup>t</sup> Id. ib. p. 282.

<sup>u</sup> Young's ann. 5. 451.

<sup>v</sup> Report, 87.

<sup>w</sup> Idem, 174.

<sup>z</sup> Young in Trans. Arts, 3. 31.

<sup>a</sup> Hunter's Essays, 337.

<sup>b</sup> Idem, 1. 399.

<sup>c</sup> Young's ann. 2. 100.

<sup>d</sup> Bath papers, 5. 30.



# S O L

|   |   |    |    |   |
|---|---|----|----|---|
| Mr. Billingsley, average of 16 experiments. |   |    |    |   |
| Produce 70 sacks or 210 bushels             | - | 10 | 10 | 0 |
| Expenses                                    | - | 9  | 9  | 3 |
| <hr/>                                       |   |    |    |   |
| Profit on an acre                           | - | 0  | 0  | 9 |

|  |    |    |   |   |
|--|----|----|---|---|
| Mr. William Dann, of Gillingham in Kent. |    |    |   |   |
| Produce, to the acre 386 bush. at 1s.    | 19 | 6  | 0 |   |
| Expenses                                 | 8  | 15 | 9 |   |
| <hr/>                                    |    |    |   |   |
| Profit                                   | 10 | 10 | 3 | ° |

There is a fair profit on all the above crops except Mr. Billingsley's. Therefore either his land was improper, or the lazy-bed method, which he prefers, a bad one.

The following table of produce, expense, and profit, is taken from Young's Irish tour.

|   | Produce. | Expense. | Profit. |
|---|----------|----------|---------|
| 60 barrels at 5s.   | 15 0 0   | 15 0 0   | 0 0 0   |
| 320 bushels at 1s.  | 16 0 0   | 7 7 0    | 8 13 0  |
| 300 ———   | 15 0 0   | 8 5 6    | 6 14 6  |
| 32 barrels at 8s.   | 12 16 0  | 7 15 5   | 4 18 7  |
| 60 ——— 7s. 6d.  | 22 10 0  | 13 0 4   | 9 9 8   |
| 350 pecks at 6d.  | 8 15 0   | 6 17 0   | 1 18 0  |
| 20 barr. or 12 tons, }<br>at 12s. - - - }                     | 12 0 0   | 5 13 0   | 6 7 0   |
| 70 barrels at 3s.   | 10 10 0  | 6 4 0    | 4 6 0   |
| 100 Bristol barrels, }<br>weight 22 ston. }<br>at 4s. - - - } | 20 0 0   | 14 16 10 | 4 16 10 |
| 100 barrels at 3s. 4d.  | 16 13 4  | 11 5 2   | 5 8 2   |
| 120 ——— at 3s.  | 18 0 0   | 10 11 8  | 7 8 4   |
| 60 ——— at 4s. 4d.   | 13 0 0   | 5 0 7    | 6 19 5  |
| 480 bushels at 8d.  | 16 0 0   | 9 8 8    | 6 11 4  |

They sell commonly from 1s. to 1s. 8d. the hundred weight; and from 3s. 6d. to 8s. the barrel. The latter is a common price, and sometimes it rises as high as 12s.—One shilling and 1s. 6d. are common prices in England; sometimes it falls as low as 8d. and in some parts is as high as 2s. or more. When Potatoes are cultivated in large quantities, they have frequently no sale adequate to the expense, unless near a great town or in a very populous neighbourhood; they must then be applied to feeding stock, which seldom pays more than 8d., 10d. or 1s. a bushel, and sometimes nothing: but it is a good preparatory crop, and raises a great quantity of manure.

## TAKING UP.

Potatoes are raised or taken up in October, when the stalks are withered, either with the plough or the three-pronged fork. In large concerns they commonly use the common or double mould board plough without the coulter to split the furrows, women and children following to gather them. In this method many of the roots will be left in the ground, unless a pair of harrows with long tines are drawn over, or men break the ground with forks after the plough, for the pickers; and there is danger of the plough not going deep enough to avoid cutting the roots, especially in those sorts which strike down. To lessen the expense of this operation Mr. Young invented an iron ploughing harrow, to fix in the holes of his shin beam, with two, three or four teeth (according to the tenacity or friability of the land) standing obliquely, so that the horse walking in the path of the furrow, the teeth might be in the direction of the land turned over by the plough. But the labour to keep it in that direction being found on trial too great, he added a semicircular iron to slide against the land side of the furrow at the bottom. This harrow, with one man and one horse, without any boy to lead, lays all the Potatoes bare, and does the work of ten or fifteen men. First the plough goes, then the boys pick all the roots that appear; the harrow follows, and the boys pick again. By this tool, the expense of taking up was reduced more than one half.

° Young's Annals.

° Trans. arts, 4. 72.

# S O L

In gardens and in small concerns the three-pronged or broad three-tined fork is more commonly used. This mode is also followed in Essex, at the price of three guineas an acre: and in the Midland district, where they pay from 1d. to 2d. a bushel; and in many parts of Scotland.

The spade is much used in Ireland, and in some parts of England, where the lazy-bed method is adopted.

The time of taking up is from the end of September to the middle of November. In Ireland they are sometimes even later than this. But the decay of the haulm or stalks is the best direction, for if taken up sooner, they will not keep well, and after this there is no addition to the growth of the roots; but as some decay later than others, it is absurd to prescribe any particular week for the operation; only they should be taken up before severe frosts set in, and if possible in dry weather. In Scotland it is necessary to attend to this circumstance of frost, but in the southern and western parts of England the autumnal frosts are rarely so severe as to freeze the roots in the ground, unless they are near the surface. If there should not be leisure to get up the whole of the crop, and frost is expected, it may not be amiss to leave the whole of the haulm over that part, instead of carting it to the fold-yard.

If many small bulbs should be left in the ground, as is sometimes the case, they will be detrimental to the succeeding crop. The ground therefore should be harrowed, and swine turned in to eat them up, or if Wheat is to be sown immediately, the land should have a clean ploughing or harrowing, by which few roots will escape, and the field is in the most perfect condition for the succeeding crop.

## PRESERVATION.

The common method of preserving Potatoes through the winter is in heaps or pits, on dry ground, with a bed of straw at the bottom, covered with straw six or eight inches thick, and over that a cover of earth a foot thick, of that which is thrown out of the pit, or taken from a trench dug round the heap; well clapped down with a spade, and sometimes a row of turf over all. If put up dry and in good condition, not in quantities too great, they may thus be preserved through the most severe winter without injury; but they will shrink in measure about one sack in twenty. The drier the ground, the deeper may be the trench; but if it be at all wet, either the heap should be above ground, or a drain should be made from it. If possible, the pit should be on a declivity. Attention must be had that rats and other vermin do not burrow into the heaps or pits. If the Potatoes are not dry, they should be carted to a barn or shed, where they should be turned over, and the small ones, with such as are cut or otherwise injured, picked out, before they are pitted. It is not a bad precaution, to keep open holes through the mould to the straw for some time, for the heaps will ferment more or less, according to their size and moisture: when the fermentation has ceased, the holes should be closed, to keep out frost and wet. If the Potatoes are to be kept long, the heaps or pits should be the less.

In Lincolnshire and the northern counties these preserving pits are called *Pyes*. In the Midland counties this method of laying them up is called *Camping*. They judiciously make their *camps* or pits shallow; not deep as some, or on the surface as others; the usual depth is a foot. The pit should be three, or at most four feet wide; and the length proportioned to the quantity: if this be very great, several short ones are better than one very long. The Potatoes, on a bed of dry straw, are ridged up, and then covered with long wheat straw, laid evenly, like thatch; over this the mould out of the trench is spread, and the surface made firm and smooth with the back of the spade. A coat of coal ashes is sometimes spread over the mould, as a farther guard against frost. These camps are tapped at the end; some battins or a quantity of loose straw, being thrust close into the opened end, as a bung or safeguard.

° Marshall's Midl. 250.



Mr. Marshall, in his *Economy of Yorkshire* (2. 63.) suggests, as an eligible receptacle for Potatoes, a long arched vault, running endway into the side of a hill, or the side of a pit or other hollow, with a door at the end, level with the ground below; with a road over the top; and with one or more shooting holes, similar to those of coal-vaults under the streets of towns.

General Murray, in *Suffex*, dug holes in the side of a hill, six yards wide, and ten deep. He carted from the field and unloaded at top. He took them out at the end at bottom, which opened to the slope of the hill, where a wall was built with a door. When full, a stack of stubble or straw was built over the hole, wide and large enough for security against all frosts. The effluvia of the roots rising through the stubble, does not occasion their rotting from heat<sup>b</sup>.

In some places Potatoes are housed in winter. In Canada, says Mr. Toosey, we have admirable root-houses to preserve them in perfect soundness from October to June<sup>c</sup>: but he does not describe them. In Scotland, they are very commonly preserved in the house, where being liable to injury by heating or freezing, they should be put in perfectly dry, and the walls must be lined with straw or dry fern, and they should be covered with straw, mats, or sacks, in frosty weather. If they cannot, on account of the season, be housed perfectly dry, it will be necessary to turn them over during the winter, and to pick out such as are unfound. For this purpose there must be some spare room in the root house; which may be had by keeping a space open in front, into which the Potatoes may be removed for sorting. And if the repository be divided into bins, the different kinds may be placed separate, and the heaps will not be so large as to ferment readily<sup>d</sup>. I find a large three-stall stable, built of brick and well ceiled, to answer the purpose of such a root-house very well. When they are kept in a common room, barn or outhouse, dry sand, saw-dust or straw is laid on the floor, the sides are well stuffed with straw, and they are covered with that or the chaff of oats: but in such places they will freeze in very severe winters. In order to have them good till June, or till the season for new Potatoes return, after being housed dry, and kept so during winter, they must be laid on a clean cool floor in the spring, and frequently turned, to prevent their sprouting. Near Lismore in Waterford, they are kept on hurdles, raised high enough for the mould to fall off in turning them, which is often done. Moist warm places will not do. Cellars therefore are improper: a large wine vault has been tried, but found to be too warm, and they sprouted.

Where land cannot be got in order for early planting, the Potatoes are cut up into sets in November, and put on a room floor where a strong current of air can be introduced at pleasure, and covered with oat-shells or saw-dust about two inches thick; this protects them from frost, and by keeping them warm causes them to vegetate; the doors and windows are opened in mild weather; and when the shoots are sprung an inch and half or two inches they remove one half of the covering with a wooden rake, or with the hands, taking care not to disturb or break the shoots<sup>e</sup>.

#### DISEASE AND CURE.

The Potato is subject to a disease commonly called the Curl; and in some districts, when it is thus infected, they say it is frizzled, or rose-headed. These names are given it from the obvious appearance of the leaves in this disease; but the destructive effect of it is upon the bulbs of the root, which become worse and smaller in proportion to its influence.

A variety of causes is assigned for this disease, which was unknown till within forty years. These are: 1. Distempered or vitiated sets. 2. Forcing the plants from which the sets are taken, by too much fresh dung, and earthing them up too deep, on land too rich, and in a southern aspect, and choosing sets from bulbs rendered large by this management. 3. Planting the

same sorts too long on the same land. 4. Taking the sets from such bulbs as have been heated or frosted in the heaps. 5. The first shoots being broken off before planting, by which means the sets are weakened. 6. Planting too near the surface, and in old worn-out ground. 7. Planting indiscriminately sets of new sorts raised from the seed. 8. Insects attacking the sets, or roots, or young shoots. 9. Unfavourable soils and seasons.

One or more of the above causes may operate in producing this disease; and any or all of them in different circumstances. He must be a careless cultivator indeed who will plant distempered or vitiated sets; and he merits a bad crop, who sells or eats all his best Potatoes, and plants the worst. Yet Mr. Billingsley, a great farmer, and grower of this vegetable, planted whole Potatoes, large cuttings, small cuttings, nay the mere eye only, but never could see any difference in respect to the curl. If the Potato was disposed to be curled, it proved almost equally so in all methods; on the other hand, he never knew a true Dumfries Potato come curled the first year; perhaps the second year a few would be curled; but beware of the third; for be assured, let the soil or manure be ever so good, almost all will be curled the third year, if planted in the same soil and neighbourhood<sup>m</sup>.

Dr. Anderson remarks very properly, that some Potatoes affected with the curl, produce smaller bulbs than sound ones; should one man select from the heap all the small ones to plant, he would probably have most of the curled ones, and very few of the sound: and should another pick out from the same heap only the largest bulbs, he would perhaps have scarcely one curled plant<sup>n</sup>.

Forcing Potatoes, by setting them late, in a rich soil, well manured, having a southern aspect, especially if the summer be hot and dry; or covered with green fern or other litter before the plants appear, is found by a series of experiments to produce the curl. The set will be exhausted in feeding the plant; but should the weather become moist and warm towards the end of summer, the plants, especially if they should be earthed, may then produce a plentiful crop of large Potatoes, which will be fit for eating, but being produced from the stalk, after the set was exhausted, will be defective in vegetative power, and the plants from them will be curled. If they were covered, the rain rots the fern or litter, and enables it to penetrate as a manure to the roots: thus the plants are forced to a second growth, and the sets from these bulbs will produce curled plants. Large crops may be raised by earthing and manuring; but these are not fit for planting. A portion of ground should therefore be allotted for raising sets<sup>o</sup>.

Planting repeatedly on the same land or the same sort on similar soils, is very unadvisable, and contrary to general practice with other crops. Potatoes have been grown for several years together on the same spot in rich land with high manuring; and labourers frequently do this in their confined gardens. But unless the sort be changed it is found frequently to produce the curl; and on a large scale they are seldom planted two years together on the same land.

Whether the curl be occasioned, as some pretend, by being frost-bitten before or after planting; or, as others, by being heated in the heaps; or not: no prudent man will use such for sets in planting. For they must be weakened, and produce an inferior crop, if not the curl.

If the Potatoes intended for sets have been suffered to exhaust themselves by sprouting, they are unfit for the purpose; for whatever tends to weaken the set, will operate to the diminution of the crop, and probably bring on the curl.

If Potatoes be planted too near the surface, or where the staple is very shallow, they will be liable to frost, and consequently to curl, if that produces it. They will also want proper nourishment, and therefore be weak; now weakness, from whatever cause, probably

<sup>b</sup> Young's ann. 11. 284. & 29. 45.

<sup>c</sup> Idem, 17. 285.

<sup>d</sup> Fife report, p. 188.

<sup>e</sup> Young's ann. n. 209. p. 82.

<sup>m</sup> Bath papers, 6. 345.

<sup>n</sup> Idem, 4. 90.

<sup>o</sup> Trans. Arts, 8. 21, &c. 9. 56, &c. 11. 78.



produces disease. Old worn-out land must needs be improper for the same reason: but who in his senses would expect a sound or efficient crop from such land?

For a long time after the introduction of the Potato, men were contented with the common sorts then in use; but afterwards some aimed at raising new sorts from the fruit. This has been thought by some to have occasioned the curl in the first instance. It is asserted, that when the Potato is raised from the seed, about one plant in thirty will be curled, and if propagated, will retain this quality<sup>p</sup>. Others alledge, that plants lately obtained from seed, are free from the curl: but Dr. Anderson assures us, from his own observation, that a large field, planted with Potatoes the third year from seed, had more than half the plants curled; while another field near it, planted with sets, never as far as we know, produced from seed in this country, had scarcely one curled plant in the whole. The Dr. informs us, that the curl was not known in Scotland till a very few years ago; when, there is great reason to believe, it was introduced by means of seed Potatoes imported from the south: and that it is now much less frequent in the northern and remote parts, than in the southern and more commercial districts<sup>q</sup>.—By seed-Potatoes, the Dr. probably means, those which are used for sets, which is the vulgar acceptance: but this is so strange a perversion of language, that I have invariably used the word *sets* for the cuttings or pieces of the root which are set or planted, and confined the word *seed* to its proper signification, of the rudiment of the new vegetable contained in the fruit, which in the Potato is a berry, and not an apple, as it is commonly denominated.

Dr. Anderson will not allow some of the causes assigned above to have operated in producing the curl. For instance, it has been supposed, says he, that nature, sated as it were by having long produced this plant in a climate not deemed congenial to it, had become so far exhausted, as to occasion this disease. But if so, the more northern parts of this island, where the climate is the most unfavourable, should have been soonest affected by it. It has been farther supposed, that if the bulbs be frost-bitten before they are housed, this disease is produced from them; but the curl is least known in those districts where the Potatoes are most liable to this accident. It has been said, that Potatoes which were taken up before they attained perfect maturity, infallibly become affected with this disease; but in some cold mossy soils, and exposed situations, where the Potatoes must often be taken up whilst they are yet in a state of vigorous vegetation, this disease is scarcely known.

Upon the whole the Dr. conjectures that the disease depends entirely on the nature of the set, and that the curl, like some hereditary diseases among animals, if once introduced, vitiates the prolific stamina, and is perpetuated as long as the infected breed continues to produce others<sup>r</sup>.

There is no doubt but that in some soils, particularly in fresh land, the bulbs of Potatoes are attacked by insects, which by affecting the stalk, will produce the curl in the leaves. Charles Mordaunt, Esq. looking over a field set with whole Potatoes, observed a plant with two stems, the one curled, the other perfect; on taking up the root, he found a hole at that end where the curled stem grew, from which an insect of the millepedes kind, about an inch long, escaped. The gardener took up several more plants; and every curled plant had the hole, or nest, or the insect itself: several successive examinations confirmed the matter. The insect does not attack the cluster, late or autumn Potatoes: but the early summer ones remain subject to its depredations<sup>s</sup>.

On a dry soil, in a very dry season, Potatoes are subject to the curl. On the contrary a very wet season, in strong retentive land, is very unfavourable to the growth of Potatoes, but I cannot say whether it occasions the curl. Dr. Anderson alledges that the soil or season is not the occasion of this disease: for several

ridges in a field in his neighbourhood, planted with Potatoes obtained from one particular person were very much curled, whilst the remainder of the field, planted with Potatoes of the same sort, obtained from a different person, were not at all infested with the disease<sup>t</sup>. This proves that the soil and season were not the occasion of the curl in this case: but it does not follow, that they may not sometimes operate as causes.

Mr. Marshall adopts the idea that the old varieties, formerly in cultivation, dwindling in produce, till they were entirely worn out with disease, new varieties were introduced; and that the disease vanished with the old ones. In confirmation of this, he observed in Rutlandshire, in a large piece of Potatoes, two stripes, which were almost wholly curled, whilst the rest of the piece appeared to be free from the disease. Enquiring into the reason of this difference, he was told that the healthy plants were a new sort called *Manleys*; and the diseased ones red-nosed Kidneys, which was heretofore the prevailing sort. The circumstance of the old sorts being now almost entirely cut off by the curl, renders it probable that the disease is incident to declining varieties of Potatoes, as the canker is to declining varieties of fruit<sup>u</sup>.

Mr. William Pitt, of Pendeford in Staffordshire is of the same opinion; that the curl is owing to a degeneracy in the set, or to the particular variety, being worn out, by planting too long on the same sort of land<sup>v</sup>.

Not only copious dunging is thought by some to bring on the curl, but manuring well with lime, or ashes either of coal or wood. On a deep loam limed, near three fourths of the crop were curled; whilst a few drills adjoining, not limed, and planted with the same sort of Potato, were entirely free from the distemper. The experiment was repeated the year after with the same result. The curl has been since observed to prevail most in the districts where much lime or ash-manure is used<sup>w</sup>. A moderate quantity however of lime made into a compost with earth has no bad effect, and will be of use in destroying the wire-worm and other insects that attack the sets.

The method of cure is pointed out by the causes of the disease. If it be owing to the soil, that should be improved by sufficient manuring and good management; or, if wholly unfit for Potatoes, should be given up. If the disorder be occasioned by any defect or weakness in the sets, arising from their having been heated, or frozen, or over-forced, or exhausted by shooting, or from whatever other cause; care should be taken to procure proper sets, and to change the sorts occasionally. If the land be rich and warm, the crop should not be over-earthed; if it be dry, poor and shallow, it should be well earthed up. For the roots should neither be parched with the sun, nor too far removed from its influence. If very rich dung, by forcing them too much, brings on the curl; spread it over the field, and plough it in, rather than put it immediately over or under the sets in the furrows, especially as the latter mode is apt to make the Potatoes scabby. In a proper soil, with good management, planting in the best season, and due attention to procure good sorts in a sound healthy condition; changing the land, or bringing this in with other crops in a regular rotation; changing also the sorts which are intended for sets, or planting some by themselves for that purpose: the crop will not be infested in general with the curl; or if a few of the plants should be curled, they must be carefully pulled out.

Great attention is paid in Lancashire to changing their sets, in order to prevent the curl. If any of their favourite sorts are infested with it, they send them to the moss or moor-lands to be cured. It is held as a general opinion in Scotland and the northern counties that moss or peat-earth prevents the curl.

Insects are not very destructive enemies to this crop. A moderate dressing of lime is the best security against them. A copious manuring with fresh rank dung encourages them.

<sup>p</sup> Young's Annals, 31. 417.

<sup>r</sup> Idem, lb.

<sup>q</sup> Bath papers, 4. 86.

<sup>s</sup> Young's Ann. 14. 448.

<sup>t</sup> Bath papers, 4. 87.

<sup>u</sup> Trans. Arts, 8. 31.

<sup>v</sup> Midland Counties, 1. 247.

<sup>w</sup> Report Comm. agr. 38.



Very unfavourable soils had better be given up. Bad seasons cannot be wholly guarded against, but damage arising from them may be moderated by attention and good management.

In the North Riding of Yorkshire, in the dales of the Moorlands, they make use of sets of their own growth, only endeavouring to plant them on a soil as different from that on which they grew, as they can; by this means they in a great measure avoid the curl: but in the lower parts, the sets of the kinds for the table are procured either from the Moorlands or from Scotland, and it is found necessary to renew them every year, or at least every second year; for in the third they will be very generally curled. No other prevention is known there for this disease or degeneracy, than renewing the sets, and changing the soil. The Ox-noble, Champions and red kinds are not liable to this disorder\*. We shall see hereafter, whether these and other varieties now said not to curl, degenerate as well as many of the rest.

In the West Riding they procure their sets of the red-nose Kidney from the neighbourhood of Berwick: and until they adopted this plan of changing, they were much troubled with the curl<sup>2</sup>.

In Argyleshire, they attribute their not having the curl, to their changing the sets very often, and planting much of them in new mossy ground. This should be a strong motive to the culture of such waste lands<sup>3</sup>.

#### RAISING FROM SEED.

In Lancashire they have a great variety of early Potatoes; and great attention is paid to raising those of the best qualities from the seeds of the berries, or as they call the fruit, the apples or orabs. It is well known that this is the only way of obtaining new varieties; some of which will be better, and others worse than the parent plant. The former will of course be propagated, and the latter thrown away: thus real improvements will be made; and if it should be found that old varieties degenerate in time, as is the case in many vegetables that are raised any way but by seed, it will be necessary to have recourse to this method, now little followed, of raising Potatoes from seed.

Dr. Hunter's method of raising seedling Potatoes is as follows. Hang a bunch of the berries in a warm room during the winter, and in february separate the seeds from the pulp, by washing the berries in water, and pressing them with the fingers. Then dry the seeds upon paper. In april sow these seeds in drills, in a bed well dug, and manured with rotten dung. When the plants are about an inch high draw a little earth up to them with a hoe, in order to lengthen their main roots. When they are about three inches high, dig them up with a spade, and separate them carefully for planting out, in a piece of fresh ground well trenched, sixteen inches apart. As they advance in growth earth them up once or twice, to lengthen the main root, and encourage the shoots under ground. By this management, the bulbs, in the course of one season, will arrive at the size of hen's eggs, and the haulm will be as vigorous as if sets had been planted. But what proves the luxuriancy in the most convincing manner is, that flowers and fruit are produced.

In Lancashire, they are always two, and sometimes three years, in bringing their Potatoes raised from seed to full size. By transplanting them with wide distances, many of the bulbs will attain their full size in one season.

These seedlings produce bulbs of all the varieties, and sometimes new ones. There does not seem to be any difference, whether the fruit be taken from a round or a kidney Potato. Seeds from a red Potato, that has flowered in the neighbourhood of a white one, will produce both red and white.

Potatoes, when propagated from sets, after a number of years are found to decrease in bearing, and should be brought back every fourteen years to their original. From a want of attention to this circumstance, Potatoes are sometimes so run out, as hardly to return treble produce. The farmer complains that his land is tired

of them, but the true cause is the age of the sets. The increase of Potatoes raised from seed is astonishing. They continue in vigour about fourteen years; after which the produce gradually declines<sup>b</sup>.

Mr. Henry Dobby, of Yorkshire, recommends the seeds to be sown in the beginning of march or sooner, on a hot-bed, in lines about nine inches asunder, one-third of an inch deep, and very thin; to water between the lines frequently, and when the plants are risen a little height, to introduce fine rich earth between the lines, to strengthen them; to admit air frequently, and before they are transplanted to water them plentifully, to make them rise with a large ball of earth to their roots; old rotten horse-dung and yellow moss are the best manures; plant them in trenches, like Celery, with a space of four feet between the trenches, and twelve or fourteen inches between each plant; as they grow up draw the earth to the stalks, but do not cover the tops. When the ground is brought to a level, dig it, and earth up the plants till pretty deep trenches are formed between the lines. With this treatment they will produce the first season from a pound to five pounds weight on a plant; and many considerably more than an hundred Potatoes each; the produce of which, for ten or twelve years after, will be prodigious<sup>c</sup>.

Mr. Wimpey relates, that the first year he raised Potatoes from seed, he had some bulbs as large as a pullet's egg, but did not then remark any varieties. He preserved the largest of these, and planted them in april following. In october they were carefully dug up, and were as large in general as those produced from old bulbs: many from half a pound to a pound and upwards. Among them were five or six different varieties, totally different from the parent stocks: the colours smooth yellowish white, dusky brown, and reddish brown; the skin rough in some, smooth in others; some in distinct single bulbs of a regular shape, others a congeries of bulbs from six to ten or twelve, connected by a kind of neck, composing a mass, sometimes nearly as big as a half-peck measure. One far exceeded all the rest in beauty; many of these were as big as a goose's egg, having a fine clear smooth skin of a yellowish white colour, and finely pounced with small crimson spots; the complexion beautiful, and the substance admirably well tasted.

The bulbs from which the seeds of these varieties were obtained, were of very different sorts: one, an oblong white Potato, many of which were gibbous at each end, connected by a part much smaller in the middle, a good family sort. The other of a brownish red colour, finely marbled on the inside with a crimson purple; a very fine juicy Potato, much in use for feeding hogs<sup>d</sup>.

Dr. Anderson also on the 23d of april sowed on a bed of good garden mould, some seed of Potatoes gathered the preceding autumn, and preserved among dry straw all the winter. The young plants appeared in ten days, and advanced vigorously during the summer, especially where they were not too thick. On the 3d of november they were taken up; some were nearly as big as a pigeon's egg, and the rest gradually decreased to the size of peas. If the seeds had been properly separated, they might have been sown more equally; and if the plants had been transplanted, the roots would have been larger.

On the 20th of april the year following, these small Potatoes were planted in a bed of good garden mould, in rows one foot asunder, and four inches apart: decreasing the distances as the bulbs diminished in size. The largest yielded a good crop, in which many of the bulbs were as big as a hen's egg: but those produced from the smaller bulbs did not in general exceed the size of a horse bean, and many were no bigger than small peas. None of the plants flowered.

These Potatoes were planted in april 1778, in rows a foot distant, and the largest a foot asunder in the rows. The largest again produced the most luxuriant and weighty crop. Very few flowered, and none of

<sup>b</sup> Essays, exp. 14. p. 348.

<sup>c</sup> Young's ann. 18. 445.

<sup>d</sup> Bath papers, 5. 35.

\* Report, 150.

\* Ibid. 101.

\* Ibid. 88.



the bulbs were of such a size as those produced from sets of very large Potatoes; or afforded nearly the same produce as was obtained from them, planted on the same soil, at eighteen inches apart<sup>c</sup>.

After this, Dr. Anderson sowed the seeds of a Potato which he received from Ireland, of a dark dirty purple colour, and a round irregular shape. It was planted by itself, at as great a distance as could be conveniently from any other sort, and all the varieties in the neighbourhood were of the white sort. The variety of the produce was very great, and scarcely two plants were precisely the same. The colours were dark purple, bright pink, dark pink, bright white, dun, yellow, black, dark greenish, spotted, &c. The shapes very various. The time of ripening from August to October. The size from a hen's egg to a pea. The stems, leaves, manner of growth, produce, &c. very different<sup>f</sup>.

#### APPLICATION or CONSUMPTION.

*By Man.*

The reputation of the Potato as a wholesome and nutritious food for man, has now been well established by an extensive experience of many years. The prejudices of some botanists on account of its natural place among the Solanums, some of which are poisonous, has long ago subsided: indeed much attention was never paid to it. In Burgundy, it is said, the culture and use of Potatoes in food were interdicted, as a mischievous root. Among other effects, it was accused of occasioning leprosy and dysentery. There is not the smallest foundation for this: the roots however, exposed to the sun and weather, whilst growing, acquire a green colour, a bitter taste, and a narcotic quality<sup>g</sup>; the fruit also has proved noxious to some persons, though not to others. A family having been accustomed to eat tarts made of this fruit, a stranger on putting the first bit into his mouth, clapped his hand to his throat, and declared he was choked; he therefore eat no more, and the disagreeable sensation went off as suddenly as it came. The family, notwithstanding this, went on eating the tarts, without perceiving any thing in the least degree offensive: but soon after, one of the maid servants was affected in the same manner. Are not these two instances, asks my friend, sufficient to prove, that somewhat deleterious, though in a lower degree, resides in this species, as well as in some of its brethren; and to confirm the propriety of Linneus's inserting it in the genus *Solanum*<sup>h</sup>? At the same time, these instances are no proof of the insalubrity of the root, properly cultivated; since it has now constituted the chief article of food to vast numbers of people, during a century.

It appears from Dr. Pearson's experiments, that one hundred parts of Potato-root, deprived of its skin or bran, consist of sixty-eight to seventy-two parts of water, and thirty-two to twenty-eight parts of meal. The meal consists of three substances: 1. Starch or fecula, seventeen to fifteen. 2. Leafy or fibrous matter, nine to eight. 3. Extract or soluble mucilage, six to five parts. This mixture is in many respects similar to that of the grain of wheat and maize. The essential difference between them is, that the two latter contain a glue of the same nature as animal matter, in place of the leafy or fibrous vegetable matter of the Potato: but the principal ingredient in point of quantity in all is starch, and they all contain a soluble mucilage. The mean quantity of animal glue in wheat appears to be about one twelfth of the meal. To this is imputed the superior quality of wheat-meal for bread. It is supposed to give tenacity and firmness, at the same time that it promotes the fermentation in making the bread, as well as gives it a taste.

Ninety-eight or ninety-nine parts out of a hundred of Potato-meal are capable of being assimilated into animal matter.

There does not seem to be just ground for the opinion that the meal of Wheat affords much more

nourishment than that of Potatoes; for if it is supposed to be so on account of the animal matter which Wheat contains, the proportion of that is too small to occasion any great difference<sup>i</sup>.

To obtain the meal from Potatoes, they are well washed, and grated down to a pulp, by a grater, or in a hand-mill. The pulp is then put into a hair sieve, and repeatedly mixed with cold water, till the strainings are clear, and the fibrous part perfectly divested of the meal. The former may be set aside for the use of hogs or cows, and the strained liquor suffered to settle, after which the brown-coloured water is poured off, and fresh water repeatedly mixed with the sediment, and poured off after it settles, till the water comes off perfectly clear. The sediment is then dried in the sun or in an oven, as soon as may be, to prevent its moulding. When quite dry, and put in a bag, in any dry place, it will keep many years. The quantity of meal will depend on the kind of Potatoes; but in general one pound of meal may be got from seven or eight pounds of the root<sup>k</sup>.

By this process the meal is deprived of the greatest part, or all, of one of the ingredients, namely the soluble mucilage, which by itself is undoubtedly nutritive, and may probably be rendered more nutritive by mixture with the other constituent parts of the root.

To prepare meal therefore of the best quality for bread, the roots may be cut into thin slices, and dried quickly in the air of a kiln of the temperature from 110 to 130 degrees.

For want of the glue in Potato-meal, it cannot be made into bread alone; but with three or even two parts of Wheat-meal, or of the root itself, well boiled, peeled and mashed, excellent bread may be made, with yeast, in the common method<sup>l</sup>.

Wheat-meal having more animal glue than is necessary for making it into bread, and Potato-meal having none, a mixture may improve both. Sea biscuits made with Potato-meal will certainly keep better, and be less liable to breed insects<sup>m</sup>: biscuits made with equal quantities of this and Wheat-meal, cannot be distinguished from those which are made wholly of the latter. Equal quantities of Oat and Potato meal unleavened or with a little yeast, make a cake or flat bread, more pleasant to the taste than when made only of Oat meal<sup>n</sup>.

Potato-meal does not occupy near the space of an equal weight of Wheat-meal. It does not absorb moisture. Having none of the animal glue, it is not apt to spoil, or breed weevils and other insects. It appears to be indestructible in any common situations or circumstances; and therefore is proper to carry into warm climates, and for use on board ships<sup>o</sup>.

There is no doubt but that Potato-meal may be used, not only for preparing common starch, but other substances of the same kind, as Sago, Tapioca, Vermicelli, Macaroni, and Salep; that it may be put to all the uses to which ground rice is applied; and that it may serve, either alone, or with a due proportion of wheat-meal, in various compositions of cookery, such as puddings, biscuits, pastry, &c.

It is however most ready, profitable, and perhaps salutary, to use the root cooked by merely boiling or baking. This is obviously the simplest and cheapest preparation. The meal is thus taken into the stomach, more intimately mixed or diffused through two and a half or three times its weight of water, than in the case of artificial mixtures of the meal with water. Hence the easiness of digestion, and lightness of this root above other farinaceous substances equally nutritive. Hence also, this root alone, or with a little meat or oil affords sufficient nourishment to most persons without disordering the stomach by its bulk: contrary to what is experienced from Beet, Turnep, Onion, and other roots, which contain a much greater proportion of water than that of the Potato<sup>p</sup>.

<sup>c</sup> Bath papers, 4. 62.

<sup>f</sup> Idem, 5. 128.

<sup>g</sup> Report Comm. agr. app. n. 1. 76.

<sup>h</sup> M. S. information from the Rev. George Ashby.

<sup>i</sup> Pearson in Report Comm. agr. app. n. 2. 81.

<sup>k</sup> Argyll Report, 86.

<sup>l</sup> Pearson, idem. 84.

<sup>m</sup> Young's ann. 25. 556.

<sup>n</sup> Idem. 24. 516.

<sup>o</sup> Idem. 24 & 25.

<sup>p</sup> Pearson, Rep. Comm. Agr. 85.



Though the boiling of Potatoes is now constantly practised in most houses in England, yet in many parts it is little understood. The Potatoes should be sorted, so as to be nearly of the same size; little more than water enough should be put into the vessel to keep them from burning, and if the roots be large, cold water should be poured upon them once or twice; when they are sufficiently done, pour off the water, and then evaporate the moisture, by replacing the vessel for a short time over the fire. Some dress them in an iron pot, over a slow fire, without any water. Boiling by steam has been recommended as an improvement; but the water seems to carry off some matter, by detaining of which the flavour of the root is injured<sup>a</sup>. They are most agreeable and nourishing baked or roasted.

The consumption of this root in Ireland and Lancashire has long been very great, and is now become considerable in Scotland, and many parts of England. In the county of Fife 6000 acres are supposed to be annually planted with Potatoes; in Mid-Lothian from 1200 to 1500; in Roxburghshire 1300 or 1400; in the West Riding of Yorkshire 1200; and about Frodsham in Cheshire, 1300 acres<sup>b</sup>.

In Ireland a barrel weighing 280 lb. or four English bushels, will on an average last a family of six persons six days; or a year's food amounts to sixty barrels. Now the average produce of the whole kingdom being eighty-two barrels to an acre, plantation measure, one acre rather more than supports eight persons the year through, which is five persons to an English acre. To be fed on Wheat, those eight persons would require eight quarters, or two Irish acres, which in the present mode of culture, imply two more for fallow, or four in all<sup>c</sup>.

Mr. Bartley, of Bristol, calculates, that a sack of Potatoes, weighing 224 lb, and containing one fourth part of farinaceous matter, is at least equal in value, as an article of food in the family of a poor cottager, to a bushel of the best Wheat: and that by a judicious attention to soil, situation, season, &c. 120 sacks of Potatoes may be more certainly raised upon an acre than twenty-five bushels of Wheat. But that on stiff clays and wet heavy soils, not only light crops are to be expected, but a diminution of the farinaceous matter, and a degeneracy of the root<sup>d</sup>.

According to Mr. Harris, a labourer with three or four children will use from twenty-five to thirty-five bushels: suppose the average produce 180 bushels to the acre, (of 90 lb. to the bushel:) a sixth part of an acre will suffice for such a family<sup>e</sup>.

Again, if an acre produce ten tons or 300 bushels, there will be about twelve pounds a day, for the consumption of each person in a family of five, and therefore the sixth part of an acre will be sufficient to afford them two pounds a day, the year through. But if they live on Potatoes only 250 days in the year, an acre will afford each person 18 lb. daily, and therefore a ninth part of an acre will suffice for such a family.

If every cottage therefore had an acre or even half an acre assigned to it for a garden, there would be ample room to furnish the family with this nourishing root, together with a change of ground for other vegetables. But this would be to little purpose without manure; and that can hardly be procured in sufficient quantity, without a cow, or at least a pig. Where this cannot be done, gentlemen and farmers may give or let pieces of land in odd corners of inclosed fields, headlands, &c. to their labourers, and these will bear a tolerable crop for two or three years, with little or no manure. Or farmers may find land, sets and manure, and divide the produce with his labourer, who is to perform all the work. Or a certain quantity of a fallow intended for Wheat, and well manured, may be set apart every year for this purpose, under certain conditions, advantageous to both parties.

In Ireland a family of five persons will eat and waste forty-two stones of Potatoes in a week; but then the

cows, pigs, poultry, &c. all partake with them. This root is well known to be the general food of the lower people, for a great part of the year.

In Scotland, the use of Potatoes has very much increased. In the central highlands they are become the principal food of the common people; and before their introduction famines were frequent there. It would be difficult to say how much the introduction of Potatoes into the Hebrides has bettered the condition of the poorer inhabitants. In East Lothian they constitute nearly one-third of the food of the common people, from the first of august to the end of may. In Perth they are said to have done more to prevent emigration than any device whatever. In Banff, had they not been in general use in the year 1783, it is probable that many persons would have perished for want of food<sup>f</sup>.

In many parts of Wales, Potatoes and Barley bread form the chief sustenance of the poor.

In England; it is no uncommon thing in Somersetshire, for families to live three quarters of a year on Potatoes; and the want of them would bring the whole family to the parish. In Lancashire and Cheshire the use has been long general and extensive<sup>g</sup>. It is very considerable in many other parts; and in the metropolis the consumption is very great.

Yeast or Barm may thus be made from Potatoes. Boil some of the mealy sort, (one pound for every quart of yeast to be made,) till they are quite soft: skin and mash them very smooth: mix as much of the water in which they were boiled as will reduce them to the consistency of common yeast, but not thicker. Add to every pound of Potatoes two ounces of coarse sugar or treacle; and when lukewarm, stir in, for every pound of Potatoes, two table spoonfuls of good new beer yeast. Keep it stirring and warm for twenty-four hours, or till it has done fermenting, when it will be fit for use; but if older, the better. It will keep in bottles three months<sup>h</sup>.

An ardent Spirit may be obtained from Potatoes. Many years ago it was proposed in Sweden to use them for this purpose to save corn; and it was found that an acre of land set with this root would yield a greater quantity of spirit than if it were sown with Barley<sup>i</sup>. Hence the practice was taken up in some parts of Scotland. Different accounts are given of its quality there; owing probably to more or less skill and care in the process. Dr. Anderson obtained from seventy-two pounds of Potatoes an English gallon of pure spirit considerably above proof, and about one quart more below proof. He celebrates it as the finest and most agreeable vinous spirit he ever tasted: somewhat like very fine brandy, but more mild, with a peculiar coolness upon the palate, and a flavour as if it had been impregnated with violets and raspberries. The Potatoes were boiled to a pulp, bruised and passed through a sieve with fresh water, to separate the skins. The pulp was then gradually mixed with about twenty gallons of cold water. When this mixture was of a temperature fit for putting yeast to wort, yeast was put to it. In ten or twelve hours a fermentation began, and continued during ten or twelve hours; by stirring it briskly this was renewed, and continued for a fortnight, at the end of which time it could not be renewed by agitation or otherwise, and was found upon trial to have acquired a kind of acid slightly vinous taste fit for distillation. It was then distilled with due caution; care being taken to stir it till it began to boil, before the still-head was applied; and the fire was made so strong as to keep it boiling briskly, till the whole came over, in order to prevent the thick matter from subsiding, and burning to the bottom, which would have given it a flavour like the fumes of burning tobacco. For want of skill or caution, spirit said to be drawn from Potatoes has been found to be intolerably nauseous: but Dr. Anderson succeeded equally well a second time. Another person however under his direction could not succeed in producing that

<sup>a</sup> Lancashire Report, 63, Perth Rep. 176. Bath papers, 3. 298.

<sup>b</sup> Reports.

<sup>c</sup> Young's Irish tour, 2. 120.

<sup>d</sup> Bath papers, 8. 344.

<sup>e</sup> Young's ann. n. 209. 84.

<sup>f</sup> Reports.

<sup>g</sup> Ibid.

<sup>h</sup> Report Argyll, 86. & Young's ann. 1. 285.

<sup>i</sup> Mem. Stockh. & Weston's Tracts, 251.



peculiar raspberry-flavour, though in other respects the result was the same<sup>b</sup>.

If the produce of an acre be ten tons or 300 bushels, it is obvious that full 300 gallons of spirit may be expected from it.

*By Horses.*

Sir William Fordyce seems to have been the first person publicly known in England to apply this root to feeding horses. He gave them boiled in the usual manner, and each horse had a quarter of a peck daily. The sort was the Cluster or Surinam Potato. The horses did their work well on this allowance, with a trifling quantity of Oats now and then; during two months. If they were baked or roasted on kilns; as they are in Northumberland, and mixed with some ground Oats, it would be a great saving in corn, and more hearty food. Mr. Kirby, of Ipswich, gave them raw, but washed, to saddle horses, each a peck a day, without any Oats. They did their work very well, and were in good order. At first they scoured, but it soon went off, and only kept their bodies gently open. Reckoning half a peck a day to be equal feeding, and the price of Oats sixteen shillings a quarter, the value of the Potatoes will be one shilling a bushel. Mr. Bywell gave half a peck a day with hay, but no Oats, to draught horses, and never had them in so good condition: he recommends them as a remedy for swelled legs, and used them raw<sup>c</sup>. Mr. Young gave rather more than two pecks a day to each horse; and found that they did not eat so much when given raw.

A gentleman in Lancashire fed forty horses with Potatoes boiled in a basket, half a bushel to a bushel of chaff, without any Oats. One woman washes and boils twenty-five bushels in a day. The whole prime cost of the Potatoes ready for the manger seven pence the bushel<sup>d</sup>.

Mr. Stewart fed two horses a whole winter, that regularly ploughed an acre a day, on Potatoes and cut straw, without hay or corn: the Potatoes were washed and boiled at the expense of three halfpence the bushel: the two horses ate nine bushels a week, were in high order, and stood their work well<sup>e</sup>.

Of all applications, in Mr. Young's opinion, none answer any thing like that of giving them, late in april and may to cart-horses and working oxen: when hay is scarce and dear, it may thus be saved to very great advantage<sup>f</sup>.

In confirmation of this, Mr. Culley remarks, that they have for several years practised giving their working horses Potatoes in the spring, with the greatest success. They give corn at the same time, because they work their horses remarkably hard at that season. They think that Potatoes with their corn and straw, not only keeps them heartier, but prevents grease, foulness, &c. by keeping their bodies open<sup>g</sup>.

Mr. Dann, of Gillingham in Kent, gave eighteen bushels of Potatoes, with chaff and cut straw, two bushels of Beans, and two bushels of Oats weekly to three teams of cart-horses. The Potatoes saved four bushels of Oats weekly; which ascertains the value to be twelve shillings, or eight pence the bushel. The teams were in as good, or perhaps better order, than when fed without Potatoes<sup>h</sup>.

Mr. May, near Ipswich in Suffolk, keeps nineteen horses and four cows on a farm of six hundred acres, without a single acre of meadow or artificial grasses. His entire dependance, in winter and spring, is on Potatoes, chaff and straw. He gives one bushel a day, cut very small; for if uncut or but grossly, they will not eat a sufficient quantity of dry meat with them. The sort he uses is the Ox-noble<sup>i</sup>.

Mr. Crooke, of Tytherton in North Wiltshire, fed nine horses with steamed Potatoes at three halfpence the bushel, with as much cut straw as they would eat, but no oats, nor hay<sup>k</sup>.

At Aveley in Essex 300 lb. sufficient for a working horse six days, which is 9000 lb. for half a year, be-

ing three-fifths of an acre's produce. Washing and steaming cost two pence for each 100 lb. To every 300 lb. half a pint of salt, and a small quantity of sulphur were added. On a comparison of wintering a team of five horses thus, and with hay and oats, it was in favour of the former 12l. 17s.<sup>l</sup>

Mr. Young, in various experiments, ascertained the value of the Cluster sort, for feeding horses to be nine pence the bushel. Others have found them to be worth a shilling, and Mr. Billingsley estimates them at eight pence for this purpose<sup>m</sup>.

In many parts of Scotland they are given to horses raw; but well washed, and are found to be excellent. In Annandale 10 lb. are supposed to be a moderate feed: In East Lothian horses prefer Surinam Potatoes to corn, when accustomed to them; they are esteemed excellent for foals and young horses, keeping them open in body, and smooth in coat: 9 lb. are a sufficient feed for a pair of horses, with half the usual allowance of oats. In Fife they give a peck a day to each horse, and regard them as excellent for horses. In Kintyre (Argyleshire) their working horses have generally one feed of Potatoes: from 15 to 18 lb. make a good and cheap meal for a horse<sup>n</sup>.

In Ireland, Mr. Longfield, of Castle Mary, cultivates the Cluster Potato, which they call Bulls. Horses are very fond of them; they do very well on them raw, but better when boiled<sup>o</sup>.

Here is much in favour of Potatoes as food for horses, and yet it is asserted, that in some parts of Scotland Surinam Potatoes otherwise called Yams have been discontinued, being found to produce gripes and colic: The Rev. Mr. Close says, they have not answered with him so well for horses and colts as he expected<sup>p</sup>. I have been told that a gentleman ruined a fine team of horses, by feeding them on raw Potatoes.

*By Cattle.*

Experiments on giving Potatoes to milking cows turn out much in favour of this root. Dr. Wilkinson, of Enfield Chace, gave them to a dairy of ten cows. At first not above half the cows took kindly to them; by degrees however they all became fond of this food, and at last, towards spring, as the fodder became dry, would scarcely taste any hay, and were almost entirely kept on Potatoes, each cow consuming about a bushel every day. The milk being applied chiefly to suckling, the increase was not ascertained, it was however evidently great. The butter was well-flavoured, and better than it had been the preceding winter. The cows were kept rather loose in their bodies, but preserved their health, and looked sleek and thriving through the winter. But for the last fortnight, when they all began to reject hay, and lived almost entirely on Potatoes, the milk became too thin and watery to bring the calves on properly, and the butter became white and tasteless, without any firmness or adhesion<sup>q</sup>.

Mr. Forby finds that Potatoes give a bad taste to milk<sup>r</sup>. Mr. Close fed his three cows, after Cabbages, with half a bushel of Potatoes night and morning, and a small quantity of hay, from the 10th of march to the 10th of may, without any diminution of their milk, but rather an increase of cream; the butter as sweet as from the best grass. All cattle may thus be fed to great advantage, at least during the month of april, and the first fortnight in may, which practice would enable the farmer to clear his turnep or cabbage land, and to sow his spring corn at an early and proper season<sup>s</sup>. Charles Mordaunt, Esq. gives one peck boiled night and morning to each cow<sup>t</sup>. Mr. Seaton, of Sussex, gave at least half a bushel each to three milch cows from the first of november to the first of april, and fed three heifers in calf from the 13th of february to the 10th of april<sup>u</sup>.

T. B. Bayley, Esq. of Hope says, that his cattle

<sup>l</sup> Vancouver's Essex.

<sup>m</sup> Transf. Arts. 4. 91. Young's ann. 1. 285. 16. 91. 22. 167.

<sup>n</sup> Reports. <sup>o</sup> Young's tour, 1. 416.

<sup>p</sup> Rep. Comm. agr. 62. Bath papers, 3. 108.

<sup>q</sup> Young's ann. 29. 459. <sup>r</sup> Idem, 19. 473.

<sup>s</sup> Idem, 1. 401. & Bath papers, 3. 107. <sup>t</sup> Idem, 7. 252.

<sup>u</sup> Transf. Arts, 17, 162.

<sup>b</sup> Bath papers, 4. 43. <sup>c</sup> Young's ann. 1. 279, 283, 285. 402.

<sup>d</sup> Idem, 16, 356. <sup>e</sup> Idem, 20. 266. <sup>f</sup> 21. 52.

<sup>g</sup> Idem, ib. 226. <sup>h</sup> Idem, 22. 167. <sup>i</sup> Idem, 18, 314.

<sup>k</sup> Report Comm. agr. 61.



eat the Howard or Bedfordshire Potato boiled, with as much eagerness as the best sorts, and came on as well with them; that for the milch cows he mixed malt-dust with them, and found them much more profitable than either Turneps or Cabbages. Once, when his Potatoes grew low, he desisted from giving them to the milking cows; immediately, though fed with the best hay, they fell off much in their milk; he therefore began again, and in a week they yielded more butter by one third. Their value is superior in this to Turneps or Cabbages, and there is no risk of their giving a disagreeable taste either to butter or milk<sup>x</sup>.

A large cow, tied up a month after calving, ate 2 cwt. and 18 lb. of hay in one week, and the ensuing week four Winchester bushels of Potatoes being given to her, the consumption of hay was reduced to 3 qrs. and 20 lb. It appears therefore that a sack of Potatoes is equal to 1 cwt. of hay. The quantity of milk was increased by the Potatoes, but it was thinner in quality<sup>y</sup>.

In the Lancashire Report, Mr. G. Green observes, that after many experiments he invariably found that the watery Potato, of which there are many varieties, has fallen far short of the purpose intended: that he has several times, both through necessity and for the sake of experiment, given the Ox-noble to milch cows, after the more farinaceous sorts, as for instance the Pink-eye, when the decrease of both milk and butter has been evident in a very short space, and the beasts themselves seemed much dissatisfied with the change.

In the Report for the county of Fife, Potatoes are said to be exceedingly proper for milk cows, and by some are reckoned preferable to Turneps; as they produce an equal quantity of milk, and give no bad taste either to milk or butter. But as cows are in danger of being worried or suffocated with Potatoes, it is advisable to cut or mash them.

Sir Mordaunt Martin observes; that when he fed his cows with Potatoes, they were all so tender-footed, as to be hardly able to walk from the yard to an adjoining close: this he attributes to their treading in the dung formed by the Potatoes; for they soon recovered when they ceased to eat them<sup>z</sup>.

In Cheshire they are found to be of too laxative a nature, without the addition of some other food.

In Dumbarton cows are fed with messes of boiled food, in which Potatoes are a principal ingredient; not boiled but bruised in a stone mortar.

In Mid Lothian the Surinam is chiefly given to milch cows; increasing the produce without affecting the taste of the milk. In West Lothian these have killed many cattle by hoving. Mr. Hill, of Hertfordshire, finds that milch cows yield abundance of milk with Potatoes, but not cream in proportion<sup>a</sup>.

Some persons have used the stalks of Potatoes, as a food for horses and cattle: but if they are cut whilst the roots are growing, the crop of roots will be lessened; and if the cutting be delayed till the growth of the roots is completed, they will not be either succulent or nourishing. At best I believe they are but indifferent food<sup>b</sup>.

Potatoes have been used by some for fattening cattle, in their opinion, with great success: but others have disputed the economy of it. Mr. Bywell of Yorkshire fed oxen of seventy or eighty stone, with a bushel a day, and some hay; and found them superior to Turneps. Mr. Campbell found that large oxen may be as completely fattened on potatoes and hay, as on any other food. Mr. Arthur Young finished fattening oxen with Potatoes, with the addition of some bean-meal from April 21st to May 27th, and they did perfectly well. Mr. Abdy of Essex fattened Welch runts on Potatoes, and a Scotch cow. Several persons in Sussex have used them for fattening oxen, and found them to answer, paying from 4d. to 9d. a bushel<sup>c</sup>. Mr. Hunter of Hertfordshire fed 103 oxen on Potatoes, and found they did well with hay, but not without<sup>d</sup>.

Mr. Dann of Kent, after fattening many beasts with this root, dropped the practice in 1794, finding that it did not answer. Mr. Arthur Young, in fattening eight bullocks, tried 212 bushels of Cluster Potatoes, with bean-meal and chaff, and found that they did not pay three halfpence a bushel; that seventy bushels more were given to loss; and that in finishing twelve beasts the year after, the result was loss. Another time, he gave to six fattening beasts, during three weeks, Potatoes, Beans, and Hay; the 126 bushels of Potatoes paid only one penny the bushel. Mr. Mure of Suffolk, fattening beasts on a very large scale, with Potatoes, Beans, Chaff, and Hay; found that the Potatoes to the amount of many thousand bushels paid nothing. In one experiment they paid 6d. and in another 2d. halfpenny<sup>e</sup>.

In Ireland, Mr. Jones had twelve store bullocks on Potatoes; they liked them much, and eat three barrels a day. They weighed 5 cwt. each, and had they been kept long enough on the Potatoes would have been fattened. Mr. Rowley has fattened worked oxen of five years old, in eight weeks on Potatoes parboiled, with hay<sup>f</sup>. Mr. O'Hara of Nymphsfield fatted many bullocks with them, and found that they did exceedingly well<sup>g</sup>.

Mr. Close of Suffolk allows his fattening cattle all the Potatoes they will eat: a beast of about 35 stone, will require a bushel every day, but will fatten one third sooner than on Turneps. He washes them clean, and does not give them until they are dry. He boils them only for bacon hogs and poultry; and prefers the Champion<sup>h</sup>.

Mr. Turner, of the same county, finds that bullocks do exceedingly well on them: that four, of 35 stone each, will eat 16 sacks a week, and 7 lb. of hay each every day: and that when they take to them kindly, nothing will bring on beasts faster than Potatoes<sup>i</sup>. A gentleman from Lancashire fats many oxen on them boiled, and finds that they, and all other animals, do much better on them boiled than raw. On which Mr. Young remarks; that baking is said to be still better<sup>j</sup>: but he does not admit, that Potatoes applied in any way to this purpose will answer.

Mr. James Bucknell, of Knowstone near Tiverton, Devon, found that this practice far exceeded what he expected. Cattle, when a little used to Potatoes, grow exceeding fond of them, but it is necessary to give them sometimes oat-straw and hay: the former is particularly useful, to prevent that laxative state of body, which the cattle would otherwise be subject to, from the rich and nourishing quality of the Potatoes, if confined wholly to that sort of food. Cattle thus fed were generally disposed of to the butcher, and the beef was exceeding well tasted. The number he thus fed yearly was about fifty. He gave the Potatoes raw and unwashed<sup>k</sup>.

John Hunter, Esq. of Gubbins in Hertfordshire, fattened 103 oxen principally with Potatoes, and 70 capital cattle the year after. They are wonderfully nutritive, but will not fatten an ox in any reasonable time without hay<sup>l</sup>.

William Barbor, Esq. of Fremington near Barnstable; Devon, fed 56 bullocks on twenty acres of Potatoes. The cattle were bought in very lean, and scoured for three weeks; after this stopped, they throve very well: this food had no ill effect on those that were in a better state. The beasts are subject to swelling and being choaked: but the first is easily got rid of by driving them about the yard, and the second may be prevented by thrusting down the Potato with a smooth stick, or a large stiff rope soft at one end. The 56 bullocks were bought in for 380l. 18s. and were sold for 580l. 18s. Each bullock eat three pecks a day, which at the rate they then sold for was 2s. 6d. a week. They were put to feeding on the 10th of December, and most of them were fit for the butcher by the 1st of March; but the number being too great for the consumption of the

<sup>x</sup> Hunter's Essays, 325.

<sup>y</sup> Report Somers. 118.

<sup>z</sup> Norfolk Report, app. 196.

<sup>a</sup> Reports.

<sup>b</sup> See Bath papers, 4. 32. Young's ann. 6. 92.

<sup>c</sup> Young's Annals.

<sup>d</sup> Trans. Arts, 10. 98.

<sup>e</sup> Young's Annals.

<sup>f</sup> Young's Irish Tour, 1. 21.

<sup>g</sup> Idem, 23.

<sup>h</sup> Idem, 284.

<sup>i</sup> Bath papers, 3. 107.

<sup>j</sup> Young's ann. 1. 192.

<sup>k</sup> Idem, 16. 357.

<sup>l</sup> Trans. Arts, 9. 45.

<sup>m</sup> Idem, 10. 98.



country, they were sold as purchasers offered, and were all gone by the 4th of May, except four, which were not sold till the end of the month. They were all sold to the butcher except three, which were disposed of to a jobber, and most of them were killed immediately from the stalls. For the first week he gave them hay, but finding that too expensive, he changed it for straw, which he found to answer full as well.<sup>o</sup>

*By Sheep.*

Sheep have not been so generally fed with Potatoes as bullocks. Mr. Fuller of Sussex however has fattened many sheep on them with great success, and faster than on corn or even oil-cakes; each sheep eat a gallon every day, and some hay morning and evening. The Potatoes were sliced, and put into troughs under a shed. The sheep were of the South-Down breed; were taken into the yard about the middle of November, and were ready for the market at the end of February, or the first week in March.<sup>p</sup>

General Murray, of the same county, fattened sheep with them; 196 wethers eat very near 14 bushels of Potatoes, and 1 cwt. of hay each day.<sup>q</sup>

Monf. Cretté de Palleul fattened sixteen sheep: four on Potatoes, four on Turneps, four on Beets, four on Corn. The four on Potatoes gained in four months 70 lb.—on Turneps, 67 lb.  $\frac{1}{2}$ —on Beets, 71 lb.—and on Corn, 92 lb.  $\frac{1}{2}$ . They had some hay; and were all weighed alive.<sup>r</sup>

George Ward, Esq. of Bradfield house in Berkshire, found that an acre of middling Turneps, and 100 bushels of Potatoes, kept forty lambs the same time, namely twenty days. The scouring at the beginning was stopped by a little hay. When the Potatoes were finished the lambs fell off.<sup>s</sup>

Mr. Dann, of Gillingham in Kent, made a reserve of Potatoes for ewes and lambs in the spring, that Turneps might not remain to exhaust the land, to the injury of succeeding crops. From the 2d to the 14th of April inclusive 156 ewes, and 155 lambs, were kept in a meadow of five acres and three quarters, on Potatoes and Clover hay. They eat each 616 lb. of the former, and 279 lb. of the latter. This saved the Clover, of which there was then a very short bite. Mr. Dann is of opinion, that if feeding with Potatoes were continued, till Lucerne and Clover could be mowed for the sheep, it would be a great saving, as the produce will be considerably more when mown, than if they were fed.<sup>t</sup>

William Barbor, Esq. during winter, especially in bad weather, to about six score ewes gave sometimes a bag of Potatoes, containing twelve pecks, Winchester measure, to every score, in a day. They were carried out, and thrown abroad on the pasture. After having been used to them two or three days, they eat them with great eagerness.<sup>u</sup>

Mr. Armstrong, of King's county in Ireland, had eighty sheep in the snow, which got to his Potatoes, and eat of them freely, upon which he picked forty of them, and put them to that food regularly: they fattened very quick, much sooner than forty others at hay, and yielded him a great price.<sup>v</sup>

The most unsuccessful experiment I have met with on feeding sheep with Potatoes, is Mr. Arthur Young's. November the 21st he found sixteen of his wethers to weigh alive 1432 lb. He inclosed them on dry grass, in a pen, which was moved occasionally. January the 14th he weighed them again, and their weight was then only 1264 lb.; they had lost therefore 168 lb. after having eaten sixty bushels of Potatoes. So he finished an experiment so manifestly mischievous, by putting the sheep to Turneps. This was the Cluster Potato.<sup>w</sup> Sheep will not always take to Potatoes at first, without slicing and mixing them with other food.

*By Swine.*

Potatoes have been applied with success to feeding swine, and to fattening them, with the assistance of meal, peas, &c.

In Cumberland, thirty bushels of Potatoes, and ten of Corn made into meal, are supposed to feed a sow of eighteen or twenty stone weight, and leave a profit of 1l. 15s. The Potatoes are boiled, and the meal is mixed with them. Thus applied they are worth 4d. a bushel.

Mr. Billingsley of Somersetshire found their value thus applied, did not exceed 10d. the bushel of 80 lb. and that they may be grown for 6d.

In Staffordshire, refuse Potatoes are very generally applied to fattening hogs, which they will bring on fast when boiled, and mixed with a little ground Barley; the tail or damaged Barley will answer the purpose.

The Reporter for the county of Fife, says that nothing is preferable to Potatoes for rearing or fattening hogs; and that he has seen some fed to a large size, and of excellent quality, who had nothing but Potatoes raw or boiled, except a little peas or oat-meal mixed with them a few days before killing.<sup>z</sup>

Mr. Turner kept sixty hogs a considerable time on the Red Cluster Potato: but thinks that they grow tired of them, and do not come on fast enough in flesh; and that it is therefore more profitable to give them Beans occasionally, or to let them have the run of a barn door. On this Mr. Young remarks, that from a considerable experience in keeping a large lean stock with the Red Cluster, he has found that they may be depended on without other food; but that fattening even for roasting pork is a different question.

Sir William Fordyce fattened hogs with the Cluster Potato, except the last ten days, when he gave them Peas; and did not find that the fat was lost in boiling.

Mr. Close (1784) for several years kept his hogs on his refuse Potatoes; and finds pork fed with them remarkably sweet, moist and delicate. Bacon hogs he keeps about a fortnight upon ground Peas mixed with the Potatoes boiled. If they be forwarded with Potatoes before they are confined, two bushels of Pea-meal, and four bushels of boiled Potatoes, well incorporated, will fat a hog of twelve stone, fit for hams or bacon.<sup>a</sup>

Mr. Le Blanc applied 166 bushels of Cluster Potatoes to feeding fourteen hogs taken out of the stubbles above half fat: they had a bushel raw, three times a day; no corn, but the shack of a farm-yard, in which three flails were going, with fifteen little pigs, which in return took a small share of their Potatoes. After having been thus fed above three weeks, and thriving very fast, they were sold to the butcher.<sup>b</sup> The same gentleman had afterwards thirteen sows with their litters at once on Potatoes, and should not have thought of keeping such a stock, had it not been for this provision.<sup>c</sup>

Mr. Pitt of Pendeford fattened large swine with Potatoes boiled, and thickened with bran and barley flour. On taking the Potatoes hot from the furnace, in mashing they were mixed with the bran and barley-meal; 12 lb.  $\frac{1}{2}$  of the latter to one bushel of Potatoes. Afterwards they had Peas.<sup>d</sup>

Mr. Boys of Kent, found that ninety-six sacks of Potatoes, given to fatten hogs, were 4l. 3s. 1d. worse than nothing. Upon which Mr. Young remarks, that this experiment tends to confirm the opinion that Potatoes alone will not fatten hogs; but does not by any means prove, that they may not be profitably used with corn, either raw or boiled.<sup>e</sup>

Mr. Adams, of Cherington near Newport in Shropshire, fatted eight pigs, by placing two troughs in the sty, one filled with raw Potatoes, the other with Peas. They had no water, so that when the pigs were thirsty, they ate the Potatoes. They were fatted from sixteen to twenty score; and ate no more than thirty bushels of Peas, and 200 bushels of Potatoes.<sup>f</sup>

Mr. Fawcener, of Petworth in Sussex, having found that his hogs fell off their flesh and did badly on raw Potatoes, was induced to steam them, which is supposed to be better than boiling; the water in which

<sup>o</sup> Transf. Arts, 11. 91, 95, 96.

<sup>p</sup> Young's ann. 12. 265.

<sup>q</sup> Idem, 11. 285.

<sup>r</sup> Idem, 14. 139.

<sup>s</sup> Idem, 11. 625.

<sup>t</sup> Transf. Arts, 10. 94.

<sup>u</sup> Idem, 11. 99.

<sup>v</sup> Young's Irish tour, 1. 22.

<sup>w</sup> Transf. Arts, 4. 81.

<sup>z</sup> Reports.

<sup>a</sup> Young's ann. 1. 192, 280, 400.

<sup>b</sup> Idem, 3. 82.

<sup>c</sup> Idem, 5. 259.

<sup>d</sup> Idem, 6, 231. & 9. 210.

<sup>e</sup> Idem, 9. 98.

<sup>f</sup> Idem, 17. 587.



Potatoes are boiled being deleterious to hogs<sup>g</sup>. But does not boiling carry off this deleterious substance into the water better than steaming?

Mr. Billingsley found that the water in which Potatoes were boiled was injurious to hogs. He also plainly perceived, that they were better liked when slightly boiled, than when boiled to a pulp<sup>h</sup>. He gives a decided preference to large hogs; the small growing pigs eating nearly as much food, without improving proportionably in size or fat. He found that many hogs at first ate the Potatoes with reluctance, particularly when raw, and that the quantity of food consumed increased every week, till the animal became three parts fat; after which they ate little, and almost all they did eat turned to fat. He experienced a great amendment in the quality of the wash, when a quantity of meal was mixed up a week or two before it was used, to ferment. Salt given with the Potatoes tempts the hogs to eat them very greedily. A little malted Barley, or Oats, mixed in their wash would do good. It appears that no swine pay better for Potatoes than spayed sows; for they get fat quicker and on less food than others. Grinding Potatoes in a mill instead of boiling did not answer; but they might perhaps if they had been mixed with meal, and fermented in a reservoir. Upon these experiments of Mr. Billingsley's, made upon a very great scale, with an ample capital, and the utmost attention and care, Mr. Young remarks, that the profit is nothing, the loss certain, and would have appeared still greater, if interest on capital had been reckoned<sup>i</sup>.

Sir Thomas Beever gave them boiled to fattening swine, but did not find them answer alone; but mixed with an equal quantity of Barley or Buck meal, he has had them equally fat, and in as short a time, as those which were fed with either of the meals alone<sup>k</sup>.

Mr. Charles Chaloner recommends baked Potatoes as an excellent food for hogs. The pork was equal to that from Barley and Beans. The Potatoes were done on a kiln, similar to what is used by oat-meal shellers for drying their Oats. The difference in expense between boiling and baking is prodigious, both in labour and fuel. The action of the fire, by dissipating the crude juices, reduces the Potatoes to a state highly wholesome and nutritious. Boiling does this in part, but not so effectually as baking or roasting<sup>l</sup>.

Mr. Robinson, of Steeple Langford, Wilts, fed eight large hogs from the 27th of January to the 21st of April, when the last was killed, on boiled Potatoes only. The Potatoes, after being boiled, were drained in hampers, put into large butts, and rammed down hard with a beetle: from these tubs they were dug with a spade, and carried directly to the pig-sty. The pigs always ate them with appetite, and thrived upon them well, though not so rapidly as upon Pea and Barley meal. The bacon was as sweet, firm, and as little wasteful as when hardened by corn<sup>m</sup>.

Mr. Young ascertained the value of the Cluster Potato in feeding swine to be on an average 8d. farthing a bushel. He boiled them, being first well washed, in a copper, mashed them in a tub, when they were turned into a cistern, and incorporated with Barley meal, nine bushels to seventy-five bushels of Potatoes. The common stock do very well on them raw, and they may be thrown to them from the heap every day with little trouble. A large boar, three sows, and eight stores had no other food from November to the end of June: two bushels a day kept these hogs in high order. An acre therefore (or 360 bushels) would maintain twelve middling hogs six months or 180 days. But Mr. Young is confident that two bushels a day will maintain sixteen hogs<sup>n</sup>.

Mr. Kendal of Derbyshire mixes two bushels of Rye-meal with twenty of boiled Potatoes; with which he fattens brawns better than on corn alone. Mr. Wharton of Doncaster mixes half a peck of Barley-meal with six bushels of Potatoes boiled, with which he fattens porkers, and half fattens bacon hogs. Mr.

Arbuthnot fattens porkers with Potatoes mixed with a little Barley-meal. Mr. Poole of Suffex, boils one third Barley-meal, and two thirds Potatoes which beat Peas and Barley alone<sup>o</sup>.

In Ireland, Mr. Clements at Killadown finds that hogs fat exceedingly well with boiled Potatoes, without any meal, both for porkers and bacon; giving them Oats for three weeks at last.

About Luttrellstown they give their pigs the small Potatoes boiled, and they fatten them to fine bacon; but they give some butter-milk, and a week or two before they are killed, some offal corn.

At Slaine they fat hogs with them boiled; at last mixing some Bran or Oats. A hog of two cwt. will fatten in two months on six barrels of Potatoes, and one barrel of Oats. Potato-fed pork reputed much firmer than that fed on Pollard. About Headfort all the hogs are fattened on Potatoes half boiled.

Mr. Cooper of Mercra has found that Potatoes raw will fatten hogs very well, but the fat will be flabby and greasy; but if they be parboiled and well sprinkled with salt, the flesh will be firm and perfectly good<sup>p</sup>.

#### By Dogs.

Potatoes boiled, mashed, and mixed with meal, are an excellent food for dogs. Eight ounces of Potatoes with one ounce of meal are equal to four ounces of meal alone.

Suppose a dog to eat 5 lb. 4 oz. of meal in a week; with 10 lb. 8 oz. of Potatoes he will require only 1 lb. 5 oz. of meal: which will make a saving of almost one half.

#### By Poultry.

Considerable profit may be made by feeding geese, turkeys, and fowls of every sort, with Potatoes boiled and mixed with meal as above. They will feed fatter, and in nearly half the time that they will with corn, or even meal by itself<sup>q</sup>.

In Ireland they are very commonly applied to feeding poultry. They boil them to a mash, and mix them with butter-milk. Much poultry is thus reared and fed in all the cabins, in many parts of the country<sup>r</sup>.

Sir William Fordyce fed his fowls entirely on Potatoes and Pollard, and found that they thrived exceedingly on this food, and that it was a great saving in grain<sup>s</sup>.

Upon the whole, Potatoes are a very valuable article for rearing and feeding stock of all kinds, when judiciously managed: and may always be thus turned to account, when raised in quantities too great to fetch a price at market, or in places too distant to pay the expense of carriage. The profits on feeding stock are seldom considerable, but when we reflect on their great importance in the spring, when Hay is dear, and Turneps fail, on the good state in which Potatoes well managed leave the land for succeeding crops, and the great quantity of the best manure which is raised from them, we cannot but acknowledge that they are, upon the whole, beneficial to the farmer.

#### EFFECT UPON LAND.

It is much disputed whether Potatoes exhaust the soil or not. There can be no doubt that they do, under improper management; and that although some persons have raised them four, and others even thirty-two years successively on the same land, yet no prudent cultivator will continue them longer than two years together, except in highly manured ground, or in gardens and small patches, where particular attention is bestowed on them. On a large scale, they should always come in regularly with other crops.

Many, says Mr. Billingsley, object to the cultivation of this root on a large scale, considering it in the light of a great exhauster. If the produce of any crop, so productive as this is, be sold from the farm without sufficient return of manure, such must be the effect; but if Potatoes are consumed on the premises, the manure from the consumption of one acre, will be sufficient for two or three: and as the Potato crop ought always to be highly manured, no deficiency

<sup>g</sup> Young's ann. 20. 287 & 22. 42.

<sup>h</sup> Idem, 21. 42.

<sup>i</sup> Idem, 21. 1, &c. Bath papers, 6. 378.

<sup>k</sup> Bath papers, 3. 283.

<sup>l</sup> Hunter's Essays, 410.

<sup>m</sup> Young's ann. n. 216. p. 37.

<sup>n</sup> Transl. Arts, 44 to 90.

<sup>o</sup> Young's East tour, 4. 113.

<sup>p</sup> Young's Irish tour.

<sup>q</sup> Transl. Arts, 16. 207.

<sup>r</sup> Irish tour, 1. 7, 27.

<sup>s</sup> Young's ann. 1. 280, 283.



need be feared in the subsequent crops of grain, grasses, &c. especially if Wheat be banished, and Barley or Oats substituted in its place<sup>1</sup>.

Mr. Tuke, the agricultural reporter for the North Riding of Yorkshire, has always found that the crop of corn succeeding Potatoes, and the seeds after the corn, have been equal to those which succeeded a crop of Turneps. A well managed crop of Potatoes leaves the soil in a mellow and more fertile state than any summer fallow, from the frequent stirrings for the destruction of weeds: the thick shade of the plants, which keeps a perpetual moisture in the soil, and the decay of a large quantity of leaves and stalks, before and after the crop is taken up, all tend to enrich the soil. And do not all succulent plants derive a great proportion of their nourishment from the atmosphere?

Mr. Young remarks, that even if the Potato should be found to exhaust considerably, as he suspects it does, yet the friends of this culture should not be alarmed at it; for though it is a deduction from its value, still that value in its product is so very considerable, as to leave it one of the most beneficial plants that the farmer can put into his ground<sup>2</sup>.

Potatoes are not regarded as an exhausting crop in Essex, where they cultivate them on a very great scale. Mr. Turner of Stoke near Ipswich asserts from the experience of several years, that they are by no means exhausting, but on the contrary an ameliorating crop; and that his Barley after them had not a weed, and produced five quarters an acre. Mr. Bucke of Worlington in Suffolk judges, from his second crop exceeding the first, with only a small quantity of dung, that this crop is not very exhausting. Mr. Lodge of Great Blakenham in Suffolk never found the idea that Potatoes are an exhausting crop verified; is certain that no crop leaves the land so clean; and usually sows Barley after them with good success<sup>3</sup>.

In Durham they sow Wheat after Potatoes, and have good clean crops. In Suffolk the Wheat following this root is reputed equal to that of a Clover lay, or clean fallow<sup>4</sup>.

Mr. Grossett of Cornwall is sure from experience that Potatoes do not exhaust; but as soon as he perceives the bloom to be entirely gone; he gathers all the berries, and gives them to hogs, who devour them greedily<sup>5</sup>.

Mr. Dann, who considers Potatoes as a more exhausting crop than corn, allows that if cattle be fed with the produce, they would raise, with a moderate quantity of litter, dung sufficient to manure nearly thrice the quantity of land the Potatoes grew on. This agrees nearly with Mr. Billingsley's opinion.

Notwithstanding the general opinion is in favour of Potatoes, yet there are not wanting some who think that this culture must tend to impoverish every estate on which it is practised. Where this prevails restrictions and penalties are inserted into leases, in some parts of the north of England. The opinions on this subject in Scotland are very various: indeed the accounts are very contradictory in most places. I shall not therefore enlarge upon them farther.

Mr. Marshall settles the dispute in this manner.—The Potato contains a great quantity of nourishment, and must therefore be a great exhauster of the soil. It leaves it also in a singularly friable state, causing an abundant produce of the crop that succeeds it. If therefore the husbandman keeps cropping the land year after year with corn, and then, in its impoverished state lays it down to grass, it is no wonder if it be unproductive. On the contrary, if after a crop of Potatoes well dunged for, only one or two crops of corn be taken, and the land laid down to grass, whilst yet in a state of fertility, the Potato crop seems friendly to those which succeed it.

The value of Potatoes as a fallow crop, and as an article of food for cattle compared with Turneps and Cabbages, may be considered thus. Potatoes are more nutritious, and seem to fat cattle quicker than

either Turneps or Cabbages: being secured from the frost, they are also a more certain article than the others, which occupy the soil in the spring, when it should be prepared for the succeeding crop; whilst Potatoes may be continued without inconvenience until the cattle be finished, or the grass has acquired its requisite bite. Upon the whole, applying these to their proper soil: Cabbages are best for strong tenacious land; Turneps for light shallow soils; and Potatoes for rich, deep, sound, sandy loams<sup>6</sup>.

## CROPS FOLLOWING.

There is no doubt but the Potato crop is an excellent preparation for corn, provided the ground was well manured before, and duly hoed after the setting. The frequent stirring of the land by hoeing, and the complete opening of it by taking up the crop, must leave it in a loose and friable state, fit for the reception of seed. If the soil be a strong loam or clay, Wheat may be sown immediately with advantage; but on lighter loams, which are most proper for Potatoes, the land is commonly left in too loose and friable a state for Wheat, and on such land it is generally more judicious to sow Barley or Oats. Besides, it frequently happens, especially in cold exposed situations, and in wet seasons, that the Potato crop cannot be raised and got off the land before November, which protracts the sowing of Wheat beyond the proper time.

Mr. Billingsley directs very judiciously. In a cold climate, and on a light soil, never sow Wheat after Potatoes, but ridge up your land, and leave it for a spring crop; and perhaps on any soil it is good husbandry so to do. As a trial, he sowed half of fifty acres with Wheat in the beginning of November; the other half he sowed with white Oats in April: the latter was uncommonly fine, and the Wheat very indifferent<sup>7</sup>.

In Essex however, about Ilford, their autumnal crops of Potatoes are succeeded by Wheat, which is generally fine; and the summer ones by Turneps. They mow Clover, and plough it up the beginning of July, and plant immediately<sup>8</sup>.

Mr. Pitt of Pendeford found his Wheat crop always equal to what might have been expected after any other preparation, but perhaps the Wheat stubble not so clean or kindly as after fallow Wheat<sup>9</sup>.

Mr. Culley of Fenton in Northumberland, does not remember ever to have had a bad crop of Wheat after Potatoes, or indeed of any corn; and generally the grain good in quality<sup>10</sup>.

Mr. Dann sowed an acre and half with Wheat after Potatoes, in October, with only one ploughing and no fresh manure. The produce eight quarters and a half of clean corn. The land was full of Quick and other weeds, and was well cleaned by the Potato crop<sup>11</sup>.

Mr. Hunter of Gubbins sowed thirty-eight acres of Wheat after Potatoes, with the drill-plough, a bushel and half of seed to the acre<sup>12</sup>.

Mr. Barbor says his land after Potatoes was in excellent order for Wheat, and that he had a better crop than ever was seen in his neighbourhood<sup>13</sup>.

Mr. Kingston of Oak-hill near Barnet, says that his ground was in fine dry condition for dibbling in Wheat, which in January looked exceedingly healthy and fine, and took only a peck and half of seed to the acre<sup>14</sup>.

Mr. Harper of Bank-Hall, in Kirkdale, Lancashire, says that if Potato land be laid dry, and remain so for the winter, it will be equal to Turnep land, for any spring crop that the land will bear: but that it is mostly sown with Wheat, let the season turn out ever so bad; and by being sown in bad condition, it commonly leaves the land foul. In this case Mr. Harper never sows Wheat, but always finds his land in excellent order for an early spring crop<sup>15</sup>.

At Slaine in Ireland Wheat is sown after Potatoes, sometimes Barley; the latter good, but the Wheat

<sup>1</sup> Yorkshire, 2, 64 to 67.

<sup>2</sup> Bath papers, 6. 352, 360. Young's ann. 21. 19.

<sup>3</sup> Young's annals, 2. 99.

<sup>4</sup> Idem, 21. 227.

<sup>5</sup> Idem, 10. 100.

<sup>6</sup> Idem, 14. 142.

<sup>7</sup> Idem, 7. 39.

<sup>8</sup> Transf. Arts, 10. 39.

<sup>9</sup> Idem, 11. 92.

<sup>10</sup> Idem, 16. 210.

<sup>11</sup> Somers. Report, p. 117.

<sup>12</sup> Transf. Arts, 4. 83.

<sup>13</sup> Young's annals.

<sup>14</sup> Reports.

<sup>15</sup> Rep. Comm. agr. 44.



generally a bad crop and bad grain. Hence Mr. Young supposes the soil to be so light as to require adhesion to be given it.—About Furness they sometimes sow Wheat after Potatoes, and the crops are as great as after fallow; but the quality of the grain is inferior<sup>1</sup>.

Mr. Young, in his directions for the management of land, recommends the following course of crops: 1. Potatoes. 2. Wheat. 3. Turneps. 4. Barley. 5. Clover. 6. Wheat. The seed wheat ready brined and limed to be in the field, and the seedsmen with his basket; as soon as the ploughman turns a furrow, the seedsmen follows him close, throwing the seed not into the furrow just opened, but on the land thrown over by the plough, the forkmen then divide themselves at equal distances along it, and shaking the mould, which the ploughman turned over, with their forks, the boys pick up the Potatoes. The forkmen must leave the land regular without holes, for there is to be no other tillage for the Wheat<sup>m</sup>.

For any soils, except strong ones, another course is: 1. Potatoes. 2. Flax. 3. Clover. 4. Wheat. In this course, the land is left till spring; no water being suffered to stand on it in the winter. In the spring more or fewer ploughings to be applied, as will best insure a fine friable surface to sow the Flax in<sup>n</sup>.

Mr. Young remarks, that the first of these courses is upon the whole the most profitable that can be practised on all soils that will do for the two roots. Because one third of the arable land is every year in Wheat. It contains spring corn, the straw of which is necessary for cattle. The Turneps do for the sheep, and the Clover will feed in summer the stock hogs, supported in winter by the Potatoes; with this great advantage that the two crops of Wheat are put in at scarce any expense, and that there is no other expense on the Potatoes than mere setting, since all the rest is done in order to take up that crop<sup>o</sup>.

He has trusted to Potato crops as a fallow, previous to laying down to meadow, which demands as clean a fallow as any object possibly can. The seeds were sown with Barley<sup>p</sup>.

Mr. Lodge of Great Blakenham in Suffolk, says he is certain no crop leaves the land so clean as Potatoes, and that he usually sows Barley after them with good success. He intends trying the following course: viz. Potatoes in rows thirty to thirty-six inches apart; then winter Tares, with Barley or Rye, mown in June or the beginning of July for Hay; the land trench-ploughed for Turneps; the third year Barley with Clover; followed by Wheat. Thus every fifth year he purposes having a crop of Potatoes, upon which he shall bestow all the dung he can muster. He has tried Wheat after Potatoes, but not with such good success as Barley; believing that they leave his land too light and porous for Wheat<sup>q</sup>.

Mr. Young remarks on Mr. Billingsley's result given above, that it unites entirely with his own experience, for that he never got a good crop of Wheat after Potatoes: and that it is owing to two circumstances; first, the soil is too much pulverized; 2dly, the root exhausts so much as not to leave nourishment sufficient for Wheat<sup>r</sup>.

Mr. Robinson of Steeple-Langford, Wilts, has several times sown, and often observed other people's Wheat after Potatoes, and there was invariably a thin crop of straw, and a poor shrivelled grain: Barley and Oats are as invariably good<sup>s</sup>.

Mr. Walker of Norfolk, upon a clean Turnep fallow, planted Potatoes under the plough in June, and harrowed in Turnep seed above them, timing it so that the Turneps and young Potato shoots shall come to the hoe at the same time. He feeds the Turneps off early in autumn, and then ploughs the land for Wheat; gathering the Potatoes at the same time. He has had a full crop of Turneps, and 120 bushels of Potatoes on an acre<sup>t</sup>.

Mr. Bell of Dumfriesshire drills Potatoes at four

feet and a half; and the hoeing being over by the end of June, he drills Turneps in the intervals<sup>u</sup>.

Mr. Hollins of Montgomeryshire, after the rows of Potatoes were covered, with a stick set beans along the middle of the rows: both grew up together very well, and came to perfection, without injuring each other in the least<sup>v</sup>.]

#### Tomatos.

32, 33, 34, 35, 36, 37, 38, 40. These plants are all propagated by sowing their seeds on a moderate hot-bed in March, and when the plants are come up two inches high, they should be transplanted into another moderate hot-bed, at about four inches distance from each other, observing to shade them until they have taken root; after which they must have frequent waterings, and a large share of fresh air; for if they are too much drawn while young, they seldom do well afterwards.

In May these plants should be transplanted either into pots filled with rich light earth, or into borders near walls, pales, or Reed-hedges, to which their branches may be fastened to support them from trailing on the ground, which they otherwise will do, and then the fruit will not ripen; so that where these plants are cultivated for the sake of their fruit, they should be planted to a warm aspect, and the branches regularly fastened as they extend, that the fruit may have the advantage of the sun's warmth to forward them, otherwise it will be late in the season before they are ripe, and they are unfit for use before; but when the plants are brought forward in the spring, and thus regularly trained to the south sun, the fruit will ripen by the latter end of July, and there will be a succession of it till the frost kills the plants.

Some persons cultivate these plants for ornament, but their leaves emit so offensive an odour on being touched, as to render them very improper for the pleasure-garden, and their branches extend so wide and irregular, as to render them very unsightly in such places; for as their branches cannot be kept within bounds, especially when they are planted in good ground, so they will appear very unsightly in such places; therefore the borders in the kitchen-garden, where these plants are placed for their fruit, must not be too rich, for in a moderate soil they will not be so luxuriant and more fruitful.

The Italians and Spaniards eat the fruit of the *Lycopersicum* (n. 33.) as we do Cucumbers, with pepper, oil, and salt; and some eat them stewed in sauces, &c. and in soups they are now much used in England. This fruit gives an agreeable acid to the soup, though there are some persons who think it not wholesome, from the great moisture and coldness, and that the nourishment it affords must be bad.

The other sorts are never used either in the kitchen or for medicine, but the plants are preserved for the sake of variety, especially by those persons who are lovers of botany. The 40th sort is propagated by seeds, which should be sown upon a hot-bed in the spring, and the plants afterwards treated in the same manner as has been directed for the *Capficum*, with which this plant will thrive and produce plenty of fruit annually.

39. Garden Nightshade is a common weed on dunghills and in gardens. That and all the varieties are annual, and are propagated by sowing their seeds in the spring, on a bed of rich earth, where the plants are designed to remain. When they come up, thin them to at least two feet distance. In July and August they will flower, and the seeds will ripen in autumn. A plant or two of the more tender varieties may be set in pots and trained to sticks; to be removed into the greenhouse in autumn. During the winter, when the fruit is ripe, they will make a pretty appearance.

41. 45. The different sorts or varieties of *Melongo* or Egg Plant are propagated by seeds sown upon a moderate hot-bed in March. When the plants come up, transplant them into another hot-bed about four inches asunder, observing to water and shade them

<sup>1</sup> Irish Tour, 1. 27. & 2. 2.

<sup>m</sup> Idem, 2. 399.

<sup>n</sup> Idem, 2. 492.

<sup>o</sup> Transf. Arts, 3. 27.

<sup>p</sup> Id. ib. 94.

<sup>q</sup> Young's ann. n. 198. p. 201.

<sup>r</sup> Idem, 21. 19.

<sup>s</sup> Idem, n. 216. p. 40.

<sup>t</sup> Idem, 9. 431.

<sup>u</sup> Rep. Com. agr. 10.

<sup>v</sup> Transf. Arts, 11. 80.



until they have taken root; after which give them a great share of air, when the weather is warm. Water them frequently, and when they fill the frame, which will be by the middle or end of may, transplant them into a rich spot of ground, at two feet distance, or into the borders of the pleasure garden, preserving a good ball of earth to the roots. Water them plentifully till they have taken root. About the middle of july the fruit will appear; and then, if the weather be dry, water the plants often, to increase the fruit in number and size: in august it will ripen, in hot countries it is esteemed a delicacy, but in England it is merely regarded as a curiosity.

42. 43. 44. 46. 47. 48. 49. 52. 53. 54. 59. 60. 63. 66. 67. 69. 70. 71. 72. 73. 75. 76. 77. 78. 79. 80. 81. 82. 83. 88. 89. 90. 91. 92. 93. All these being natives mostly of the West Indies, and some of the East Indies, must be raised from seeds on a hot-bed early in the spring. When the plants are fit to remove, put each in a separate small pot filled with fresh rich earth; plunge them in a moderate hot-bed of tanner's bark, and shade them from the sun until they have taken new root; after which admit a large share of fresh air to them in warm weather, and water them frequently. Towards the end of june harden them gradually; and soon after remove them into the stove, where they must have as much free air as possible in warm weather; but as the cold approaches in autumn, they must be carefully protected, and in winter they must be kept in a moderate temperature of warmth. Some of these will bear to be exposed to the open air in the heat of summer, in a warm situation; but in general it is better to let them remain in the stove, with the glasses open in front; and every day, in warm weather, to admit as much air as possible at the top of the stove.

[**SOLANUM.** See *Atropa*, *Boerhaavia*, *Chenopodium*, *Datura*, *Halleria*, *Hyoscyamus*, *Mirabilis*, *Paris*, *Physalis*, *Phytolacca*, *Rivina*, *Trillium*.]

**SOLDANELLA.** (A Soldo, nummo. So named, from the roundness of the leaves, like a piece of money.)

Lin. gen. n. 199. Reich. n. 212. Schreb. n. 260. Tournef. t. 16. Juss. 97.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Precie*. *Lyfimachia*, Juss.

#### GENERIC CHARACTER.

**CAL.** Perianth five-parted, straight, permanent: segments lanceolate.

**COR.** one-petalled, bell-shaped, widening gradually, straight: mouth torn into many clefts, acute.

**STAM.** Filaments five, awl-shaped. Anthers simple, sagittate.

**PIST.** Germ roundish. Style filiform, length of the corolla, permanent. Stigma simple.

**PER.** Capsule oblong, round, obliquely striated, one-celled, opening by a many-toothed top.

**SEEDS** numerous, acuminate, very small. Receptacle columnar, free.

#### ESSENTIAL CHARACTER.

**Cor.** bell-shaped, lacero-multifid. **Caps.** one-celled, many-toothed at the top.

#### SPECIES.

1. *Soldanella alpina.* *Alpine Soldanella.*

Lin. spec. 206. fyst. 194. Reich. 1. 414. Willd. 1. 808. hort. cliff. 49. Hall. helv. n. 634. Scop. carn. n. 210. Jacqu. austr. 1. 11. t. 13. Schmidt bohem. 1. 2. n. 147. Villars dauph. 2. 465. Allion. pedem. n. 323. Sabb. hort. 1. t. 16. Curt. magaz. 49. Camer. epit. 254. Clus. pann. 354.

*S. alp. rotundifolia.* Bauh. pin. 295. Mor. hist. 2. 285. f. 3. t. 15. f. 8. Scheuch. alp. 1. 50. Tournef. inst. 82.

*S. alp. major.* Clus. hist. 309. Ger. emac. 838. f. 2. Park. theat. 168. f. 3.

β. *S. alp. minor.* Clus. hist. 308. Ger. emac. 839. f. 3.

*S. Clusii.* Schmidt bohem. 1. n. 148.

*Lunaria alia minor cærulea.* Dalech. hist. 1314.

#### DESCRIPTION, &c.

Root perennial, fibrous. Leaves almost kidney-shaped, about three quarters of an inch over each

way, of a dark green colour, on long foot-stalks. Among these arises a naked flower-stalk or scape, about four inches long, sustaining at the top two small open bell-shaped flowers, with the brim cut into many fine segments like a fringe: the most frequent colour is blue, but it is sometimes snow-white. It flowers in april, and the seeds ripen in july.

[The largest specimen, says Scopoli, that I possess, has the leaf eleven lines long, and an inch broad, emarginate at the base, on a petiole near two inches in length. Scape a span high, terminated by three flowers, the middle one longer. (Haller says, that the flowers are from one to three.) Corollas blue with some mixture of red, moderately nodding. Capsules erect, much resembling those of *Cerastium arvense*: (according to Haller, deep blue, like the flower.) Receptacle on a columnar peduncle a line in length. Seeds roundish, as many as sixty.

Native of the Alps of Switzerland, Austria, Bohemia, Dauphiné, Piedmont. Cultivated in 1656, by Mr. John Tradescant<sup>r</sup>.

Gerarde says it grows wild in North Wales, but it has not been found there since his time.

β. This has all the parts smaller; the petiole is shorter and more slender, and the leaves are not so much rounded, but gradually widen from the petiole<sup>z</sup>.

Clusius found this variety in 1578.]

#### PROPAGATION AND CULTURE.

Part the roots in september. If removed in spring, the plants never flower strong; and if the season should prove dry, they will decay, unless they are constantly supplied with water. The seeds seldom grow unless they are sowed soon after they are ripe; for which reason those sent from abroad seldom succeed.

This plant thrives best in a strong cool loam, and must have a shady situation: exposed to the sun it will not live; nor will it thrive in a warm light soil. In dry weather it should be frequently watered.

[The *Soldanella* requires, like most other alpine plants, shade and moisture in the summer, and thrives best in a pot, set in a northern aspect: in winter, it requires the shelter of a frame, in lieu of snow, its more natural covering<sup>a</sup>.]

Seeds that ripen in England, may be sown in a box or pot, soon after they are ripe, placed in the shade, and frequently watered in dry weather. The plants will sometimes appear in autumn, but more frequently not till the following spring. When they come up, they must be duly watered in dry weather, and kept constantly in the shade. The following autumn, transplant them into a shady border six or eight inches asunder; [or rather into small pots.

**SOLDANELLA.** See *Convolvulus*.

**SOLDIER-WOOD.** See *Mimosa purpurea*.]

**SOLIDAGO.** (From *solidare*, or *solidando* vulnera, from its supposed efficacy in healing wounds.)

Lin. gen. n. 955. Reich. n. 1035. Schreb. n. 1292.

Vaill. æt. gall. 1720. f. 5, 46. 18. Juss. 181.

Gertn. fruct. t. 170. Mill. fig. t. 254. Virga

aurea. Tournef. t. 275. Vaill. æt. gall. 1720.

Doria. Dill. gen. 8. elth. 104, 105.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*. *Corymbifera*, Juss.

#### GENERIC CHARACTER.

**CAL.** Common oblong, imbricate: scales oblong, narrow, acuminate, straight, converging.

**COR.** Compound radiate. Corollas hermaphrodite tubular, very many, in the disk:—Female ligulate, fewer than ten (commonly five) in the ray.

Proper of the Hermaphrodite funnel-form, with a five-cleft, patulous border:—Female ligulate, lanceolate, three-toothed.

**STAM.** in the Hermaphrodites: Filaments five, capillary, very short. Anthers cylindrical, tubular.

**PIST.** in the Hermaphrodites: Germ oblong. Style filiform, length of the stamens. Stigma bifid, spreading.—In the Females: Germ oblong. Style filiform, length of the hermaphrodite. Stigmas two, revolute.

**PER.** none. Calyx scarcely changed.

<sup>r</sup> Hort. kew.

<sup>z</sup> Clus. hist.

<sup>a</sup> Curtis.



SEEDS in the Hermaphrodites solitary, obovate-oblong. Seed-Down capillary:—in the Females very like the others.

REC. flattish, naked.

ESSENTIAL CHARACTER.

Cal. scales imbricate, closed. Corolllets of the ray about five. Seed-down simple. Rec. naked.

SPECIES.

1. With racemes directed one way.

1. *Solidago canadensis*. Canadian Golden-rod.

Ait. kew. 3. 210.

α. *S. canadensis*. Lin spec. 1233. Reich. 3. 814. hort. cliff. 409. upf. 259. Gron. virg. 97. Kniph. cent. 3. n. 87. Pluk. phyt. t. 263. f. 1. Mor. hist. 3. 125. n. 25.

Leaves almost naked, with very few serratures, racemes terminating elongated.

β. *Solidago humilis*. Mill. dict. n. 16.

Dwarf Canadian Golden-rod.

Leaves rugged with few serratures, racemes almost equal spreading very much.

γ. Entire-leaved Canadian Golden-rod.

Ait. kew. 3. 210.

Leaves villose underneath, the upper ones quite entire, racemes elongated spreading.

Stem villose erect, leaves lanceolate serrate triple-nerved rugged, racemes panicled directed one way recurved, ligules abbreviated.

2. *Solidago procera*. Great Golden-rod.

Ait. kew. 3. 211.

*S. hirsutissima*. Mill. dict. n. 15.

Stem villose upright, leaves lanceolate serrate triple-nerved rugged villose underneath, racemes spike-shaped erect, before they open nodding, ligules abbreviated.

[3. *Solidago serotina*. Upright smooth Golden-rod.

Ait. kew. 3. 211.

Stem upright round even, leaves linear-lanceolate smooth rough at the edge serrate triple-nerved, racemes panicled directed one way.

4. *Solidago gigantea*. Gigantic Golden-rod.

Ait. kew. 3. 211.

Stem upright smooth, leaves lanceolate smooth serrate rugged at the edge, racemes panicled directed one way, peduncles rough-haired, ligules abbreviated.

5. *Solidago reflexa*. Reflexed Golden-rod.

Ait. kew. 3. 211.

Stem upright villose, leaves lanceolate subserrate triple-nerved rugged reflexed, racemes panicled directed mostly one way.]

6. *Solidago lateriflora*. Lateral flowered Golden-rod.

Lin. spec. 1234. Reich. 3. 815. Ait. kew. 3. 211.

Mill. fig. t. 254. f. 1?

α. Lateral flowered Golden-rod with red stalks, scarcely hairy.

β. Lateral-flowered Golden-rod with green stalks hairy.

Stem upright somewhat hairy, leaves lanceolate subtriple-nerved smooth except at the edge, which is rugged, the lower ones subserrate, racemes panicled subrecurved directed one way.

[7. *Solidago aspera*. Rough-leaved Golden-rod.

Ait. kew. 3. 212.

Virga aurea americana foliis brevioribus ferratis. Dill. elth. 411. t. 305. f. 392.

Stem upright round hairy, leaves ovate subelliptic very rugged wrinkled serrate nerveless, racemes panicled directed one way.]

8. *Solidago altissima*. Tall Golden-rod.

Lin. spec. 1233. Reich. 3. 815. hort. upf. 259.

Dill. elth. 416. t. 308. f. 396.

α. *S. altissima*. Mill. dict. n. 8. Mart. cent. t. 14.

Stem five feet high hairy, serratures deep unequal, racemes divaricating.

β. *Solidago pilosa*. Hairy Golden-rod.

Mill. dict. n. 9.

Stem three feet high hirsute, serratures deep almost equal, racemes ascending. Ait. kew.

γ. *Solidago recurvata*. Recurved Golden-rod.

Mill. dict. n. 28.

Stem three feet high villose, serratures deep almost equal. Ait. kew.

δ. *Solidago virginiana*. Virginian Golden-rod.

Mill. dict. n. 11.

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Stem five feet high extremely villose, serratures large, racemes scarcely diverging. Ait. kew.

ε. *Solidago rugosa*. Wrinkled leaved Golden-rod.

Mill. dict. n. 25.

Stem three feet high somewhat villose, serratures small almost equal, racemes divaricating.

Stem upright rough-haired, leaves lanceolate very rugged wrinkled serrate nerveless, panicles directed one way.

[9. *Solidago nemoralis*. Woolly-stalked Golden-rod.

Ait. kew. 3. 213.

Stem upright tomentose, stem-leaves lanceolate hispid quite entire, root-leaves subcuneiform serrate, racemes panicled directed one way.

10. *Solidago arguta*. Sharp-notched Golden-rod.

Ait. kew. 3. 213.

Stem upright smooth, leaves smooth sharply and unequally serrate, stem-leaves elliptic, root-leaves ovate-oblong, racemes panicled directed one way, ligules elongated.

11. *Solidago juncea*. Rush-stalked Golden-rod.

Ait. kew. 3. 213.

Stem upright smooth, leaves lanceolate smooth rugged at the edge, the lower ones serrate, racemes panicled directed one way.]

12. *Solidago elliptica*. Oval-leaved Golden-rod.

Ait. kew. 3. 214.

*S. latissimifolia*. Mill. dict. n. 14.

Stem upright smooth, leaves elliptic even, serrate, racemes panicled directed one way, ligules middling.

13. *Solidago sempervirens*. Narrow-leaved evergreen Golden rod.

Lin. spec. 1232. Reich. 3. 814. Ait. kew. 3. 214.

Gron. virg. 97.

*S. glabra*. Mill. dict. n. 22.

*S. maxima*. Corn. canad. 168. Raii hist. 279.

Virga aurea canadensis foliis carnosiss non ferratis angustioribus. Mor. hist. 3. 124. n. 14. f. 7. t. 23. f. 15.—fol. angustis laevibus non ferratis. Raii hist. 279.

Stem upright smooth, leaves linear-lanceolate somewhat fleshy even quite entire rugged at the edge, racemes panicled directed one way, peduncles hairy.

[14. *Solidago odora*. Sweet-scented Golden-rod.

Ait. kew. 3. 214.

Virga aurea americana Tarraconis facie et sapore, panicula speciosissima. Pluk. alm. 389. t. 116. f. 6.

Stem upright pubescent, leaves linear-lanceolate quite entire smooth rugged at the edge, racemes panicled directed one way.]

2. With upright racemes.

15. *Solidago lanceolata*. Grass-leaved Golden-rod.

Lin. syst. 763. Reich. 3. 816. mant. 114. Ait.

kew. 3. 214.

*S. noveboracensis*. Mill. dict. n. 23.

*Chrysocoma graminifolia*. Lin. spec. 1178.

Stem smooth very much branched, leaves linear-lanceolate quite entire three-nerved smooth, corymbs terminating, ligules the height of the disk.

16. *Solidago laevigata*. Fleshy-leaved Golden-rod.

Ait. kew. 3. 215.

*S. carnosa*. Mill. dict. n. 20. fig. t. 255.

Virga aurea canadensis foliis carnosiss non ferratis latioribus. Mor. hist. 3. 124. n. 15.

Stem upright even, leaves lanceolate fleshy quite entire even all over, racemes panicled upright, peduncles scaly villose, ligules elongated.

17. *Solidago mexicana*. Mexican Golden-rod.

Lin. spec. 1234. Reich. 3. 816. hort. cliff. 409.

Ait. kew. 3. 215. Gron. virg. 122. Kniph.

cent. 1. n. 82.

Virga aurea mexicana. Bauh. pin. 517. Raii hist. 278.

Stem oblique smooth, leaves lanceolate somewhat fleshy quite entire even all over, racemes panicled upright, peduncles scaly smooth, ligules elongated.

18. *Solidago viminea*. Twiggy Golden-rod.

Ait. kew. 3. 215.

*S. integerrima*. Mill. dict. n. 24.

Stem upright subpubescent, leaves linear-lanceolate membranaceous attenuated at the base smooth except at the edge which is rugged, the lowest subserrate, racemes upright, ligules elongated.



- [19. *Solidago stricta*. Willow-leaved Golden-rod.  
Ait. kew. 3. 216.  
Stem upright smooth, stem-leaves lanceolate quite entire smooth rugged at the edge, root-leaves ferrate, racemes panicled upright, peduncles smooth.
20. *Solidago petiolaris*. Late-flowering Golden-rod.  
Ait. kew. 3. 216.  
Stem upright villose, leaves elliptic somewhat rugged petioled, racemes upright, ligules elongated.]
21. *Solidago bicolor*. Two-coloured Golden-rod.  
Lin. syst. 763. Reich. 3. 815. mant. 114. Ait. kew. 3. 216.  
S. alba: Mill. dict. n. 26. ed. 7. n. 28.  
Stem and leaves hairy, leaves elliptic, the lower ones ferrate, branches having small leaves on them, racemes upright, calyx-leaves blunt.
22. *Solidago rigida*. Hard-leaved Golden-rod.  
Lin. spec. 1235. Reich. 3. 818. hort. cliff. 410. Ait. kew. 3. 216.  
Virga aurea Novæ Angliæ, lato rigidoque folio. Herm. par. t. 243. Raii suppl. 167.  
Stem and leaves ovate-oblong hairy rugged, stem-leaves quite entire, the lowest ferrate, flowering-branches panicled, racemes compact upright, ligules elongated.
23. *Solidago cæsia*. Maryland Golden-rod.  
Lin. spec. 1234. Reich. 3. 816. Ait. kew. 3. 217. Dill. elth. 414. t. 307. f. 395. Raii suppl. 168. n. 18.  
Stem even straight, leaves lanceolate ferrate smooth, racemes upright, ligules middling.
24. *Solidago flexicaulis*. Crooked-stalked Golden-rod.  
Lin. spec. 1234. Reich. 3. 816. Ait. kew. 3. 217. Gron. virg. 123. Kniph. cent. 4. n. 84, 85.  
S. latifolia. Lin. spec. 1234. Reich. 3. 817. Pluk. phyt. t. 235. f. 3, 4.  
Virga aurea canadensis asterisci folio. Herm. par. t. 244. Raii suppl. 168.  
Stem flexuose smooth angular, leaves ovate acuminate serrate smooth, racemes upright, ligules middling.
- [25. *Solidago ambigua*. Angular-stalked Golden-rod.  
Ait. kew. 3. 217.  
Stem subflexuose smooth angular branched, leaves oblong-lanceolate closely ferrate somewhat hairy underneath, racemes upright, ligules elongated.]
26. *Solidago Virgaurea*. Common Golden-rod.  
Lin. spec. 1235. syst. 764. Reich. 3. 817. hort. cliff. 409. fl. lapp. n. 306. suec. n. 754. mat. med. 186. Ait. kew. 3. 218. Gært. fruct. 2. 448. Hudf. angl. 367. Smith brit. 889. engl. bot. t. 301. With. arr. 727. Hull, 186. Lightf. scot. 482. Relb. cant. ed. 2. n. 693. Sibth. oxon. n. 707. Abbot bedf. n. 601. Fl. dan. t. 663. Hall. belv. n. 69. Scop. carn. n. 187. Neck. gallob. 352. Leers herborn. n. 656. Pollich pal. n. 802. Krock. filef. n. 1407. Villars dauph. 3. 223. Allion. pedem. n. 741. Gmel. fib. 2. 164. Thunb. jap. 317. Ludw. est. t. 150. Blackw. t. 169. Kniph. cent. 7. n. 89. Knorr. del. 1. t. W. 11. Regnault bot.
- α. S. vulgaris. Mill. dict. n. 2.  
Virga aurea. Ger. 348. 2. emac. 430. 2. Matth. 1006. valgr. 2. 354. Dalech. hist. 1272. Dod. pempt. 142. 2. Raii hist. 278. syn. 176. Petiv. brit. t. 16. f. 10.  
Virga aurea vulgaris. Park. theat. 542.
- β. S. latifolia. Mill. dict. n. 1.  
Virga aurea latifolia ferrata. Baub. pin. 268. Mor. hist. f. 7. t. 23. f. 4.—vulgaris latifolia. Baub. hist. 2. 1062.
- γ. S. angustifolia. Mill. dict. n. 3.  
Virga aurea angustifolia minus ferrata. Baub. pin. 268. Dod. pempt. 142. 1. Lob. ic. 298. 2. Ger. 348. 1. emac. 430. 1. Petiv. brit. t. 16. f. 9. Mor. hist. f. 7. t. 23. f. 20.
- δ. S. minor. Mill. dict. n. 4.  
Virga aurea vulgari humilior. Raii syn. 176. 3. Dill. elth. 414.—minor fol. ferratis utrinque acuminatis. Rand.
- ε. S. cambrica. Welch Golden-rod.  
Hudf. angl. 367. With. arr. ed. 3. 728. Hull, 186. Smith, brit. 889. γ. Ait. kew. 3. 218.  
S. minuta. Mill. dict. n. 5.

- Virga aurea cambrica, floribus conglobatis. Dill. elth. 413. t. 306. f. 393.—montana, folio angusto subincano, flosculis conglobatis. Raii syn. 177.
- ζ. S. lapponica. With. arr. ed. 3. 728.  
Stem somewhat flexuose pubescent angular, racemes panicled erect clustered:—ligules elongated; leaves ferrate, somewhat hairy.
- [27. *Solidago multiradiata*. Labrador Golden-rod.  
Ait. kew. 3. 218.  
Stem somewhat villose, leaves sessile lanceolate smooth ciliate, the lower ones ferrate at the top, raceme terminating upright, ligules elongated numerous.
28. *Solidago minuta*. Least Golden-rod.  
Lin. spec. 1235. Reich. 3. 817. Hall. belv. n. 69. γ. Krock. filef. n. 1408. Villars dauph. 3. 224. Allion. pedem. n. 742. Pluk. phyt. t. 235. f. 7, 8. Herm. par. t. 245. Barrel. ic. 783. Bocc. mus. 169. t. 118. Scheuch. it. 2. 144. & 4. 463. Camer. epit. 748.  
Stem quite simple hairy, leaves lanceolate acute ferrate smooth, raceme terminating simple upright, ligules elongated.]
29. *Solidago urticifolia*. Nettle-leaved Golden-rod.  
Mill. dict. n. 30.  
Virga aurea americana, urticæ foliis conjugatis rugosis & hirsutis, florum spicis foliosis. Houst. Mfs.  
Stem round hairy, leaves ovate-lanceolate crenate opposite rugged, racemes very short lateral.
30. *Solidago fruticosa*. Shrubby Golden-rod.  
Mill. dict. n. 31.  
Virga aurea amer. fruticosa, salicis folio, floribus quasi umbellatis. Houst. Mfs.  
Stem shrubby, leaves lanceolate smooth quite entire, flowers corymbed terminating.

## DESCRIPTIONS, &amp;c.

[The Golden-rods are natives of North America, except two species which are found in Europe, and two others which were discovered by Houstoun in New Spain, and have not been adopted by Linneus or any other author. I have generally followed the catalogue of the Royal Garden at Kew in the determination of the species, and the specific characters, which were probably reformed by the late Dr. Solander. Most of the species are there said to have been cultivated by Mr. Miller in 1758, which was the year when Mr. Aiton came to the Chelsea garden: many of them however had been there long before, certainly so far back as 1731, and some even in 1699. They were very imperfectly distinguished by Linneus. The flowers are yellow, and frequently in long spikes, whence the names of *Virga aurea* and *Golden-rod*.

1. Linneus only remarks upon this species, that the leaves are narrow-lanceolate, scarce apparently ferrate, and almost smooth.

Mr. Miller makes two species of this—*canadensis* and *humilis*. The first he describes as having] the stalks round, smooth, and two feet high; the leaves narrow and rough, with three longitudinal veins, two inches and a half long, and a quarter of an inch broad in the middle, sessile, ending in acute points, and having sometimes a few slight ferratures: the flowers in a roundish terminating panicle, the lower spikes of which are reflexed, but those at the top erect and joined very close; these appear in July.

The stalks of the second are very strong and near two feet high; very closely garnished with narrow, spear-shaped, stiff leaves, four inches long, and half an inch broad, a little indented on their edges and sessile. The flowers are disposed in large panicles at the top of the stalks: the spikes are long, recurved, and composed of smaller spikes in clusters: they appear in September.

[A third variety is added in the Kew catalogue, the leaves of which are hairy underneath, and the upper ones quite entire. The common Canadian Golden-rod has been long known in our gardens, having been cultivated in 1656, by Mr. John Tradescant, junior<sup>b</sup>.]

2. This seems to be the *hirsutissima* of Miller, which he says grows naturally in Canada. The stalk is strong and hairy, five or six feet high, closely gar-



nished with rough spear-shaped leaves ending in acute points, four inches long, and one broad, very hairy on their under side, sharply ferrate, and having three strong longitudinal veins: the flowers are disposed in a roundish panicle at the top of the stalk; the spikes are recurved; the flowers are small and of a brimstone colour; they appear in september, and frequently continue to the end of october.

[3. I cannot affix any of Mr. Miller's species to this, though he certainly cultivated it. The copious specific character is sufficient to distinguish it.

4. 5. The case is the same with these two species.

6. Plant, according to Linneus, smaller than *S. canadensis*. Leaves not ferrate, softer, but sometimes having one or two teeth. Flowers and all things as in the preceding, but the stem below the middle puts out simple branches, a little shorter than the stem, corymbose at the top but no branches between the terminating corymb of the stem and the middle or branches, which is singular in this species. The description affixed to fig. 1. of plate 254. in Mr. Miller's figures, seems to agree with the specific character of this species, as given in the Kew catalogue: but I dare not say that they are the same.—Stalk upright, smooth, near three feet high. Leaves smooth, spear-shaped, ending with acute points, about three inches long, and an inch broad in the middle, of a light green colour. The upper part of the stalk branches out into a panicle, and these branches have long spikes of flowers coming out from their wings, which are recurved: the flowers are ranged on one side of the foot-stalk, and stand erect; they are of a bright yellow, and have five or seven florets in the ray. It flowers at the beginning of august, and if the autumn proves favourable, the seeds will ripen at the end of september. Native of New Jersey, whence the seeds were sent to Mr. Miller in 1756, by Mr. John Bartram.

In the same plate (fig. 2.) another species is represented, which in the Dictionary (n. 27.) he calls *conferta*. I cannot refer it to any of the species in Linneus or the Kew catalogue.—He thus describes it:] Stalks branching, from three to four feet high. Leaves smooth; the lower ones spear-shaped, oblique, entire, five inches long and two broad in the middle, on long footstalks. The axillary spikes of flowers are long, blunt, and a little recurved at the end: those on the upper part of the stalk are erect, and clustered together in a close spike; they appear in september.—Native of Philadelphia, whence the seeds were sent to Mr. Miller by Dr. Bensel. The seeds, in warm seasons, will ripen in England.

[The Kew catalogue distinguishes two varieties of the *lateriflora*: one with red stalks scarcely hairy; the other with green hairy stalks.

7. Stems three feet high, the thickness of a straw at the base, round, hairy, finely streaked, clothed with leaves from top to bottom, diminishing gradually in size upwards, ferrate, hirsute and rough, hairy along the nerve and veins at the back, destitute of hairs on the upper part, rough at the edge to the touch, of a somewhat paler colour underneath. At a foot or a foot and half from the top the stem puts out branches, which are very full of small flowers, on spikes a little reflexed.

Native of Virginia and Carolina. It flowers here in september<sup>c</sup>. Cultivated in 1732, by James Sheppard, M. D.<sup>d</sup>

This is a smaller plant than the next; the leaves are shorter and somewhat wider, of a darker green, and ferrate almost to the top; the flowers are in more numerous spikes, and appear a little later<sup>e</sup>.

8. Stems numerous, straight, rigid, from three to four feet and a half high, the thickness of a straw or more at the base, round, slightly streaked, hirsute, clothed from top to bottom at short distances with leaves, which are widish, oblong, pointed, rough, at their upper and lower parts thinly crenate, in the middle ferrate, the ferratures minutely crenate; those on the upper branches not ferrate, but only minutely crenate; they are green on both sides, with a few oblique

veins, and are hairy along the nerve and veins at the back, but without hairs every where else. Flowers very many, on the upper branches, in long rod-like spikes, somewhat reflexed; having four, five or six florets in the ray. They appear in august and september.—Native of New England, Virginia and Carolina<sup>f</sup>.

Linneus says, it has the habit of the *canadensis*, but differs in the size, ferratures and nerves of the leaves: and that it unites species scarcely genuine; perhaps mules, of which the limits can scarcely be distinguished. He recommends therefore a comparison of several which he names.

Mr. Miller has made several species out of this.]

1. *S. altissima*: the stalks of which are round and smooth, above four feet high: the leaves rough, acute-pointed, and without veins; closer together on the stalks, and shorter and broader than those of *canadensis*: the panicles of flowers are much larger, the spikes much longer, spreading out wider, and more reflexed.

2. *S. pilosa*: the stalks of which are round and hairy, near three feet high, close garnished with rough spear-shaped leaves, two inches long, and half an inch broad, slightly ferrate, and sessile. Flowers from the axils at the upper part of the stalk, in long recurved spikes, small, sulphur-coloured, on short footstalks, appearing at the end of july.

3. *S. recurvata*. Stalks hairy, branching towards the top. Leaves spear-shaped, rough, sessile; the lower ones four inches long, and an inch and half broad; on the stalks gradually diminishing in size to the top; rough, veined and ferrate. Flowers in a terminating panicle corymb; the spikes on the lower part recurved, but at the top clustered and erect. They appear in september and october. Native of Philadelphia.

4. *S. virginiana*. Stalks round, channelled, two feet high. Leaves rough, acute-pointed, ferrate, two inches and a half long, and an inch broad. Flowers in a terminating panicle: spikes very long; recurved, and spreading out on every side; the lower parts of the branches closely furnished with small leaves, and the flowers in close clusters at the end of the spike: they are of a bright yellow, and appear late in september. Native of Virginia.

5. *S. rugosa*. Stalks round, hairy, two feet and a half high; the upper branches in a loose panicle. Leaves sessile, rough, spear-shaped, entire; the lower ones two inches long, and half an inch broad, but gradually smaller to the top: Spikes of flowers axillary: the lower ones long, but diminishing to the top. The branches have many small leaves growing along them; some of which are intermixed with the flowers; which appear in the middle of november. Native of New England.

[9. This was introduced in 1769, by Samuel Martin, M. D. and flowers in september.

10. Cultivated by Mr. Miller in 1758: It flowers in july and august.

11. Introduced in 1769, by Samuel Martin, M. D. It flowers in august and september. These are all natives of North America<sup>g</sup>.]

12. Stalks stiff, round, smooth, with a white bark, upwards of three feet high. Leaves spear-shaped, smooth, with several veins, three inches and a half long, and one inch broad, alternate. Flowers from the upper axils, in short, erect, obtuse spikes, of a pale yellow colour, and appearing in august. Native of Canada.

13. [This is remarkable, says Linneus, for its red stalk, higher than a man, with very smooth and somewhat fleshy leaves, a little rugged at the edge, continuing the whole winter; it flowers very late, so that in Sweden the frost commonly prevents them from opening.

Linneus did not distinguish this from the *laevigata*. Miller seems to have intended the *sempervirens* by his *glabra*, which he thus describes.] The lower leaves are fleshy, narrow spear-shaped and entire: the stalks smooth, purplish, near three feet high, garnished with long, narrow, smooth, keel-shaped entire leaves: the

<sup>c</sup> Dillenius. <sup>d</sup> Hort. kew. <sup>e</sup> Dill. hort. elth.

<sup>f</sup> Idem.

<sup>g</sup> Hort. kew.



flowers are disposed in a loose panicle at the top of the stalk; the spikes are slender and erect; the flowers of a bright yellow, appearing late in october, and sometimes continuing till december.

Native of North America. [Linneus says New York and Canada, we may add Virginia, if this be Gronovius's plant.—It was cultivated in 1699 by the Dutcheſs of Beaufort.

14. Cultivated in 1763, by Mr. James Gordon. It flowers in july and auguſt<sup>h</sup>.

15. Stem five feet high. Leaves long, rugged eſpecially at the edge. Calyxes ſmall, obovate, ſubſquarroſe. Ray of the corolla ſmall<sup>i</sup>. It is deſcribed at length in Linneus's ſpecies under the name of *Chryſocoma graminifolia*. Unleſs this is the *noveboracensis* of Miller, I know not where to fix it. He thus deſcribes that ſpecies.] The lower leaves are long, narrow, and very ſmooth, keel-shaped and entire. Stalks red, fleſhy, ſmooth, two feet high, thinly garniſhed with narrow, ſmooth leaves. Flowers in looſe panicles at the top of the ſtalks, and ſome ſingle ſpikes from the axils below. Flowers bright yellow, appearing in auguſt. Native of New England, [and other parts of North America.

16. Stalks thick, fleſhy, of a purpliſh colour, frequently ſix feet high in good ground. Leaves ſpear-shaped, thick, fleſhy, of a deep green colour, and very ſmooth; but their edges are a little rough to the touch; they are ten inches long, and an inch and half broad, drawing to a point at each end. The flowers terminate the ſtalk in a roundiſh panicle or corymbus. The common calyx is longer than in moſt of the other ſpecies, and the ſcales are ſmoother; the radial florets are much narrower in proportion to their ſize; the florets of the diſk are large, and their ſegments not ſo acute. It is a native of many parts of North America, but was firſt brought to Europe from Canada. It ſeldom ſhows its flowers till late in october, ſo that unleſs the autumn proves favourable, the ſtalks are pinched by the froſt before the flowers blow. The ſeeds ſcarcely ever ripen in England, unleſs the plants are ſheltered<sup>k</sup>.

This ſeems to be what Linneus intended by his *ſempervirens*. There is no doubt of its being the *carnosa* of Miller.

Morifon ſays it is a taller plant, and has wider thicker leaves than our *ſempervirens* (n. 13.) They both flower in the ſame manner; the ſtems with the leaves and flowers continue the whole winter, and they were cultivated in the Chelſea garden in 1699, when the third part of his work was publiſhed<sup>l</sup>.]

17. Stalks oblique, a foot and half high, ſmooth, with a brown bark. Leaves ſmooth, ſpear-shaped, entire, three inches long, and three quarters of an inch broad. The flowers come out on branching foot-ſtalks on the ſide of the ſtalks, are ranged on one ſide, and have a few ſmall leaves under the flowers; which appear at the end of auguſt.

[Native of North America. Cultivated in 1697, by the Dutcheſs of Beaufort<sup>m</sup>.

Caspar Bauhin called it *Virga aurea Mexicana*, having been told probably that it was a native of Mexico; Mr. Miller has adopted this error; Linneus doubted it. Bauhin had it from Spoerlin, who gathered it in Robin's garden at Paris.]

18. Stalks ſmooth, erect, a foot and half high. Leaves narrow, ſmooth, entire, dark green. Flowers in cloſe compact panicles at the top of the ſtalk; ſpikes ſhort, cluſtered. Flowers large, bright yellow, appearing in ſeptember.

Native of North America. [Cultivated by Mr. Miller in 1759.

19. 20. Natives of North America, and cultivated by Mr. Miller in 1758. The former flowers in ſeptember; the latter from october to december<sup>n</sup>.

Mr. Miller has a ſpecies which he names *S. petiolata* (n. 29.) But it can ſcarcely be the ſame with the *petiolaris* of the Kew catalogue. He deſcribes it as having] the lower leaves ſmooth, entire, narrow and

ſpear-shaped, three inches and a half long, and half an inch broad, ſtanding upon long foot-ſtalks: the ſtalks round, ſmooth, three feet high; having very ſmall, ſmooth, entire, ſeffile leaves on them; the flowers in a cloſe panicle at the top of the ſtalk, of a bright yellow, and appearing in ſeptember. Native of Philadelphia.

21. Lower leaves oval, ſix inches long, and three broad, ending in acute points, ferrate, having ſeveral ſtrong longitudinal veins on long foot-ſtalks which have leafy borders or wings. Stalks a foot and half high, branching out almoſt from the bottom, garniſhed with ſmall, ſpear-shaped, entire leaves. The branches grow erect, are cloſely furniſhed with ſmall leaves below, and are terminated by ſhort cloſe ſpikes of white flowers; [or rather, having a yellow diſk and a white ray, in cloſe racemes<sup>o</sup>.

Native of North America. Cultivated by Mr. Miller in 1759. It flowers in ſeptember<sup>p</sup>.]

22. Stalks two feet high. Lower leaves ovate, ſtiff, ſmooth and entire, four inches long, and two inches and a half broad, on foot-ſtalks four inches in length: thoſe on the upper part of the ſtalk are ſpear-shaped, entire, and embrace the ſtalk half round. Flowers in looſe, ſpreading, terminating panicles; ſpikes ſhort, cluſtered, roundiſh; bright yellow, appearing in auguſt.

Native of New England. [Cultivated in 1759, by Mr. Miller<sup>q</sup>.]

23. Stalk ſlender, ſmooth, a foot and half high. Leaves narrow-ſpear-shaped, two inches long, and half an inch broad, indented on their edges, and ending in acute points. Flowers in a looſe terminating panicle, with the ſpikes cloſer and thicker towards the top.

[According to Dillenius, the ſtems are three feet high, ſtiff, round, ſmooth, without ſtreaks, gray, but purpliſh towards the top, dividing into many branches. Leaves tender, thin, ſmooth, glaucous, pale grayiſh-green underneath.

Native of Maryland, whence it was procured and ſent to the Eltham garden by Peter Collinſon. It flowers in ſeptember.]

24. The lower leaves are four inches long, and almoſt two broad; their foot-ſtalks are two inches long, and have a membrane or wing on each ſide. The ſtalks riſe two feet high; they are ſlender, ſmooth, and of a light purple colour. Leaves ovate-lanceolate, indented, near two inches long, and three quarters of an inch broad, of a pale green on their under ſide. The flowers are produced in ſhort bunches from the axils almoſt the whole length; the lower ſpikes are an inch long, but the upper ones are almoſt round. The flowers are of a brimſtone colour, and appear late in auguſt.

[Linneus has made two ſpecies out of this, which he names *flexicaulis* and *latifolia*. The latter, he ſays, is too nearly allied to the former: the ſtem ſtraight, (whereas the other is flexuofe or winding,) and acutely angular: the leaves ovate, mucronate both ways, ferrate, ſmooth above but rugged beneath: racemes from the wings, commonly ſhorter than the leaf.

Native of Canada,—and other parts of North America. Cultivated by Mr. Miller in 1731<sup>r</sup>.

25. This is ſaid in the Kew catalogue to have been cultivated by Mr. Miller in 1759; but we are not informed there which ſpecies of the Dictionary is intended. I know not which it is, unleſs it be the *ſcrophularifolia*, n. 12. He thus deſcribes it:] Stalks ſlender, ſmooth, two feet high. Leaves ovate, acuminate, ferrate, three inches long and two broad, alternate at two inches diſtance. Flowers in long bunches from the axils, diſpoſed looſely, and pale yellow; appearing in auguſt, and continuing part of ſeptember.

26. [Root perennial, of long ſimple fibres. Stem very various in height, from ten inches to three feet, commonly branching into a panicle, more or leſs flexuofe, never entirely ſtiff and ſtraight, leafy, angular, ſtriated, a little downy; at the baſe round and often purple. Leaves elliptic-lanceolate, ſomewhat rugged, and ſtiffiſh; thoſe next the root wider, on longer

<sup>h</sup> Hört. kew.

<sup>i</sup> Linn. mant.

<sup>k</sup> Mill. fig.

<sup>o</sup> Linn. mant.

<sup>p</sup> Hort. kew.

<sup>q</sup> Idem.

<sup>l</sup> Hiſt. oxon. 3. p. 124.

<sup>m</sup> Hort. kew.

<sup>n</sup> Ibid.

<sup>r</sup> Idem.



petioles, and more widely ferrate; stem-leaves for the most part indistinctly crenate-ferrate, sometimes almost quite entire, varying in size, often recurved; the upper ones gradually diminishing into lanceolate downy bractes: all somewhat hairy, or covered with short stiff down, paler underneath: footstalks winged. Flowers in terminating and axillary erect clusters or corymbs, forming a dense leafy pubescent panicle, which varies extremely as to luxuriance and number of flowers; in a barren soil and on mountains being shorter, more dense and less compound. Corolla of a golden colour. Calyx-leaves finally patulous, but all straight, lanceolate, ciliate, sometimes rugged at the back, having a membranous border. Florets of the ray from five to nine or ten, spreading, elliptic-oblong, toothed at the top. Seeds pubescent. Seed-down appearing rugged when magnified<sup>s</sup>.

On heaths it frequently does not exceed a foot in height; but in hedges and coppices it is three or four feet high, unbranched. Lower leaves ovate-lanceolate, tapering into the footstalk, distantly ferrate but almost entire at the summit, rough, slightly hairy, dark green above, glaucous beneath, reticulated with numerous veins; upper leaves alternate, almost sessile, lanceolate, entire or nearly so. Numerous flowering-branches arise from the axils of the leaves; lower ones shorter, upper longer than the leaves, bearing six or eight flowers, or branched peduncles, with each one or two small bracteal scales. Calyx imbricate with unequal lanceolate scales, having a green dorsal line, and whitish shining membranaceous edges. Seeds brown, convex on one side, plane on the other, hairy the whole length, nearly as long as the calyx, crowned with a sessile simple down:—small, oblong, tapering downwards, round or indistinctly angular, beset with very minute bristles: down capillary, remotely toothletted, half as long again as the seed. Receptacle narrow, flat, naked, full of small excavations, and rugged with their toothletted margins<sup>s</sup>.

Native of Europe, Siberia, and Japan, in woods, coppices, hedges and heaths; flowering from July to September.

It has been suspected that our English Golden-rod is different from the *S. Virgaurea* of Linneus; but we are assured by Dr. Smith, whose authority is decisive, that on a careful comparison of specimens, they are found to be precisely the same.

The herb when bruised smells like wild Carrot. It has been esteemed a vulnerary, and is recommended to be taken internally, as well as applied to the wound. As a tonic it may strengthen the general habit, and by that means be of use<sup>s</sup>. A case is related in the Gentleman's Magazine for February 1788, of the efficacy of a decoction made with this plant, in the stone. A boy ten or eleven years of age, after taking a decoction or infusion of the Golden-rod for some months at times, voided great quantities of gravel, with many small stones, and after that fifteen larger stones from three fourths of an ounce to an ounce and quarter, besides fifty or more not less than a large pea.—It is celebrated in old authors for its lithontriptic qualities, some more modern ones allow them, but it is entirely discarded from our regular practice. In my remembrance, says Gerarde, the dry herb which came from beyond the sea sold in Bucklersbury for half a crown an ounce; but since it was found in Hampstead wood, no man will give half a crown for an hundred weight of it.

From its vulnerary qualities, it is called in some places *Woundwort*, which is a name given to many other plants, for the same reason; others call it *Aaron's rod*.

Mr. Miller has made five species from the varieties of the European Golden-rod.] 1. Not common in England, but grows plentifully in Brabant, and is the most common in Germany. Stalks stiff, purplish brown, two feet high. Panicles axillary and terminating, each flower on a long slender foot-stalk, pale yellow, appearing at the beginning of August. Leaves

lanceolate; almost four inches long, and a quarter of an inch broad, deeply ferrate, pale green beneath. This is our  $\beta$ . and the broad-leaved Golden-rod.

2. Our common Golden-rod about London. ( $\alpha$ .) Lower leaves ovate-lanceolate, two inches long and an inch broad, slightly ferrate, on pretty long foot-stalks. Stems slender, a foot and half high; with small, narrow, entire, sessile leaves. Flowers in panicked bunches, clustered together, forming a thick, erect spike; appearing in August and September.

3. Narrow-leaved Golden-rod. ( $\gamma$ .) Frequent in several parts of England, as in the woods near Dulwich in Surry. Stalk round, smooth, a foot and half high. Leaves narrow-lanceolate, an inch and quarter long, and an eighth of an inch broad, almost entire, sessile. Flowers in small clustered bunches from the axils, to which they fit very close; and the stalk is terminated by a roundish bunch. The flowers being produced at every joint on the upper half of the stalk, the spikes being short, do not make so good an appearance as those of the second.

4. Dwarf Golden-rod ( $\delta$ .) grows in the woods at Hampstead, whence Mr. Miller several times transplanted roots into the garden, where they continued many years without varying. Lower leaves indented. Stalk seldom more than a foot high, branching out almost from the bottom. Branches terminated by short, clustered, erect spikes. Leaves on the stem and branches very narrow, acute-pointed and entire.

[Whether this be the same which was gathered by Sherard in Ireland, I cannot say. That is described, as having the leaves narrower and slightly ferrate, on long petioles; and the flowers larger, from the axils, collected into a sort of spike<sup>r</sup>.

In all these varieties, the degree of ferrature on the leaves, as well as the length of the leaf-stalks, is very variable; but the stem in all is serpentine (flexuose,) ribbed and cottony<sup>z</sup>.]

5. Welch Golden-rod ( $\epsilon$ .) has the lower leaves narrow-lanceolate, an inch and half long, and a quarter of an inch broad, smooth, slightly ferrate, a little hoary on the under side. Stalk about six inches high, with the same sort of leaves on it, only smaller. Flowers in roundish clustered terminating spikes, much larger than those of the common sort, and appearing five or six weeks earlier.

[This is a well-marked variety, but can scarcely be reckoned a distinct species, though it is ranked as such, not only by Miller, but by Hudson, Withering and Aiton. In the work of the latter it is distinguished by its very simple pubescent stem; wedge-lanceolate ferrate and somewhat hairy leaves, upright racemes, and elongated ligules.

According to Dr. Withering, it is from three to seven inches high. The flowers sometimes form a corymbus, sometimes a compact spike-like bunch, but the secondary fruit-stalks do not seem to be ever branched, as they are in the common Golden-rod. When cultivated, it attains the height of eighteen inches or more, but still preserves its straight unbranched stem, and its great length of leaf-stalks. Specimens from Professor Thunberg, under the name of *S. Virgaurea*, agree with our *cambrica*, which confirms an observation made by Mr. Afzelius, that Linneus (in hort. cliff.) had placed this as a variety of the common *S. virgaurea*, whereas it is the plant of the Flora Suecica, and really distinct from that of the Hortus Cliffortianus, which is our more common species.

Dillenius, who regarded it as a species, distinguishes it, by its low stature, slender stem, smaller, narrower and more hairy leaves, but principally by the inflorescence; having many flowers on the top of the stem only, closely collected together into a shorter blunt spike: it also flowers earlier, namely at the beginning of June, in gardens, but later in its natural places of growth. In cultivation, it produces several stems from the same root, and longer leaves<sup>s</sup>.

Lhwyd, who first discovered this plant in Wales,

<sup>s</sup> Smith brit. & engl. bot.

<sup>u</sup> Gartner.

<sup>c</sup> Woodw. Mss.

<sup>x</sup> Engl. bot.

<sup>r</sup> Raii syn.

<sup>z</sup> Withering.

<sup>a</sup> Hort. elth.



on the top of the mountain called y Glydder, doubted whether it was any thing more than a variety<sup>b</sup>. Mr. Woodward also much doubts its being distinct; and says it seems only to differ in having the flowering heads in a closer spike, the single heads larger, and the florets of the ray broader. The leaves are more hairy, but this is frequently the case with plants which grow dwarfish and stunted. Specimens gathered on the rocky precipice on the summit of Ingleborough to the N. W. afford no marks sufficient to form a specific difference<sup>c</sup>.

It has been found by Hudson about Llanberys, and by Pennant on Llyn y Cwyn near Snowdon. Mr. Hudson found it on the mountains of Yorkshire and Westmoreland, and Mr. Gough, near Kendal. Mr. Lightfoot saw it on the highlands of Scotland.

Plukenet has figured two dwarf varieties (*t.* 235. *f.* 7, 8.) not above two inches high; which seem to be only stunted plants of the common sort, owing to their growth in a very barren soil. Such Dillenius seems to have found near Petersfield in Hampshire<sup>d</sup>, flowering in august.

ζ. Withering's *S. lapponica* is about six inches high, and the spike contains about ten flowers. Mr. Afzelius informed Dr. Withering that this Lapland plant had been found in Scotland; and the Dr. had a specimen which he believed came from the mountains of Westmoreland. The root-leaves are ovate, on bordered leaf-stalks; the stem-leaves spear-shaped and sessile; the flowers in a spike-like terminating bunch and in the bosom of the upper leaves: the stem is straight and unbranched, as in *cambrica*<sup>e</sup>. Lightfoot's dwarf plant is probably the same with this.

27. Native of Labrador. Introduced in 1776, by the Hudson's-bay company. It flowers in July<sup>f</sup>.

28. Linneus says it is too nearly allied to the *S. Virgaurea*; and Haller that the *cambrica* seems to differ from it in having hoary leaves. It is lower, according to him, than the common Golden-rod, often a long span in height, with fewer, larger flowers, on one-flowered petioles, in a very short spike: but these marks do not seem to be sufficient to distinguish it, since they agree so entirely in the habit. It is frequent in all the Alps<sup>g</sup>; and Pyrenees. Introduced in 1772, by Mons. Richard. It flowers in July<sup>h</sup>.

Mr. Miller seems to have supposed it to be the same with the *cambrica*, from which it differs in having a hairy stem, the leaves lanceolate acute and smooth, and one simple upright terminating raceme. In the seventh edition of his Dictionary, it is the eighth species, and is described as having] the stalk about four or five inches high; the leaves small, spear-shaped, and indented on their edges; the flowers produced singly upon long slender foot-stalks from the axils; they are large, pale yellow, and appear in June.

29. Stalks round, hairy, and near three feet high. Leaves opposite, upon short foot-stalks, three inches long, and an inch and a quarter broad, their surface very rough, of a dark green on the upper side, but paler on the under, crenated on the edges. Flowers in short bunches from the upper axils, deep yellow, and pretty large.

30. Stalk shrubby, seven or eight feet high, dividing into many spreading branches, which are slender, woody, and covered with a smooth gray bark. Leaves two inches and a half long, and an inch broad, of a light green, and upon short foot-stalks. Flowers in a loose terminating corymbus, large, of a pale yellow colour, upon pretty long peduncles. The common calyx is cut almost to the bottom. Petiver seems to have this plant, under the name of *Pulmonaria jamaicensis*, *salicis folio*, *calycibus paleaceis*. These are both natives of La Vera Cruz in New Spain, where they were discovered by Dr. Houstoun: and consequently must have been cultivated by Mr. Miller before 1733, in which year Dr. Houstoun died.

[Forster has one species (*S. arborescens*) native of New Zealand; and Loureiro two species (*decurrens* and *cantonensis*) natives of China near Canton.]

<sup>b</sup> Raii syn.

<sup>c</sup> Botan. arr.

<sup>d</sup> Mss.

<sup>e</sup> Hort. kew.

<sup>f</sup> Hort. kew.

<sup>g</sup> Hort. elth. p. 413.

<sup>h</sup> Helv. p. 30.

## PROPAGATION AND CULTURE.

These plants are all hardy, (except the two sorts last mentioned) and therefore will thrive in the open air in England. Many of them having specious panicles of flowers, are great ornaments to the English gardens at the end of the summer, when there is a scarcity of other flowers, which renders them more valuable. The European sorts are seldom admitted into gardens, as they do not make any great appearance, but the sorts from North America are better esteemed; these have been greatly increased in their number of late years, and if we can judge from the sorts which have been introduced from North America within a few years past, we must suppose that country abounds with many more sorts than are yet known.

These plants when they are once obtained, may be propagated in plenty by parting their roots; the best time for doing it is in autumn, as soon as their flowers are past; but those sorts which do not flower till very late in the year, should be transplanted early in the spring before they begin to shoot, and the roots may be then parted; but if the spring should prove dry, they will require water to establish them well in the ground, otherwise they will not flower strong the succeeding autumn. Some of the sorts spread their roots, and propagate much faster than others, these may be transplanted and parted every other year; or if the plants are wanted, they may be every year divided, but then they will not flower so strong as those which are suffered to remain longer unremoved; and those sorts whose roots do not multiply so fast, should be parted only once in three years, if they are expected to flower strong.

The sorts which grow tall, are not very proper furniture for small gardens, because they require much room, for these should be allowed four or five feet, otherwise their roots will intermix with those of the neighbouring plants, and draw away their nourishment; therefore these plants are proper ornaments for large extended walks round fields, or for the borders of wood-walks, where they will make a fine appearance during their season of flowering; and as they require little culture, they are adapted to those places. They will thrive in almost any soil, but when they are planted in good ground they will grow much larger, and make a better appearance.

These plants may also be propagated by seeds, but it is only the early flowering kinds which perfect their seeds in England. These seeds should be sown in autumn soon after they are ripe, for those which are kept out of the ground till spring seldom succeed, or at best do not come up the same year; they may be sown in drills upon a bed of fresh earth, at about a foot asunder, but the seeds should be scattered pretty thick in the drills, and covered lightly over with fine earth. When the plants come up, they must be kept clean from weeds, and where they are too close, part of them may be drawn out, and planted in a shady border, to allow room for the others to grow till autumn, when they should be transplanted where they are designed to remain. The following year they will flower, and their roots will abide many years.

The two last mentioned sorts being natives of a warm country, will not thrive here, unless they have artificial heat in winter, especially the last sort, which requires a warmer situation than the other. These plants should be planted in pots, and the last should be plunged into the tan-bed in the stove, and treated in the same way as other tender plants from the same country. This may be propagated by cuttings, which, if planted in pots filled with loamy earth, and plunged into a moderate hot-bed, will take root. The other sort is propagated by parting the roots, in the same manner as the sorts before mentioned; these should be kept in a moderate stove in winter, and in summer may be placed abroad in a sheltered situation.

[SOLIDAGO. See *Amellus*, *Cacalia*, *Cineraria*, *Inula*, *Othonna*, *Senecio*.

SOLOMON'S SEAL. (So called from impressions on the roots like those of a seal.) See *Convallaria*.

SOMO.



SOMO. See *Illicium*.

SONCHO AFFINIS. See *Lapsana*.

SONCHORUS. See *Kämpferia*.

SONCHUS. (Σονχος of Theophrastus and Dioscorides. According to some, it is corrupted from σονχος inanis, vacuus; from its hollow stalks: according to others, it is so called απο του σων χεειν, from its pouring out a whole-some juice.)

Lin. gen. n. 908. Reich. n. 987. Schreb. n. 1233.

Tourn. t. 268. Vaill. aët. gall. 1721. 22. Juss.

169. Gært. t. 158. Crepis. Vaill. aët. 1721.

55. 22.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of Compositæ Semiflosculosæ. Cichoraceæ, Juss.

#### GENERIC CHARACTER.

CAL. Common imbricate, ventricose: scales very many, linear, unequal.

COR. Compound imbricate, uniform. Corollæ hermaphrodite, numerous, equal.

Proper one-petalled, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ subovate. Style filiform, length of the stamens. Stigmas two, reflexed.

PER. none. Calyx converging into a depressed acuminate globe.

SEEDS solitary, oblongish. Down capillary, sessile.

REC. naked.

#### ESSENTIAL CHARACTER.

Cal. imbricate, ventricose. Down hairy. Recept. naked.

#### SPECIES.

1. *Sonchus maritimus*. Sea Sow-thistle.

Lin. spec. 1116. Reich. 3. 620. Allion. pedem.

n. 818. t. 16. f. 2. Krock. files. n. 1252.

Desfont. atlant. 223. Cavan. ic. n. 57. t. 51.

*S. angustifolius*. Neck. gallob. 326.—*maritimus*. Baub.

pin. 124. prodr. 61. Raii hist. 226. Pluk. phyt.

t. 62. f. 5. Tournef. inst. 475. Vaill. acad. 1721.

p. 196. Zanich. hist. 1. 98.

*Chondrilla palustris longifolia sinuata læviter spinosa*.

Raii suppl. 137.

Peduncle naked, leaves lanceolate embracing undivided sharply toothed backwards.

2. *Sonchus cæruleus*. Blue Sow-thistle.

Smith brit. 815. Camer. epit. 281.

*S. canadensis*. Lin. spec. 1115. Reich. 3. 624.

Wither. arr. ed. 3. 674. Hull, 177.

*S. alpinus*. Hudf. angl. 336. Fl. dan. t. 182. Hall.

helv. n. 20. Villars dauph. 3. 161.

*S. alp. cæruleus alter*. Park. theat. 808. 1.

*S. cæruleus latifolius*. Baub. hist. 2. 1005. Raii hist. 225.

*S. flore cæruleo*. Ger. 231. 6. emac. 294. 7.

Peduncles and calyxes hispid and racemed, leaves sublyrate, terminating lobe deltoid and very large.

3. *Sonchus palustris*. Marsh Sow-thistle.

Lin. spec. 1116. Reich. 3. 620. Hudf. angl. 337.

Wither. arr. ed. 3. 674. Hull, 177. Smith brit.

816. engl. bot. t. 935. Curt. lond. 5. t. 59.

Relb. cant. ed. 2. n. 629. Fl. dan. t. 606. Neck.

gallob. 326. Allion. pedem. n. 812. Pallas it. 1. 59.

*S. asper arborescens*. Baub. pin. 124.

*S. lævior austriacus* 5. *altissimus*. Clus. hist. 2. 147.

*S. arborescens*. Park. theat. 808. 2.—*alter*. Ger. emac. 294. 9.

*S. tricubitalis folio cuspidato*. Merr. pin. Raii syn. 163. Pet. brit. t. 14. f. 7.

*S. lævis palustris altissimus*. Raii hist. 226.

Peduncles and calyxes hispid subumbelled, leaves runcinate sagittate at the base rugged at the edge.

4. *Sonchus arvensis*. Corn Sow-thistle.

Lin. spec. 1116. Reich. 3. 621. fl. suec. n. 687.

bort. cliff. 384. Hudf. angl. 337. Wither. arr.

ed. 3. 674. Hull, 177. Smith brit. 817. engl.

bot. t. 674. Curt. lond. 4. f. 53. Lightf. scot.

427. Relb. cant. ed. 2. n. 630. Sibth. oxon.

n. 659. Abbot bedf. n. 555. Hall. helv. n. 23.

Pollich pal. n. 726. Neck. gallob. 325. Krock.

files. n. 1251. Villars dauph. 3. 159. Allion. pedem. n. 813.

*S. repens multis* Hieracium majus. Baub. hist. 2. 1018. 1. Raii hist. 226. syn. 163. Petiv. brit.

t. 14. f. 6.

*Hieracium arvense*. Scop. carn. n. 974.

*H. majus*. Fuchf. hist. 319.—folio fonchi, f. H. fonchites. Baub. pin. 126.

*S. arborescens*. Ger. 231. 7. emac. 294. 8.

*S. dendroides* Dak champii. Park. theat. 808. 3.

*S. hieracites*, &c. Mor. hist. f. 7. t. 6. f. 12.

Peduncles and calyxes hispid subumbelled, leaves runcinate toothletted cordate at the base, root creeping.

5. *Sonchus agrestis*.

Swartz prodr. 110.

*S. lævis*. Sloan. cat. 122. hist. 1. 255.

Peduncles tomentose many-flowered, calyxes smooth, stem striated, leaves gasb-ferrate sessile.

6. *Sonchus oleraceus*. Common Sow-thistle.

Lin. spec. 1116. syst. 712. Reich. 3. 621. fl. lapp.

n. 289. suec. n. 688. hort. cliff. 384. Hudf. angl.

336. Wither. arr. ed. 3. 675. Hull, 177. Smith

brit. 818. Curt. lond. 2. t. 58. Lightf. scot.

428. Relb. cant. ed. 2. n. 631. Sibth. oxon.

n. 658. Abbot bedf. n. 554. Pollich pal. n. 727.

Neck. gallob. 326. Krock. files. n. 1253.

*Hieracium oleraceum*. Scop. carn. n. 975.

α. *S. lævis*. Lin. spec. 1117. α. Hall. helv. n. 21.

Villars dauph. 3. 158. 2. Allion. pedem. n. 815.

Camer. epit. 279. Matth. 497. valgr. 1. 452.

Ger. 231. 4, 5. emac. 292. 3. Dod. pempt. 643.

1. Raii hist. 224. syn. 162. Petiv. brit. t. 14.

f. 9, 10. Park. theat. 805. 1. non. ic.

*S. lævior vulgaris* 1. Clus. hist. 2. 146.

*S. lævis laciniatus latifolius*. Baub. pin. 124. Mor.

hist. f. 7. t. 3. f. 1. Gmel. sib. 2. 9.

Smooth jagged Sow-thistle.

β. *S. oleraceus*. Fl. dan. t. 682. Desfont. atlant.

224.

*S. lævis minor paucioribus laciniis*. Baub. pin. 124.

Raii hist. 224. 2. syn. 163. Petiv. brit. t. 14.

f. 8. Blackw. t. 130.

*S. lævis latifolius*. Ger. 230. 3. emac. 292. 4.

Park. theat. 806. f. 3. Mor. hist. f. 7. t. 3. f. 2.

Smooth broad-leaved Sow-thistle.

γ. *S. asper*. Lin. spec. 1117. γ. Hall. helv. n. 22.

Villars dauph. 3. 158. 3. Allion. pedem. n. 816.

Gært. fruct. 2. 360. Lightf. scot. 429.

*S. asperior*. Ger. 229. 2. emac. 291.

*S. asper laciniatus*. Baub. pin. 134. Park. theat.

804. n. 3. Raii hist. 225. syn. 163. Petiv. brit.

t. 14. f. 5.

*S. lacin. spinosus*. Baub. hist. 2. 1016. 2.

Prickly jagged Sow-thistle.

δ. *S. asper*. Ger. emac. 291.—non laciniatus. Baub.

pin. 134. Raii hist. 225. syn. 163. Petiv. brit.

t. 14. f. 2.—major, non lacin. Park. theat.

803. 1.

Prickly toothed Sow-thistle.

ε. *S. subrotundo folio*. Dill. in Raii syn. 163. Pluk.

phyt. t. 61. f. 5. Petiv. brit. t. 14. f. 1.

Round-leaved Sow-thistle.

ζ. *S. aphyllocaulis angusto & oblongo folio*. Dill. in

Raii syn. 163. Pluk. phyt. t. 62. f. 4. Petiv.

brit. t. 14. f. 3.

Narrow-leaved Sow-thistle.

Peduncles tomentose, calyxes even, leaves runcinate toothed.

7. *Sonchus tenerrimus*. Clammy Sow-thistle.

Lin. spec. 1117. syst. 712. Reich. 3. 622. Gouan

monsp. 407. Desfont. atlant. 223. Pluk. phyt.

t. 93. f. 3. (Hieracium.)

*S. lævis* in plurimas & tenuissimas lacinias divisus.

Baub. pin. 124. prodr. 61. Tourn. inst. 475. Vaill.

acad. 1721. p. 197.

*Chondrilla lutea*. Baub. hist. 1. 120.

Peduncles tomentose, calyxes hairy.

8. *Sonchus Plumieri*. Plumier's Sow-thistle.

Lin. spec. 1117. syst. 712. Reich. 3. 622. Gouan

illustr. 54.

*Lactuca alpina glabra, acanthi folio, flore magno cæ-*

*ruleo*. Vaill. aët. 1721. p. 200. Monnier obs. 157.

Peduncles naked, flowers panicked, leaves runcinate.

9. *Sonchus*



9. *Sonchus alpinus*. *Alpine Sow-thistle*.  
*Lin. spec.* 1117. *syft.* 712. *Reich.* 3. 623. *fl. suec.*  
*n.* 689. *lapp. n.* 290. *hort. cliff.* 385. *Gunn.*  
*norv. n.* 52. *Gouan monsp.* 408. *Smith ic. ined.*  
*1.* 21.  
*S. lævis laciniatus cæruleus*, f. *S. alpinus cæruleus*.  
*Baub. pin.* 124.  
*S. cær. latifolius*. *Scheuch. alp.* 50.—*S. lævis flore*  
*cæruleo*. *Clus. pan.* 651.  
*Peduncles scaly, flowers racemed, leaves runcinate*.
10. *Sonchus fruticosus*. *Shrubby Sow-thistle*.  
*Lin. syft.* 712. *suppl.* 346. *Jacqu. collect.* 1. 83.  
*L'Herit. stirp. norv.* 6. 171. *t.* 81.  
*Peduncles somewhat scaly, leaves attenuated at the base*  
*and lyrate, lobes rounded obtuse, flowering calyxes*  
*squarrose*.
11. *Sonchus pinnatus*. *Wing-leaved Sow-thistle*.  
*Ait. kew.* 3. 116.  
*Peduncles naked, calyxes even, leaves pinnate, pinnae*  
*linear-lanceolate somewhat toothed*.
12. *Sonchus radicans*. *Long-rooted Sow-thistle*.  
*Ait. kew.* 3. 116.  
*Peduncles naked together with the calyxes smooth, stem*  
*almost naked, root-leaves lyrate even on both sides, lobes*  
*triangular ovate*.
13. *Sonchus floridanus*. *Small-flowered Sow-thistle*.  
*Lin. spec.* 1118. *syft.* 712. *Reich.* 3. 623. *Lour.*  
*cochinch.* 480. *ed. Willd.* 586. *Gron. virg.* 115.  
*S. annuus canadensis altissimus laciniatus, flore cæru-*  
*lescente*. *Vaill. aët.* 1721. *p.* 198.  
*Lactuca altissima, folio sonchi laciniato, flore parvo*  
*cæruleo*. *Berb. lugdb.* 1. 81.  
*Peduncles scaly, leaves lyrate-bastate*.
14. *Sonchus sibiricus*. *Willow-leaved Sow-thistle*.  
*Lin. spec.* 1118. *Reich.* 3. 623. *fl. suec. n.* 690.  
*Gort. ingr.* 119. *Lour. cochinch.* 481. *ed. Willd.*  
*586. Kniph. cent.* 10. *n.* 82.  
*Peduncles scaly, leaves lanceolate undivided sessile*.
15. *Sonchus tataricus*. *Tartarian Sow-thistle*.  
*Lin. syft.* 712. *Reich.* 3. 623. *mant.* 572. *Gmel.*  
*fib.* 2. 11. *t.* 3.  
*Peduncles naked, leaves lanceolate toothed runcinate*.
16. *Sonchus tuberosus*. *Tuberous-rooted Sow-thistle*.  
*Lin. syft.* 712. *ed.* 13. 346. *Reich.* 3. 624.  
*Lower leaves runcinate, upper sagittate*.
17. *Sonchus quercifolius*. *Oak-leaved Sow-thistle*.  
*Desfont. atlant.* 225. *t.* 213.  
*Stem shrubby, leaves wedge-form, lobed at the edge, lobes*  
*remote acute toothed, the end ones in threes*.
18. *Sonchus angustifolius*. *Narrow-leaved Sow-thistle*.  
*Desfont. atlant.* 225.  
*Leaves glaucous smooth linear, pinnules distant tooth-*  
*letted*.
19. *Sonchus chondrilloides*.  
*Desfont. atlant.* 226.  
*Chondrilla sicula tragopogonoides maritima*. *Bocc. sic.*  
*13. t.* 7. *f.* A.  
*Root-leaves unequally pinnatifid toothed narrow, branches*  
*rod-like rushy one-flowered*.

DESCRIPTIONS, &c.

1. Stem smooth, decumbent, sometimes erect, simple or sparingly branched. Leaves smooth, glaucous, acute. Flowers few, panicle-corymbous: peduncles smooth or tomentose. Calyx smooth, or tomentose at the base. Flower the size of the common sort. Seed-down white, villose.—It is distinguished by its lanceolate, glaucous, toothletted leaves. Sometimes the stem has only one or two flowers<sup>1</sup>.

The stem, according to Cavanilles, is round and near two feet high: the leaves near a foot long, narrow, somewhat earletted: the flowers terminating, two or three, on short pedicels: scales of the calyx lanceolate, the outer ones shorter: corollas yellow, with a villose tube. He remarks, that Plukenet's figure, referred to by Linneus differs very widely from this plant.

Native of the South of Europe, and of Barbary, in sandy wet places. Introduced in 1774, by Mons. Richard. It flowers from July to September<sup>2</sup>.

<sup>1</sup> Desfontaines.

<sup>2</sup> Hort. kew.

2. Root perennial, fleshy, branched in tufts. Stems upright, three feet high, simple, leafy. Leaves alternate, embracing, runcinate-lyrate, toothletted, even, glaucous beneath; the lobes acute, that at the end very large and deltoid: the upper ones linear and ciliate. Raceme terminating, solitary, upright, hispid with red stretched-out glandular-viscid hairs. Bractes linear. Calyx hispid, red. Corolla blue-purple, twice as long as the calyx. Anthers red. Seeds compressed. Seed-down rugged, not feathered<sup>1</sup>.

Native of Canada and the European alps. Found on the borders of corn fields about Willington and Howden-Pans in Northumberland<sup>2</sup>.

This has been confounded with the *alpinus* of Linneus, from which it differs widely. The trivial name *canadensis* being improper for a plant common on the alps of Europe, Dr. Smith has judiciously restored that by which it is known in old authors.

3. Mr. Curtis has well distinguished this species from the *arvensis*, in opposition to the opinion of Haller. The root is perennial, fleshy and branched, but not creeping; the whole herb is twice or thrice as large, though the flowers are rather smaller, and generally a little paler; the stem-leaves are longer, and their base is arrow-shaped, terminating in a pair of long narrow divaricating lobes, instead of being heart-shaped, their margin is minutely toothed; the panicle assumes nearly the shape of an umbel or cyme, varying in the number of flowers; the stalks as well as the calyx are rough with dense short black glandular hairs or bristles, in which respect, as well as in the seeds and their down, it much agrees with *S. arvensis*<sup>3</sup>.

Johnson (in Ger. emac.) and Sam. Dale (in Ray hist.) remarked the greater size of this species, with smaller flowers; which induced Ray to consider them as distinct, contrary to the opinion of the Bauhins.

The root, when old, forms a large stool, and throws out numerous stems from four to seven feet in height; the plant from which Mr. Sowerby's drawing is made was seven feet high; Dr. Smith says, from six to eight, Mr. Curtis six feet or more, but that he has seen it ten feet high; he considers it as the tallest of our English herbaceous plants; and remarks that it flowers later by three weeks than the *arvensis*.—Lower stem-leaves very large, upper smaller, embracing, and arrow-shaped at the base, pinnatifid with two or three pairs of lanceolate pinnae, and a very long terminating one, smooth, finely toothed at the margins: the pinnae are variously bent, and the main nerve does not run through the middle, but near the interior edge: uppermost leaves arrow-shaped at the base, lanceolate upwards and acuminate. Bractes awl-shaped. Calyx of numerous strap-shaped unequal scales, hairy, but the hairs not so long as in *arvensis*, though as in that terminated by globules<sup>4</sup>.

Native of Germany, Flanders, France, Italy, Hungary, Denmark and England. Thomas Willisel found it on the banks of the Thames not far from Greenwich. Mr. Curtis says it occurs sparingly in the marshes about Blackwall and Poplar. Mr. Sowerby's specimen was gathered between Greenwich and Woolwich, late in July. Near Stretham-ferry in the isle of Ely, it has not been found for many years. Mr. Ray mentions his having gathered it in Suffex, and near Frankfort on the Mayne, where Clusius also found it.

4. Root perennial, creeping, milky, composed of oblong fleshy branches, which render it very difficult to be extirpated. Stem three or four feet high, upright, little branched, roundish or slightly angular, hollow, leafy, rough with glandular bristly hairs. Leaves alternate, runcinate, sharpish, smooth, shining, fringed with little spinous teeth, paler on the under side; the upper leaves heart-shaped at the base and embracing; the uppermost entire. The larger leaves are notched with triangular teeth, which are again much sharper toothed, the teeth more spinous than in the *palustris*: the upper ones are lanceolate, but not so much acuminate as in that. Panicle somewhat cymose or umbellate, terminating, few-flowered.

<sup>1</sup> Smith brit.

<sup>2</sup> Wallis, 186.

<sup>3</sup> Engl. bot.

<sup>4</sup> Woodw. Mss.



Calyx and peduncles, as well as the upper part of the stem, clothed with spreading brown glandular bristles. Withering says they are pale green (or yellowish,) and are terminated by yellow globules: this is in their young state. Dr. Abbot remarks, that after flowering they are turgid at the base: and Mr. Woodward, that these hairs are more numerous and longer than in *palustris*. Calyx-leaves more pointed than in *palustris*. Flowers very large and conspicuous, of a bright gold-colour, externally reddish; on longer peduncles than those of *palustris*. Each floret has a hairy tube. Seeds ovate, compressed, bay-coloured, both longitudinally and transversely grooved. Seed-down smooth<sup>p</sup>.

Mr. Curtis remarks, that this species is properly termed *arvensis*, being commonly found in corn fields, where its large yellow flowers towering above the corn render it a very conspicuous plant in July and August. Its size, creeping root, and numerous globular hairs on the calyxes and peduncles, sufficiently distinguish this from *S. oleraceus*. Many of the seeds prove abortive; owing probably to its creeping so much at the root. Cows and goats are said to eat this plant, and horses to be very fond of it: The leaves, like those of the common Sow-thistle, applied outwardly by way of cataplasm, have been found serviceable in inflammatory swellings.

5. Native of Jamaica. Sloane considered it as our common smooth Sow-thistle.

6. Root annual, fusiform, whitish, milky. Stem from one to three feet high, upright, branched, especially towards the top, round except near the top where it is somewhat angular, smooth, tender, brittle, hollow, leafy, sometimes purplish. Leaves embracing, smooth, glaucous, runcinate or pinnatifid, with the lobes acute, and more or less toothed or spiny. Peduncles axillary and terminating, forming a sort of cyme, downy with a white and very soft lanugo, which quickly falls off. Calyx before flowering cylindrical and truncate, afterwards bellying out and forming a cone; scales smooth and pointed. Corolla pale yellow. Seed oblong, flattened, angular, grooved, somewhat rugged, notchletted. Seed-down very fine and smooth. Receptacle rugged with little prominent points, and shining<sup>q</sup>.

Gärtner describes the receptacle before it is fully ripe as concave, and having very minute depressed papillæ scattered over it: the seeds obovate, compressed, having three or five longitudinal streaks, and other transverse ones more indistinct and slender; the colour is rusty yellow or cinnamon. Seed-down snow-white, three times as long as the seed.

The common Sow-thistle is subject to vary extremely: among the varieties Haller and others make the *asper* or prickly one a distinct species; and the old botanists formed several others, from the size, breadth and division of the leaves, &c. but these variations are owing merely to soil and situation; even the prickly one may readily be traced into the smooth, in a garden overrun with these plants.

The Sow-thistle seems to have nearly the same properties as Dandelion and Succory, but it is little regarded as a medicine. It is a favourite food with hares and rabbits; and is said to be eaten by goats, sheep and swine, but not to be relished by horses. The young tender leaves are in some countries boiled and eaten as greens: and it is even affirmed that the tender shoots of the smooth variety, boiled in the manner of Spinach, are superior to any greens not in common use.

Common Sow-thistle abounds most in gardens, and is often met with on walls. It is more injurious to the slovenly gardener than the husbandman: and flowers chiefly in July, August, and September<sup>r</sup>.

7. Root annual. Stem very much branched, with scattered, glutinous hairs on it. Pedicels clothed with a white nap. Calyxes cylindrical, with spreading hairs scattered over them. Leaves smooth, tender, pinnatifid, unarmed<sup>s</sup>.

It is thus described more at large by Monf. Desfontaines. Stems procumbent, smooth, striated, brittle; hollow. Leaves smooth, very tender, deeply pinnatifid; pinnules remote, unequal, lanceolate, often irregular, toothed, acute, subanceolate; increasing from the base of the petiole to the top; often bowed and turned back; the lobe of the base much the largest, and embracing; the end one sometimes subhastate. Flowers corymbed. Peduncles leafless. Calyx ovate; clothed at the base with a white nap; leaflets linear, hairy. Flowers yellow, nearly as big as in *S. arvensis*. Seed-down whitish, villose, simple, sessile. Seed small, brownish, even, oblong, smooth.

This plant varies much. The stems have rufous glutinous hairs thinly scattered over them, or are frequently quite smooth. The leaves are sometimes pinnate, sometimes pinnatifid; the segments in some plants are wide, in others almost linear; and in some the uppermost leaves are entire and lanceolate. The very tender pinnatifid leaflets, and the calyx tomentose at the base, distinguish it from the other species.

Native of Italy and the South of France. Found also in Barbary, both in corn fields and on the sea shore, by Monf. Desfontaines. Dr. Smith observed it on the walls of Rome; and remarks, that it flowers perpetually, and is eaten by the common people as a salad<sup>t</sup>. It was cultivated in the Chelsea garden in 1713<sup>u</sup>.

8. This very much resembles the next species, but the corolla has only one row of florets, or are fewer by half than in that, but four times as big. Stem the height of a man. Leaves two feet long, runcinate like those of Dandelion, even above, rugged on the veins beneath. Stem-leaves narrower and sharper. Panicle terminating, with naked peduncles. Corolla like that of Succory. The calyx exudes very small, scattered resinous globules. Seed-down stiped, as in *Lactuca*<sup>v</sup>.

Gouan says that this is very different from *S. alpinus* in the whole of its habit. The root is perennial, woody and branched; whereas in that it is annual. Stem green, very smooth, very finely streaked. Root-leaves and lower stem-leaves runcinate, and like those of *Erysimum Irio*, &c. The other stem-leaves resemble these, but have narrower pinnules, more torn, a wider base, and commonly more sharply toothletted: the uppermost very small, with a wide sheath terminated by a very long entire awl-shaped leaflet. Pedicels naked for the most part, but never covered with scattered strap-shaped bractes; and the leaves from whose axils the peduncles spring are wider, hastate-cordate at the base, not awl-shaped as in *S. alpinus*. Calyxes twice as large and very smooth; the scales larger, and the outer ones at the base cordate, as in *Scorz. picroides*. Corollas blue.—Native of the Pyrenees.

9. Root annual. Stem simple, upright; round; striated, glaucous, the height of a man and upwards. Leaves alternate, irregularly toothed, smooth, glaucous beneath, with the terminating segment scarcely larger than the rest. Raceme compound, leafy, very long, terminating, upright, many-flowered; flowers upright. Peduncles branched, wholly covered with alternate triangular acute smooth bractes. Calyx oblong, bellying at the base, smooth; scales lanceolate, acute, green, pale at the edge. Corolla blue. Seeds contracted, striated. Seed-down simple, sessile, appearing rugged when viewed with a magnifying glass.

This has been much confounded with the second species, from which it is totally different, as appears clearly from comparing the specific differences. Dr. Smith has not seen a specimen of it in any herbarium except in his own, and Leche's now in the possession of Sir Joseph Banks. Linneus found it very common on the side of the Lapland alps in 1732<sup>y</sup>.

The natives eat the stalks raw, like Angelica, stripping off the bark; but Linneus found them too bitter for his palate<sup>z</sup>.

I have given the synonyms from the Flora Laponica, but probably they do not belong to this species.

<sup>p</sup> Smith brit. & engl. bot. Curt. lond. Wither. arr. Woodw. Mfs.

<sup>q</sup> Curt. lond. Smith brit.

<sup>r</sup> Curt. lond.

<sup>s</sup> Linn. spec.

<sup>t</sup> Tour, 2. 296.

<sup>u</sup> Hort. kew.

<sup>v</sup> Linn. spec. & syst.

<sup>w</sup> Smith.

<sup>x</sup> Fl. lapp.



10. Stem shrubby, smooth, milky, upright, scarcely branched, round, thick, gray. Branches alternate, spreading. Leaves sessile, clustered, sinuate-runcinate or repand-sinuate, unequally toothed, acute; very smooth, bright green on both sides, spreading, flat, milky, a foot long and three inches wide. Corymbs terminating, very loose, upright, few-flowered. Peduncles alternate, spreading, many-flowered, somewhat mealy. Pedicels one-flowered, scaly with little scattered linear acute recurved bractes, swelling at the top and hollow. Flowers yellow, two inches wide. Bractes like involucre, lanceolate, acute, waved, sessile, the upper ones gradually smaller. Calyx pitcher-shaped: scales lanceolate, acute, reflex, gibbous at the base, the upper ones gradually larger. Seeds oblong, striated, brownish. Seed-down silky, white. Receptacle flat, honey-combed<sup>a</sup>.

Native of Madeira, where it was found by Mr. Francis Masson, and introduced by him in 1777. It flowers from april to july<sup>b</sup>.

11. Native of Madeira. Introduced in 1777.

12. Native of the Canary islands. Introduced in 1780. It flowers in july. Both these are shrubby, and were found by Masson<sup>c</sup>.

13. Stem annual, four feet high, upright, round, smooth, branched. Leaves sessile. Flowers yellow, terminating, many<sup>d</sup>.

Native of North America; and of China near Canton, according to Loureiro.—Cultivated here in 1713; flowering in july, and biennial<sup>e</sup>.

14. Stem suffruticose, four feet high, simple, upright, round. Leaves somewhat toothletted, smooth. Flowers yellow, in a large spreading panicle. Calyx oblong, ventricose, smooth<sup>f</sup>. Seed-down simple sessile. This as well as the *alpinus* varies with a white flower<sup>g</sup>.

Native of Sweden and Russia,—according to Loureiro, of China also near Canton. Cultivated by Mr. Miller in 1759. It flowers in july and august, and is perennial<sup>h</sup>.

15. Root perennial, creeping. Plant very like the preceding. Stems even, twice as high as in that. Most of the leaves lanceolate, pinatifid-toothed or subruncinate, even, with a white rib; stature of *S. arvensis*. Flowers blue, altogether like those of *S. fibiricus*<sup>i</sup>.

Native of Siberia. Introduced in 1784, by William Pitcairn, M.D.<sup>k</sup>

16. This resembles the *tataricus*, but the root is not at all creeping. Corollas erect, blue. All the pistils in the centre of the flower.—Native place unknown<sup>l</sup>.

17. Stems shrubby, branched, fleshy, roughened with the rudiments of the petioles, as thick as the finger or even the thumb. Leaves scattered, glaucous, very smooth, somewhat fleshy, perennial, running down along the petiole; the teeth of the lobes snow-white at the top. Petioles clustered, flat above, embracing. Flowering branches terminating, dichotomous, striated, smooth. At the base of each peduncle a leafy scale. Flowers in a loose corymb. Peduncles unequal, with a few scales on them, one-flowered. Calyx cylindrical, loosely imbricate, smooth: outer scales wide, ovate, leafy, whitish and shrivelling at the top. Flowers yellow: floscules twice as long as the calyx. Seeds oblong, smooth: seed-down sessile, simple, snow-white, villose. It is a very handsome singular species, and quite distinct.—Native of the mountains of Calsa in Barbary.

18. Root long, fusiform, the thickness of a goose quill or the little finger, putting forth fibres all over. Stem none or short. Leaves somewhat fleshy, pinnate: pinnules remote, unequal, toothed; teeth shrivelled and whitish. Peduncles one or many-flowered, having few scales scattered over them, and shorter than the leaves. Calyx smooth, ovate; the outer scales ovoid, the inner ovate-lanceolate, frequently having a whitish membranaceous point. Corolla

yellow, the size of *S. arvensis*.—Found near Calsa by Desfontaines.

19. Plant glaucous and very smooth. Segments of the root-leaves somewhat remote, acute or obtuse, whitish at the tip; stem-leaves few, narrow-lanceolate, with acute remote teeth. Branches upright, slender, unequal, clothed with small, linear or scaly leaves. Calyx like that of *Lactuca*, smooth, cylindrical, imbricate with whitish lanceolate scales, hoary at the tip. Floscules yellow, twice as long as the calyx. Seed-down simple, white, villose, sessile. Seed small, oblong, brown. It has the appearance of *Hieracium porrifolium*. Boccone's figure represents the segments of the leaves too sharp, and the peduncles too short; the flowers are also ill drawn: but it is certain that it is the same with this, from the specimen in his herbarium at Paris.

Native of sandy fields about ancient Carthage<sup>m</sup>.]

#### PROPAGATION AND CULTURE.

Many of these are weeds and therefore not to be planted in gardens, but extirpated continually, not only in the garden itself, but in all the parts near it; their winged seeds being wafted to a considerable distance.

[The foreign sorts may be propagated by seeds; and those which are shrubby, by cuttings also.]

SONCHUS. See *Andryala*, *Cacalia*, *Conyza*, *Lactuca*, *Lapsana*, *Prenanthes*, *Scorzonera*, *Tragopogon*.

SONGUM. See *Dillenia*.

SONNERATIA. (So named by the younger Linneus, in memory of Mons. Sonnerat, who travelled into New Guinea, the East Indies and China, and communicated many new plants to the botanists in Europe. Voyage à la Nouvelle Guinée. Par. 1776. qu. Voyage aux Indes Orientales & à la Chine. 1774—1781. Par. 1782. qu.)

Lin. gen. Schreb. n. 853. suppl. 38. Juss. 325.

Pagapate. Sonn. nov. Guin. p. 16. t. 10, 11.

Aubletia. Gært. t. 78. Rhizophoræ. Sp. edit. pr.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Hesperideæ*. Myrti, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, flat, six-cleft, permanent: segments ovate.

COR. Petals six, awl-shaped, spreading, inserted into the base of the calyx, and scarcely longer than it.

STAM. Filaments very many, filiform, inserted into the base of the calyx, long. Anthers globular.

PIST. Germ superior, globular. Style filiform. Stigma simple.

PER. Berry placed upon the permanent patulous calyx, subglobular, acuminate, smooth, with a bladdery pulp, many-celled.

SEEDS some in each cell.

OBS. The cells are commonly twenty-six. Sonnerat. twelve or more. Gærtner. *S. apetala* has eight cells, and no corolla.

#### ESSENTIAL CHARACTER.

Cal. six-cleft. Pet. six, lanceolate. Berry many-celled, with several seeds in each cell.

#### SPECIES.

1. *Sonneratia acida*,

Lin. syst. 464. ed. Willd. 999. suppl. 252.

Rhizophora caecularis. Lin. spec. 635. Reich. 2. 414.

Lour. cochinch. 296. ed. Willd. 363.

Aubletia caecularis. Gært. fruct. 1. 379. t. 78. f. 2.

Pagapate. Sonn. it. 16. t. 10, 11.

Mangium caeculare. Rumph. amb. 1. 111. t. 73, 74.

#### DESCRIPTION, &c.

This is a tree. The leaves are opposite, subsessile, oblong, quite entire, like those of *Hypericum*. Flowers terminating, solitary, large. Petals red. Fruit resembling that of *Mesembryanthemum*, with an acid bladdery juice<sup>n</sup>.

Native of the Molucca islands, and the bogs of New Guinea; also of CochinChina, on the banks of rivers.

<sup>m</sup> Desfontaines.

<sup>n</sup> Linn. suppl.

<sup>a</sup> L'Heritier.

<sup>b</sup> Hort. kew.

<sup>c</sup> Idem.

<sup>d</sup> Loureiro.

<sup>e</sup> Hort. kew.

<sup>f</sup> Loureiro.

<sup>g</sup> Linn. spec.

<sup>h</sup> Hort. kew.

<sup>i</sup> Linn. mant.

<sup>k</sup> Hort. kew.

<sup>l</sup> Linn. syst.



Loureiro observed it on the east coast of Africa, of a lower stature, with some of the leaves emarginate, but agreeing with the other in the flower and fruit.

Gærtner describes the berry as superior, globular, flattened a little, terminated by the filiform style, very smooth, glaucous, many-celled: rind very thin, membranaceous, adhering close to the pulp, which is hardish, granular and whitish: cells twelve or more, filled with the pulp and seeds intermingled: partitions thin, not separate from the pulp. Seeds very numerous, of different shapes, having the appearance of fragments of broken teeth, but for the most part irregularly club-shaped, curved, and resembling ivory; they lie in the pulp like pebbles in a pavement.

Another species is figured in Major Symes's account of an Embassy to the kingdom of Ava, under the name of *Sonneratia apetala*. It is thus described in that splendid work, p. 477. The apetalous *Sonneratia* is a most beautiful tree, resembling the weeping Willow, but loftier: the branches are scattered, pendulous, round, and smooth; the smaller branches or twigs opposite, divaricating, subbrachiate, smooth, filiform. Leaves on the twigs few, opposite, ovate-lanceolate, one of the margins more gibbous than the other, quite entire, commonly blunt, without nerves or veins, flat, somewhat fleshy. Petiole linear, depressed, sharp at the edge on each side, short, oblique, smooth. Flowers drooping, greenish, smooth, the size of a nutmeg, axillary, subsolitary; the terminating ones mostly in threes. Peduncles shorter by half than the leaves, pendulous, one-flowered, smooth, whitish, thickened towards the top, jointed, angular. Calyx coriaceous, thick, four-cleft beyond the middle; segments patulous, acute. Corolla none. Nectary a thick membrane, fastened to the bottom of the calyx, with the margin entire, stamiferous, produced beyond the division of the calyx. Filaments erect at the base, but curved in above, the length of the calyx, placed in several rows on the top of the nectary. Anthers small, upright, cordate. Germ turbinate. Style round, longer than the stamens, flexuose. Stigma very large, concavo-convex, resembling a cap. Fruit an orbicular depressed Pome, girt at the base with the spreading calyx, eight-celled, pointed with the permanent style. Seeds very many, angular, nestling in the pulp.

Native of Rangoon in the kingdom of Ava, on wet inundated banks by the coast. Called in the Birman language *Kam-ba-la*.

It is clearly distinguished from that of the Moluccas and CochinChina, by having the calyx divided into four parts only, and in the want of a corolla. In these circumstances it recedes from the generic character. Various are the names of the fruit: in *Systema Vegetabilium* it is a capsule, in Aublet, *Sonnerat*, Jussieu and Gærtner a berry, in Loureiro a drupe, in Symes a pome; it seems to have the best claim to the name of a berry.

SOPEBERRY. See *Sapindus*.

SOPEWORT. See *Saponaria*.

SOPHERA. See *Cassia*.

SOPHIA. See *Sisymbrium*.]

SOPHORA. (Linneus's derivation of the name of this genus will be best given in his own words.—“*Sophora vel Sophera est verbum antiquum plantæ, huic proximæ, impositum, quo utor ad designandum hocce genus quod Sophorum est sive sapientiam et admonitionem fert flaminum filamenta in papilionaceis, si separata inter se sint, vix classē naturali conjungendas esse plantas, si unquam limites classis reperiundi sint.*”

*Hort. Cliff. p. 156.*)

*Lin. gen. n. 508. Reich. n. 551. Schreb. n. 694.*

*Gærtn. t. 149. Juss. 352.*

Class. 10. 1. Decandria Monogynia.

Nat. order of *Papilionacæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, short, bell-shaped, gibbous at the base above: mouth five-toothed, oblique, obtuse.

COR. Papilionaceous, five-petalled. Standard oblong, gradually wider, straight, reflexed at the sides. Wings two, oblong, appendicled at the base, length of the standard. Keel two-petalled, with the petals conform-

able to the wings, the lower margins approximating and boat-shaped.

STAM. Filaments ten, distinct, parallel, awl-shaped, length of the corolla within the keel. Anthers very small, rising.

PIST. Germ oblong, cylindrical. Style size and situation of the stamens. Stigma obtuse.

PER. Legume very long, slender; one-celled, knobbed at the seeds.

SEEDS very many, roundish.

OBS. It agrees in every thing with the plants of the class *Diadelphia*, except in having all the filaments separate.

#### ESSENTIAL CHARACTER.

Cal. five-toothed, gibbous above. Cor. papilionaceous, with the wings of the same length with the standard. Legume.

#### SPECIES.

[1. *Sophora tetraptera*. Wing-podded *Sophora*.

*Ait. kew. 2. 43. Lin. spec. ed. Willd. 2. 499.*

*Job. Miller. ic. t. 1. Curt. magaz. 167. Lamarck illust. t. 325. f. 3.*

Leaves pinnate, leaflets numerous (17—19) lanceolate-oblong somewhat villose, legumes quadrangular-membranaceous, stem arboreous.

2. *Sophora microphylla*. Small-leaved shrubby *Sophora*.

*Ait. kew. 2. 43. Lin. spec. ed. Willd. 2. 499:*

*Lamarck illustr. t. 325. f. 1.*

*S. tetraptera. Lin. suppl. 230. Forst. prodr. n. 183.*

Leaves pinnate, leaflets very numerous (33—41) obovate somewhat villose, legumes quadrangular-membranaceous, stem arboreous.

3. *Sophora flavescens*. Siberian *Sophora*.

*Ait. kew. 2. 43. Lin. spec. ed. Willd. 2. 499.*

Leaves pinnate, leaflets numerous oblong smooth, stem herbaceous.]

4. *Sophora alopecuroides*. Fox-tail *Sophora*.

*Lin. spec. 533. syst. 391. Reich. 2. 241. Willd.*

*2. 499. hort. cliff. 156. Kniph. cent. 10. n. 94.*

*Ervum orientale alopecuroides perenne, fructu longissimo. Tournef. cor. 27. Dill. elth. 136. t. 112. f. 136.*

*Glycyrrhiza filiquis nodosis quasi articulatis. Buxb. cent. 3. 25. t. 46.*

Leaves pinnate, leaflets numerous oblong villose, stem herbaceous.

5. *Sophora tomentosa*. Downy *Sophora*.

*Lin. spec. 533. Reich. 2. 241. Willd. 2. 500.*

*fl. zeyl. n. 163. hort. cliff. 487. (Indigofera.)*

*Gærtn. fruct. 2. 320. Forst. prodr. n. 182.*

*Colutea zeylanica argentea tota. Herm. lugdb. 169. t. 171. Raii hist. 1720.*

Leaves pinnate, leaflets numerous roundish tomentose.

[6. *Sophora occidentalis*. Occidental *Sophora*.

*Lin. spec. 533. syst. 391. Reich. 2. 241. Willd.*

*2. 500. Swartz obs. 154. Trew Ebrt. 27.*

*t. 59. Brown. jam. 289. 1. t. 31. f. 1. (Galega.)*

*Plum. spec. 21. ic. 101. (Corallodendron.) Sloan.*

*jam. 2. 40. t. 107. f. 3. (Arbori coral affinis.)*

Leaves pinnate, leaflets numerous roundish hoary subto-

mentose.

7. *Sophora monosperma*. One-seeded *Sophora*.

*Swartz prodr. 66. descr. 2. 722. Willd. spec. 2.*

*501. Brown. jam. 298. 3. (Glycine.)*

Leaves unequally pinnate, pinnae five-paired, legumes one-seeded. stem arboreous.

8. *Sophora japonica*. Shining-leaved *Sophora*.

*Lin. syst. 391. Reich. 2. 242. Willd. 2. 500:*

*mant. 68. Burm. ind. 93. Thunb. jap. 178.*

*Willd. arb. 364.*

Leaves pinnate, leaflets many ovate smooth, stem ar-

boreous.

9. *Sophora heptaphylla*. Seven-leaved *Sophora*.

*Lin. spec. 533. syst. 391. Reich. 2. 242. Willd.*

*2. 501. mat. med. 110. fl. zeyl. n. 164. Thunb.*

*jap. 178? Planch, ic. 323. Pluk. amalt. t. 451.*

*f. 10? (Fruticulus sinensis.)*

Anticholerica. *Rumph. amb. 4. 60. t. 22.*

Leaves pinnate, leaflets seven smooth.

*Podalirias.*

10. *Sophora capensis*. Vetch-leaved *Sophora*.

*Lin. syst. 391. Reich. 2. 242. mant. 67.*

*S. oroboides.*



- S. oroboides.* Berg. cap. 142.  
*Podalyria capensis.* Lin. spec. ed. Willd. 2. 501.  
 Leaves pinnate, leaflets numerous lanceolate hoary beneath pointed, legumes tomentose, stem shrubby.
11. *Sophora aurea.* Golden-flowered *Sophora*.  
 Ait. kew. 2. 44.  
*Podalyria aurea.* Lin. spec. ed. Willd. 2. 502.  
*Virgilia.* Lamarck illustr. t. 326. f. 1.  
*Robinia subdecandra.* L'Herit. stirp. nov. 1. 157. t. 75.  
 Leaves pinnate, leaflets numerous elliptic sharpish very smooth above almost naked beneath, legumes smooth, stem shrubby.
12. *Sophora argentea.* Silvery-leaved *Sophora*.  
 Pallas in aët. petrop. 1792. p. 373. t. 8.  
*Podalyria argentea.* Lin. spec. ed. Willd. 2. 502.  
 Petioles two-leaved spinose, leaflets silky-tomentose oblong acute at both ends.
13. *Sophora genistoides.* Broom-leaved *Sophora*.  
 Lin. spec. 534. syst. 391. Reich. 2. 242. Thunb. prodr. 79.  
*Podalyria genistoides.* Lin. spec. ed. Willd. 2. 502.  
*Genista africana foliis galii.* Old. afr. 31.  
 β. *S. gallioides.* Berg. cap. 141. Pluk. phyt. t. 413. f. 5.  
 Leaves ternate sessile, leaflets linear mucronate revolute at the edge.
14. *Sophora ternata.* Ternate-leaved *Sophora*.  
 Thunb. prodr. 79.  
*Podalyria ternata.* Lin. spec. ed. Willd. 2. 503.  
 Leaves sessile, leaflets lanceolate silky.
15. *Sophora australis.* Blue *Sophora*.  
 Lin. syst. 391. Reich. 2. 243. mant. 378. Gærtn. fruct. 2. 321. Curt. magaz. t. 509.  
*Podalyria australis.* Lin. spec. ed. Willd. 2. 503.  
 Leaves ternate petioled, leaflets obovate-lanceolate obtuse, stipules lanceolate acute twice as long as the petiole.]
16. *Sophora tinctoria.* Dyer's *Sophora*.  
 Lin. spec. 534. syst. 391. Reich. 2. 243. mant. 377.  
*Podalyria.* Lamarck illustr. t. 327. f. 1.  
*P. tinctoria.* Lin. spec. ed. Willd. 2. 503.  
 Leaves ternate petioled, leaflets roundish-obovate obtuse mucronate, stipules obsolete oblong acute many times shorter than the petiole.
17. *Sophora alba.* White *Sophora*.  
 Lin. syst. 391. Reich. 2. 243.  
*Crotalaria alba.* Lin. spec. 1006. mant. 440. hort. cliff. 499. Mill. dict. n. 11.  
*Podalyria alba.* Lin. spec. ed. Willd. 2. 503.  
*Anonis caroliniana, &c.* Mart. cent. t. 44.  
 Leaves ternate petioled, leaflets oblong obtuse, stipules filiform shorter than the petiole.
- [18. *Sophora lupinoides.* Lupin-leaved *Sophora*.  
 Lin. spec. 534. syst. 391. Reich. 2. 243. amoen. 2. 350. Pallas it. 2. 676.  
*Podalyria lupinoides.* Lin. spec. ed. Willd. 2. 504.  
 Leaves ternate petioled, leaflets elliptic-lanceolate obtuse pubescent, stipules lanceolate longer than the petiole.]
19. *Sophora trifoliata.* Three-leaved *Sophora*.  
 Thunb. prodr. 79.  
*Podalyria trifoliata.* Lin. spec. ed. Willd. 2. 504.  
 Leaves ternate petioled, leaflets ovate silky.
20. *Sophora calyptrata.* Veiled *Sophora*.  
 Retz. obs. 1. 36. Thunb. prodr. 79.  
*S. biflora.* Houttuyn Lin. pfl. syst. 3. 501. t. 24. f. 1.  
*Podalyria calyptrata.* Lin. spec. ed. Willd. 2. 504.  
*Crotalaria fol. simplicibus ovatis villosis, petiolis simplicissimis, ramis teretibus.* Lin. hort. cliff. 357. Seba mus. 2. t. 99. f. 3.  
 Leaves simple elliptic somewhat rugged above, beneath villose and netted-veined, peduncles one-flowered, calyxes villose having a deciduous veil at the base.
21. *Sophora biflora.* Two-flowered *Sophora*.  
 Retz. obs. 1. 36.  
*Podalyria.* Lamarck illustr. t. 327. f. 3.  
*P. biflora.* Lin. spec. ed. Willd. 2. 505.  
 Leaves simple ovate subtomentose, peduncles two-flowered, calyxes thrust in at the base tomentose coloured.]
22. *Sophora myrtillifolia.* Round-leaved *Sophora*.  
 Retz. obs. 1. 36.  
*S. rotundifolia.* Thunb. prodr. 79.

- S. biflora.* Lin. spec. 534. syst. 392. Reich. 2. 244. Ait. kew. 2. 46.  
*S. rotundifolia α.* Berg. cap. 138.  
*Podalyria myrtillifolia.* Lin. spec. ed. Willd. 2. 505.  
*Crotalaria arbor africana styracis folio molli incano.* Pluk. phyt. t. 185. f. 2.  
*C. villosa.* Mill. dict. n. 8: & Dict. nostr. n. 29.  
*Genista arborescens afr. styracis folio.* Herm. lugdb. 270. t. 271.  
*Myrto-Genista Capitis bonæ spei.* Breyn. cent. t. 29?  
 Leaves simple elliptic-obovate obtuse cusped silky on both sides, peduncles one-flowered.
- [23. *Sophora hirsuta.* Hairy *Sophora*.  
 Ait. kew. 2. 46.  
*Podalyria hirsuta.* Lin. spec. ed. Willd. 2. 505.  
 Leaves simple hirsute, the upper ones ovate the lower roundish, branches round, segments of the calyx lanceolate and length of the wings.
24. *Sophora buxifolia.* Box-leaved *Sophora*.  
 Retz. obs. 1. 35.  
*S. pedunculata.* Thunb. prodr. 79.  
*Podalyria.* Lamarck illustr. t. 327. f. 4.  
*P. buxifolia.* Lin. spec. ed. Willd. 2. 505.  
*Genista africana frutescens nummulariæ hirsuto folio, floribus parvis purpureis.* Raii dendr. 105?  
 Leaves simple oval smooth above silky beneath, peduncles one-flowered, calyxes thrust in at the base tomentose coloured.
25. *Sophora cordata.* Heart-leaved *Sophora*.  
 Thunb. prodr. 79.  
 Leaves simple ovate hirsute.

## DESCRIPTIONS, &amp;c.

1. This magnificent tree is a native of New Zealand; where it was found by Sir Joseph Banks, and introduced in 1772. It displays its pendulous branches of large golden flowers in may and june.

2. This is a smooth tree, with small leaves almost wedge-shaped. Flowers large and yellow. Legume compressed, torulose, flat at the back and belly, keeled at the sides with longitudinal membranes, as in *Lotus tetragonolobus*.

Native of New Zealand, where it was found by Sir Joseph Banks, and introduced in 1772. It flowers in may and june.

3. This resembles the next species, but is smooth all over. Leaves unequally pinnate, with the leaflets in six pairs, ovate-lanceolate, bluntish. Calyx indistinctly five-toothed.

Native of Siberia. Introduced in 1785 by Mr. John Bell.

4. Root perennial, creeping, from which arise several erect stalks from three to four feet high. Leaves unequally pinnate. Flowers pale blue and small, in long axillary spikes standing erect close to the stalk.

[Stems striated, the thickness of a reed. Leaves from top to bottom: pairs of leaflets ten or more, deep green above, whitish and silky beneath, hairy not only there but along the edges and above, though less so. The stem puts forth a few branches only towards the top: these have leaves like those of the stem, but much smaller and more hairy. Spike terminating, long, composed of many flowers, neither loosely nor very closely put together, of a whitish herbaceous or pale yellowish colour: calyx divided into five blunt short segments, and of the same colour with the corolla. The flowers rise obliquely or incline gently, but are not pendulous. Germ slender, silky. Legume an inch and half or two inches long. The flowers smell sweet.

Native of the Levant. Cultivated in 1732, by James Sherard, M. D. It flowers in july and august.

5. Stem downy, six or seven feet high. Leaves unequally pinnate, composed of five or six pairs of leaflets. Flowers in short loose axillary spikes, large and yellow, not unlike those of Spanish Broom, void of scent. Pods larger, woolly, five or six inches long, having four or five large swellings, in each of which is a roundish brown seed as big as a pea.

° Hort. kew.  
 ° Willdenow.

° Linn. suppl.  
 ° Hort. kew.  
 ° Hort. kew.

° Hort. kew.  
 ° Dillenius.



[Gartner describes the legume or pod as pedicelled, necklace-form, silky-tomentose, white, many-celled; the cells divided by spongy isthmuses: the valve scarcely open. Seeds separate, four or a few more in the whole, subglobular, attenuated at each end into a short point, and having an oblong excavation at the navel, smooth, of a chestnut-bay or pale red colour.

The whole plant is clothed with a thick white nap. Leaflets about seventeen, ovate and blunt, or roundish. Calyxes tomentose. The plant is sometimes entirely smooth<sup>x</sup>.

Native of Ceylon; and according to Forster, of the Society Isles. Mr. Miller says, of Senegal in Africa, and of the West Indies, particularly Jamaica, where it is called Sea-side Pigeon-Pea; but he probably confounded this with the next species, from which it does not materially differ, in Linneus's opinion.

6. This is a shrub, with a round hoary-pubescent stem, and round spreading subtomentose branches. Leaves on alternate, long, spreading, round, hoary petioles, thickened at the base: leaflets opposite, mostly six-paired with an odd one, entire, flat, hoary, white-tomentose beneath, on short round petioles. Flowers in a sort of spike. Peduncle terminating, erect, a foot long, simple, round, many-flowered: flowers close, biggish, peduncled, yellow. Calyx bluntly five-toothed, with the three lower teeth longer, hoary, pale green. Germ hoary. Legume pedicelled, very long, at first filiform, then swelling out and jointed. Seeds roundish<sup>y</sup>.

The leaves are less tomentose than in the preceding, according to Linneus, who suspects it to be only a variety of that.

Native of the West Indies. In Jamaica, according to Browne, this shrubby plant grows chiefly in the low lands, near the sea, and rises generally to the height of six or seven feet.—Cultivated in 1739, by Mr. Miller<sup>z</sup>. In Jamaica it flowers in may and june.

7. This is a small tree, ten feet high, with a whitish bark, and a hard wood: branches ferruginous tomentose. Leaflets smooth on both sides and rigid. Panicles terminating, branched. Corolla large, blue, smelling sweet. Legume ovate, villose, woody; in which there is only one large spherical scarlet seed with a black spot.

Native of Jamaica and other islands of the West Indies<sup>a</sup>. Browne says he has seen this tree often in Montserrat; that it rises by a moderate trunk, and spreads much towards the top; that the seeds are pretty large, and well marked with a proportioned large spot. He names it the Red-Bead Tree.

8. Branches round, even, purplish. Leaves alternate, unequally pinnate: leaflets subopposite, on very short petioles, oblong, blunt with a point, quite entire, glaucous beneath, smooth, spreading, an inch long. Flowers on paniced racemed branchlets. Legumes somewhat fleshy, single or two-jointed, the joints globular<sup>b</sup>.

The leaves are like those of *Robinia Caragana*; they are scattered, and the leaflets are ovate, thin, even on both sides, from seven to eleven in number; the lower ones a little smaller. Racemes small. Flowers white, of the same size as in Indigo.

Native of Japan<sup>c</sup>. Introduced in 1753, by Mr. James Gordon<sup>d</sup>.

9. The whole plant is smooth. Leaves alternate: leaflets ovate-oblong, petioled, commonly seven, sharpish, remote from each other. Raceme terminating, long, naked. It is about the same-sized plant with *tomentosa*<sup>e</sup>.—Native of the East Indies.

Willdenow, following Lamarck, has divided this genus into two, *Sophora* to which the foregoing, and *Podalyria* to which the following species belong. In the first the calyx corresponds with the generic character, and the pod is moniliform or like a necklace of beads: in the second, the calyx is subbilabiate, and the pod only swelling. The name is given from Podalirius, one of the sons of Æsculapius.—

“ Ασκληπιου δυο παιδε,  
“ Ἰηηρ αγαθω, Ποδαλειριος ηδε Μαχων.” *Hom. Il. 2. 731.*

10. This is a tender pubescent shrub, when more advanced in its wild state naked; having the appearance of *Amorpha*. Leaves alternate, unequally pinnate: leaflets twenty-three, narrow-lanceolate, equal, quite entire, shining above, subtomentose beneath. Raceme terminating, composed of white flowers resembling those of *Crotalaria* and recurved. Filaments interwoven as it were with villose hairs. Legume oblong, compressed, tomentose. Seeds from three to six, very hard<sup>f</sup>.

Native of the Cape of Good Hope. Introduced in 1773, by Mr. Francis Masson<sup>g</sup>.

11. This is a shrub, the height of a man. The root has the smell and taste of Liquorice. Stem upright, round, tubercled, gray: branches alternate, spreading, like the stem. Leaves alternate, unequally pinnate, spreading, eight inches long: petioles round on one side, channelled on the other, pubescent. Leaflets from twelve to fifteen pairs, opposite, on short petioles, those of the outmost longer, quite entire, one-nerved, bright green, paler beneath, spreading very much, flat. Stipules linear, acute, pubescent, brownish, erect, permanent. Racemes axillary, solitary, peduncled, spreading, bracted, pubescent, four or five inches long. Flowers alternate, nodding, yellow, eight or nine lines in length, on round pedicels jointed at the top. Bractes lanceolate, acute, concave, pressed close, one under each pedicel, pubescent, brown. Calyx half-four-cleft, pubescent; segments lanceolate, acute, erect, the upper one twice as wide as the rest and bifid. Germ pedicelled, linear, compressed, villose. Legume oblong, attenuated at the base, acuminate, compressed, having a longitudinal raised line at the lower suture on each side, an inch and half long, and half an inch wide. Seeds few (about three) oblong, subreniform<sup>h</sup>.

Monf. L'Heritier united this plant with the Robinias, though he perceived that it receded from them in several circumstances. Monf. Lamarck named it *Virgilia* from the celebrated Roman poet. Willdenow has joined it to his *Podalyrias*.

Native of Africa. Found by James Bruce, Esq. who gave seeds of it to the Paris garden, where it flowers at the end of summer or the beginning of autumn, and sometimes perfects the fruit<sup>i</sup>. It was introduced at Kew in 1777, by Monf. Thouin, and flowers there in july<sup>k</sup>.

12. This shrub very much resembles *Robinia Halodendron*. The legumes are flat and one-seeded.

Native of Siberia, on sandy hills, in the Songarian desert, by the river Bekun<sup>l</sup>.

13. The keel of the corolla is horned on both sides, as in *Indigofera*<sup>m</sup>.—Native of the Cape of Good Hope. Introduced in 1787, by Mr. Francis Masson. Shrubby<sup>n</sup>.

14. Native of the Cape of Good Hope<sup>o</sup>.

15. Stem herbaceous, most commonly decumbent. Leaves cuneate-oblong, smooth, yellowish green. Stipules ensiform, longer than the shortest petiole<sup>p</sup>. Flowers blue. Legume pedicelled, inflated, swelling next the suture to which the seeds are fixed; on the opposite side, compressed and keeled, papery, dark brown, one-celled. Receptacle fungous, white, ending in various conoid processes, instead of umbilical chords, to which the seeds are fastened in several rows. Seeds numerous, reniform, smooth, dun-coloured. By the calyx and fruit this species has a greater affinity to *Crotalaria* than to *Sophora*<sup>q</sup>.

Native of Carolina. Cultivated in 1758, by Mr. Miller. It flowers in june and july<sup>r</sup>.]

16. Root perennial, from which arise several stalks about a foot and half high, sending out from the bottom a great number of small branches. The flowers come out towards the end of the branches in short spikes; they are yellow and appear in july. The pods are short and swelling, and in warm seasons

<sup>x</sup> Linn. zeyl.

<sup>y</sup> Swartz obs.

<sup>z</sup> Hort. kew.

<sup>a</sup> Swartz descr.

<sup>b</sup> Thunberg.

<sup>c</sup> Linn. mant.

<sup>d</sup> Hort. kew.

<sup>e</sup> Linn. zeyl.

<sup>f</sup> Linn. mant.

<sup>g</sup> Hort. kew.

<sup>h</sup> L'Heritier.

<sup>i</sup> Idem.

<sup>k</sup> Hort. kew.

<sup>l</sup> Willdenow.

<sup>m</sup> Linn. syst.

<sup>n</sup> Hort. kew.

<sup>o</sup> Thunb. prod.

<sup>p</sup> Linn. mant.

<sup>q</sup> Gartner.

<sup>r</sup> Hort. kew.



come to maturity in England. The stalks decay to the root in autumn.

[Stem very much branched. Stipules scarcely any. Leaves on very short petioles, obovate, obtuse, becoming black in drying. Racemes the thickness of a horse hair, few-flowered<sup>a</sup>.

Native of Barbadoes and Virginia.] Mr. Miller says that he received the seeds both from Virginia and Philadelphia, and that formerly a coarse sort of Indigo was made from it in America, before the true plant was introduced there. [He cultivated it before 1759.

17. Stem even, high, dark purple. Leaves like those of *Laburnum*, even, elliptic, smooth on both sides, an inch and half long. Stipules scarcely any. Raceme a foot long, pendulous: flowers white, the size of those of *Laburnum*<sup>a</sup>. Standard shorter than the corolla; filaments quite distinct<sup>a</sup>.]

Root perennial, sending up every spring a number of leaves in proportion to its size: their foot-stalks are smooth, rising two feet high, and dividing upwards into three or five branches. The peduncles spring immediately from the root, and advance rather higher than the leaves; being terminated by a thyrse (raceme) of large flowers, which is near a foot in length. The corolla is either white or deep blue. Pods swelling, black when ripe, having one row of kidney-shaped seeds. It flowers in June, and the seeds ripen in the autumn.

Native of Virginia and Carolina. [Introduced in 1724, by Mr. Mark Catesby<sup>x</sup>.

18. Flowers subsessile, yellow. Stipules ensiform, large<sup>y</sup>. — Native of Kamtschatka. Introduced in 1776, by Hugh Duke of Northumberland<sup>z</sup>.

19. Found by Thunberg at the Cape of Good Hope<sup>a</sup>.

20. Stem shrubby: branches stiff, obscurely angular, leafy, tomentose, subdivided. Leaves scattered, petioled, ovate, the younger ones obovate, twenty-two lines in length, and twelve or thirteen in breadth, quite entire, sometimes having a small reflexed point, above rugged with very short hairs that are scarcely visible, beneath villose but not soft or silky; the rib and veins beneath have an ash-coloured nap. Stipules two, awl-shaped, shorter than the petiole, caducous. Flowers axillary, solitary, on tomentose peduncles shorter than the adjoining leaf, having a single joint near the flower; the rudiment of which is covered with a globular villose veil, fastened to the joint of the peduncle; as the flower increases this veil separates at its base from the joint, and falls off when the flower is about half opened: being villose like the calyx, and of the same colour, this veil is not easily remarked by an inattentive observer, before it begins to separate, and falling off before the flower expands it is seldom found in dried specimens, which are commonly gathered when plants are in full flower. Although this species be named *calyptrata*, yet it is not improbable that the other single-leaved species may have the *calyptra* or veil at the joint of the peduncle. Calyx villose, reflexed, not at all thrust in. Corolla very large, purple.

21. Stem shrubby, round, leafy, even, yellow: branches round, tomentose. Leaves scattered, except on the outmost twigs, where they are sometimes opposite, eleven lines long and six broad, quite entire, acuminate with a reflexed point, smooth; the younger ones tomentose-silky beneath, the youngest on both sides; all grooved above, keeled beneath, and coriaceous: petioles short. Stipule awl-shaped, tomentose, scarcely longer than the petiole, on each side of the petiole. Flowers at the ends of the branches from the last axils of the leaves. Common peduncle the length of the next leaf, and then divided into two one-flowered pedicels, joined by a common articulation; these pedicels become gradually thicker towards the upper part, and have a yellowish nap on them like the peduncle itself. Calyx five-toothed, bell-

shaped, gibbous, thrust in at the base, closely covered with long, curled, reddish-yellow strigæ, whence it appears to be longer than the corolla; which itself is large, and seems to be pale yellow with purple streaks. Germ hispid. Stigma capitate<sup>b</sup>.

This and the preceding are natives of the Cape of Good Hope.

22. Stem shrubby, round, leafy, even: branches almost upright, tomentose, somewhat angular towards their tops. Leaves scattered, on short petioles, ten lines long, and four broad, quite entire, rounded at the end with a reflexed point, grooved above and keeled beneath, coriaceous. On each side of the petiole an awl-shaped tomentose stipule, twice as long as the petiole. Flowers towards the end of the branches from the axils of the leaves, solitary, on peduncles the length of the adjacent leaf, white-tomentose; seldom two-flowered. Calyx bell-shaped, five-toothed, thrust in at the base, of the same colour with the peduncle. Corolla purple, with a paler keel. Germ extremely hispid. Stigma simple, becoming black<sup>c</sup>.

Native of the Cape of Good Hope. Cultivated in 1692 by Bishop Compton, as appears from Plukenet. It flowers from November to January<sup>d</sup>.

23. Native of the Cape of Good Hope, where it was found by Mr. Francis Masson; and introduced in 1774. It flowers in July and August. Shrubby<sup>e</sup>.

24. Stem suffruticose, loose, round, leafy, tomentose: branches short, spreading, more tomentose. Leaves scattered, on very short petioles, six lines long and three wide, quite entire, bluntish, above smooth and grooved, beneath silky-tomentose and keeled, fleshy: the young leaves rufous and shining, especially at the edge and beneath. Stipules two, filiform, intrapetiole, three times as long as the petiole. Flowers from the ends of the branchlets, solitary, on a peduncle the length of the leaf next below, rufous-tomentose. Calyx bell-shaped, five-toothed, thrust in at the base, rufous-hoary on the outside, but white within; segments sharp. Corolla purple with paler wings. Germ extremely hispid. Style terminated by a little head<sup>f</sup>. Native of the Cape of Good Hope.

25. Found at the Cape of Good Hope by Thunberg<sup>g</sup>.

#### PROPAGATION AND CULTURE.

1. 2. The two first species may be raised from seeds, which sometimes ripen in this country. They may also be increased by cuttings and layers. They will bear our climate, if planted against a wall, where they may be covered with mats, to protect them from severe frost.

A finer sight, says Mr. Curtis, can scarcely be imagined than a tree of this sort, extending to a great breadth on a wall with a western aspect, in the Apothecaries garden at Chelsea, where it was planted by Mr. Forsyth about the year 1774, and which at this moment (April 28, 1791) is thickly covered with large pendulous branches of yellow, I had almost said, golden flowers; for they have a peculiar richness, which it is almost impossible to represent in colouring.]

4. This increases fast enough by its creeping root, in the same manner as Liquorice, and being very hardy, may be planted in some corner of the garden, at a distance from other plants, which it will otherwise soon overbear. It will thrive in almost any soil and situation.

5. 6. 7. These must have the protection of a stove; and may be propagated by seeds, when they can be procured from the countries where they grow naturally. Sow the seeds in pots, plunging them in a good hot-bed, and they will appear in a month or six weeks. When fit to remove, transplant them into separate pots, filled with soft loamy earth, and plunge them into the bark-pit; shading them till they have taken new root. They must be kept in the bark-pit, and have little water in winter.

[8. 10. 11. 13. 14. 19. 20 to 25. Require the protection of the dry stove, or a good glass case, and may be increased by cuttings.]

<sup>a</sup> Linn. mant.

<sup>x</sup> Mart. cent.

<sup>c</sup> Idem.

<sup>y</sup> Linn. syst.

<sup>a</sup> Prodr.

<sup>z</sup> Linn. syst.

<sup>z</sup> Hort. kew.

<sup>b</sup> Retzius.

<sup>c</sup> Idem.

<sup>f</sup> Retzius.

<sup>d</sup> Hort. kew.

<sup>e</sup> Prodr.

<sup>e</sup> Idem.



15. 16. 17. May be propagated by seeds sown on a warm border, at the beginning of april, in shallow drills. When the stalks decay in autumn, take the plants up carefully, and set them in a warm border, where they are designed to remain; for they do not bear transplanting well.

Or the seeds may be sown, and the young plants raised in a moderate hot-bed. The first winter they may be placed in a common frame, or covered with mats; and the following spring, turned out of the pots, and planted in the full ground, where if the soil be dry, and the situation sheltered, they will live many years, flowering and producing seeds.

[SORAMIA. See *Mappia*.

SORB TREE. See *Sorbus domestica*.]

SORBUS (of Pliny, &c. a *sorbendo*, quia caro matura sorbetur: the pulp being supped or sucked in.)

Lin. gen. n. 623. Reich. n. 679. Schreb. n. 855. Juss. 335.

Class. 12. 3. Icosandria Trigynia.

Nat. order of Pomaceæ. Rosaceæ, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, concave-spreading, five-cleft, permanent.

COR. Petals five, roundish, concave, inserted into the calyx.

STAM. Filaments twenty, awl-shaped, inserted into the calyx. Anthers roundish.

PIST. Germ inferior. Styles three, filiform, erect. Stigmas headed.

PER. Berry soft, globular, umbilicate.

SEEDS three, somewhat oblong, distinct, cartilaginous.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Petals five. Berry inferior, three-seeded.

#### SPECIES.

1. *Sorbus aucuparia*. Mountain Service. Mountain Ash, Quicken Tree, Roan Tree.

Lin. spec. 683. syst. 465. Reich. 2. 495. Willd. 2. 1008. mat. med. 126. hort. cliff. 188. fl. suec. n. 435. Gron. orient. 151. Hudf. angl. 215. Wither. arr. ed. 3. 460. Engl. bot. t. 337. Lightf. scot. 256. Abbot bedf. n. 364. Fl. dan. t. 1034. Gunn. norv. n. 99. Hoffm. germ. 171. Roth. germ. 1. 213. 2. 544. Pollich pal. n. 473. Neck. gallob. 217. Krock. files. n. 756. Villars dauph. 3. 541. Gmel. fib. 3. 178. Du Roi barbk. 2. 420. Willd. arb. 363. Blackw. t. 173. Plenck, ic. 392. Mill. illustr. Hunter Evel. 218. ed. 1.—211. ed. 2. Dubam. arb. 2. t. 73. Baub. hist. 1. 62. Tournef. inst. 634.

*S. sylvestris*. Camer. epit. 161. Matth. 261. valgr. 1. 238.—foliis domesticæ similis. Baub. pin. 415. Raii hist. 1457. syn. 452.

*S. sylv. f. Fraxinus bubula*. Ger. 1290. emac. 1473.

*S. sylv. alpina*. Lob. ic. 107. obs. 544. 2.

*Mespilus aucuparia*. Scop. carn. n. 593. Allion. pedem. n. 1810. Hall. belv. n. 1091.

*Ornus*. Dod. pempt. 834.—*f. Fraxinus sylvestris*. Park. theat. 1419. 2.

*Pyrus aucuparia*. Gært. fruct. 2. 45. t. 87. Smith brit. 533. Relh. cant. ed. 2. n. 414.

Leaves pinnate smooth on both sides.

[2. *Sorbus hybrida*. Bastard Service or Mountain Ash.

Lin. spec. 684. syst. 465. Reich. 2. 496. Willd. 2. 1008. Lin. fl. fasc. 1. t. 6. Hudf. angl. 216. Wither. arr. ed. 3. 461. Fl. dan. t. 302. Hoffm. germ. 171. Roth. germ. 1. 213. 2. 545. Willd. arb. 366.

*Cratægus fennica*. Lin. suec. n. 433. γ.

*Pyrus hybrida*. Smith brit. 534.

Leaves semipinnate tomentose beneath.]

3. *Sorbus domestica*. True Service or Sorb.

Lin. spec. 684. syst. 465. Reich. 2. 496. Willd. 2. 1009. Hudf. angl. 215. Wither. arr. ed. 3. 460. Hoffm. germ. 171. Roth. germ. 1. 214. 2. 546. Crantz austr. t. 2. f. 3. Jacqu. austr. 5. t. 447. Krock. files. n. 757. Villars dauph. 3. 541. Du Roi barbk. 2. 423. Plenck, ic. 391. Matth. 261. valgr. 1. 237. Camer. epit. 160. Lob. ic. 2. 106.

*Sorbus*. Baub. hist. 1. 59. Ger. emac. 1471. 1. Raii hist. 1456. syn. 452. Dod. pempt. 803. 1.

*S. fativa*. Baub. pin. 415. Edw. av. t. 211. Tournef. inst. 633. Blackw. t. 174.

*S. legitima*. Clus. hist. 1. 10. 3. Park. theat. 1420. 1. Dubam. arb. 1.

*Mespilus domestica*. Allion. pedem. n. 1811.

*M. Sorbus*. Hall. belv. n. 1092.

*Pyrus Sorbus*. Gært. fruct. 2. 45. t. 87.

*P. domestica*. Smith brit. 532. engl. bot. t. 350.

Leaves pinnate villose underneath.

#### DESCRIPTIONS, &c.

1. [The Mountain Ash is an elegant tree, of slow growth; the wood tough and close-grained; not very hard; the bark smooth and gray; the young branches purplish brown. Leaves unequally pinnate: leaflets (five, six, seven or eight pairs,) ferrate except at the base, smooth above, and nearly so beneath, except a few fine scattered hairs; their under side is also glaucous: they are sessile, lanceolate, the middle ones are longest, and the odd one is rather oblong-ovate: the midrib is channelled, and often purple.] Mr. Miller remarks, that the leaves on the young trees in the spring are hoary on their under side, but about midsummer the hoariness goes off, and those upon the older branches have very little at any season. [The flowers are in large, terminating, pubescent corymbs, very much branched. Corollas white, with very concave petals. Germ hairy. Styles three or four. Fruit bright red or scarlet when ripe, nearly round, the size of a large pea, juicy, with an astringency. Seeds three, sometimes four or five<sup>n</sup>. Dr. Smith calls the fruit a pome. Gærtner, who follows Linneus in naming it a berry, says that it has five cells, two or three of which are often abortive; the fertile ones are lined with a very thin papery membrane: in each of these are two germs, which become two oblong seeds, acuminate at both ends, and plano-convex. He reduces it to the genus *Pyrus*; Dr. Smith and Mr. Relhan have followed him. We might thus reduce the genera of some natural orders into one, as Scopoli has done in the *Stellatæ*.

Native of the colder parts of Europe, mount Libanus, Siberia, &c. Woods and hedges on mountainous and boggy situations in the north of England, in Wales, Scotland and Ireland; flowering in may.] In the southern counties it is seldom found of any size, but in the northern counties and in Wales there are trees of very large growth. The leaves make a pretty variety when mixed with other trees in plantations. It is also handsome when in flower, and in the autumn, when in fruit: but the blackbirds and thrushes are so fond of it, that they devour it before it is well ripe.

[In the Scottish highlands, says Mr. Gilpin, the Mountain Ash becomes a considerable tree. There on some rocky mountains covered with dark pines and waving birch, a few of these trees mixing with them have a fine effect. In summer, the light green tint of their foliage; and in autumn the glowing berries, which hang clustering upon them, contrast beautifully with the deeper green of the pines: if they are happily blended, and not in too large a proportion, they add some of the most picturesque furniture with which the sides of those rugged mountains are invested.

In ancient days, when superstition held that place in society, which dissipation and impiety now hold, the Mountain Ash was considered as an object of great veneration. Often at this day, a stump of it is found in some old burying place; or near the circle of a Druid temple, whose rites it formerly invested with its sacred shade<sup>1</sup>.

This tree may to this day, says Mr. Lightfoot, be observed to grow more frequently than any in the neighbourhood of the druidical circles of stones, so often seen in North Britain; and superstitious persons still believe that any small part of it carried about them, will prove a sovereign charm against all the effects of enchantment or witchcraft. The dairy-

<sup>n</sup> Smith brit. & engl. bot. Relh. Abbot.

<sup>1</sup> Forest scenery, 1. 38.



maid will not forget to drive her cattle to the *shealings* or summer pastures with a rod of the Roan-tree, which she carefully lays up over the door of the *sheal-booth* or summer-house, and drives them home again with the same. In Strathspey, they make, on the first of May, a hoop with the wood of this tree, and in the evening and morning cause all the sheep and lambs to pass through it.

In Wales, says Mr. Evelyn, this tree is reputed so sacred, that as there is not a church-yard without one of them planted in it, so on a certain day in the year every body religiously wears a cross made of the wood, and it is reputed to be a preservative against fascinations and evil spirits, whence perhaps we call it *Witchen*; the boughs being stuck about the house, or the wood used for walking staves<sup>k</sup>. It is curious to observe how the same old superstitions have been driven with the ancient inhabitants into the remote corners of our island, so distant from each other as Scotland and Wales.

The wood is tough and close-grained, but not hard. It may be used in mill-work, and converted into tables, chairs, spikes for wheels, shafts, screws for presses, &c. The roots are formed into handles for knives, and spoons<sup>l</sup>. Besides the use of it for husbandmen's tools, goads, &c. the wheelwright commends it for being all heart; and if the tree be large, it will saw into planks, boards and timber. Our fletchers commend it for bows next to Yew; and it is excellent fuel<sup>m</sup>. The berries dried and reduced to powder make wholesome bread; and an ardent spirit may be distilled from them, which has a fine flavour, but is small in quantity. The Scottish highlanders make this use of them, and so do the inhabitants of Kamtschatka, as we are informed by Gmelin. Infused in water, they make an acid liquor somewhat like Perry, which is drank by the poorer people in Wales. In the island of Jura they use the juice of them as an acid for punch. In Germany the fowlers bait springes or nooses of hair suspended in the woods with these berries, to entice the red-wings and field-fares; whence the trivial name of *aucuparia*<sup>n</sup>.

This tree is generally known in the south of England, by the name of *Mountain Ash*, from its growing in high situations, and having pinnate leaves like the Ash; but this name has led ignorant persons to suppose that it has an affinity with the Ash; and even Mr. Gilpin speaks of it as a variety of that tree, whereas it is totally different in every respect except a small similitude in the leaves. Gerarde calls it the wild Ash, Quickbeam or Quicken tree. Evelyn the Quickbeam, Wild Sorb, or Witchen; which is otherwise written Whicken, or Whitten. All these names, except Ash and Sorb, are evidently the same, and are derived from the supposed efficacy of this tree in resisting witchcraft. In Scotland and the north of England it is called *Roan-tree*, and this name is variously spelt *Rowne*, *Roddan* and *Rantry*.

2. This is a middle-sized tree. Leaves lobed in front, pinnate at the base, serrate, without any stipules, smooth above, white-tomentose beneath. Corymbs terminating, tomentose, many-flowered. Flowers white. Styles three, or sometimes two only. Fruit as in the preceding, but a little larger<sup>o</sup>.

Stature and leafing somewhat like that of *Crataegus* or *Pyrus Aria*; but the corymb, flowers and three pistils of *Sorbus aucuparia*<sup>p</sup>.

Linneus considers it as a new tree produced between these two, and making a distinct species. He remarks that the leaves have the same texture as in those of *Aria*, and that the outmost leaflets are confluent<sup>q</sup>.

In the *Flora Suecica* he relates that it was sent him by Kalm, and that it occurs only in Finland. It has since been found in Thuringia; and in Wales, on the walls of Castel Dinas brân in Denbighshire; but Dr. Smith says that a specimen gathered in the latter place was most certainly only the *Aria*. He remarks also that it may be propagated by the seeds, and therefore

cannot properly be considered as a mule. It was introduced in 1779 by Chevalier Thunberg<sup>r</sup>.

3. The true Service is a tree of a middling size, not unlike the Mountain Ash, of very slow growth, not flowering till it arrives at a great age; the wood is very hard. Leaves alternate, composed of from six or seven to nine pairs of opposite, sessile, ovate or oblong, equal leaflets, with a terminating one of the same size; all entire at the base, serrate from about half way to the end, smooth above, downy beneath, but that downiness goes off towards autumn. Flowers in terminating panicles, subcorymbed, tomentose. Petals cream-coloured, concave with hairy claws. Calyx very woolly. Styles always five, with oblique concave stigmas. Fruit pear-shaped, reddish and spotted, extremely austere, and not eatable till it is quite mellowed by frost or time, when it becomes brown and very soft. In the middle are five cells, with one seed in each<sup>s</sup>, as in the Apple and Pear; with which this tree agrees certainly in the fruit, and number of styles; but if general habit has any thing to do in the arrangement of plants, the Service ought not to be united with them.

The fruit is certainly a Pome, Gærtner however, following Linneus and others, calls it a subturbinated Berry, an inch long, variegated with green, yellow and red: it has five cells, two or three of which are often abortive, and the fertile ones are lined with a thin polished papery membrane: in each of these cells there are constantly two germs, but commonly one seed only, biggish for the size of the fruit, lenticular-compressed, rufescent.

According to Krocker, this is distinguished from the first species by its greater height, harder wood, and later flowering, for it does not come into full bearing before it is sixty years old, as Gmelin affirms. The branches are more villose and whitish, the leaves wider, and tomentose at the back; they do not smell unpleasantly: the cymes are smaller; the calyx is woolly, and the segments are very small: the fruit is pear-shaped and much larger, being as big as some pears; it is yellow mixed with red on the outside, and within has five cells, with five seeds: but Crantz says that the seeds are seldom all perfect.]

Mr. Miller informs us that there are several varieties of this fruit, differing from each other in size and shape; some are like Catherine Pears, and nearly as large, others are shaped like Apples; but both arise from seeds of the same tree. The several varieties differ in the number of their seeds, some having three only, others four or five. When it is said therefore that one character of the genus is to have three seeds, it must be understood of the wild tree; but in trees that are cultivated the number of seeds is as uncertain as in Apples and Pears.

In Italy, where the Service tree is very common, they have many varieties obtained from seeds, but I have not observed in the English gardens more than three, and those are very scarce, for the fruit not being esteemed in England, we have very few large Service trees. There was one in the garden of John Tradescant at South Lambeth, near forty feet high, which produced a great quantity of fruit annually, shaped like Pears. Some trees of middling growth in the garden of Henry Marsh, Esq. at Hammersmith, produced fruit of the Apple shape. From these many trees were raised in the nurseries near London, but the fruit is small compared with that of Tradescant.

Great numbers of large Service trees grow wild about Aubigny in France, whence the late Duke of Richmond brought a great quantity of the fruit, and from the seeds raised a considerable number of young plants at Goodwood in Sussex.

The true Service is a native of the warmer parts of Europe, where it becomes a large and lofty tree.—[In England, Ray says it has been observed to grow wild in many places in the mountainous parts of Cornwall, by that ingenious young gentleman Walter

<sup>k</sup> Sylva, c. 15. p. 86. ed. 4.

<sup>l</sup> Withering and Lightfoot.

<sup>m</sup> Linn. syst.

<sup>n</sup> Withering.

<sup>o</sup> Smith brit.

<sup>p</sup> Spec.

<sup>q</sup> Evelyn.

<sup>r</sup> Hort. kew.

<sup>s</sup> Smith brit. & Engl. bot.



Moyle, Esq. in company with Mr. Stevens of that county. It was also found by Mr. Pitts, alderman of Worcester, in a forest of that county; and is said by Dr. Plot, to grow wild in many places of the Morelands in Staffordshire<sup>1</sup>. Lord Valentia has found a solitary tree in the middle of Wire forest near Bewdley, the same probably that was observed by Alderman Pitts<sup>2</sup>. It flowers in may.

The wood is used by the turner in foreign countries. Nash says it is valuable for making mathematical rulers and excisemens gauging-sticks.

The fruit is austere and astringent, like a Medlar, but inferior to it. In the south of Europe it is reputed good in the dysentery and fluxes.]

#### PROPAGATION AND CULTURE.

All these sorts may be propagated by sowing their seeds in pots soon after the fruit is ripe, sheltering them under a common frame in winter, and plunging the pots into a moderate hot-bed in the spring, which will soon bring up the plants; and when they are come up, they should be carefully kept clear from weeds, and in dry weather watered; but they should be exposed to the open air, for the only reason of putting them in a hot-bed is to forward the growth of the seeds; but if, when the plants are come up, the bed is kept covered, it will draw the plants and spoil them. In this bed the plants should remain until the middle of october, at which time the leaves will decay, when there should be a warm light spot of ground prepared to receive them, into which they should be planted in rows two feet asunder, and a foot distant in the rows, observing to take them up carefully, and to plant them as soon as possible, that their roots may not dry.

During the summer, the ground should be kept constantly clear from weeds, and in winter there should be a little mulch laid upon the surface of the ground about their roots, to protect them from being injured by frost; but in the spring the ground between them should be dug, burying the mulch therein, in doing of which you must be careful not to cut or injure the roots of the plants.

In this nursery they may continue three or four years according to their growth, when it will be proper to transplant them out where they are to remain; the best season for which is in october, or in the spring, just before they begin to shoot. The soil should be warm in which they are planted, and the situation defended from cold winds, in which place they will thrive, and produce fruit in a few years.

Those who raise many trees of the true Service from seeds, will procure some varieties of the fruit, from which the best may be selected, and propagated for the table, and the others may be planted for variety in wildernesses or wood-walks, or may be used for stocks to graft the better kinds upon.

There is a sort of this with variegated leaves, which is preserved by such as are curious in collecting the several sorts of striped plants, but there is no great beauty in it; it may be propagated by layers, or by being budded on the plain sort, but they become plain on a very rich soil.

The wild sort should have a moist strong soil, but will grow in the most exposed places, being extremely hardy, which renders them worthy of care, since they will thrive where few other trees will succeed.

[If the fruit be sown in the common ground it will frequently be the second spring before it makes its appearance, as in the Hawthorn. It should therefore be divested of its pulp and preserved in sand.]

Mr. Boutcher recommends, when the seedling plants have stood a year to remove them, and let them stand two seasons more; then cutting away all cross down-right or superfluous roots, to remove them into another nursery, planting them three feet and a half by eighteen inches asunder; there to remain three years, when they will be of proper size to remove where they are to continue.

<sup>1</sup> Ray syn.

<sup>2</sup> Engl. bot.

They may also be raised from layers, but the trees will neither be so handsome nor so straight as those which are raised from seeds.

SORBUS. See *Crataegus*, *Mespilus*, *Pyrus*.

SORGHUM, SORGO, SORGUM. See *Holcus*.]

SORREL. See *Rumex*.

[SORREL TREE. See *Andromeda* and *Rumex*.

SORREL, WOOD. See *Oxalis*.

SOUR GOURD. See *Adansonia*.

SOUROUBEA. See *Russchia*.

SOUR SOP. See *Annona*.]

SOUTHERNWOOD. See *Artemisia*.

[SOUTH-SEA TEA. See *Ilex*.

SOWBANE. See *Chenopodium murale*.]

SOW-BREAD. See *Cyclamen*.

[SOW-THISTLE. See *Sonchus*.

SOYA, SOYE or SOY. See *Dolichos*.

SPANISH BROOM. See *Spartium*.

—— CRESS. See *Vella*.

—— ELM. See *Cordia*.

—— HEDGE-NETTLE. See *Prasium*.

—— POTATOES. See *Convolvulus*.

SPARGANIUM. (*Σπαργάνιον* of *Diocorides*. From *σπαργανον*, fascia, a bandage: from the similitude of the leaves to ribbands.)

Lin. gen. n. 1041. Reich. n. 1132. Schreb. n. 1402.

Tournef. t. 302. Juss. 26. Leers herb. 726.

t. 13. f. 11. Gertn. t. 29.

Class. 21. 3. Monoecia Triandria.

Nat order of *Calamariae*. *Typhae*, Juss.

#### GENERIC CHARACTER.

\* Males numerous collected into a head.

CAL. Ament common roundish, very closely imbricate on all sides, consisting of Proper Perianths that are three-leaved, linear, deciduous.

COR. none.

STAM. Filaments three capillary, longer than the calyx. Anthers oblong.

\* Females, below the males.

CAL. as in the male (six-leaved, G.) Receptacle common roundish.

COR. none.

PIST. Germ ovate, ending in a short awl-shaped Style. Stigm. one or two, acute, channelled, permanent.

PER. Drupe juiceless, turbinate with a point, angular below.

SEED. Nut, bony, oblong-ovate, angular.

OBS. Tournefort remarked, that the seed in some species is one-celled, in others two-celled; but neither Adanson nor Gertner could ever see two seeds or a two-celled drupe.

#### ESSENTIAL CHARACTER.

MALE and FEMALE. Ament roundish. Cal. three-leaved. Cor. none.

FEM. Stigma bifid. Drupe juiceless, one-seeded.

#### SPECIES.

1. *Sparganium ramosum*. Branched Bur-reed.  
Huds. angl. 401. Curt. lond. 5. t. 66. 342. Wither. arr. ed. 3. 112. Smith brit. 961. eng. bot. t. 744. Hull, 203. Lightf. scot. 539. Relb. cant. ed. 2. n. 744. Sibth. oxon. n. 73. Bauh. pin. 15. theat. 228. Park. theat. 1205. 1. Ger. emac. 45. 1. Raii hist. 1311. syn. 437. Petiv. brit. t. 72. f. 9. Mor. hist. f. 8. t. 13. f. 1. ord. 2.  
S. erectum. Lin. spec. 1378. syst. 841. Reich. 4. 95. mant. 494. fl. lapp. n. 345. succ. n. 831. hort. cliff. 439. Gertn. fruct. 1. 75. Abbot bedf. n. 653. Hall. helv. n. 1303. Pollich pal. n. 872. Leers herb. n. 726. t. 13. f. 11. Scop. carn. n. 1146. Villars dauph. 2. 222. Gron. ung. 114. Gmel. fib. 1. 133.

*Sparganium*. Matth. 990. Bauh. hist. 2. 541. 1. Camer. epit. 732. Best. eyf. vern. 7. t. 2. f. 3.

*Platanaria* f. Butomon. Dod. pempt. 601. f. 2.

*Butomos dissecta pannicula*. Bod. in Theoph. 462. f. 1.

*Phlecos foeminea*. Dalech. hist. 1017.

Leaves triangular at the base, their sides concave; common flower-stalk branched; stigma linear.

2. *Sparganium simplex*. Unbranched Bur-reed:

Huds. angl. 401. Curt. lond. 5. t. 67. 341. Wither.

arr. ed. 3. 112. Smith brit. 962. eng. bot. t. 745.



- Hull, 203. *Relb. cant. ed.* 2. n. 745. *Sibth. oxon.* n. 74. *Abbot bedf. n.* 654. *Dicks. hort. succ. fasc.* 6. 7. *Fl. dan. t.* 932.
- S. erectum* β. *Lin. spec.* 1378. *Reich.* 4. 95.
- S. natans.* *Lin. succ. n.* 832. *lapp. n.* 345.
- S. non ramosum.* *Baub. pin.* 15. *Park. theat.* 1206. 2. *Raii hist.* 1311. 1910. *syn.* 437. *Petiv. brit. t.* 72. f. 10. *Mor. hist. f.* 8. t. 13. f. 3.—*f. latifolium.* *Ger.* 41. 2. *emac.* 45. 2.
- S. alterum.* *Baub. hist.* 2. 541. 2.
- Platanaria altera.* *Dod. pempt.* 601. 3.
- Butonum alterum.* *Bod. in Theophr.* 462. f. 2.
- Leaves triangular at the base, their sides flat; common flower-stalk simple, stigma linear.*
3. *Sparganium natans.* *Floating Bur-reed.* *Lin. spec.* 1378. *synt.* 841. *Reich.* 4. 95. *f. succ.* n. 832 β. *Smith brit.* 962. *engl. bot. t.* 273. *Wither. arr. ed.* 3. 112. *Lightf. scot.* 540. *Relb. cant. ed.* 2. n. 746. *Pollich pal. n.* 873. *Fl. dan. t.* 260. *Villars dauph.* 2. 222.
- S. minimum.* *Baub. hist.* 2. 541. *Baub. pin.* 15. *prodr.* 24. *theat.* 232. *Park. theat.* 1205. *Raii hist.* 1312. *syn.* 437. *Petiv. brit. t.* 72. f. 11.
- S. non ramosum minus.* *Dill. giff.* 130. *spec.* 58.
- Leaves drooping flat, heads of flowers in a simple spike, most of them accompanied by leaves, style not longer than the germ.*

## DESCRIPTIONS, &amp;c.

1. Root perennial, creeping. Stem upright, about three feet high, round, leafy, smooth, divided at the top into several alternate slightly flexuose flowering-branches. Root-leaves sword-shaped, erect, smooth, entire; at their base triangular, with their sides concave or channelled, not flat. Stem-leaves merely concave, and sheathing at their base. Heads of flowers alternate, sessile, many-flowered; the lower female, the upper male, more numerous, and closer together. Calyx-leaves spatulate, brownish, shorter than the stamens. Anthers yellowish white. Germ of two cells, one of them generally obliterated and abortive in the fruit. Style short. Stigma long, linear, oblique, downy on one side, for the most part solitary, but sometimes two. The fruit ripens into brown prickly heads of dry deciduous drupes, by which, as well as its spreading roots, the plant increases abundantly<sup>\*</sup>.

Curtis remarks, that the root-leaves are of a deep green colour, almost twice the length of the stem; and that the stem-leaves are about three in number, beside the floral-leaves, which are about four.

The parts of fructification vary much in number, as is usual in monoecious and dioecious plants; one of the many reasons for keeping them in distinct classes from the hermaphrodite ones.

Common in ditches and along the banks of rivers; flowering in July and August<sup>†</sup>. Having a very strong-creeping root, it soon fills up a ditch or pond, if suffered to remain unmolested<sup>‡</sup>: the smaller brooks are soon clogged by it, and it forms dams with other aquatic plants, which arrest the descending soil and make islands or banks of earth. It is common not only in Europe, but in Barbary, Siberia, and North America.

2. This was considered by Linneus as a variety of the preceding; but they were held to be distinct by all the old botanists, Mr. Hudson and after him our other English botanists have followed these, and Mr. Curtis has several important distinctions. This species is seldom found more than one fourth so high as *S. ramosum*, and yet the flowers are larger in proportion. The leaves incline much more to a yellow colour, and instead of being hollow on two sides near the base, they are flat, so that a transverse section forms a triangle with nearly plane sides. Each flower-stalk supports only a single globule of male or female flowers: the lowermost (which support female flowers) vary considerably in length, being sometimes more than an inch in length. Pollich remarks this circumstance, and Mr. Woodward relates that in his specimen, the fruit-stalk of the lowest ball is two inches long, the next one inch, and two above these sessile.—The

flowers before they blow look yellow, and have none of the blackness about them, so conspicuous in those of *ramosum*. In English Botany it is remarked, that the calyx is generally green, or at least of a paler brown than in the former: that the stigma, as in that is long and linear, not short and ovate as in *S. natans*, to which the present species is in other respects perhaps more nearly allied than to *S. ramosum*: and that it has sometimes two stigmas like that.

Unbranched Bur-reed, though by no means so common as the preceding, is not very rare in ponds and ditches. It is found, as Mr. Curtis says, only on particular spots, especially on heaths and commons, in pools of water made by digging gravel. It flowers in July and August. Lightfoot affirms that this is more common in Scotland than the preceding. He does not distinguish them specifically, but conjectures that they are different.

3. Root perennial, creeping, with long fibres, running deep into the muddy bottoms of ditches or flow streams. Stems ascending, round, leafy. Leaves linear, narrow, thin and almost pellucid, flat; sheathing and a little channelled towards the base, but without any degree of keel or midrib; the lowermost long and floating, the rest gradually shorter. Flowers from the bosoms of the upper leaves, in three or four solitary little round heads, improperly called aments by Linneus: the lowest is on a footstalk: the uppermost only, or part of the next, consists of male flowers; the rest are female. Calyx of three whitish leaves. Stamens twice as long. Germ ovate, very smooth. Style simple: stigma oblique, with a fissure on the upper side. The shortness of this seems the best mark of distinction between the *natans* and the two former species. The fruit is a one-seeded drupe<sup>‡</sup>.

Lightfoot remarks, that the stalk is about two feet long; the leaves four, a quarter of an inch wide at the base, one eighth in the middle, and ending in a point; that the female sphærules are commonly three, the two lower ones on peduncles, the uppermost sessile; males also generally three, all sessile; and that when the plant flowers, the stalk is raised above the water three or four inches, the leaves still continuing to float.

Mr. Woodward says, that the flowering-stem is very slender, and does not rise above six inches out of the water, simple with few balls of female flowers, and those not longer than a pea; and that the leaves float on the water to a considerable length. Mr. Hudson considers this as a variety of the preceding. Mr. Curtis remarks with reason, that soil and situation often make a great difference in the appearance of plants; but that does not seem to be the case here.

The *natans* occurs in Cambridgeshire near Sawston moor, on Wilbraham moor, and Burwell fen; near Norwich; in Yorkshire and Westmoreland; Scotland and Wales; flowering in July. It seems to prefer a muddy or clay soil.

SPARGANOPHORUS. See *Ethulia*.

SPARRMANNIA. (So named in memory of Anders or Andrew Sparrman, a Swede, fellow of the academy of sciences at Stockholm. He travelled into China, the Cape of Good Hope, and the Islands of the South Sea. His travels were published at London in 1785, in two volumes quarto: and there are many descriptions of animals and plants by him, in the *Vetensk. Acad. Handling; Philos. Transactions, &c.*)

*Lin. gen. Schreb. n.* 893. *suppl.* 41. *Thunb. nov. gen.* 88. *Juss.* 290.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Columniferae*. *Tiliaceae*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* lanceolate, entire, reflexed, villose.

COR. *Petals* four, equal, wedge-shaped, entire, flat, twice as long as the calyx.

*Nectaries* proper, difform, filiform, torulose, shorter than the stamens: swellings inflated, turbinate.

STAM. *Filaments* very many, inserted into the germ, filiform: outer like the nectaries, but longer, shorter

\* Engl. bot.

† Idem.

‡ Curtis

\* Engl. bot.



however than the corolla. *Antbers* ovate-cordate, placed on the top of the filaments.

**PIST.** *Germ* subglobular, five-cornered, hispid, superior. *Style* filiform, straight, hanging down among, and much longer than the stamens. *Stigma* truncate, terminated by elongated papillæ.

**PER.** *Capsule* five-cornered, five-celled, echinate with straight, rigid, hairy bristles, terminated by a pellucid, straight, pungent spine, larger and more pungent at the corners.

**SEEDS** two, oblong, smooth, keeled on one side.

#### ESSENTIAL CHARACTER.

*Cal.* four-leaved. *Cor.* of four reflexed petals. *Nect.* several, torulose. *Caps.* angular, five-celled, echinate.

#### SPECIES.

##### 1. *Sparrmannia africana*.

*Lin. spec. ed. Willd.* 2. 1160. *syft.* 492. *suppl.* 265.

*Thunb. nov. gen.* 5. 89. *Retz. obs.* 5. 25. n. 65.

t. 3. *Curt. magaz.* t. 516.

#### DESCRIPTION, &c.

This beautiful shrub grows to the height of six feet or more, and is thickly divided into alternate branches, finely clothed with large cordate and lobed pendulous leaves upon erect footstalks, making a very handsome appearance even in foliage, in which state it much resembles a *Sida*; its fine umbels of flowers are produced plentifully along the young branches, opposite to the leaves, in the same manner as in the common species of *Pelargonium*, which it resembles much in its inflorescence, the flowers nodding before they are expanded, and becoming erect as they approach maturity. The petals, which are of a snowy white, remain but a short time open, being soon reflected with the calyx: this is white like the petals, but covered, as is the whole plant except the petals, with fine hairs. The singular nectaries surround the filaments, which they so nearly resemble, that a superficial observer might easily confound them; they are very numerous, shorter than the purple filaments, of a yellow colour, and torulose or knobbed at the upper part: they have no anthers, but purple tips not unlike them. The whole plant abounds with a tasteless mucilage<sup>b</sup>.

The herb resembles the *Triumfetta*, and still more the *Commerſonia*; it has the peduncle and inflorescence of the *Geraniums*, with the fruit of *Hibiscus*, but prickly as in *Geum*, so that it is as it were composed of several different genera<sup>c</sup>.

The description in the *Supplementum Plantarum* of the younger Linneus, is in most respects very accurate, but the petals and nectaries are said to be yellow, which may be a mistake arising from having described from a dried specimen<sup>d</sup>.

The synonym, country, and observation in Retzius, belong to *Lagerstroemia*<sup>e</sup>.

This shrub is native of Africa, near the Cape of Good Hope, in Essebosch and Houtniquas woods, and the sides of the mountains at Lange Kloof, where it was found by the celebrated traveller whose name it bears.

It has been introduced at Kew since the catalogue was printed; and has flowered there, and at Messrs. Whitley's nursery at Old Brompton.

#### PROPAGATION AND CULTURE.

It may be readily increased by cuttings, if treated in the same manner as some of the more tender *Pelargoniums*<sup>f</sup>.

**SPARROW-WORT.** See *Passerina*.

**SPARTEUM.** See *Borbonia*.]

**SPARTIUM.** (*Σπαρτίον* of *Dioscorides*: *frutex ex cujus ramulis spartei funes contextuntur.*)

*Lin. gen.* n. 858. *Reich.* n. 929. *Schreb.* n. 1166.

*Gartn. t.* 153. *Genista. Tournef. t.* 411. *Juss.* 353.

*Class.* 17. 4. *Diadelphia Decandria*.

*Nat. order* of *Papilionaceæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leaved, cordate-tubular: at the upper edge very short, below towards the tip marked with five toothlets, coloured, small.

<sup>b</sup> Curtis. <sup>c</sup> Linn. suppl. <sup>d</sup> Curtis.

<sup>e</sup> Willdenow. <sup>f</sup> Curtis.

**COR.** papilionaceous, five-celled. *Standard* obcordate, the whole reflexed, very large. *Wings* ovate, oblong; shorter than the standard, annexed to the filaments: *Keel* two-petalled, lanceolate, oblong, longer than the wings, (the carinal margin connected by hairs,) inserted into the filaments.

**STAM.** *Filaments* ten, connate, adhering to the germ, unequal, gradually longer: the uppermost very short: the lower nine-cleft. *Antbers* oblongish.

**PIST.** *Germ* oblong, hirsute. *Style* awl-shaped, rising: *Stigma* growing to the upper side of the top, oblong, villose.

**PER.** *Legume* cylindric, long, obtuse, one-celled, two-valved.

**SEEDS** many, globe-kidney form.

#### ESSENTIAL CHARACTER.

*Cal.* produced downwards. *Filam.* adhering to the germ. *Stigma* longitudinal, villose above.

#### SPECIES.

##### [1. *Spartium contaminatum*. *Narrow-leaved Broom*.

*Lin. syft.* 643. *Reich.* 3. 400. *mant.* 268.

*Genista africana frutescens*, foliis linearibus angustioribus glaucis, flore luteo. *Raii dendr.* 104. n. 30.

*Branches* round, leaves alternate filiform stained at the base.

##### 2. *Spartium sepiarium*. *Hedge Broom*.

*Lin. spec.* 995. *syft.* 643. *Reich.* 3. 400. *amoen.* 6.

*af.* 27. *Berg. cap.* 196. *Pet. gaz.* t. 83. f. 3.

*Raii dendr.* 105. n. 33. (*Genista*.) *Pluk. mant.* t. 424. f. 1.

*Branches* rugged, upper leaves clustered filiform.]

##### 3. *Spartium junceum*. *Spanish Broom*.

*Lin. spec.* 995. *Reich.* 3. 401. *hort. ups.* 208.

*Gron. orient.* n. 211. *Ger. prov.* 480. 1. *Villars*

*dauph.* 3. 418. *Allion. pedem.* n. 1258. *Affo*

*aragon.* n. 657. *Medic. in obs. soc. æcon. Lutr.*

1774. p. 276. *Kniph. cent.* 1. n. 83. *Regnault.*

*bot. Curt. magaz.* t. 85.

*S. arborecens*, seminibus lenti similibus. *Baub. pin.* 396.

*S. macrolobium*. *Renealm. spec.* 34. t. 33.

*S. hispanicum frutex vulgare*. *Park. theat.* 231. f. 12.

*S. dioscorideum narbonense & hispanicum*. *Lob. ic.* 91.

*Genista juncea*. *Baub. hist.* 1. 395. *Tournef. inst.* 543.

*Dubam. arb.* 1. 257. t. 103. *Scop. carn.* n. 870.

*G. hispanica*. *Ger.* 1131. *emac.* 1313. f. 3. *Raii hist.* 1726.

*Branches* opposite round flowering at the top, leaves lanceolate.

##### 4. *Spartium monospermum*. *White-flowered single-seeded Broom*.

*Lin. spec.* 995. *syft.* 643. *Reich.* 3. 401. *hort. cliff.*

335. *Sauv. monsp.* 60. *Of. it.* 37. *Desfont.*

*atlant.* 130. *Affo aragon.* n. 658. *Vahl symb.* 1.

51. *Ait. kew.* 3. 10.

*Spartium*. *Camer. epit.* 949. f. 2.

*S. tertium flore albo*. *Baub. pin.* 396. *Tournef. inst.* 645.

*S. hispanicum* 3. *Clus. hist.* 103.

*S. hisp. flore candido*. *Baub. hist.* 1. 398. *Raii hist.* 1727.

*S. hisp. majus flore albo*. *Park. theat.* 232. f. 14.

*S. 2 flore albo Clusii*. *Lob. ic.* 2. 92.

*S. 5 hisp. 2 Clusii*. *Tabern. ic.* 1107.

*S. aliud hisp.* *Dalech. hist.* 165.

*S. frutex minus*. *Dod. pempt.* 764.

*Pseudo-Spartium album aphyllum*. *Ger.* 1137. 3. *emac.* 1318. 2.

*Genista Rætam*. *Forsk. descr.* 214. n. 66.

*Branches* round striated, racemes few-flowered, flowers subaggregate, leaves lanceolate silky.

##### [5. *Spartium sphærocarpum*. *Yellow-flowered single-seeded Broom*.

*Lin. syft.* 643. *Reich.* 3. 401. *mant.* 571. *Desfont.*

*atlant.* 129. *Ait. kew.* 3. 11.

*Spartium*. *Camer. epit.* 949. 1.

*S. alterum monospermum femine reni simili*. *Baub. pin.* 396. *Tournef. inst.* 645.

*S. 2. hispanicum*. *Clus. hist.* 102.

*S. hisp. alt. flore luteo*. *Lob. ic.* 2. 91. *Dalech. hist.*

170. *Baub. hist.* 1. 397. *Raii hist.* 1726. 2.



- S. hisp. 4. *Tabern. ic.* 1107.  
 S. frutex majus. *Dod. pempt.* 764.  
 S. hisp. minus monospermum flore luteo. *Park. theat.* 232. n. 13. 231. f. 13.  
 S. hisp. alterum. *Dodart. ic.*  
 Pseudo-Spartium hisp. aphyllum. *Ger.* 1137. 2. *emac.* 1318. 1.  
 Uposphærolobion. *Renealm. spec.* 33.  
 Branches round striated, racemes many-flowered, flowers remote, leaves lanceolate sessile pubescent beneath.]  
 5. Spartium purgans. *Purging Broom.*  
*Lin. syst.* 643. *Reich.* 3. 402. *Gouan monsp.* 474.  
*Ger. prov.* 480. 3. *Allion. pedem. n.* 1259. *Affo arag. n.* 659. *Thunb. jap.* 278.  
 Genista purgans. *Lin. spec.* 999. *Mill. dict. n.* 4.  
 G. f. Spartium purgans. *Baub. hist.* 1. 404. *Raii hist.* 1727. *Tournef. inst.* 644.  
 Branches round striated, leaves lanceolate subsessile pubescent.  
 [7. Spartium aphyllum. *Leafless Broom.*  
*Lin. syst.* 644. *suppl.* 320. *Pallas it.* 3. 742. t. V. f. 3.  
 Branches round striated smooth rod-like, leaves very short linear propped.  
 8. Spartium virgatum. *Twiggy Broom.*  
*Ait. kew.* 3. 11. *L'Herit. stirp. nov.* 183.  
 Cytisus tener. *Jacqu. collect.* 1. 40.  
 Branches round striated, leaves lanceolate-oblong silky, calyxes funnel-form two-lipped rough-haired, standard and keel pubescent.  
 9. Spartium decumbens. *Trailing Broom.*  
*Ait. kew.* 3. 11. *Hall. belv. n.* 355. *Durande bourg.* 1. 299.  
 Genista pedunculata. *L'Herit. stirp. nov.* 184. t. 89.  
 Stem decumbent branched, leaves solitary ovate flowers on long peduncles.  
 10. Spartium Scorpius. *Scorpion Broom.*  
*Lin. spec.* 995. *Reich.* 3. 402. *Gouan monsp.* 355.  
*Ger. prov.* 480. 2. *Villars dauph.* 3. 418.  
*Desfont. atlant.* 134.  
 Genista-spartium spinosum majus, flore luteo. *Baub. pin.* 394. *Tournef. inst.* 645.  
 Genista-spartium spinosum majus. *Lob. ic.* 2. 94.  
 Genista spinosa minor. *Ger.* 1138. *emac.* 1319. 2.  
 Aspalathus alter tertius hirsutus. *Park. theat.* 999. n. 3.  
 A. secunda monspeliensis. *Baub. hist.* 1. 402. *Raii hist.* 1729.  
 A. alter 3. *Clus. hist.* 106.  
 Branches spiny spreading, leaves ovate.  
 11. Spartium aspalatoides.  
*Desfont. atlant.* 136. *Poiret itin.* 2. 209. *Lamarck dict.* 2. 220.  
 Branchlets bowed smooth tubercled flower-bearing, leaves linear-lanceolate, flowers axillary pedicelled, calyx three-parted, corollas silky.  
 12. Spartium multiflorum. *Portugal white Broom.*  
*Ait. kew.* 3. 11. *L'Herit. stirp. nov.* 183. t. 87.  
 S. album. *Desfont. atlant.* 132.  
 Genista alba. *Lamarck dict.* 2. 623.  
 Leaves ternate and simple silky, shoots strict striated flowering on every side.]  
 13. Spartium angulatum. *Angular-branched Broom.*  
*Lin. spec.* 996. *Reich.* 3. 402.  
 S. orientale siliqua compressa glabra & annulata. *Tournef. cor.* 44.  
 Leaves ternate and solitary, branches hexangular flowering at the end.  
 14. Spartium scoparium. *Common Broom.*  
*Lin. spec.* 996. *syst.* 644. *Reich.* 3. 403. *hort. cliff.* 356. *f. suec. n.* 633. *Huds. angl.* 310. *Wither. arr. ed.* 3. 623. *Hull.* 158. *Smith brit.* 753. *Curt. lond.* 5. t. 52. *Lightf. scot.* 382. *Relb. cant. ed.* 2. n. 578. *Sibth. oxon. n.* 611. *Abbot bedf. n.* 504. *Woodv. med. bot.* 243. t. 89. *Fl. dan. t.* 313. *Hall. belv. n.* 354. *Pollich pal. n.* 665. *Leers herb. n.* 522. *Neck. gallob.* 302. *Krock. files. n.* 1146. *Villars dauph.* 3. 419. *Allion. pedem. n.* 1260. *Affo arag. n.* 660. *Du Roi barbk.* 2. 425. *Knorr. del.* 2. t. S.  
 Cytiso-genista scoparia vulgaris, flore luteo. *Tournef. inst.* 649. *Dubam. arb.* 1. t. 84.

- Genista. *Dod. pempt.* 761. 1. *Camer. epit.* 950.  
*Fuchs. hist.* 218. *Ger.* 1130. 1. *emac.* 1311. 1.  
*Riv. tetr. t.* 63. f. 1. *Blackw. t.* 244.  
 G. angulosa & scoparia. *Baub. pin.* 395.  
 G. vulgaris f. scoparia. *Park. theat.* 228. 1. 229. f. 1.  
 G. angulosa trifolia. *Baub. hist.* 1. 388. 3. *Raii hist.* 1723. *syn.* 474.  
 Leaves ternate and solitary, branches unarmed angular—flowers axillary solitary, legumes ciliate.  
 [15. Spartium umbellatum. *Umbelled Broom.*  
*Desfont. atlant.* 133. t. 180. *L'Herit. stirp.* 183.  
 Leaves ternate and simple, branches very numerous opposite and alternate, flowers in terminating heads, corollas and legumes silky.  
 16. Spartium ferox. *Fierce Broom.*  
*Desfont. atlant.* 136. t. 182. *Poiret itin.* 2. 206. *Shaw afr. n.* 194.  
 S. heterophyllum. *L'Herit. stirp. nov.* 183.  
 Leaves ternate and simple mucronate, flowers in terminating racemes, branches striated spinescent, legumes compressed somewhat torulose elongated hoary with a very short lanugo.  
 17. Spartium horridum. *Rough Broom.*  
*Vahl symb.* 1. 51.  
 S. aphyllon fruticosum, junceis aculeis, lanatis capitulis. *Lob. adv.* 409.  
 Genista-spartium minus faxatile, aculeis horridum. *Tournef. inst.* 645.  
 Leaves ternate complicate silky, branchlets round spiny opposite.  
 18. Spartium patens. *Woolly-podded Broom.*  
*Lin. syst.* 644. *Reich.* 3. 402. *L'Herit. stirp. nov.* 183. t. 86. *Krock. files. n.* 1147. *Mill. fig.* 92. t. 138. *sec. L'Herit.*  
 Cytisus patens. *Lin. syst.* 666. *Reich.* 3. 482.  
 C. pendulinus. *Lin. syst.* 667. *suppl.* 328.  
 C. lusitanicus, medicæ folio, floribus in foliorum alis. *Tournef. inst.* 648.  
 Leaves ternate, branches rod-like, flowers lateral in pairs drooping.  
 19. Spartium arboreum.  
*Desfont. atlant.* 131. t. 177. *Shaw afr. n.* 191. (Cytisus.)  
 Leaves ternate obovate, branches striated, flowers aggregate axillary nodding, legumes villose with the hairs pressed close.  
 20. Spartium biflorum. *Two-flowered Broom.*  
*Desfont. atlant.* 133. t. 179.  
 Unarmed, branchlets angular, leaves petioled ternate linear subvillose, flowers in pairs terminating, legumes smooth.  
 21. Spartium linifolium. *Flax-leaved Broom.*  
*Desfont. atlant.* 134. t. 181.  
 Genista linifolia. *Lin. spec.* 997. & *Dict. nostr. n.* 3.  
 G. tinctoria hispanica. *Clus. hist.* 101. *Baub. hist.* 1. 392. *Tabern. ic.* 1101. *Raii hist.* 1725.  
 Unarmed, branches angular, leaves sessile ternate, leaflets linear hoary beneath, flowers in terminating racemes.  
 22. Spartium sericeum. *Silky Broom.*  
*Ait. kew.* 3. 12.  
 Unarmed silky, leaves ternate, leaflets linear, racemes terminating, branches angular.  
 23. Spartium cytiloides. *Cytisus-leaved Broom.*  
*Lin. syst.* 644. *suppl.* 320. *Berg. cap.* 199. *Ait. kew.* 3. 12. *L'Herit. stirp. nov.* 183.  
 Unarmed silky, leaves ternate, leaflets lanceolate bluntish, racemes terminating, branches round.  
 24. Spartium nubigenum. *Clusterflowered Broom.*  
*Ait. kew.* 3. 13. *L'Herit. stirp.* 183.  
 S. supra-nullum. *Lin. syst.* 644. *suppl.* 319.  
 Leaves ternate lanceolate hairy petioled, flowers in lateral bundles, legumes smooth, branches round striated.]  
 25. Spartium radiatum. *Starry Broom.*  
*Lin. spec.* 996. *syst.* 644. *Reich.* 3. 404. *Mill. fig.* 173. t. 259.  
 S. æquicolum minimum montanum triphyllum. *Col. ecphr.* 1. 295. t. 294.  
 Genista radiata. *Scop. carn. n.* 871.—f. stellaris. *Baub. hist.* 1. 399. *Raii hist.* 1727. 5.  
 Leaves ternate linear sessile, petioles permanent, branches opposite angular.  
 26. Spartium



26. *Spartium spinosum*. *Prickly Broom*.*Lin. spec.* 997. *Reich.* 3. 404. *hort. cliff.* 356.*upf.* 208. *Sauv. monsp.* 191. *Gron. orient.* 212.*Desfont. atlant.* 135.*Cytisus spinosus*. *Tournef. inst.* 648. *Shaw afr.**n.* 196.—*Acacia dictus*. *Raii hist.* 1723.*Acacia trifoliata*. *Baub. pin.* 392.*A. altera trifolia*. *Ger.**A. alt. Dioscoridis*. *Lob. ic.* 2. 95. *Dod. pempt.* 753.*Tabern. ic.* 1089. *Dalech. hist.* 162. *Park. theat.*999. *f.* 4.*Aspalathus secunda trifolia*, quæ *Acacia secunda* Matthiolo. *Baub. hist.* 1. 375.*Leaves ternate, branches angular spiny.*[27. *Spartium villosum*.*Vahl symb.* 2. 80. *Poiret itin.* 2. 207.*S. lanigerum*. *Desfont. atlant.* 135.*Cytisus spinosus creticus*, *siliqua villis densissimis longissimis & incanis obducta*. *Tournef. cor.* 44.*Leaves ternate, branches spiny, calyxes and legumes villose.*

## DESCRIPTIONS, &amp;c.

1. Stem shrubby, rod-like, branched at the base, round, even. Leaves alternate not scattered, remote, flattened above, purple at the base, with a subserruginous patulous tip, erect, a finger's length. Raceme long, erect, terminating, with the flowers alternate, of a tawny colour with a yellow keel. It differs from the next species in having the tenth stamen not distinct: the leaves not clustered, but scattered and four times narrower; the purple colour at their base is a very evident mark of this species.—Native of the Cape of Good Hope, in the sands<sup>z</sup>. Introduced in 1787, by Mr. Francis Masson<sup>h</sup>.

2. Branches rugged with the fallen leaves. Leaves very closely clustered, a finger's length. Racemes terminating. Flowers yellow.—Native of the Cape of Good Hope<sup>1</sup>.]

3. Branches smooth, flexible, eight or ten feet high: the lower ones have small smooth leaves, at the end of the shoots of the same year, the flowers are disposed in a loose spike, they are large, yellow, have a strong agreeable odour, appear in July, and in cool seasons continue in succession to September. Pods compressed, about three inches long, ripening in autumn.

[The leaves have two stipules at the base; Gerard says that they are apparent with the lower leaves only, that they spread out before flowering time, and when the flowers are fully open, fall off<sup>k</sup>.

[The bees are fond of the flowers; and the same qualities which are attributed to the common Broom belong also to this, perhaps in an inferior degree, at least as it is found in our gardens. In Languedoc they make a thread of it, and it is there used as a green food for sheep.

Spanish Broom is native of all the southern countries of Europe, Spain, Portugal, Italy, Sicily, Carniola, and the South of France: Rauwolf observed it in Judea, about Joppa and Rama.—It appears from Turner's herbal (2. 144.) that it was cultivated here in 1562, by Lord Cobham.

There is a variety of it with double flowers<sup>l</sup>, which is very unusual in this natural order.] Miller mentions another variety, which is smaller and has narrower leaves, smaller and paler flowers, appearing later than the common sort. It was introduced from Portugal; [but being inferior to the other, does not appear to be worth cultivating.]

4. This has a thick stalk, covered with a rugged bark when old; it rises eight or nine feet high, sending out many slender rush-like branches of a silvery colour, almost taper, which terminate in very slender bending ends; these have a few narrow spear-shaped leaves on the lower branches. The flowers are produced in very short spikes or clusters on the side of the branches; they are small and white. Pods large ovate, containing one kidney-shaped seed.

[Stem upright, very much branched, as thick as the thumb, and sometimes as the arm. Branches round,

upright, slightly striated, slender, smooth, bundled, leafless. On the younger twigs are a few small lanceolate silky leaves. Flowers very numerous, disposed in short distinct little racemes along the branches; sometimes they are aggregate, or even solitary: each of them is on a very short pedicel. Calyx small, pitcher-shaped, often tinged with purple, smooth, three-toothed; teeth ovate, almost equal. Corolla white, villose with very short hairs. Legume smooth, roundish, a little inflated, hooked, pulpy within; containing one brown smooth shining roundish seed, nearly as big as a garden pea. It is a very handsome shrub, remarkable for its numerous snow-white flowers<sup>m</sup>.

Native of Spain and Portugal. Clusius observed it about Cadiz near the coast, flowering in February: Affo in Aragon abundantly. Osbeck remarks that it grows like willow-bushes along the shore of Spain, as far as the flying sands reach, where scarcely any other plant grows except the *Ononis repens*, or creeping Restharrow. The use of this shrub is very great in stopping the sand. The leaves and young branches are delicious food for goats. It converts the most barren spot into a fine odoriferous garden by its flowers, which continue a long time. It serves to shelter hogs and goats against the scorching heat of the sun. The twigs are used for tying bundles; and all kinds of herbs that are brought to market are fastened together with them<sup>n</sup>. Forskahl found it in Arabia; and Desfontaines in Barbary, on the sandy coast. The Spaniards call it *Retamas*, from the arabic name *Ratam*. It was introduced here in 1690, by Mr. Bentick, and flowers in June and July<sup>o</sup>.

5. Stem upright. Branches numerous, slender, round, smooth, slightly striated, having a few tubercles scattered over them, below leafless. Leaves on the younger branchlets, small, lanceolate, deciduous, silky with very short hairs pressed close. Flowers small, racemed, each on a very short pedicel. Calyx small, pubescent, two-lipped, the lower lip longer, five-toothed, the three lower teeth very small. Corolla yellow, small, silky: standard almost upright, roundish, entire, shorter than the keel; wings lanceolate, obtuse, shorter than the keel, which is somewhat bowed, obtuse, two-leaved. Legume roundish, slightly bent in on one side, yellowish, smooth, containing one (sometimes but seldom) two seeds<sup>p</sup>.

Native of the South of Europe; and of Barbary, near Mayane.—Introduced in 1778, by Monf. Thouin. It flowers in June and July<sup>q</sup>.]

6. Stalks striated, taper, four feet high, sending out several branches terminated by spines. Flowers in terminating spikes, large and pale yellow.

[Stems rushy, straight, very much branched. Branches unarmed, divided into others, which are frequent and irregular, green, striated, almost naked, withering at the end, truncate. Stipules at the base of the branches, shaped like the nail, blunt, mortified at the tip, at the smaller branches wandering: the lower ones leafless. The leaves together with the flowers come out from the summits of the branches; they are sessile, ovate-lanceolate, unequal, silky, more shining beneath, shorter than the flowers. Flowers solitary, on peduncles coming out from the side of the leaves. Calyx two-lipped, short, almost equal: upper lip retuse; lower entire: petals almost equal; standard cordate-roundish, wide; wings oblong, with linear oblique claws, appendicled at the base towards the standard; keel a little longer than the standard, not bending down. All the filaments united. Stigma hooked. Legume oblong, compressed, villose<sup>r</sup>: according to Linneus, ovate, pendulous, sinuate on one side.

Native of the South of France, the county of Nice, Aragon, and Japan. Cultivated by Mr. Miller in 1768.

7. With its branches and their ramifications into very simple filiform attenuated flowering branchlets,

<sup>z</sup> Desfontaines.<sup>h</sup> Hort. kew.<sup>l</sup> Voyage, vol. 1. p. 42. engl. ed.<sup>o</sup> Desfontaines.<sup>q</sup> Hort. kew.<sup>r</sup> Gerard prov.<sup>z</sup> Linn. mant.<sup>h</sup> Hort. kew.<sup>l</sup> Linn. amoen.<sup>k</sup> Fl. prov.<sup>1</sup> Hort. kew.



this species resembles *S. junceum*. There are no leaves except a single small one, which is linear, at each division of the branchlet, soon withering away, and rather resembling a stipule. Bractes to each flower, small, awl-shaped. Flowers small, pedicelled, forming a raceme on the side of the branchlets. Corolla violet. Legumes short, compressed, hoary, two-seeded.—Found by Pallas, in the driving sand of the Wolga desert<sup>1</sup>.

8. This is a shrub about three feet high, with a trunk of about a finger's thickness, dividing into numerous branches, which are somewhat villose and spreading: the leaves are simple, lanceolate, either obtuse or slightly pointed, green above and pale beneath: they are scarcely more than half an inch in length: the flowers are yellow and sweet-scented; standing on short footstalks in a kind of racemes at the tips of the branches: the pods are upright and covered with a whitish hairy down<sup>2</sup>.

Native of the island of Madeira: where it was found by Mr. Francis Maffon; and introduced in 1777. It flowers from march to june<sup>3</sup>.

9. Stems angular, branched. Leaves not hard, longer than ovate leaves, wider on this side the end, obtuse, hirsute, not all silky, solitary even the lowest. Peduncles an inch long. Flowers smaller by half than in the common Broom, and less placed on one side. Calyx two-lipped, the upper segment two-toothed; the teeth triangular, acute, curved a little; the lower three-toothed. Standard veined, yellow, large, emarginate; the wings also are wide, oval, with the hook more apparent; beak of the keel curved, and much more acute than in the common Broom.

Found in Burgundy, and in that part of Switzerland which borders on it as at Roulier and Chaux de Fonds<sup>4</sup>. Introduced into England by the doctors Pitcairn and Fothergill. It flowers here in may and june<sup>5</sup>.

10. The whole shrub is covered with alternate spines, on which the flowers are placed<sup>6</sup>. This renders it quite inaccessible. The branches and leaves are striated and ash-coloured, and the latter are a little villose. The flowers are yellow and rather large. The legumes are villose, flattened, and a little curved. The calyx is small, and has five divisions<sup>7</sup>.

Native of the South of Europe, and of Barbary. Cultivated by Parkinson in 1640. It flowers in march and april<sup>8</sup>.

11. This is a very branching shrub. Branchlets smooth, striated, slender, tubercled, frequently bowed, becoming thorny, flower-bearing. Leaves small, narrow-lanceolate, silky with very short hairs pressed close. The older branches are leafless. Flowers numerous, solitary or in pairs, on pedicels furnished with little bractes. Calyx small, silky, the three segments lanceolate, the lowest longer and trifid. Corolla pale yellow, size the same as in *Genista tinctoria*: standard obovate, the length of the keel; wings linear, obtuse, a little shorter; keel somewhat bowed, obtuse.—Native of Barbary, on the hills near La Calle<sup>9</sup>.

12. This shrub is very much branched. The branches or flowering-twigs are erect, slender, streaked or furrowed, hoary in the furrows. Leaves ovate, oblong-ovate and lanceolate, petioled and sessile, silvery-tomentose or silky with hairs pressed close: there is a knot of two or three leaves or more to each flower. Flowers in long lateral racemes, mostly pointing one way, and so numerous that the shrub seems wholly covered with them: they are each solitary, or at most two together, and pedicelled. Calyx so small as to be scarce visibly toothed. Standard of the corolla erect not reflex, involute, beautifully marked with purple lines radiating from the base; the wings also have sometimes a few of these purple lines; the rest of the corolla is white; the wings are involute, bellying in the middle, but meeting at the tips, to the full as long as the standard, and longer than the keel, but being curved meet it at the tip: keel seeming to be

of one piece unless examined carefully, the two parts not being separable without some difficulty. The filament closely invests the nascent legume after the flower is past. Legume very hairy, about an inch long, pointed; containing two or three seeds, sometimes only one.

The above description was made from the live shrub in full flower on the 19th of may 1791.

Desfontaines remarks, that the lower leaves are ternate, the upper simple, obovate or linear-lanceolate; the calyx small, truncate, silky, two-lobed, the lobes blunt; the corolla white, a little smaller than in *S. monospermum*, the standard elliptic and quite entire, the wings ovate-lanceolate, obtuse, a little longer than the keel, which is somewhat bowed, compressed and two-leaved; the filaments are united below into a half-ten-cleft column; anthers saffron-coloured; style filiform, bowed, acute; germ pubescent; legume compressed, oblong, very villose.

Native of Portugal and mount Atlas.—Introduced about 1770, by Mr. James Gordon<sup>10</sup>.]

13. Stalks and branches slender, having a few trifoliate and single leaves towards the bottom. The branches have six angles or furrows; [or as Linneus expresses it, three angles run down along the branches from each leaf; and hence his trivial name.] Flowers small, of a pale yellow colour, produced in loose spikes at the ends of the branches. They rarely produce seeds in England.

Native of the Levant. [Cultivated by Mr. Miller in 1759.

14. The common Broom grows from three to six feet high or more, very much branched; the branches upright, rushy, evergreen, angular, flexible, leafy, smooth except the very young ones which are downy. Leaves ternate, small, ovate, acute, downy and edged with soft hairs bending inwards; the leaf-stalks are also slightly hairy, and flattened. Flowers axillary, solitary or two together, rarely three, nodding, on round smooth peduncles, furnished on each side with a very minute stipule. Calyx somewhat bell-shaped, two-lipped, gaping, even, often purple, faintly toothed, the extremities of the lips withered and brown. Corolla large, handsome, of a fine gold colour, sometimes tinged with orange or tawny on the outside, and less frequently wholly lemon-coloured: standard nearly round, slightly notched at the end, very large, reflexed; wings the length of the keel, somewhat oval, on short claws; keel large and deep with a blunt beak, composed of two petals, which are rather hooked, and united at the lower edge by an intertexture of very fine soft woolly hairs. Stamens four long and six short, all united at the base into a tube: anthers oblong, saffron-coloured. Germ villose. Style bent almost into a circle, and after flowering into a spiral, near the tip hollowed below. Stigma terminating, very small, and forming a little head. Dr. Withering remarks, that the very end of the style, which one should be inclined to regard as the stigma, is not hairy. Legume compressed, brown or blackish, edged with long soft hairs<sup>11</sup>. Seeds sometimes as many as eighteen or twenty, small, of an oblong elliptic form, compressed, glossy, dingy yellow, beaked above the navel with a short point: the navel is defended by a white two-lobed or cordate gland, which falls off after it is fully ripe. This umbilical wart or gland is wanting in the seeds of the Spanish Broom (*S. junceum*), at least Gærtner's specimens had it not<sup>12</sup>.

Native of Europe, in dry sandy soils; flowering in may and june.

The common Broom merits a place among our flowering shrubs, especially the variety with a purple calyx, and the flowers strongly tinged with orange. There is another variety much more hoary than usual. But even in its common state, such is the profusion of golden-coloured blossoms with which its branches are loaded in summer, and such the verdure of its twigs in winter, that it may vie with most of the foreign Brooms, and is superior to some of them as

<sup>1</sup> Linn. suppl.

<sup>2</sup> Jacquin.

<sup>3</sup> Hort. kew.

<sup>4</sup> Haller.

<sup>5</sup> Hort. kew.

<sup>6</sup> Linn. spec.

<sup>7</sup> Villars.

<sup>8</sup> Hort. kew.

<sup>9</sup> Desfontaines.

<sup>10</sup> Hort. kew.

<sup>11</sup> Curtis, Smith, Withering.

<sup>12</sup> Gærtner, Curtis.



an ornamental shrub. It claims some attention also as an useful plant in rural œconomy and medicine.

It is used for besoms, and from their common name of brooms, one may suppose that this plant was first in use for the purpose of sweeping. In the northern parts of Great-Britain it serves for thatching cottages, corn and hay-ricks, and as a substitute for reeds in making fences or screens. In some parts of Scotland, where coals and wood are scarce, it is said whole fields are sown with it for fuel.

Bees are fond of the flowers: the flower-buds, just before they become yellow, are pickled in the manner of capers: the branches are said to be capable of tanning leather, and of being manufactured into coarse cloth; when tender, they are mixed with hops in brewing: the old wood furnishes the cabinet-maker with the most beautiful material for vaneering.

The twigs, when bruised, smell disagreeably, which perhaps may be one reason why our Broom is generally rejected by cattle<sup>c</sup>: but they have also a nauseous bitter taste.

Thomson alludes to the fondness which kine show for broom-fields, which they frequent much during the summer heat, probably for the sake of brushing off the swarms of flies with its tough yielding branches.

The tops and leaves of Broom are commended for their purgative and diuretic qualities. Dr. Mead relates the case of a dropsical patient who was cured by taking half a pint of a decoction of green Broom tops, with a spoonful of whole Mustard seed, every morning and evening. The patient had been tapped three times, and had tried the usual remedies before. An infusion of the seeds, drank freely, has been known to produce similar happy effects: but whoever expects these effects to follow in every dropsical case will be greatly deceived. I knew this medicine succeed, says Dr. Withering, in one case that was truly deplorable; but out of a great number of cases, in which it had a fair trial, this proved a single instance. Dr. Cullen ordered half an ounce of fresh Broom tops to be boiled in a pound of water, till one half was consumed; and gave two table spoonfuls of the decoction every hour, till it operated by stool, or till the whole was taken. It seldom failed to operate both by stool and urine; and by repeating the medicine every day, or every second day, some dropsies have been cured.

The plant when burnt affords a tolerably pure alkaline salt; and upon this salt the efficacy of the ashes of Broom in dropsies must depend. They were used principally on the authority of Sydenham; whose account of their good effects have been since confirmed by Dr. Monro and other writers<sup>d</sup>. The same qualities are attributed to *Spartium junceum* and *Genista tinctoria*, probably with equal reason.

15. Branches very numerous, round, slender, smooth, upright, clustered, striated, with a few tubercles on them. Leaves on the younger branchlets silky, linear or linear-lanceolate, acute, villose with hairs pressed close. Flowers in terminating heads, sessile. Calyx silky, subbilobed, five-toothed: teeth acute, two upper, three lower. Corolla yellow, silky on the outside: standard as long as the keel, obovate, entire, with a very short claw: wings shorter than the keel, which is slightly bowed. Legume compressed, linear, acuminate, covered closely with hoary short hairs. Seeds from three to five, small, compressed, somewhat kidney-shaped.

Native of Barbary, on dry hills near Arzeau, on the sea coast.

16. Stem upright, with numerous striated branches, and stout long striated flowering spines. Leaves smooth or very shortly villose, mucronate; the upper ones simple, lanceolate and obovate, on very short petioles; the lower ternate and obovate. Flowers numerous, solitary, axillary, on short pedicels, disposed in loose racemes. Rachis pubescent. Calyx three-parted, with acute segments, the lower one a little longer and trifid. Corolla yellow, the same size as in *Genista spinosa*, and smooth. Germ silvery. Legume bowed a little, compressed, acuminate, torulose, hoary with

close and very short hairs pressed close, containing from eight to ten seeds.—Native of Barbary; near La Calle<sup>e</sup>.

17. This is a low shrub, a foot high, very much branched, diffused, rigid, rough with spines. Branches trichotomous, many times divided, marked with six lines, smooth, widening towards the top: branchlets above often five from the same joint, round, awl-shaped, spiny, rigid, yellowish at the end. Leaves petioled, opposite: the three leaflets are sessile, linear, complicate, silky, equal. Petiole the length of the leaves, with a spinulose stipule growing to it at the base on each side. Flowers from the top of the middle branchlet, solitary or in pairs, subsessile. Bractes four, cordate-acuminate, villose, dry, at the base of the flowers. Calyx dry, two-lipped, villose, shorter than the pod: upper lip three-toothed, teeth acuminate; lower with two teeth. Corolla yellow. Legume hirsute, hoary, four-seeded.

Found by Vahl on mount Uruel, by Jacca, a city of Aragon<sup>k</sup>.

18. Branches spreading, striated. Leaves small: leaflets obovate, almost equal, somewhat pubescent beneath. Flowers large, tumid, very deep yellow, with a tawny or orange spot at the back of the standard. Seed hirsute<sup>l</sup>.

This shrub appears three times in the *Systema Vegetabilium*: and the same synonym from Tournefort is given in Reichard's edition and the *Supplementum Plantarum* to all three. In the latter work it is said that the branches are dry at the ends; the buds hoary; the flowers sometimes three together, on one-flowered peduncles, shorter than the flowers; calyx smooth; corolla yellow; legumes hairy, compressed.

Monf. L'Heritier refers the *Genista* figured in Miller's plates, t. 138. to this species. He describes it as growing to the height of six or seven feet, sending out many slender pliant branches, so as to form a large spreading head: these branches being fully furnished with flowers in every part, the shrub makes a fine appearance during their continuance. He adds that the branches are generally three-cornered, spread and turn downward; that the leaves are sometimes single, and those that terminate the branches end in three points; that the flowers come out singly from the axils on short pedicels; that the calyx is short and cut into five parts, and the corolla yellow; that it flowers at the end of april and beginning of may, and the seeds ripen in july; that it is a native of Portugal, and he has several times received the seeds from thence.

All are agreed that this species is a native of that country. According to the Kew catalogue, it was introduced about 1764, by Mr. James Gordon.

Mr. Miller has three sorts in his Dictionary (n. n. 5, 6, 7.) with ternate leaves and unarmed branches, from Spain and Portugal; which he names *lusitanicum*, *hirsutum* and *glabrum*. They have not been adopted by other authors, and may perhaps belong to this species.

19. Trunk often as thick as the human arm. Branches numerous, unarmed, deeply striated, frequently leafless at the top. Leaves petioled: leaflets smooth or scarcely villose with very short hairs. Flowers numerous, aggregate and sometimes solitary, on filiform pedicels. Calyx small, pitcher-shaped, two-lobed, with very small teeth, two upper and three lower. Corolla deep yellow, shining, a little inflated, the same size as in *S. scoparium*: standard obcordate, the length of the wings and keel; wings large, elliptic, obliquely truncate, clawed; keel rounded at the top, bowed. Filaments bowed, united at the base into a column, five shorter. Style curved in. Legume flat, linear, many-seeded, black when ripe, silky-villose with short silvery hairs. It is allied to *S. patens*, and is perhaps a variety of it: but the legume is almost twice as long, and villose with much shorter hairs, pressed close.—Native of mount Atlas and in the vallies near Algiers.

20. This is an unarmed shrub, with erect striated branches, the younger ones angular. Flowers subsessile

<sup>c</sup> Curtis.

<sup>d</sup> Withering, Woodville.

<sup>e</sup> Desfontaines.

<sup>k</sup> Vahl.

<sup>l</sup> Linn. syst.



at the ends of the branches, generally two together, seldom one or three. Calyx two-lobed, pitcher-shaped, villose, membranaceous, five-toothed, two of the teeth superior. Corolla almost the size of those of common Broom, yellow, shining, smooth, somewhat inflated: standard obovate, quite entire, scarcely exceeding the wings and keel; wings lanceolate-linear, obtuse; keel boat-shaped, obtuse. Filaments united below. Style bowed. Stigma obtuse. Legume smooth, compressed, hooked, many-seeded.—Native of Mount Atlas near Tlemcen.

21. This is an upright shrub, the younger branches of which are striated, pubescent, clustered, and tubercled. Leaves numerous scattered in clusters: leaflets narrower below, silvery-silky beneath, reflexed at the edge. Pedicels one-flowered. Calyx silky, deeply three-parted: segments lanceolate, acute, the lower one longer and trifid. Corolla yellow, the size of *Genista tinctoria*, villose with close-pressed hairs: standard depressed, obovate, a little longer than the keel, with the margin reflexed upwards; wings elliptic, obtuse, equalling the keel, which is slightly bowed. Legume linear, flat, hirsute, many-seeded. It is an elegant shrub, flowering early in spring, and is a native of the mountains of Algiers<sup>m</sup>.

22. Native of the Cape of Good Hope, where it was found by Mr. Francis Masson, and introduced in 1774. It flowers in April<sup>n</sup>.

23. This is a silky shrub. Leaves alternate, petioled; leaflets linear, villose<sup>o</sup>. Native of the Cape of Good Hope. Introduced in 1774, by Masson. It flowers in April<sup>n</sup>.

24. At first sight this exactly resembles *S. junceum*, but the leaves are ternate, and the branches grooved; the ends of the branches are often leafless. Leaves small. Peduncles from the axils of the leaves, several, heaped, one-flowered. Flowers white, smelling very sweet, small. Legumes compressed, smooth, becoming black in drying. It is a valuable shrub on account of the abundance of its fragrant white flowers<sup>a</sup>.

Native of the Pic of Teneriffe, where it was found by Masson, and introduced in 1779<sup>r</sup>.

25. Stems low, with opposite four-cornered branches. Leaves opposite, subsessile: leaflets sessile, thin, subpubescent. Petioles extremely short, but permanent, three-cornered, gibbous, very blunt, thicker than the branchlet to be supported. Flowers terminating, in threes, sessile. Bracte acute, deciduous<sup>o</sup>.]

In its natural state this is a low shrub: when cultivated it becomes much larger, though rarely exceeding two feet and a half in height, but the branches spread very much and form a large bush; they are angular and pliable, and always come out by pairs opposite. Leaves narrow and awl-shaped, placed round the stalk, spreading out like the points of a star, whence John Bauhin's name, which Linneus has adopted. Flowers in small spikes at the end of the branches; bright yellow, but not more than half the size of *S. junceum*, and without scent. Pods short and hairy, containing two or three small seeds. It flowers in June and the seeds ripen in August.

Native of Italy upon the mountains: [also of Carniola.—Cultivated by Mr. Miller in 1758<sup>t</sup>.

26. Branches dense, divaricating, smooth, striated, having stout, striated, diverging spines, ending in a very sharp prickles. Leaves petioled: leaflets obovate, smooth, very shortly mucronate, or having no point, a little longer than the petiole. Flowers numerous, pedicelled, axillary, solitary and aggregate. Calyx small, membranaceous, with five indistinct teeth. Corolla yellow, smooth, only half the size of the common Broom: standard obovate, quite entire, the length of the wings and keel; wings lanceolate, obtuse; keel two-petalled, slightly bowed, obtuse. Filaments united. Style inflexed. Legume compressed, linear, smooth, containing two or four seeds<sup>u</sup>.]

Stalks five or six feet high, sending out many flexible branches, armed with long spines; flowers termi-

nating in clusters, each upon a long pedicel; corolla bright yellow, appearing in June; pods short, woody, with a thick border on their upper edge, and containing three or four seeds.

Native of Italy and Spain near the sea coast; [also of the South of France, Mount Libanus, and about Algiers.—Cultivated in 1640 by Parkinson<sup>s</sup>.

27. This resembles the preceding very much, and is distinguished from it by its thick legume, covered with a very close wool<sup>r</sup>.

Vahl is inclined to think it no more than a variety of the *spinosum*, with which it agrees in every thing, except in the woolly shagginess of the calyx and legume. He gathered it in Barbary and about Naples. Desfontaines also found it in Barbary.

Jussieu and Lamarck have united *Spartium* and *Genista* into one genus, perhaps not without reason. They seem to form one natural genus, and there are scarcely sufficient artificial characters to distinguish them.

The Brooms are ornamental, flexible, deciduous Shrubs, of middling growth, with long rush-like shoots, few leaves, and numerous flowers. Some of them (10. 11. 16. 17. 26. 27.) are armed with spines; the rest are unarmed. They may be divided into three parcels from the leaves; which in the eleven first species are simple, in the five next (12 to 16) simple and ternate, and in the remainder ternate only. The predominating colour of the flowers is yellow; but in n. 7. they are violet-blue, and in 4. 12. and 24. white. The greater part are natives of the South of Europe, particularly Spain and Portugal, in arid sterile soils: 3 to 6. 9. 10. 12. 14. 17. 18. 25. 26. 27. Many of these, and some others, are natives of Barbary: 4. 5. 10. 11. 12. 15. 16. 19. 20. 21. 26. 27.—13 and 26 are found in the Levant; 8 in Madeira; 24 in Teneriffe; 1. 2. 22. 23. at the Cape of Good Hope; and 7 in Siberia.]

#### PROPAGATION AND CULTURE.

3. Spanish Broom is easily propagated by seeds, sown in the spring, upon a bed of common earth, in a shady situation, where the plants will rise very freely; they must be kept clear from weeds the following summer, and in autumn they may be taken up, and transplanted into a nursery, which should be chosen in a warm sheltered situation. N. 7. 9. 10. 12. 18. may be raised and treated in the same manner.

4. Sow the seeds about the middle of April upon a bed of fresh light earth, in drills half an inch deep; the drills not less than a foot asunder, and the seeds three inches apart. Remove them at Michaelmas, for if suffered to stand longer, they shoot downright roots very deep, and if these be cut or broken, when they are grown large, the plants frequently miscarry.

If the season should not be favourable, defer the sowing, for the seeds are subject to perish in the ground by cold or wet. The best rule is to sow them at the same time with Kidney-beans.

At Michaelmas some of the plants may be potted, to be sheltered in winter, and the rest may be planted in a warm situation and on a dry soil; where, if the winter should not prove severe, they will stand very well. If some of the plants are left in the seed-bed, they may be sheltered with mats in severe frost, and some mulch laid about their roots.

The above directions will serve for n. 5. 6. 8. 11. 13. 15. 16. 17. 19. 20. 21. 26. 27.

25. Sow the seeds in autumn in a bed of common earth in rows. The following autumn remove the plants from the seed-bed to the places where they are to remain, or into a nursery for a year or two to get strength; but they will not bear transplanting when they are large.

[1. 2. 22. 23. with 8. and 24. are inhabitants of the dry stove. Several also of the above in the second class, require the protection of a greenhouse in severe weather.

SPARTIUM. See *Anthyllis*, *Aspalathus*, *Ebenus*, *Genista*, *Pterocarpus*, *Securidaca*.

<sup>m</sup> Desfontaines.

<sup>n</sup> Hort. kew.

<sup>o</sup> Linn. syst. & Berg.

<sup>r</sup> Hort. kew.

<sup>s</sup> Linn. suppl.

<sup>t</sup> Hort. kew.

<sup>u</sup> Linn. spec.

<sup>v</sup> Hort. kew.

<sup>w</sup> Desfontaines.

<sup>x</sup> Hort. kew.

<sup>y</sup> Desfontaines.



# S P E

SPARTIUM africanum. See *Borbonia* and *Polygala*.  
 — capense. See *Crotalaria* and *Liparia*.  
 — complicatum. See *Cytisus divaricatus*.  
 — sopheroides. See *Crotalaria*.

SPARTUM. See *Dactylis*, *Lygeum*, *Nardus*, *Stipa*.

SPATHE. See *Spathelia*.

SPATHELIA. (Altered by Linneus from the Spathe of Browne.)

Lin. gen. n. 373. Reich. n. 403. Schreb. n. 506.

Gertn. t. 58. Juss. 371. Spathe. Browne.

Class. 5. 3. Pentandria Trigynia.

Nat. order of Bicornes. Terebintaceæ, Juss.

## GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong, coloured.

COR. Petals five, oblong, equal.

STAM. Filaments five, awl-shaped, ascending, marked with a tooth at the base. Anthers ovate.

PIST. Germ ovate, shorter than the stamens. Styles three. Stigmas simple.

PER. Capsule oblong, three-cornered, three-winged, three-celled: cells accompanied by a lateral resiniferous canal.

SEEDS solitary, oblong, three-sided.

## ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Caps. three-cornered, three-celled. Seeds solitary.

## SPECIES.

1. *Spathelia simplex*. Rhus-leaved *Spathelia*.

Lin. spec. 386. Reich. 1. 738. Willd. 1. 1496.

Brown. jam. 187. (Spathe.) Sloan. jam. 2. 28.

t. 171. Raii. dendr. 94. (Aceri aut Paliuro affinis, &c.)

## DESCRIPTION, &c.

This tree rises by a single slender stem, like the Palms, and bears all its oval leaves in a pinnated order, on moderate ribs disposed closely together about the top, from the centre of which the flower-spike rises; this is very spreading, and generally shoots so as to appear a large blooming pyramid many feet above the foliage. The trunk is seldom divided, but is so very like what we have already described under this English appellation, (Maiden Plumb-tree, *Comacdia*, p. 124.) both in size and appearance, that I could never distinguish them when out of flower; nor do I yet know which is the true timber tree. This would make a most beautiful flowering shrub, for it seldom rises above fourteen or sixteen feet, and its flowering top is generally from four to six feet in height. It is frequent in the rocky hills above the ferry, and makes a most beautiful appearance in the woods when in bloom.

Gærtner describes the fruit as a juiceless drupe, ovate-three-sided, smooth, bay-coloured: rind membranaceous-fungous, widening out into rigid brittle wings: shell three-celled, stony, ovate-acuminate, peduncled with a long rigid bristle, rounded three-cornered; the corners and cells accompanied by a roundish appendicle, prominent above into a dagger point, internally channelled and abounding in a resinous fluid. Seeds in each cell one, subcylindric, acuminate at both ends, on the side towards the resiniferous channel, slightly marked with a groove, of a red-rusty colour, cohering with the outer side of the cells. On the same tree are other fruits, compressed like a lens, having two wings only, and two-celled, but in the rest of their structure resembling the others.

Native of Jamaica. Introduced in 1778, by William Wright, M. D.

*Spathium chinense*, Lour. is *Aponogeton monostachyon*, Lin.

SPATHULA. See *Iris fetidissima*.

SPATLING POPPY. See *Cucubalus*.

SPEARAGE. See *Asparagus*.

SPEAR, KING'S. See *Asphodelus*.

SPEARMINT. See *Mentha*.

SPEARWORT. See *Ranunculus*.

SPECULUM VENERIS. See *Campanula* and *Ruellia*.

SPEEDWELL. See *Veronica*.

SPelta and SPelt. See *Triticum*.

SPERAGE. See *Asparagus*.

# S P E

SPERGULA. (Dimin. a spargendo; from its throwing the seed about.)

Lin. gen. n. 586. Reich. n. 638. Schreb. n. 798.

Dill. gen. 7. Juss. 301. Gertn. t. 130.

Class. 10. 4. Decandria Pentagynia.

Nat. order of Caryophyllei.

## GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, obtuse, concave, spreading, permanent.

COR. Petals five, ovate, concave, spreading, bigger than the calyx, undivided.

STAM. Filaments ten, awl-shaped, shorter than the corolla. Anthers roundish.

PIST. Germ ovate. Styles five, from erect-reflex, filiform. Stigmas thickish.

PER. Capsule ovate, straight, one-celled, five-valved.

SEEDS very many, depressed-globular, girt with an emarginate rim.

Obs. It is distinguished from *Cerastium* by its entire petals. *S. pentandra* has only five stamens.

## ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, entire. Caps. ovate, one-celled, five-valved.

## SPECIES.

1. *Spergula arvensis*. Corn Spurrey.

Lin. spec. 630. Juss. 437. Reich. 2. 403. Willd.

2. 818. hort. cliff. 173. fl. suec. n. 419. Lapp.

n. 190. Gertn. fruct. 2. 230. Hudf. angl. 202.

Wither. arr. ed. 3. 436. Smith brit. 502. Curt.

lond. 5. t. 31. Lightf. scot. 243. Relb. cant.

ed. 2. n. 393. Sibth. oxon. n. 431. Fl. dan.

t. 1033. Gunn. norv. n. 20. Hoffm. germ. 160.

Roth. germ. 1. 195. 2. 504. Pollich pal. n. 446.

Neck. gallob. 206. Krock. fles. n. 709. Villars

dauph. 3. 656. Allion. pedem. n. 1734. Gmel.

fib. 4. 153. Desfont. atlant. 368.

*Spergula*. Dod. pempt. 537. Baub. hist. 3. 719. 2.

Dalech. hist. 1331. Raii hist. 1034.

*Sagina* *Spergula*. Ger. emac. 1125. — *Polygonon*

*Tragi*. Lob. ic. 803.

*Sagina* *Spergula* major. Park. theat. 562.

*Stellaria* *arvensis*. Scop. carn. n. 542.

*Alfina*. Hall. belv. n. 873.

*A. Spergula dicta* major. Baub. pin. 251. Raii syn.

351. Petiv. brit. t. 59. f. 6. Tournef. inst. 243.

Dubam. cult. 6. 149. t. 1.

Leaves whorled, fruiting peduncles reflexed, seeds kidney-shaped.

2. *Spergula pentandra*. Little Corn Spurrey.

Lin. spec. 630. Juss. 437. Reich. 2. 404. Willd.

2. 818. Loeft. it. 43. Smith brit. 503. Hoffm.

germ. 160. Roth. germ. 1. 196. 2. 505. Weber

spic. 14. Villars dauph. 3. 656.

*S. annua*, femine foliaceo nigro, circulo membranaceo

albo cincto. Dill. in Raii syn. 351. Giff. 46. Eph.

nat. cur. cent. 5 & 6. 275. t. 4. f. 1.

*Alfina* *Spergula dicta*, femine membranaceo fusco.

Raii syn. ed. 2. 210. conf. Mor. hist. 2. 551.

n. 16. 17.

*A. Spergula facie minima*. Magn. monsp. 14. — femi-

nibus marginatis. Vaill. par. 8.

*A. marginata*. Schreb. spicil. 31.

*Stellaria* *pentandra*. Scop. carn. n. 543.

*Arenaria* *media*. Pollich pal. n. 426. Rupp. gen. 2.

118.

Leaves whorled, flowers five-stamened, seeds depressed

winged.

3. *Spergula nodosa*. Knotted Spurrey.

Lin. spec. 630. Juss. 437. Reich. 2. 404. Willd.

2. 819. hort. cliff. 173. fl. suec. n. 420. Lapp.

n. 191. Hudf. angl. 203. Wither. arr. ed. 3.

437. Smith brit. 503. Lightf. scot. 244. Relb.

cant. ed. 2. n. 394. Sibth. oxon. n. 4. 432. Abbot

bedf. n. 346. Curt. lond. 4. t. 34. 261. Fl. dan.

t. 96. Hoffm. germ. 161. Roth. germ. 1. 196.

2. 505. Pollich pal. n. 447. Reyg. ged. 1. 124.

Krock. fles. n. 711. Gmel. fib. 4. 153. Kniph.

cent. 11. Dill. giff. 156.

*Alfina*. Hall. belv. n. 871.

*A. nodosa germanica*. Baub. pin. 251. Park. theat.

764.

15 X *A. palustris*

<sup>2</sup> Browne.

<sup>2</sup> Hort. kew.



A. palustris foliis tenuissimis, f. Saxifraga palustris anglica. Ger. emac. 568. Raii syn. 350. Petiv. brit. t. 59. f. 5. Pluk. phyt. t. 7. f. 4. Saxifraga palustris anglica. Park. theat. 427. 3. Raii hist. 1032.

S. pal. alpinefolia. Goodyer in Ger. emac. 567. f. 6. Stellaria nodosa. Scop. carn. n. 545.

Arenaria. Bauh. hist. 3. 724. Raii hist. 1033. fec. Linn:

Polygonum foliis gramineis alterum. Loef. pruss. 204. t. 64.

Leaves opposite awl-shaped even, the upper ones in bundles, calyx nerveless.

[4. Spargula laricina. Larch-leaved Spurrey.

Lin. spec. 631. syst. 437. Reich. 2. 404. Willd. 2. 820. Smith ic. ined. 1. t. 18.

Alfne foliis oppositis linearibus rigidis fasciculatis basi ciliatis, petalis integris calyci æqualibus. Gmel. fib. 4. 155.

Leaves opposite awl-shaped ciliate in bundles.

5. Spargula faginoides. Smooth awl-shaped Spurrey.

Lin. spec. 631. syst. 437. Reich. 2. 404. Willd. 2. 820. Smith brit. 504. Gouan illustr. 31. Swartz in act. holm. 1789. 44. t. 1. f. 2.

Alfne. Hall. helv. n. 862.

A. foliis gramineis sæpe fasciculatis glabris, pedunculis longis nudis unifloris. Gmel. fib. 4. 157.

Leaves opposite awl-shaped awnless naked, peduncles solitary very long smooth.

6. Spargula subulata. Ciliated awl-shaped Spurrey.

Lin. spec. ed. Willd. 2. 820. Swartz in act. holm. 1789. 45. t. 1. f. 3. Wither. arr. ed. 3. 436. Smith brit. 505.

S. laricina. Hudf. angl. 203. Lightf. scot. 244. Fl. dan. t. 858. Jacqu. collect. 2. 207.

S. faginoides. Curt. lond. 4. t. 35. Hoffm. germ. 161. Roth. germ. 1. 197. 2. 506. Retz. obs. 1. 19. 2. 18. & 3. 32.

Sagina procumbens β. Lin. spec. 185.

Saxifraga graminea pusilla foliis brevioribus crassioribus & succulentioribus. Raii syn. 345.

Alfne tenuifolia pediculis florum longissimis. Vaill. par. 8.

Leaves opposite awl-shaped awned ciliate, peduncles solitary very long somewhat hairy.

7. Spargula glabra. Smooth Spurrey.

Lin. spec. ed. Willd. 2. 821.

S. faginoides. Allion. pedem. n. 1735. t. 64. f. 1.

Leaves opposite bundled filiform smooth, flowers ten-stamened, petals bigger than the calyx.

DESCRIPTIONS, &c.

1. Root annual, small, fibrous. Stems numerous, a span or a foot in length, nearly upright or spreading a little, round, smooth, hairy, clammy and panicked on the upper part, leafy, jointed; joints swelling, globular. Stipules in pairs at the joints, very short, the tips of the lower ones reflexed. Leaves in whorls, forming two bundles, about eight in each, the inner ones gradually smaller, linear, round, having a deep furrow on the back, blunt and yellow at the tip; the upper ones hairy and clammy. Panicle dichotomous, divaricating, many-flowered. Peduncles one-flowered, pubescent, clammy, bracted at the base, bent down when the flowering is over. Leaflets of the calyx ovate, obtuse, concave, hairy, scarious scurfy or whitish at the edge. Petals ovate, white, longer than the calyx, a little pointed, fastened by a short claw<sup>b</sup>. Capsule ovate, smooth, shining, scarcely opening beyond the middle. Receptacle columnar, free, hispid with the umbilical chords, a little longer than half the capsule. Seeds numerous, (about seventy) subovate, compressedly three-cornered, shagreened with scattered raised dots, having a groove along the back, and a ridge along the belly, rufescent<sup>c</sup>. Smith describes the capsule as being double the length of the calyx; and the seeds kidney-shaped, gibbous, margined, and finally rugged with tubercles. According to Curtis, the capsule is covered by the remaining calyx; and the seeds are rather large, round with a small degree of flatness, blackish, and if viewed with

a magnifier beset with small, reddish, prominent points, and encircled with a manifest ring. Gærtner says that the capsule is six-valved, but surely that is not the natural number.

The number of stamens is by no means constant in this and other kindred genera. Mr. Curtis has not found this plant to vary unusually in this respect. Dr. Smith says it varies, but seldom, with five stamens. This has made some confound it with the next species; which by others has been considered as a variety only of this. Pollich affirms that *Spargula arvensis* has often five, six or seven stamens: Scopoli, that it has five, seven or eight, as well as ten: Withering, that it has frequently fewer than ten in the autumn; which is certainly the case in some other plants. The Bishop of Drontheim says that he has not observed any plant in which the number of stamens varies so much as in this, having observed from five to nine and very few with ten, on the same individual.

Native of Europe, in sandy soils; also of Barbary and Siberia. It flowers here from July to September.

The inhabitants of Finland and Norway make bread of the seeds, when their crops of corn fail. Poultry and birds in general are very fond of the seeds. In some parts of Holland, Brabant, Flanders, Germany, &c. they sow great quantities to feed their cattle with the plant, and it is reputed very nutritious. It has been recommended for cultivation in England, but we have fortunately better crops for sandy lands, such as Rye, Peas, Tares or Vetches, Buckwheat, Carrots, &c.]

Mr. Miller says, the chief use that is made of Spurrey abroad is for feeding sheep and cattle in winter, when the common grass is eaten bare. It is said that it makes cows yield excellent butter, that mutton fed on it is well tasted, and that it causes hens to lay abundance of eggs.

[Spurrey, and Chickweed, says Dr. Anderson, are by many thought to cause cows to give an extraordinary quantity of milk; that cattle prefer it when green, to almost any other plant, and sheep are exceedingly fond of it. Though cultivated in Holland as a useful plant, it is in some parts of Scotland a very pernicious weed among corn crops, particularly in spongy soils. It is sometimes called *Yarr* there<sup>d</sup>. In Norfolk they call it *Pickpurse*, which shows their contempt of it, and *Sandweed*<sup>e</sup>.

2. This has all the habit of the preceding, but it is smaller, and has fewer, less fleshy leaves. The margin of the calyx is scarcely scarious. The number of stamens is five. The seeds are flattened, even, and have a widened, membranaceous, white rim<sup>f</sup>.

If the difference between these two plants, says Mr. Curtis, were to depend solely on the number of its stamens, we should be ready to consider them as the same; but Ray founds his specific difference on characters less subject to variation: the leaves at the joints, he observes, are fewer and thicker, the plant flowers early and soon goes off. These circumstances are noticed by French botanists, and by Ruppert. The difference in the seeds are remarked by Morison, Dillenius and Villars; the latter of whom says it is easily distinguished, not by the number of stamens, but by its blackish flattened seeds, bordered by a little membrane.

Native of Germany, France, Spain, and Ireland; where it was observed by William Sherard, LL. D. Consul at Smyrna, in sandy grounds.

Dr. Smith informs us, that Linneus had it from Læfing; and that he has admitted it into the British Flora entirely on the authority of Dillenius. Some English botanists have mistaken the *arvensis* with fewer stamens than common for this species.]

Mr. Miller affirms, that both species are equally cultivated in Holland and Flanders for feeding cattle; [and Morison says they are so alike that they cannot be distinguished but by the seeds.

3. Root perennial, fibrous. Stems several, four inches or more in length, procumbent, but sometimes

<sup>d</sup> Essays, vol. 2. 63 & 208.

<sup>e</sup> Marshall's Norfolk, p. 385.

<sup>f</sup> Smith brit.

<sup>b</sup> Curtis, Smith.

<sup>c</sup> Gærtner.



nearly upright, after flowering often creeping, simple or little branched, leafy, round, slender, smooth or sparingly haired; the hairs appearing globular at top when magnified, having numerous joints which are swelled. Leaves next to the root numerous, forming a tuft, of a beautiful dark green colour, about an inch in length, somewhat fleshy; the lowermost stem-leaves a little longer than the radical ones, connate, and sometimes indistinctly ciliate at the base; the upper stem-leaves very short, from their axils producing small tufts of leaves, the rudiments of branches. Flowers white, large in proportion to the size of the plant, at the ends of the stems and branches, on upright peduncles, about half an inch in length. Calyx-leaves ovate, obtuse, keeled, nerveless, smooth, or slightly hairy. Petals twice the length of the calyx, rounded ovate, entire. Capsule, small, ovate, half as long again as the calyx. Seeds numerous, very minute, blackish<sup>s</sup>.

This elegant little plant recommends itself to our notice by the beauty of its verdure, and the delicacy of its flowers; the largeness and pure whiteness of which, joined to its place of growth, serve to distinguish it from those plants which have some resemblance to it in the foliage. It is found in the greatest part of Europe, in moist situations, frequently among herbage, and sometimes out of walls, rocks or stones. It flowers in July and August. About London it is a scarce plant; but in the north of England it is very common on the borders of rivulets, and generally grows more upright than with us. Mr. Curtis observed it growing out of the wall by the Thames side, in several places betwixt Lambeth and Putney: also on Hounslow-heath<sup>b</sup>. Mr. John Goodyer observed it, August 12, 1626, plentifully on the boggy ground below the red well of Wellingborough in Northamptonshire: Dr. John Sibthorp, on Shotover hill, and near Stow wood in Oxfordshire: Dr. Abbot, at Ampt-hill and Stevington, in Bedfordshire: on Hinton and Teversham moors, Gamlingay, &c. in Cambridgeshire: boggy ground in Sutton park, Warwickshire, by Dr. Stokes: bogs about Settle, and other places in the north, by Mr. Curtis: in the bogs on Chorley forest, and Beacon hill, Leicestershire, by Dr. Pulteney: on Hampstead heath and Harefield moor, in Middlesex. In Dorsetshire not uncommon, most plentifully by the Avon; in the marsh between the town and the river at Ringwood; Dr. Pulteney. Side of the lake at Llanberris, by Mr. Aiken. In Scotland, but not very common, in wet pastures, and on the sides of lakes and marshes.

4. Root perennial. Stems decumbent, branched, leafy, round. Flowering-branches ascending, simple, leafy, few-flowered, subflexuose, with the joints swelling a little, smooth. Leaves bristle-shaped, connate with a membranaceous base, ciliate towards the base, surface smooth; the younger ones in axillary solitary bundles. Flowers terminating and lateral solitary white, the size of *Stellaria holostea*. Bractes like the leaves but shorter, naked. Peduncles filiform, smooth. Calyx-leaves lanceolate acute three-nerved smooth membranaceous at the edge. Petals obovate scarcely longer than the calyx. Five stamens the length of the petals, and five shorter. Anthers roundish. Germ ovate, obtuse, five-grooved. Styles spreading, scarcely longer than the stamens.—It is a handsome plant, agreeing very much with the *Arenarias*, except in the number of styles. It has more affinity to *Spergula nodosa* than to *saginoides*, to which its synonyms are often attributed by English botanists.

Native of Siberia, and found by Steller between Jacutz and Ochotz<sup>1</sup>.

5. Stem procumbent, two inches high. Leaves linear, in bundles at the joints. Peduncles quite simple, very long, lateral without bractes. Flowers drooping<sup>k</sup>.

Root perennial, fibrous. Herb entirely smooth. Stems decumbent, somewhat branched, an inch and half long, leafy, round, jointed, upright at the top.

Leaves connate, acute. Peduncles for the most part terminating, erect, one-flowered, round, naked, almost the length of the stems. Flowers drooping, white. Calyx-leaves ovate, obtuse, even, almost nerveless, gibbous at the base. Petals roundish, obtuse, quite entire, shorter than the calyx. Stamens ten, scarcely longer than the petals. Capsule ovate, twice as long as the calyx. Seeds kidney-shaped, brown; not margined.—Swartz found only five stamens<sup>1</sup>.

Native of Sweden, Switzerland, France, Siberia, Scotland, on mountains. It was found on Ben Lawers, a mountain in Scotland, in 1794, by Mr. J. Mackay.

6. Root perennial fibrous. Stems several, an inch or two in length, procumbent and rooting, then upright, branched, leafy, roundish, smooth, (according to Curtis, covered with short glandular hairs, scarcely visible.) Leaves connate, about half an inch in length, sharp and terminated by a whitish point or bristle, of a deep green colour, somewhat shining and rather fleshy, on the upper side smooth, on the under and at the edge hairy, the hairs terminated by little glands: stem-leaves shorter, flattish, and tending somewhat one way. Peduncles terminating and axillary, one-flowered, more or less hairy, an inch or more in length, of a brownish purple colour. Flowers drooping a little. Calyx-leaves ovate, obtuse, somewhat keeled, hairy and inclined to clamminess, membranaceous at the edge. Petals white, length of the calyx, roundish, entire and spreading. Stamens commonly five, but sometimes ten. Capsule little longer than the calyx, five-valved. Seeds numerous very small, kidney-shaped, compressed, pale-brown girt with a black line, scarcely margined; when magnified appearing dotted<sup>m</sup>.

This plant was taken for the *laricina* of Linnæus by Hudson and Lightfoot, and for the *saginoides* of the same author by Curtis: but the latter is more branched, has swollen knots at the joints of the stems, with a remarkable contraction just under the knots; it is also a larger plant, is destitute of hairiness, and its flowers have always ten stamens. The *laricina* has the leaves in opposite pairs, with bundles of young leaves or branches in the axils. The peduncles are smooth and furnished with floral leaves. The calyx-leaves are three-fibred; the flowers much larger, and the stamens always ten<sup>n</sup>.

Wulfen's plant, described in Jacquin's collectanea is probably this, though the petals are said to be bigger than the calyx, whereas they are really smaller<sup>o</sup>.

Linneus certainly confounded this plant with *Sagina procumbens*.

Native of Denmark, Sweden, Germany and Britain; on sandy commons, and dry gravelly pastures. Not uncommon on Putney heath, and about Coomb wood. On Bagshot heath. Cobham and Esher. On Uxbridge moor. In Dorsetshire, Devonshire and Cornwall. In Scotland, near Forfar and between Dundee and St. Andrew's, and in the Isle of Bute. It flowers from June to August.

7. Stems procumbent, round, knotted: at each knot a pair of linear-subulate leaves, connate next the knots, shining green, curved in; each pair putting forth on one side a bundle of leaves. The extremities of the branches produce a bundle of leaves, which is the rudiment of a new stem, and a one-flowered peduncle longer than the new branch, being near two inches in length. Calyx-leaves ovate, with a white membranaceous margin, neither acute nor obtuse. Petals ovate, marked with lines, not emarginate, obtuse, white. Filaments shorter by half than the corolla. Anthers pale whitish purple. Sometimes the flowers have six styles.

Native of Piedmont, in alpine pastures<sup>q</sup>.

Allioni took this for the *sagincides* of Linneus, but Willdenow regards it as a distinct species. Allioni gives to this that synonym of Vaillant which Linneus attributes to his *saginoïdes*, and we have given to *subulata*. He also gives Haller's *Alfine*, n. 862, as another synonym.]

<sup>s</sup> Curt. lond. and Smith brit.

<sup>b</sup> Curt. lond.

<sup>1</sup> Smith, ic. ined.

<sup>k</sup> Linn. syst.

<sup>1</sup> Smith brit.

<sup>m</sup> Curtis and Smith.

<sup>n</sup> Withering.

<sup>o</sup> Willdenow.

<sup>p</sup> Smith.

<sup>q</sup> Allioni.



## PROPAGATION AND CULTURE.

The usual time for sowing the seed of Spurrey for feeding cattle, is in July or August, that the plants may acquire strength before winter. As Spurrey will grow on the poorest sand, it may be cultivated in many places to good advantage, where no grass will thrive well; and by feeding it off the ground, the dung of the cattle or sheep will improve the land.

For saving the seeds, they should be sown in April, that they may ripen in August. The crop must be cut before the heads are quite brown, otherwise the seeds will soon scatter.

About twelve pounds of seed is sufficient to sow an acre. Harrow the ground well before the seeds are sown. In the Low countries, this plant succeeds a crop of corn. The second sort is now much cultivated in Flanders; for though it is a much lower plant, they esteem it to be superior to the other.

[SPERGULA. See *Alfina*, *Arenaria*, *Gypsophila*, *Holosteum*, *Limosella*, *Linum*, *Pharnaceum*.]

SPERMACE. (So named by Dillenius, from *σπέρμα*, a seed; and *ακων*, a sharp point: these plants having prickly seeds.)

Lin. gen. n. 119. Reich. n. 126. Schreb. n. 155.

Dill. elth. 277. Juss. 197. Gärtn. t. 25.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*. *Rubiaceæ*, Juss.

## GENERIC CHARACTER.

- CAL. Perianth small, four-toothed, superior, permanent.  
 COR. one-petalled, funnel-shaped: tube cylindric, slender, longer than the calyx: border four-parted, from spreading reflexed, obtuse.  
 STAM. Filaments four, awl-shaped, shorter than the corolla, or standing out. Anthers simple.  
 PIST. Germ roundish, compressed, inferior. Style simple, but cloven above. Stigmas obtuse.  
 PER. Capsules two, connate, oblong, gibbous on one side, flat on the other, obtuse; each two-horned.  
 SEEDS solitary, roundish.

OBS. *S. hispida* has a turbinate-campanulate erect corolla. R. It is manifestly one-capsuled and two-celled; not two-capsuled. M. Gärtn. describes *S. tenuior* as one-capsuled. The fruit is always two-celled, bipartite when ripe, naked or covered with a thin crust, like a capsule, and therefore nearest to *Diodia*. Swartz.

## ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-shaped. Seeds two two-toothed.

## SPECIES.

1. *Spermacoce tenuior*. Slender Button-weed.  
 Lin. spec. 147. Syst. 148. Reich. 1. 290. Willd. 1. 568. Gärtn. fruct. 1. 122. Swartz obs. 43. Kniph. cent. 2. n. 88. Sabb. hort. rom. 2. t. 99. Dill. elth. 370. t. 277. f. 359. Loebl. it. 202. Brown. jam. 141. n. 5. Pluk. phyt. t. 136. f. 4.  
 Smooth, leaves lanceolate, stamens included, flowers whorled, seeds rough-haired.
- [2. *Spermacoce latifolia*. Broad-leaved Button-weed.  
 Lin. spec. ed. Willd. 1. 569. Aubl. guian. 1. 55. t. 19. f. 1.  
 Smooth, leaves ovate, stamens standing out, flowers in whorls, stipules ciliate.
3. *Spermacoce cærulescens*. Blue-flowered Button-weed.  
 Lin. spec. ed. Willd. 1. 569. Vahl ecl. 1. 9. Aubl. guian. 1. 57. t. 19. f. 2.  
 Leaves ovate acute somewhat hairy even, stipules equaling the whorled flowers, stamens standing out.
4. *Spermacoce alata*. Wing-stalked Button-weed.  
 Lin. spec. ed. Willd. 1. 569. Aubl. guian. 1. 60. t. 22. f. 7.  
 Smooth, leaves ovate the uppermost sessile, flowers terminating in heads, stem four-cornered winged creeping.
5. *Spermacoce hexagona*. Hexagon-stalked Button-weed.  
 Lin. spec. ed. Willd. 1. 569.  
*S. hexangularis*. Aubl. guian. 1. 61. t. 22. f. 8.  
 Smooth, leaves ovate petioled, flowers terminating, stem prostrate six-cornered.
6. *Spermacoce prostrata*. Prostrate Button-weed.  
 Lin. spec. ed. Willd. 1. 570. Aubl. guian. 1. 58. t. 20. f. 3.

Smooth, leaves subsessile elliptic acute, flowers in whorls, stem prostrate.

7. *Spermacoce radicans*. Rooting Button-weed.  
 Lin. spec. ed. Willd. 1. 570. Aubl. guian. 1. 58. t. 20. f. 4.  
 Smooth, leaves subsessile lanceolate, flowers in whorls, stem procumbent rooting.
8. *Spermacoce longifolia*. Long-leaved Button-weed.  
 Lin. spec. ed. Willd. 1. 570. Vahl ecl. 1. 8. Aubl. guian. 1. 58. t. 21.  
 Smooth, leaves lanceolate acute at both ends rugged at the edge, whorls halved.]
9. *Spermacoce verticillata*. Whorl-flowered Button-weed.  
 Lin. spec. 148. Reich. 1. 291. Willd. 1. 570. Swartz obs. 44. Dill. elth. 369. t. 277. f. 358. Brown. jam. 141. n. 4. Pluk. phyt. t. 58. f. 6? (Scabiosa.) Sloan. jam. 1. 170? (Pulegium.)  
 Smooth, leaves lanceolate, whorls globular.
- [10. *Spermacoce fumatrensis*. Sumatra Button-weed.  
 Lin. spec. ed. Willd. 1. 571. Retz. obs. 4. 23.  
 Hispid, leaves lanceolate, corymbs terminating dichotomous.
11. *Spermacoce aspera*. Rough Button-weed.  
 Lin. spec. ed. Willd. 1. 571. Aubl. guian. 59. t. 22. f. 6. Vahl ecl. 1. 10.  
 Leaves elliptic very rugged acute smoothish, flowers axillary clustered, stamens included.
12. *Spermacoce hirta*. Rough haired Button-weed.  
 Lin. spec. 148. Syst. 148. Reich. 1. 291. Willd. 1. 571. Swartz obs. 45. Brown. jam. 141. n. 3.  
 Rugged branched, leaves ovate-lanceolate, flowers clustered axillary, stamens standing out.
13. *Spermacoce villosa*. Villose Button-weed.  
 Lin. spec. ed. Willd. 1. 571. Swartz prodr. 29. obs. 45.  
 Villose simple, leaves ovate-lanceolate pubescent, the uppermost in fours, flowers in whorls, stamens included.
14. *Spermacoce hispida*. Shaggy Button-weed.  
 Lin. spec. 148. Syst. 148. Reich. 1. 291. Willd. 1. 572. mant. 558. Murr. in comm. nov. goett. vol. 3. p. 77. t. 5. Burm. zeyl. 163. t. 20. f. 3? (Galeopsis.)  
 Hispid, leaves obovate oblique.
15. *Spermacoce scabra*. Rugged Button-weed.  
 Lin. spec. ed. Willd. 1. 572.  
 Tardavel. Rheed. mal. 9. 149. t. 76?  
 Leaves roundish with the stem hispid-rugged, flowers in whorls, stamens standing out.
16. *Spermacoce articularis*. Jointed Button-weed.  
 Lin. Syst. 148. Willd. 1. 572. suppl. 119.  
 Leaves elliptic bluntish somewhat rugged.
17. *Spermacoce stricta*. Stiff Button-weed.  
 Lin. Syst. 148. Willd. 1. 573. suppl. 120.  
*Cratægogonum amboinicum minus*. Rumph. amb. 6. 25.  
 Leaves linear-lanceolate marked with lines.
18. *Spermacoce linifolia*. Flax-leaved Button-weed.  
 Lin. spec. ed. Willd. 1. 573. Vahl ecl. 1. 8.  
 Leaves linear-lanceolate villose even, the uppermost in fours, flowers in whorls, stamens standing out.
19. *Spermacoce procumbens*. Procumbent Button-weed.  
 Lin. Syst. 148. Reich. 1. 292. Willd. 1. 573.  
*S. corymbosa*. Lin. spec. 149.  
 Procumbent, leaves linear, corymbs lateral peduncled.
20. *Spermacoce spinosa*. Thorny Button-weed.  
 Lin. spec. 148. Syst. 148. Reich. 1. 292. Willd. 1. 573. Swartz obs. 45. Brown. jam. 140. n. 1.  
*S. suffruticosum*. Loebl. it. 201.  
 Suffruticose, leaves linear ciliate with spinules.]

## DESCRIPTIONS, &amp;c.

1. This plant grows to the height of two feet and a half. The stalks are stiff, a little angular, and covered with a brown bark; the branches come out by pairs. There are two leaves at each joint placed opposite, two inches long, and almost a quarter of an inch broad; between these come out three or four smaller leaves, which stand in whorls round the stalks; they are smooth, and have one strong nerve or rib in the middle. The flowers grow in slender whorls toward the top of the stalks; they are small, white, and sessile, having a whorl of leaves close under them: these are succeeded by two oblong seeds, having small horns, and ripening in the calyx.

[Capsule



[Capsule inferior, small, rough-haired, crowned with the four teeth of the calyx, crustaceous, rigid, two-celled, not bipartite: one cell closed, the other opening to the middle, with a one-toothed valve. Seed in each cell one, small, elliptic, ferruginous, on one side convex and smooth, on the other concave by reason of the edges being rolled together into a belly<sup>1</sup>.

It is an annual plant, native of Carolina, and the West Indies, where it is very common.—In Jamaica it is found only in the woods; and is there observed to be sometimes upright and sometimes a climber; when erect, it generally rises to the height of two or three feet; but when it is assisted by the neighbouring shrubs, it grows commonly to twice or three times that length. It is called there Iron-grass<sup>2</sup>.

Swartz observes, that the seeds when unripe are like a capsule and two-celled; but when ripe, are separable, roundish, two-toothed with the permanent calyx and rough-haired. It varies with a smooth and pubescent stem, stiff and more loose; with narrower and wider leaves; with whorled and subsolitary flowers.

Cultivated in 1732 by James Sherard, M. D. It flowers from June to August<sup>3</sup>.

2. This is a herbaceous plant, rising with several tetragonal knotty branching stems the length of two or three feet; the leaves are opposite, ovate, rough, entire, and terminated by a long point: they are disposed in a cruciate direction from each of the knots or joints: the flowers are white, and are borne in sessile groupes or paquets from the bosoms of the leaves: the calyx is downy, and the anthers long and bilocular.

This species is a native of Cayenne, growing by pathways and in open plains.

3. This differs from the preceding in having the stems lower, straight and simple; the leaves smaller and green; the stipule shorter and less ciliate; the flowers small and blue; and a little fruit.—Native of Cayenne and Guiana by way sides.

4. This differs from the *Spermacoce alata* of Aublet in having a hexagonal flexuous stem, by which it spreads on the neighbouring plants: the leaves are also shorter and less sharp: the flowers are borne at the extremities of the branches and are of a blue colour.

Native of Cayenne and Guiana on the banks of rivers<sup>4</sup>. Stamens didynamous, two longer than the corolla<sup>5</sup>.

5. This differs from the preceding in having the stems hexangular and scattered over the neighbouring plants; the leaves ovate smaller and petioled.—Native of Guiana, on the banks of rivers.

6. This species has prostrate or decumbent stems, which are branchy and furnished with opposite green, soft, glabrous, sessile, ovate, and pointed leaves: flowers blueish.—Native of Guiana, on the banks of rivers.

7. A perennial species, with several branchy and knotty stems, the divisions of which proceed sometimes from the right and sometimes from the left of the bosoms of the leaves: flowers small and blueish. Native of Guiana, growing about the borders of rivers<sup>6</sup>.

8. Stem four-cornered, smooth, purplish, even, ash-coloured at the top with very short hairs visible only with the naked eye. Branches axillary, alternate, of the same structure with the stem, terminated by three leaves. Leaves spreading very much, an inch and half long, remote, clustered at the top, indistinctly nerved on the upper surface, on the lower paler, nerved, appearing hairy on the nerves when examined with a magnifier, but scarcely rugged. Petioles very short. Stipules multifid, with six or seven bristle-shaped erect segments. Flowers from one of the axils, collected into a round head, sessile, somewhat villose, about twenty-four; in the opposite axil a branchlet or the rudiment of one. Segments of the calyx ovate<sup>7</sup>.

Native of Cayenne and Guiana. Found both by Aublet and von Rohr.

The leaves in the specimen of the latter are larger than those in the figure of the former, but the plants were gathered in the same place by both<sup>8</sup>.]

9. Stem shrubby, three or four feet high, sending out a few slender branches, with narrow leaves on them, not so long as those of the first sort; they are smooth, of a light green, and stand in a kind of whorl round the stems, two being larger than the others in each whorl. The flowers grow in thick globular whorls towards the top, and one terminates the stem; they are small and very white. The stamens stand out above the tube.

[Stem rather herbaceous, only a little shrubby at the base, erect, a foot high, stiff, four-cornered. Branches opposite, decussated, fastigate, four-cornered. Leaves opposite, decussated, lanceolate-linear, with a middle nerve, entire, even on both sides. Branchlets axillary, length of the leaves, opposite. Stipules connate, membranaceous, with whitish bristles. Whorls of flowers embracing, small, white, clustered very close together. Calyx superior, minute, with two teeth, on the branches with three or four. Tube of the corolla very short, four-cornered: border four-cleft, erect, minute. Filaments standing out, fastened to the middle of the tube: anthers incumbent, whitish. Germ ovate, ancipital: style short, emarginate at the top or subbifid. Seeds naked, compressed, bipartite, crowned, smooth, black<sup>9</sup>.

Native of Jamaica and Africa. Browne says, this little bushy plant is frequent in the low and hilly lands of Jamaica; that it branches very much, is adorned with many small leaves, and bears all its flowers at the upper joints of the branches.

Swartz remarks, that when it is in flower, it smells like Melilot.

Cultivated in 1732, by James Sherard, M. D. who had the seeds from near the river Gambia in Africa. It flowers here from June to August<sup>10</sup>.

10. Stem herbaceous, four-cornered, tomentose, with long joints. Branches opposite. Leaves petioled, quite entire, hispid, with the nerves underneath tomentose. Calyx minute, four-toothed. Fruit two-seeded, four-toothed. It was found in Sumatra by Wennerberg<sup>11</sup>.

11. Stem herbaceous, erect, four-cornered with the corners hairy, branched. Leaves subsessile, opposite, an inch long, quite entire, nerved, very rugged especially beneath, the four uppermost approximating, appearing to have a few hairs scattered over them when examined with a microscope, veinless, obliquely nerved, the lower marked with lines along the nerves, subciliate at the edge. Membrane of the stipules having five hairy bristles on each side. Flowers several on each side in every axil.

Native of the West Indies.

This would appear to be the same with the *birta* of Linneus, if the leaves were rough-haired; but the hairs not being discoverable without a magnifying glass, and the stamens not being longer than the corolla, it is perhaps a distinct species, and seems to differ in having the leaves scarcely villose. The *aspera* of Aublet is referred to this on the authority of von Rohr, though his figure has lanceolate and longer leaves<sup>12</sup>.

12. Stem herbaceous, from one to two feet high, four-cornered, stiff, striated. Branches erect, four-cornered, with the angles rough-haired. Leaves subsessile, entire, nerved, rough-haired. Stipules connate, membranaceous, bristly at the edge. Flowers sessile, small, white. Calyx four-toothed, very short. Tube of the corolla round, funnel-shaped: border four-parted, reflexed. Filaments standing out: anthers blue. Germ hispid: style length of the stamens, bifid at top: stigmas blue, reflexed. Seeds two covered and united by a skin, crowned with the teeth of the calyx, rough-haired; when stripped of the skin black and smooth<sup>13</sup>.

Annual. Native of Jamaica: common in all the fields in Liguanea.

According to Browne, it seldom rises above twelve

<sup>1</sup> Gartner. <sup>2</sup> Browne. <sup>3</sup> Hort. kew. <sup>4</sup> Aublet.  
<sup>5</sup> Willdenow. <sup>6</sup> Aublet. <sup>7</sup> Vahl.

<sup>8</sup> Vahl. <sup>9</sup> Swartz. <sup>10</sup> Hort. kew. <sup>11</sup> Retz.  
<sup>12</sup> Vahl. <sup>13</sup> Swartz.



or fourteen inches, and is easily known by its oblong leaves and arched veins.

13. This species was confounded with the preceding by Linneus; it is distinguished however by its more simple stem; oblong leaves, the uppermost in fours; its villosity; the whorls of flowers, and shorter stamens within the throat of the corolla.—Native of Jamaica. Annual<sup>z</sup>.

14. Root annual. Stem herbaceous, erect, obscurely four-cornered: lower branches opposite. Leaves opposite, subpetioled, rugged on both sides, thickish, flexuose, somewhat oblique, with a small reflexed point. Stipule connecting a pair of leaves on each side, scarious, truncate, with five distant bristles the length of the stipule itself. Flowers axillary, sessile, two or three. Calyx superior, with four lanceolate patulous leaflets. Corolla violet-coloured, turbinate-campanulate, half-four-cleft, erect, larger than in the other species. Stamens purple, length of the corolla. Style declined. Stigmas two, blunt, recurved<sup>h</sup>. The pericarp is manifestly one-capsuled divided into two cells<sup>i</sup>.

Native of Ceylon: and the East Indies. Introduced in 1781, by the Right Hon. Sir Joseph Banks<sup>k</sup>.

15. This is distinct from all the species by its small orbicular obtuse leaves. It is very rugged. Stems several, four-cornered, simple or but little branched, diffused. Corolla large, funnel-shaped, three times as long as the calyx. Stamens longer than the tube.

Native of the East Indies. If this be the Tardavel of the Hortus Malabaricus, the figure is a bad one. The description seems to belong to the preceding species<sup>l</sup>. Perennial.

16. Root annual. Stem herbaceous, red, round, channelled on every side. Branches rod-like, procumbent. Joints thick. Leaves opposite, subpetioled, alternately marked with lines especially beneath. Instead of stipules there is a transverse many-awned membrane uniting the leaves. Flowers white, narrow.—Native of the East Indies<sup>m</sup>.

17. Root annual. Plant upright, half a foot high, stiff, rugged at the angles. Branches alternate, shorter. Leaves opposite, subpetioled, somewhat rugged, connected by a ciliate membrane. Flowers white, in narrow whorls.—Native of the East Indies<sup>n</sup>.

18. Stem herbaceous, four-cornered, somewhat villose especially at the corners, ash-coloured at the tip. Leaves subpetioled, sharp at both ends, rugged at the edge, villose on both sides, obscurely nerved, little paler beneath, four under the terminating whorl; and two small ones at each axil. Stipule a multifid membrane; the segments bristle-shaped. Flowers many, a little longer than the stipules; the terminating whorl is globular and a little larger than the others. Calyxes villose and ash-coloured. Stamens longer than the corolla: anthers blue. It seems to be allied to the preceding, but differs from it in having the stem and leaves villose, and the stipules bigger.

Native of Cayenne, where it was found by von Rohr<sup>o</sup>.

19. Stems herbaceous, angular, weak, diffused. Leaves reflexed. Peduncles lateral, opposite, leafless. Flowers in bundles or in a simple umbel, with a many-leaved involucre longer than the umbel. Stamens standing out, longer than the corolla.—Native of the East Indies<sup>p</sup>.

20. Stem herbaceous, almost simple, subdivided at the base, hard, leafy, four-cornered, rugged, a foot high. Leaves opposite and decussated, subsessile, lanceolate-linear, acuminate, nerveless (except the middle.) Nerves and margins toothletted backwards, and somewhat spinulose. Flowers in a sort of globular axillary whorl; involucre with the stipules, clustered, white. Stipules membranaceous, bristly at the edge, rigid. Calyx two or four-toothed; teeth linear, longer than the corolla. Tube short: border four-cleft, with ovate segments. Filaments included. Anthers whitish. Style bifid. Stigmas erect, included<sup>q</sup>.

<sup>z</sup> Swartz. <sup>h</sup> Linn. mant. <sup>i</sup> Murray. <sup>k</sup> Hort. kew.  
<sup>l</sup> Willdenow. <sup>m</sup> Linn. suppl. <sup>n</sup> Idem. <sup>o</sup> Vahl.  
<sup>p</sup> Linn. spec. <sup>q</sup> Swartz.

Browne says, it rises generally by a simple upright stalk to the height of fourteen or sixteen inches, having from space to space lanceolate, opposite, embracing leaves. Flowers numerous, white, gathered into compact axillary heads that grow gradually larger and more distinct as they draw nearer to the top.

Native of Jamaica, where it is common in the lower savannas about Kingston.]

#### PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed, and when the plants come up transplant them on to a fresh hot-bed to bring them forward, and afterwards treat them in the same way with other tender plants from the East and West Indies. If they are placed in a stove, they will live through the winter, and produce good seeds the following year.

SPHÆRANTHUS. (From σφαῖρα, a sphere; and ανθος, a flower. Globe-flower.)

Lin. gen. n. 998. Reich. n. 1083. Schreb. n. 1352.  
Vaill. aët. gall. 1719. t. 20. f. 12. Juss. 176.  
Gertn. t. 164.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of Compositæ Capitata. Cinarocephala, Juss.

#### GENERIC CHARACTER.

CAL. Common globular, imbricate: scales acuminate, permanent, clothing the universal receptacle all round.

Perianth partial many-flowered, five-leaved, within each scale of the common calyx solitary, composed of linear, equal, erect leaflets.

COR. Partial Corollets hermaphrodite few (three) in the disk; Females in the ray commonly five.

Proper of the Hermaphrodite one-petalled, funnel-shaped, with a five-cleft patulous border.—Female awl-shaped, tubular, with a very small trifid closed mouth.

STAM. in the Hermaphrodites: Filaments five capillary, very short. Anther cylindric, tubular, longer than the corolla.

PIST. in the Hermaphrodites: Germ wasting. Style longer, thicker. Stigma quite simple.—In the Females: Germ oblong. Style bristle-shaped, length of the stamens. Stigma two-parted.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites none: in the Females solitary, oblong, naked.

REC. Common scaly: Partial naked.

#### ESSENTIAL CHARACTER.

Cal. eight-flowered. Cor. tubular hermaphrodite and indistinct female. Rec. scaly. Down none.

#### SPECIES.

1. Sphæranthus indicus. Indian Sphæranthus.

Lin. spec. 1314. Syst. 797. Reich. 3. 944. Fl. zeyl. n. 312. Gertn. fruct. 2. 413. Burm. zeyl. 220. t. 94. f. 3. Pluk. phyt. t. 312. f. 6. (Scabiosa.)

Adaca-manien. Rheed. mal. 10. 85. t. 43. Raii suppl. 241.

Leaves decurrent lanceolate serrate, peduncles curled.

2. Sphæranthus africanus. African Sphæranthus.

Lin. spec. 1314. Syst. 797. Reich. 3. 945. mant. 119. Burm. ind. t. 58. f. 1. Vaill. aët. 347. Pluk. phyt. t. 108. f. 7. Raii suppl. 235. 3. (Scabiosa.)

Leaves decurrent ovate serrate, peduncles round.

[3. Sphæranthus chinensis.

Lin. Syst. 797. Reich. 3. 945. mant. 119.

Leaves sessile pinnatifid.

4. Sphæranthus cochinchinensis.

Lour. cochinch. 510. ed. Willd. 623.

Leaves decurrent oblong quite entire, heads cordato-ovate, subsessile terminating.]

#### DESCRIPTIONS, &c.

1. Stem herbaceous, about a foot high, which rarely branches out. Leaves about three inches long, and an inch broad in the middle, of a deep green, and alternate. The peduncles come out from the side of the stalk, opposite to the leaf, about two inches long, and sustain one globular head of flowers at the top, of a purplish red colour. Seeds oblong, situated on the margin.

[Stems branched above and below, even. Leaves naked,



naked, sessile and totally decurrent, foliation involuted and having the smell of oil of Lavender. Flowers solitary; terminating, subglobular, blue. Style standing out. Peduncle on each branch single, opposite to a leaf: and a one-flowered branch from the axil of the next leaf, below the peduncle. It is unusual certainly, that the peduncle should not arise from the axil of its leaf, but should be opposite to a leaf, and that the next leaf (which has nothing in common with the peduncle) should produce only a branch.

Common receptacle globular, within hollow, without chaffy; one chaff to each partial calyx, ovate, acuminate, villose: partial receptacle very narrow, dotted, smooth, naked. Seeds to the female flowers small, ovate, of a brown-bay colour with whitish little bristles scattered over them.—The fifteen chaffs to each of the partial florets, and the five-toothed female corollets, which Adanson attributes to *Sphæranthus*, are not to be found in this species; perhaps therefore he means the *S. africanus*, concerning which Jussieu doubts whether it belongs to this genus.

Native of the East Indies. Cultivated in 1709, by the Dutchess of Beaufort. It flowers from august to december.

2. This differs from the preceding chiefly in having the peduncles round, without any decurrent wings. This is marked by Linneus as annual, and the former as perennial.] According to Miller, they are both annual. He describes this as rising with an herbaceous winged stalk about ten inches high, with ovate-lanceolate, ferrate, alternate leaves; the upper part of the stalk branching out into small divisions, terminated by peduncles, sustaining three or four globular flowers of a pale yellow colour.

It grows naturally at Madras, and also at La Vera Cruz in New Spain, where it was discovered by Dr. Houffoun. [Linneus says Africa and Asia.

3. This is a much smaller plant than the first, with pinnate-sinuate leaves. Peduncles curled with the decurrent wings, as in *S. indicus*.—Native of India\*. But why then named *chinesis*?

4. Stem herbaceous, a foot and half high, upright, round, smooth, white; with a few ascending branches: appearing to be three-sided, by the leaves running down them. Leaves blunt, waved, somewhat wrinkled, sessile, alternate, lanuginose. Flowers white tinged with a little purple, in small solitary heads, on short peduncles.

Native of China and Cochinchina, among the corn and in gardens. They use it, chiefly externally as a cataplasm to resolve tumours in the breast; and the expressed juice in ophthalmia: internally the decoction as a gargarism in inflammation of the jaws.

*S. amaranthoides* of Burm. ind. 186. if not the same, differs little from this. *S. chinensis* of Linneus would also seem to be the same, if it had not pinnatifid leaves, whereas in this they are quite entire\*.]

#### PROPAGATION AND CULTURE.

Sow the seeds in a hot-bed in the spring; and keep the plants in a stove or glass-case, giving them as much air as possible in warm weather.

[SPHÆRIA. A genus of Cryptogamia Fungi.

Lin. gen. Schreb. n. 1684. Weig. obs. 41. t. 2.

Weber spicil. 281. Afzel. diff. 8. Dickson fasc.

1. 22. Hoffm. crypt. 1. præf. Wither. arr. 388.

Lichen-Agaricus, Micheli 54. 55. Valsa, Scop.

#### GENERIC CHARACTER.

Fructifications mostly spherical, opening at the top, whilst young filled with jelly; when old with a blackish powder.

Obs. They grow on the bark or wood of other plants. Capsules often immersed, so that their orifices only are visible. Most of the species are without a stem.

Dr. Withering has collected twenty-nine British, and Mr. Relhan twenty-seven Cambridgeshire species.—They are figured by Dickson, Bulliard, Bolton, Batsch, Micheli, Hoffman, Dillenius, Schæffer, Sowerby, Weigel, Vaillant, &c. See Haller.

\* Linn. syst.

\* Gartner.

\* Hort. kew.

\* Linn. mant.

\* Idem.

\* Loureiro.

SPHÆROCARPUS. (Having a globular fruit.)

A genus of Cryptogamia Helaticæ, Schreb.—Algæ; Smith and Relb.

Lin. gen. Schreb. n. 1667. Smith engl. bot. t. 299. Relb. cent. n. 945.

#### GENERIC CHARACTER.

Cal. ventricose, undivided. Seeds numerous; collected into a globe.

SPHÆROCEPHALON. See *Allium*.

SPHÆROCEPHALUS. See *Echinops* and *Mucor*.

SPHAGNUM. (From Σφαγνον, the ancient name for a kind of Moss. See Pliny, xii. 23.)

Cryptogamia Musci.

Lin. gen. Schreb. n. 1637. Dill. musc. 240. Hedw. fund. 2. 85. theor. t. 12, 13. Schmidel ic. t. 58. Bog-Moss.

#### GENERIC CHARACTER.

Male flower club-shaped: anthers flat. Caps. on the same plant, sessile, covered with a lid, without any entire veil: mouth smooth.

SPHENOCLEA. See *Gærtnera*.]

SPHONDYLUM. See *Heracleum*:

[SPHONDYLOCOCCOS: See *Callicarpa*.

SPICA. See *Lavandula*.

— celtica. See *Valeriana*.

— trifolia. See *Trifolium*.

SPICANT. See *Osmunda*.

SPIDER ORCHIS. See *Ophrys*.

SPIDERWORT. See *Anthericum* and *Tradescantia*.

SPIELMANNIA. (So named in honour of James Reinhold Spielmann, professor of medicine and botany at Strasburg: author of *Prodromus floræ Argentoratensis*, *Pharmacopœa generalis*, &c.)

Lin. gen. Schreb. n. 1027. Medicus aët. palat. 3. 196. t. 10. Juss. 109. Oflia. Adans. Lantana africana. Lin. spec.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Vitices*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, erect, short, permanent: segments linear-subulate, acute, almost equal.

COR. one-petalled, salver-shaped: tube cylindric, incurved, globular at the base, villose within; the mouth closed with hairs: border five-cleft, almost equal: segments oblong, truncate, flat, spreading very much.

STAM. Filaments four, very short, in the tube of the corolla, two a little higher than the others. Anthers oval.

PIST. Germ roundish. Style short, permanent. Stigma hooked.

PER. Drupe globular, one-celled, succulent.

SEED. Nut globular-depressed, wrinkled striated and tubercled longitudinally, two-celled. Kernels solitary, oblong, more gibbous towards the outside, tubercled-striated longitudinally, each fastened to a fleshy aril, gibbous on one side, hollowed on the other, adhering to the partition.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. bearded at the throat, with a five-cleft almost equal border. Drupe, with a two-celled, two-seeded nut.

#### SPECIES.

1. Spielmannia africana. Ilex-leaved Spielmannia or Lantana.

*S. Jasminum*. Medic. in aët. palat. 3. phys. p. 198.]

Lantana africana. Lin. spec. 875. syst. 566. Reich. 3. 167. Mill. dict. n. 11.

Jasminum africanum, ilicis folio, flore solitario ex alis foliorum proveniente. Comm. rar. 6. t. 6.

#### DESCRIPTION, &c.

This rises with a shrubby stalk five or six feet high, sending out many irregular branches, closely garnished with thin oval leaves ending in points, ferrate and embracing. From the bosom of each leaf comes out one solitary white flower, which is cut at the top into five parts, and at first sight has the appearance of a Jasmine flower; but when closer viewed, the tube will be found curved, in the same manner with ringent flowers.

[The corolla like that of Jasmine, the four stamens, the form of the nut, and the whole habit of the inflorescence,



florulence, separate this plant from the Lantanas; with which it agrees in nothing but in the structure of the hooked stigma. The essence of the genus consists in the four anthers, not twin; the throat closed with hairs; the hooked stigma; and the nut divided by a partition into two equal hemispheres<sup>a</sup>.

The upper leaves are alternate, and from the axils of these come out solitary flowers. The stamens are equal in length<sup>a</sup>.

This shrub flowered and perfected its fruit in Ludwig's garden at Leipzig; and was found to have a five-parted calyx, which is permanent, and has awl-shaped segments. The fruit an insipid, globular, sub-acuminate drupe, two-parted by a groove: the kernel globular and two-celled<sup>b</sup>.

Native of the Cape of Good Hope. Cultivated in 1731, by Mr. Miller. It flowers from february to november<sup>c</sup>.]

#### PROPAGATION AND CULTURE.

Flowers are not succeeded by seeds in England, but the plants are easily propagated by cuttings, which, if planted upon an old hot-bed any time in july, and covered with a bell or hand-glass, and shaded from the sun, will put out roots in a month or five weeks; then they may be planted in pots, and placed in the shade till they have taken fresh root; after which they may be removed to a sheltered situation, where they may remain till the frosts come on. This plant is not very tender, therefore may be preserved in a good greenhouse in winter; but during that season it must have a large share of air in mild weather, otherwise it is apt to grow mouldy, and this will cause the tender branches to decay. In the summer season it may be exposed in the open air, with other green-house plants, in a sheltered situation, where it will add to the variety; and although the flowers are small, and are produced singly from between the leaves, so do not make any great appearance; yet as there is a succession of these flowers most part of the year, and the leaves continue green throughout the year, it is worthy of a place in every collection of plants.

**SPIGELIA.** (So named by Linneus, in memory of Adrian Spigelius, born at Brussels in 1578; professor of anatomy and surgery at Padua: died 1625. Author of *Isagoge in rem herbariam*. Pat. 1606. qu. & Lugdb. 1633. 24°.)

*Lin. gen. n. 209. Reich. n. 222. Schreb. n. 272.*

*Juss. 143. Arapabaca. Plum. 31.*

*Class. 5. 1. Pentandria Monogynia.*

*Nat. order of Stellatæ ß. Gentianæ, Juss.*

#### GENERIC CHARACTER.

**CAL.** Perianth one-leaved, five-parted, acuminate, small, permanent.

**COR.** one-petalled, funnel-shaped: tube much longer than the calyx, narrowed below; border spreading, five-cleft; segments wide, acuminate.

**STAM.** Filaments five, simple. Anthers simple.

**PIST.** Germ composed of two globes, superior. Style one, awl-shaped, length of the tube. Stigma simple.

**PER.** Capsule twin, two-celled, four-valved.

**SEEDS** numerous, very small.

#### ESSENTIAL CHARACTER.

*Cor.* funnel-shaped. *Caps.* twin, two-celled, many-seeded.

#### SPECIES.

1. *Spigelia Anthelmia.* Annual Worm-grass.

*Lin. spec. 213. syst. 197. Reich. 1. 425. Willd. 1.*

*824. amoen. 5. 133. t. 2. mat. med. 59. Brown.*

*jam. 156. t. 37. f. 3. Plenck, ic. 88. Pet. gaz. t. 59. f. 10.*

*Arapabaca quadrifolia, fructu testiculato. Plum. gen.*

*11. Barr. æquin. 15.*

*A. brasiliensis dicta planta. Marcgr. bras. 46.*

*Stem herbaceous, uppermost leaves in fours.*

2. *Spigelia marilandica.* Perennial Worm-grass.

*Lin. syst. 197. Reich. 1. 425. Willd. 1. 825.*

*mant. 338. Hope æt. edinb. 3. 1771. p. 151. t. 1.*

*Woodv. med. bot. 288. t. 105. Curt. magaz. 80.*

*Plenck, ic. 89. Walter carol. 92.*

<sup>a</sup> Medicus.

<sup>b</sup> Jussieu.

<sup>c</sup> Schreber in syst. veg.

<sup>d</sup> Hort. kew. 2. 353.

*S. Lonicera. Mill. dict. n. 2.*

*Lonicera marilandica. Lin. spec. 249. Gron. virg. 142.*

*Periclymeni virginiani flore coccineo planta marilandica, spica erecta, foliis conjugatis. Raii dendr. 32.*

*Catesb. car. 2. t. 78.*

*Stem four-cornered, all the leaves opposite.*

#### DESCRIPTIONS, &c.

1. This is an annual plant with a fibrous root, from which arises a strong erect herbaceous stalk, a foot and half high, channelled, sending out two side branches opposite near the bottom, and a little above the middle four acute-pointed leaves placed in form of a cross; these, and also the principal stalk, have four smaller leaves near the top, placed round in the same manner as the others; and from these arise short spikes of herbaceous flowers, ranged on one side of the foot-stalk; which are succeeded by roundish twin capsules containing small seeds.

[Stem simple. Terminating leaves lanceolate, four; the rest on the stem opposite in pairs. From each axil of the stem-leaves a single branch, very like the stem, terminated, as in that, by four leaves placed crosswise. Racemes terminating solitary on the stem and branches<sup>d</sup>. It rises from a small tapering root, well charged with fibres on all sides, and shoots by a straight smooth roundish hollow stalk, which seems to grow thicker as it rises to the height of five, seven, nine or thirteen inches, its usual growths; the main stem emits two, four or six lateral opposite branches, as it rises, which like the parent stalk, are furnished with four oval pointed and almost equal leaves disposed in the form of a cross at the top: from the centre of these it throws out one, two or more spikes, which bear all their flowers and seed-vessels on one side, and are commonly from half an inch to two or three inches in length<sup>e</sup>.

Native of the West Indies. Cultivated by Mr. Miller in 1759. It flowers in july<sup>f</sup>.

This vegetable has been long in use among the Negroes and Indians, and takes its names (of Anthelmia, Anthelmenthia, and Worm-grass,) from its peculiar efficacy in destroying worms; which I dare affirm, (says Dr. Browne) from a great number of successful experiments, it does in so extraordinary a manner, that no other simple can be of equal efficacy in any other disease as this is in those that proceed from these insects, especially when attended with a fever or convulsions.

Take of the plant, roots and all, either fresh or dry, two moderate handfuls, and boil them over a gentle fire in two quarts of water until one half of the liquid is consumed; then strain off the remainder, and add a little sugar and lemon juice, to give it a more agreeable taste, and to keep it from growing viscid or ropy.

To a full-grown person give half a pint at the hour of rest, and a proportionate quantity to all weaker and younger subjects. Repeat the dose once in twenty-four hours for two or three days after. But as the largeness of this dose may render its operation too violent, the following method is less hazardous, and as effectual.—Give about four ounces to a full grown person for the first dose, and two or three ounces every six hours after, if its anodyne quality will permit; but to persons of a weaker constitution it should be repeated only every ten or twelve hours: this is to be continued for thirty-six or forty-eight hours, when the double dose may be again repeated; and after this takes its full effect, it must be worked off with some gentle purgatives.

This medicine procures sleep almost as certainly, and in an equal degree with Opium; but the eyes seem distended, and appear bright and sparkling, as they generally do before the eruption of the small-pox and measles, after the sleepy effects are over. In a short time after this first dose is administered, the pulse grows regular and begins to rise; the fever cools; the convulsions, if any, abate; and the worms are

<sup>d</sup> Linn. spec.

<sup>e</sup> Browne.

<sup>f</sup> Hort. kew.



generally discharged in great quantities, by the use of the subsequent purgatives, if not before; often above a hundred at a time: but when a few only come away, and those alive, which seldom is the case, the dose must be repeated, and this scarcely ever fails<sup>g</sup>.]

2. This has a perennial fibrous root, from which arise two or three erect herbaceous stalks, seven or eight inches high; having three or four pairs of acute-pointed leaves, placed opposite, sitting pretty close to the stalk, smooth, entire, and having several veins diverging from the midrib. The stalk is terminated by a short spike of flowers, ranged on one side the foot-stalk. Calyx short, cut into five acute segments. The outside of the flower is of a bright red, and the inside of a deep orange colour.

[Stems simple, rugged, quadrangular, rigid, annual. Leaves opposite, sessile, ovate-lanceolate, quite entire, smooth, spreading. Spike solitary, with small opposite bractes. Calyx five-leaved; with awl-shaped, permanent leaflets. Corolla five-cornered above, gibbous at the throat, widening at the base: border five-parted; the parts lanceolate and revolute. Stamens shorter than the corolla: anthers sagittate, converging. Style cylindric, jointed below, the upper part deciduous. Stigma attenuated. Capsule roundish, twin: cells two-valved. Seeds angular, rugged<sup>h</sup>.

Native of North America, in the warmer parts, as Virginia, Maryland, and Carolina, where it is called Indian Pink. It flowers here in July and August. Cultivated in 1694 by Bobart<sup>i</sup>.

The accounts of the vermifuge virtues of *Spigelia* given by Drs. Linning and Garden refer to this species; and as the efficacy resides chiefly in the root, which in the preceding is small, this should seem to be preferable. Dr. Garden, in his first letter to Dr. Hope, about the year 1763, says, about forty years ago, the anthelmintic virtues of the root of this plant were discovered by the Indians; since which time it has been much used by physicians and planters. I never found it do much service, except when it proved gently purgative.

Previous to the use of it, I have lately given a vomit, when the circumstances of the case permitted it, and have found it to answer so well, that it should never be omitted. I have known half a dram of this root purge as briskly as the same quantity of rhubarb; but at other times it has produced no such effect, in larger quantities. It is in general safer to give it in large doses; for giddiness, dimness of sight and convulsions frequently result from small ones, whereas large ones only prove emetic or violently cathartic. To a child of two years of age, who had been taking ten grains of the root twice a day, without any other effect than making her dull and giddy, I prescribed twenty-two grains morning and evening, which purged her briskly, and brought away five large worms. After some months an increased dose had the same good effects. Of the root properly dried I give from twelve to sixty or seventy grains in substance. In infusion it may be given to the quantity of two, three or four drams twice a day.

In Dr. Garden's subsequent letters to Dr. Hope in the years 1764 and 1766, the efficacy of this root in worm cases is farther confirmed. In what he calls continued or remitting low worm fevers, he found its efficacy promoted by the addition of the root of *Serpentaria virginiana*<sup>k</sup>.]

#### PROPAGATION AND CULTURE.

1. Sow the seeds in pots filled with soft loamy earth, in the autumn, and plunge them into the bark-bed, where they should remain till the spring, when they must be plunged into a fresh hot-bed. Afterwards plant them in separate pots, shading them till they have taken root; and then treat them in the same way as other tender annual plants from the same countries, keeping them constantly in the hot-bed under cover to perfect the seeds. They ripen in September, and should be sown soon after; for if they are kept out of the ground till spring, they frequently fail.

<sup>g</sup> Browne.

<sup>h</sup> Linn. mant.

<sup>i</sup> Hort. kew.

<sup>k</sup> Woodville.

But Mr. Miller was not able to raise any plants from English seeds.

2. This is not easily propagated in England, for the seeds do not ripen here, and the roots increase slowly; so that the plant is very uncommon in the English gardens at present. It delights in a moist soil, and must not be often transplanted.

[The scarcity of this plant, even now, is a proof, says Mr. Curtis, of the justness of Mr. Miller's observation; it is, in fact, very difficult of culture, and scarcely to be kept in this country but by frequent importation.

SPIGNEL. See *Athamanta*.

SPIKE LAVENDER. See *Lavendula*.

SPIKENARD. See *Andropogon* and *Nardus*.

----- Plowman's. See *Baccharis* and *Conyza*.

SPILANTHUS. (From *σπίλος* macula, a spot or dot; and *ανθος*, a flower. The corolla being dotted with black, from the shedding of the pollen.)

Lin. gen. Reich. n. 1011. Schreb. n. 1266. Gærtn. t. 167. Jacq. Juss. 187. Pyrethrum. Medic. aët. palat. 3. 237. t. 18.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Oppositifoliæ*. *Corymbifera*, Juss.

#### GENERIC CHARACTER.

CAL. Common subhemispherical, imbricate: scales lanceolate-linear, compact, in a double row.

COR. Compound uniform, tubular, conico-convex. Corollets hermaphrodite numerous, equal.

Proper one-petalled, funnel-shaped: border four or five-cleft, reflexed.

STAM. Filaments four or five, capillary, very short. Anther cylindric, tubular.

PIST. Germ oblong, compressed. Style filiform, length of the stamens. Stigmas two, recurved.

PER. none. Calyx unchanged.

SEEDS solitary, oblong, compressed-flat, membranaceous-margined, two-awned at the tip; one awn often smaller than the other.

REC. chaffy, conical: chaffs compressed, deciduous.

OBS. In *Sp. atriplicifolius* the seeds are awnless. In *Sp. Acmella* the ray is three-flowered and very small.

#### ESSENTIAL CHARACTER.

Cal. almost equal. Down two-toothed. Rec. conical, chaffy.

#### SPECIES.

1. *Spilanthus urens*. Biting *Spilanthus*.

Lin. syst. 731. Reich. 3. 701. Jacq. amer. 214. t. 126. f. 1. pict. 103. t. 194.

*Cotula Spilanthus*. Lin. mant. 116. Reich. 3. 857. Leaves lanceolate quite entire, stem prostrate.

2. *Spilanthus Pseudo-Acmella*. Spear-leaved *Spilanthus*.

Lin. syst. 731. Reich. 3. 701.

*Verbesina Pseudo-Acmella*. Lin. spec. 1270. mant. 475. fl. zeyl. n. 308. Mill. dict. n. 5.

*Pyrethrum Acmella*. Medic. aët. pal. vol. 3. phys. 243. t. 19.

*Bidens zeylanica*, flore luteo, melissæ folio, *Acmella dicta*. Seba thes. 1. 19. t. 10. 11.

*Chrysanthemum maderaspatanum latifolium*, scabiosæ capitulis parvis. Pluk. phyt. t. 159. f. 4.

Leaves lanceolate serrate, stem erect.

[3. *Spilanthus albus*. White-flowered *Spilanthus*.

L'Herit. stirp. nov. 7. t. 4. Ait. kew. 3. 152.

*S. salivaria*. Murr. in comm. gott. 6. 1783. p. 3. t. 1. syst. 731.

Leaves ovate almost entire, lower alternate, upper opposite, stem panicled.

4. *Spilanthus Acmella*. Balm-leaved *Spilanthus*.

Lin. syst. 731. Reich. 3. 702. mant. 475.]

*Verbesina Acmella*. Lin. spec. 1271. mat. med. 191. fl. zeyl. n. 309. Mill. dict. n. 6.

*Ceratocephalus ballotis foliis*. Vaill. aët. 600.

*Bidens zeylanica*, &c. Seba thes. 1. 19. t. 9. 10.

*Chrysanthemum bidens*, f. *Bidens zeyl.* flore, luteo, lamii folio, *Acmella dicta*. Raii suppl. 228. (226.)

Breyn. prodr. 3. t. 48.

*Senecio ind. orient. ocymi majoris folio profunde crenato*. Pluk. phyt. t. 315. f. 2.

*Abecedaria*. Rumph. amb. 6. 145. t. 65.

Leaves ovate serrate, stem erect, flowers radiate.



5. *Spilanthus tinctorius*. *Dyer's Spilanthus*.  
*Lour. cochinch.* 484. *ed. Willd.* 590.  
*Leaves lanceolate ferrate smooth, peduncles many-flowered terminating, stem diffusid.*
6. *Spilanthus uliginosus*. *Boggy Spilanthus*.  
*Swartz prodr.* 110.  
*Leaves ovate-lanceolate crenate, stem erect dichotomous, peduncles terminating, flowers radiate.*
7. *Spilanthus atriplicifolius*. *Orach-leaved Spilanthus*.  
*Lin. syst.* 731. *Reich.* 3. 702.  
*Bidens atriplicifolia. Lin. spec.* 1168. *amoen.* 4. 329.  
*Leaves alternate deltoid toothed petioled stipuled, stem panicled.*
8. *Spilanthus insipidus*.  
*Lin. syst.* 731. *Reich.* 3. 702. *Jacqu. amer.* 215.  
*piet.* 105. *t.* 261. *f.* 63.  
*Leaves obovate somewhat toothed sessile.*
9. *Spilanthus oleraceus*. *Esculent Spilanthus*.  
*Lin. syst.* 731. *Reich.* 3. 703. *Jacqu. hort.* 2. 63.  
*t.* 135. *Gärtn. frucht.* 2. 413.  
*Pyrethrum Spilanthus. Medic. in act. pal.* 3. *phys.*  
 242 & 273.  
*Bidens acmelloides. Berg. in act. holm.* 1768. *p.* 247.  
*t.* 7.  
*Leaves subcordate serrulate petioled.*

## DESCRIPTIONS, &amp;c.

This new genus is made up chiefly of those species of *Bidens* and *Verbesina* which do not properly belong to those genera. They are inhabitants of the East or West Indies.

1. Root perennial. Stems herbaceous, round, smooth, branched, procumbent and putting out round whitish fibres from the joints. Leaves numerous, narrow-lanceolate, acute, smooth on both sides, gray on the under surface, sessile, always opposite, three-nerved, the nerves united above the base, an inch and half long. These leaves when chewed for some time, are very hot, like the root of *Pyrethrum* or Pellitory of Spain, and are used for the same purposes as that. Peduncles one-flowered, solitary, suberect together with their branchlet, long, subterminating, bearing a whitish flower, void of scent, variegated with black dots, which proceed from the anthers shedding their dark pollen over the corolla. After the flower is perfectly opened, from the side of the peduncle at the base, a new leafy stemlet springs forth, which in time produces its flower.

Native of America, about Carthagera, in sandy fields; flowering from may to october<sup>1</sup>.

2. Stem upright, round, brown, stiffish, rough with white scattered procumbent hairs. Branches opposite. Leaves opposite, petioled, without stipules, ovate, three-nerved, veined, naked, deeply ferrate, opaque. Petioles slightly channelled, scarcely pubescent. Peduncles from the forkings of the stem, solitary, one-flowered, round, upright, naked, long. Flower together with the calyx ovate, yellow, without any ray. Corolllets five-cleft. Calyx squeezed with four or five leaflets, the outer ones a little shorter<sup>2</sup>.] It is an annual plant, with the stalks two feet high.

Native of Ceylon. [Cultivated in 1768, by Mr. Miller. It flowers in july<sup>3</sup>.

3. Root annual, fibrous, whitish, exciting saliva, whence Murray's trivial name of *salivaria*. Stem herbaceous, upright, somewhat flexuose, very much branched, loosely panicled, round, somewhat rugged, green, a foot high. Branches like the stem, the lower alternate, the upper opposite, roughish with hairs, scarcely striated. Leaves spreading, bluntish, attenuated at the base and running down along the petiole, serrulate-ciliate with small stiffish hairs, and having the same sort of hairs scattered over both surfaces, bright green, of the same colour on both sides, flat, two inches long, and fifteen lines wide. Petioles channelled, margined above; the upper ones gradually shorter. Flowers terminating, solitary, erect, conical, obtuse, white; on erect, striated, subvillose peduncles, scarcely thicker at the top, higher than the plant, from twelve to fifteen lines long.

<sup>1</sup> Jacquin.<sup>2</sup> Linn. mant.<sup>3</sup> Hort. kew.

Native of Peru, whence it was sent to the Paris garden by Dombey<sup>4</sup>. In 1783, it was introduced at Kew by Monf. Thouin. It flowers in june and july<sup>5</sup>.

The whole plant stimulates the tongue and palate, and produces saliva, like the *oleraceus* and its congeners.

*Spilanthus* is distinguished from *Bidens*, by having the scales of the calyx in a regular erect double row: the seeds vertical, flat, margined, ciliate, not awned but having two naked bristles at the tip: the receptacle fusiform, with the chaffs keeled and much compressed<sup>6</sup>.

4. This is so like the second species as scarcely to be distinguished from it; but it is more branched and many-flowered, with most of the florets in the disk four-cleft, a few only that are five-cleft mixed along with them, but it differs chiefly in having a small five-flowered ray, which the other had not; but that might be owing to the defect of climate<sup>7</sup>:] and Mr. Miller says that the *Pseudo-Acmella* has short rays of female flowers.

The stalks rise two feet high. The peduncles are very long, and support one yellow flower, with very short rays. There is a succession of flowers from july till the frost puts a stop to them, when the plant decays.

Native of Ceylon. Cultivated in 1768, by Mr. Miller<sup>8</sup>.

This plant is reputed to be a specific in the stone, in the East Indies; and there is a long account of it in the third volume of Ray's history, communicated by Professor Hotton from Leyden, in may 1700.

5. Stem herbaceous, three feet high, round; with a creeping root. Leaves unequally ferrate, smooth on both sides, nerveless, opposite, juicy, bright green. Flowers whitish-blue: calyx-leaves equal, obtuse. Receptacle convex, naked. Seeds three-awned.

Abecedaria of Rumphius scarcely differs in form from this plant, if we except the one-flowered lateral peduncles: but he makes no mention of the use of that in dyeing. In this circumstance, and in some marks this species agrees with *Serratula tinctoria* of Linneus, but the leaves are different, and the awns of the seed-down refer it to this genus.

It is cultivated for dyeing both in China and Cochinchina. The leaves bruised yield a most excellent blue colour, and a green prepared by a method more easy than from Indigo, and by no means inferior in brightness<sup>9</sup>.

6. This is an annual plant, native of Jamaica<sup>10</sup>.

7. Seeds awnless. Receptacle conical. Native of South America<sup>11</sup>.

8. Stems shrubby, round, branched, procumbent. Leaves attenuated at the base, very smooth, crenate-toothed, acuminate, subsessile, opposite, an inch and half long, having a salt taste, and in some degree biting. Peduncles and flowers very like those of *urens*.

Native of America. Found by Jacquin at the Havanna; where it flowers in december and january<sup>12</sup>.

9. Stems procumbent, a foot long, round, somewhat rugged. Leaves opposite, blunt. Flowers solitary, on long peduncles, yellow<sup>13</sup>. Receptacle cylindrical, very long, covered all over with herbaceous membranaceous chaffs, coloured at the tip, in part embracing the seeds. Seeds small, ovate-oblong, compressed, with little white bristles scattered over it, brown, with whitish ciliate margins. Seed-down fetaceous-awned: with two rays, shorter than half the seed, a little matter unequal, flexible, smooth<sup>14</sup>.

Native of the East Indies. Introduced in 1770, by Monf. Richard. It is annual, and flowers from july to november<sup>15</sup>.]

## PROPAGATION AND CULTURE.

Sow the seeds upon a moderate hot-bed in the spring, and when the plants are fit to remove, transplant them on to a fresh hot-bed, shading them till they have taken new root, and then treating them as

<sup>4</sup> L'Heritier.<sup>5</sup> Hort. kew.<sup>6</sup> L'Heritier.<sup>7</sup> Linn. mant.<sup>8</sup> Hort. kew.<sup>9</sup> Loureiro.<sup>10</sup> Swartz.<sup>11</sup> Linn. spec.<sup>12</sup> Jacquin.<sup>13</sup> Linn. syst.<sup>14</sup> Gärtn.<sup>15</sup> Hort. kew.



other tender annual plants, being careful not to draw them up too weak. In June take them up with balls of earth, and plant them in a warm border, shading and watering them. Several of them may be kept through the winter in a stove.

[SPINA ACUTA. See *Cratægus*.

—— ALBA. See *Drypis*, *Echinops*, *Eryngium*, *Onopordum*.

—— CERVINA and CHRISTI. See *Rhamnus*.

—— INFECTORIA. See *Rhamnus*.

—— SANCTA. See *Cratægus*.

—— SPINARUM. See *Carissa*.

—— TOMENTOSA. See *Onopordum*.]

SPINACIA. (*A modern name, said by Caspar Baubin to be corrupted from Σπινάχια, as the modern Greeks call it, from its rare use in medicine. In Arabic, it is Hispanac.—Others derive it from Spina, the seeds being probably spiny in its wild state.*)

Lin. gen. n. 1112. Reich. n. 1218. Schreb. n. 1520.

Tournef. t. 308. Juss. 85. Gerin. t. 126.

Class. 22. 5. Dioecia Pentandria.

Nat. order of *Holoraceæ*. *Atriplices*, Juss.

#### GENERIC CHARACTER.

##### \* Male.

CAL. Perianth five-parted: segments concave, oblong, obtuse.

COR. none.

STAM. Filaments five, capillary, longer than the calyx. Anthers oblong, twin.

##### \* Female.

CAL. Perianth one-leafed, four-cleft, acute, with two opposite segments very small, permanent.

COR. none.

PIST. Germ round-compressed. Styles four, capillary. Stigmas simple.

PER. none. Calyx unites and hardens.

SEED one, roundish, covered by the calyx.

OBS. Fruit round, or two-horned, or four-horned.

#### ESSENTIAL CHARACTER.

MALE. Cal. five-parted. Cor. none.

FEM. Cal. four-cleft. Cor. none. Styles four. Seed one, within the hardened calyx.

#### SPECIES.

1. *Spinacia oleracea*. Garden Spinach.

Lin. spec. 1456. Reich. 4. 250. hort. cliff. 457.

ups. 266. mat. med. 213. Gartn. fruct. 2. 198.

Lour. cochinch. 617. ed. Willd. 757.

α. *Spinachia*. Dod. pempt. 619. Matth. 464. Ger.

260. emac. 330. Park. parad. 496. t. 497. f. 4.

theat. 751. f. 1. Raii hist. 162. Blackw. herb.

t. 49.

S. mas & femina. Dalech. hist. 543.

S. femine spinoso. Mor. hist. 2. 598.

Lapathum hortense, f. *Spinacia* fem. spinoso. Baub.

pin. 114.

Prickly Spinach.

β. *Spinacia glabra*. Smooth Spinach.

Mill. dict. n. 2.

S. femine non pungente, folio majore & rotundiore.

Baub. hist. Raii hist. 162.

Lapathum hortense, f. *Spinacia* fem. non spinoso.

Baub. pin. 115. Mor. hist. 2. 598. 2.

Fruits sessile.

[2. *Spinacia fera*. Wild Spinach.

Lin. spec. 1456. Reich. 4. 250. Gmel. fib. 3. 86.

n. 67. t. 16. Amm. ruth. n. 247 & 248.

Fruits peduncled.]

#### DESCRIPTIONS, &c.

1. Root annual. Leaves sagittate. Stem hollow, branching, herbaceous, about two feet high. The male flowers are herbaceous, in long spikes; they abound in pollen, which, when ripe, flies out when the plants are shaken, and spreads all round; after which the plants soon decay. The female flowers, which are on a separate plant, sit in clusters close to the stalks at every joint; they are small, herbaceous, and are succeeded by roundish seeds, which (in variety α) are armed with short acute spines.

There are two or three varieties of this, which differ in the size and shape of the leaves; and the more or less prickliness of the seeds.

β. Smooth or round Spinach has ovate thick leaves; not angular at their base; both stalks and leaves are much more fleshy and succulent; and the seeds are smooth without any spines. Of this also there are two or three varieties, differing in the shape, thickness and size of their leaves.

[The seed has no proper pericarp; but the calyx gradually hardens and closes over the seed; this is sometimes unarmed; or it is terminated by two, three or four channelled spines spreading out horizontally; this covering protects the seed and does not drop it. The seed is subglobular, acuminate at the base, where it is fastened to the bottom of the calyx<sup>c</sup>.

The native place of growth is unknown. There is no mention of this plant among the ancients; but with the moderns the use of Spinach has been of long date. The Arabian physicians speak of it, and it has been known time out of mind in Spain, inasmuch that it has been called *Hispanum olus*. Perhaps the Spaniards might have it from the Saracens: but this I propose as matter of conjecture, for those to enquire into who have more leisure. It has been cultivated in England, as far back as we have any records of such things: being mentioned by Turner in 1568<sup>d</sup>.

The etymology of this well-known pot-herb is involved in much obscurity. Latin names ending in *aca*, as *Verbenaca*, *Portulaca*; or in *acia*, as *Spinacia*; are deduced from something to which they bear a resemblance, as *Verbena*, *Portula*, *Spina*: hence our English names *Smallach*, *Spinach*, now commonly spelt *Smallage*, *Spinage*.

Much stress has been laid by the opponents of the doctrines of the sexes in vegetables, upon plants having been produced from the seeds of female Spinage, from which all male plants have been carefully separated. But they were not aware that it is by no means uncommon in this and other dioecious vegetables, to have some hermaphrodite flowers mixed among the females<sup>e</sup>.

2. Stem higher, smooth and even. Leaves deltoid-ovate, sometimes sinuate, obtuse, petioled. Fruits axillary, three or more, each on its peduncle, the length of its fruit, ovate or obovate, obtuse, somewhat keeled on each side, even, very blunt.—Native of Siberia<sup>f</sup>.]

#### PROPAGATION AND CULTURE.

Prickly Spinach was formerly more cultivated in the English gardens than at present, because it is much hardier, so not in much danger from cold, therefore was generally cultivated for use in winter.

The seeds should be sown upon an open spot of ground the beginning of August, observing, if possible, to do it when there is an appearance of rain; for if the season should prove dry for a long time after the seed is sown, the plants will not come up regularly; part of them may come up soon, and a great part of them may remain till rain falls before they come up; and if that should not happen in a little time after, many times there will not be half a crop. When the Spinach is come up, and the plants have four leaves, the ground should be hoed to destroy the weeds, and also to cut up the plants where they are too close, leaving the remaining plants about three or four inches asunder; but this should always be done in dry weather, that the weeds may be destroyed soon after they are cut.

About a month or five weeks after the first hoeing, the weeds will begin to grow again; therefore the ground should be then hoed the second time, observing, as before, to do it in dry weather. But if the season should prove moist, it will be proper to gather the weeds up after they are cut, and carry them off the ground; for if the Spinach is not cleaned from weeds before winter, they will grow up and stifle it so much, that in wet weather the Spinach will rot away.

In October the Spinach will be fit for use, when you should only crop off the largest outer leaves, leaving those in the centre of the plants to grow bigger; and thus you may continue cropping it all the winter and

<sup>c</sup> Gartner.

<sup>d</sup> Hort. kew.

<sup>e</sup> Thunb. præf. ad flor. japon. xxi.

<sup>f</sup> Lin. spec.



spring, until the young Spinach sowed in the spring is large enough for use, which is commonly in april; at which time the spring advancing, the Winter Spinach will run up to seed; so that it should be all cut up, leaving only a small parcel to produce seeds if wanted.

But if the ground in which this Winter Spinach is sown, be planted with early Cabbages, it is not proper to let any of the Spinach remain there for seed; therefore it should be cleared off as soon as ever the Spring Spinach is fit for use, that the Cabbages may be earthed up and laid clear, which is of great service to them; wherefore you should sow a small spot of ground with this sort of Spinach, on purpose to stand for seed, where there should be no other plants among it.

Smooth-seeded or round-leaved Spinach is sown in the spring upon an open spot of ground separate, or else mixed with Radish-seed, as is the common practice of the London gardeners, who always endeavour to have as many crops from their land in a season as possible; but where land is cheap in the country, it will be the better method to sow it alone; and when the plants are come up, the ground should be hoed to destroy the weeds, and cut out the plants where they are too close, leaving the remaining about three inches asunder; and when they are grown so large as to meet, you may then cut out a part of it for use, thinning the plants that they may have room to spread; and this thinning may be twice performed, as there is occasion for the herb, at the last of which the roots should be left eight or ten inches asunder; and if then you hoe the ground over again to destroy the weeds, it will be of great service to the Spinach; for if the land is good upon which it is sown, the sort with broad thick leaves, commonly called Plantain Spinach, will with this management many times produce leaves as large as the broad-leaved Dock, and be extremely fine.

But in order to have a succession of Spinach through the season, it will be proper to sow the seed at three or four different times in the spring; the first in january, which must be on a dry soil; the second the beginning of february, upon a moister soil; the third the beginning of march, which should be on a moist soil; and the fourth the beginning of april; but these late sowings should be hoed out thinner at the first time than either of the former, for there will be no necessity to leave it for cutting out thin for use, because the former sowings will be sufficient to supply the table till these are full grown; besides, by leaving it thin at first, it will not be apt to run up to seed so soon as it would if the plants were close.

These sowings here mentioned are such as are practised by the kitchen-gardeners near London; but as this herb is much used in soups, &c. for great tables, there should be some seeds sown every three weeks, during the summer season, to supply the kitchen; but these late sowings should be on moist strong ground, otherwise, if the season proves hot and dry, the Spinach will run to seed before the plants obtain strength, especially if the plants do not stand thin.

In order to save seeds of either of these kinds, you should sow an open rich spot of ground, with the sort you intend in february, after the danger of being injured by frost is over; and when the plants are come up, they should be hoed out to six or eight inches distance, observing to cut down the weeds at the same time; and when the plants have grown about three weeks or a month longer, they should be hoed a second time, when they should be left twelve or fourteen inches asunder at least, for when they have shot out their side branches they will sufficiently spread over the ground.

You must also observe to keep them clear from weeds, which, if suffered to grow amongst the Spinach, will cause it to run up weak, and greatly injure it. When the plants have run up to flower, you will easily perceive two sorts amongst them, viz. male and female. The male will produce spikes of staminateous flowers, which contain the farina, and are absolutely necessary to impregnate the embryos of the female plants, in

order to render the seeds prolific. These male plants are, by the gardeners, commonly called She Spinach, and are often by the ignorant pulled up as soon as they can be distinguished from the female, in order, as they pretend, to give room for the seed-bearing to spread; but, from several experiments which I have made on these plants, I find wherever the male plants are entirely removed before the farina is shed over the female plants, the seed will not grow which they produce, so that it is absolutely necessary to leave a few of them in every part of the spot, though there may be a great many drawn out where they are too thick, for a small quantity of male plants (if rightly situated) will be sufficient to impregnate a great number of female, the farina when ripe, spreading to a considerable distance, when the plants are shaken by the wind.

When the seeds are ripe (which may be known by their changing their colour, and beginning to shatter, the plants should be drawn up, and spread abroad for a few days to dry, observing to turn them every other day, that the seeds on both sides may dry equally; you must also guard the seeds from birds, otherwise they will devour them. When dry, the seeds should be threshed out, cleaned from the dirt, and laid up for use where mice cannot come to them, for they are extremely fond of this seed.

[SPINACH, WILD. See *Chenopodium*.

SPINDLE TREE. See *Euonymus*.

SPINIFEX. (From *Spina* and *Facio*: so named from the leaves becoming thorny.)

Lin. gen. Reich. n. 1250. Schreb. n. 1611. Linn.

fl. nov. gen. gram. 29. f. 1—5. Juss. 30.

Class. 23. 2. Polygamia Dioecia.

Nat. order of Gramina, Gramineæ or Grasses.

#### GENERIC CHARACTER.

##### \* Hermaphrodite Flowers.

CAL. Head terminating, composed of several bundles, involucred. Bundles partial approximating, involucred: in each a *Rachis* solitary, awl-shaped, excavated a little above the base, flower-bearing, the rest naked, and others similar, without flower.

Involucre common two-leaved: leaflets lanceolate, channelled, subulate-mucronate, unequal: proper four-leaved, similar.

Glume one-flowered, two-valved: valves lanceolate, awl-shaped at the tip, unequal; outer longer, inner concealed within an excavation of the rachis.

COR. Glume two-valved: valves lanceolate, convoluted: inner involving the genitals.

STAM. Filaments three, filiform. Anthers linear, long, cloven at both ends, probably barren.

PIST. Germ oblong. Style filiform, longer than the glumes. Stigmas two, villose, standing out.

PER. none. Corolla unchanged, growing to the seed.

SEED one, oblong, smooth.

##### \* Male Flowers.

CAL. Head as in the Hermaphrodite. Bundles involucred, with glumes longer dagger-pointed, pungent. Rachis each subtrigonal, flowering almost from top to bottom: flowers from five to seven, sessile, alternate, bifarious, parallel, ovate-oblong, awnless.

Glume two-flowered, two-valved: valves oblong, obtuse, striated, channelled, shorter than the corolla, unequal; outer shorter: one floscule hermaphrodite, barren.

COR. Glume two-valved: valves lanceolate, channelled, convolute: inner narrower.

Nectary of two valves, linear, membranaceous, loose, diaphanous, short.

STAM. Filaments three, filiform. Anthers linear, long, cloven at both ends, standing out.

PIST. (in one floscule) Germ oblong. Style bifid. Stigmas none.

Obs. Spinifex differs from *Lolium* in having two valves to the calyx; from *Triticum* in their not being transverse.

#### ESSENTIAL CHARACTER.

HERM. Cal. Glume two-valved, two-flowered: valves parallel to the rachis. Cor. two-valved, awnless. Stam. three. Styles two.

MALE.



MALE. *Cal.* common with the Hermaphrodite. *Cor.* and *Stam.* similar.

## SPECIES.

1. *Spinifex squarrosus*.

*Lin. syst. ed.* 13. 757. 14. 902. *suppl.* 432. *Lour. cochinch.* 647. *ed. Willd.* 794.

*Stipa spinifex.* *Lin. syst. ed.* 13. 104. *Reich.* 1. 220. *mant.* 300.

*Arundo arborescens tabaxifera.* *Mor. hist.* 3. 219. *f.* 8. *t.* 8. *f.* 11.

*Ily-Mullu.* *Rheed. mal.* 12. *t.* 75. *Raii suppl.* 614.

*Gramen dactylon pumilum malabaricum*, spicis loliaceis in acutam spinam terminatis. *Schreb. gram.* 112.

## DESCRIPTION, &amp;c.

Culms very large, as thick as the finger, glaucous, as is the whole plant, jointed, with heaps of leaves at every joint, even, not hollow but full. Leaves grassy, convolute; recurved-spreading, rigid, spiny at the end: sheaths widened, striated, with a woolly ligule. Bundles three or four, terminating, composed of several smaller bundles; the latter of a few lanceolate shorter leaflets without sheaths; among these are the spikes, most commonly three. Each spike near a finger's length; with a three-sided rachis ending in a spine and five alternate lateral sessile remote flowers. These are ovate-oblong, with the side, not the belly, turned towards the rachis, as in the leaf. Glume two-valved: valves ovate, lanceolate, striated, acute.

Native of the East Indies, China and Cochinchina, on sandy coasts.

SPINIFEX. See *Ilibiscus* and *Stipa*.]

SPIRÆA. (*Spireon* of Pliny. Σπειραία of Theophrastus. From σπειρα, a rope, these shrubs being flexible like ropes, Miller. Σπειραί in Theophrastus, are large circular or spiral veins in trees.)

*Lin. gen. n.* 630. *Reich. n.* 686. *Schreb. n.* 862.

*Tournef. t.* 389. *Juss.* 339. *Gært. t.* 69. *Mill.*

*fig. t.* 256, 257. *Filipendula.* *Tournef. t.* 150.

*Ulmaria.* *Tournef. t.* 141. *Aruncus. edit. prior.*

*Class.* 12. 4. *Icosandria Pentagynia.*

*Nat. order of Pomaceæ. Rosaceæ, Juss.*

## GENERIC CHARACTER.

*CAL.* Perianth one-leaved, five-cleft, flat at the base, with acute segments; permanent.

*COR.* Petals five, inserted into the calyx, oblong-rounded.

*STAM.* Filaments more than twenty, filiform, shorter than the corolla, inserted into the calyx. Anthers roundish.

*PIST.* Germs five or more. Styles as many, filiform, length of the filaments. Stigmas headed.

*PER.* Capsules oblong, acuminate, compressed, two-valved.

*SEEDS* few, acuminate, small, fastened to the internal surface.

*OBS.* *Filipendula*, *Tourn.* has numerous capsules in a ring.

*Ulmaria*, *Tourn.* has numerous capsules contorted as in *Helicteres*.

*Aruncus* differs from the rest in being dioecious.

*S. opulifolia* is trigynous.

## ESSENTIAL CHARACTER.

*Cal.* five-cleft. *Pet.* five. *Caps.* many-seeded.

## SPECIES.

\* Shrubby.

[1. *Spiræa lævigata.* Smooth-leaved *Spiræa*.

*Lin. syst.* 471. *Reich.* 2. 519. *Willd.* 2. 1055. *mant.* 244. *Willd. arb.* 370. *Gært. fruct.* 1. 333.

*S. altaica.* *Pallas roff.* 1. 37. *t.* 23. *itin.* 2. *app.* 739. *n.* 3. *t.* T.

*S. altaiensis.* *Laxm. nov. act. Petrop.* 15. 555. *t.* 29. *f.* 2.

Leaves lanceolate quite entire sessile, racemes compound.]

2. *Spiræa falcifolia.* Willow-leaved *Spiræa*.

*Ait. kew.* 2. 197. *Willd. spec.* 2. 1055. *arb.* 370.

*α.* *S. falc. carnea.* Flesh-coloured Willow-leaved *Spiræa*. *Ait. kew.* 2. 197. *Ehrh. Beitr.* 7. 136.

*S. falcifolia.* *Lin. spec.* 700. *Reich.* 2. 520. *hort. cliff.* 191. *ups.* 131. *Wither. arr. ed.* 3. 463.

*Smith brit.* 535. *Gmel. fib.* 3. 183. *n.* 47. *t.* 39.

*β.* *Lin. mant.*

*Roth. germ.* 1. 215. 2. 550. *Hoffm. germ.* 137.

*Du Roi barbecc.* 2. 428. *n.* 1. *Knipl. cent.* 3.

*n.* 91. *Weig. obs.* 31. *Pallas roff.* 1. 36. *t.* 21.

*Amm. ruth.* 265. *Wangenb. amer.* 119. *Krock.*

*filef. n.* 763. *Dubam. arb.* 2. *t.* 75. *Tournef.*

*inst.* 618.

*S. Theophrasti forte.* *Clus. hist.* 1. 80. *Park. theat.*

1436. *t.* 1437. *f.* 1. *Ger. emac.* 1601. *Raii hist.*

1699.

*Frutex spicatus, foliis ferratis salignis.* *Baub. pin.*

475.

Leaves lanceolate, racemes subspiked, petals flesh-coloured, bark of the branches yellowish.

*β.* *S. falc. alpestris.* Alpine Willow-leaved *Spiræa*.

*Willd. spec.* 2. 1056.

*S. falc. β.* *Pallas roff.* 1. 36. *t.* 22.

*S. falcis folio brevior latiusculo crenato, floribus*

*rubris.* *Amm. ruth.* 188. *t.* 28.

*γ.* *S. falc. paniculata.* Panicle Willow-leaved *Spiræa*.

*Ait. kew.* 2. 198. *β.* *Mill. dist. ed.* 7. *n.* 8. *fig.*

171. *t.* 257. *f.* 2.

*S. alba.* *Du Roi barbecc.* 2. 430. *Ehrh. Beitr.* 7.

137.

Leaves lanceolate, racemes panicled divaricated, petals white, bark of the branches red.

*δ.* *S. falc. latifolia.* Broad-Willow-leaved *Spiræa*.

*Ait. kew.* 198. *γ.*

Leaves ovate-oblong, racemes panicled, petals white, bark of the branches rufescent.

Leaves oblong serrate smooth, racemes decomposed.

[3. *Spiræa callosa.* Callous *Spiræa*.

*Lin. syst.* 471. *Willd.* 2. 1056. *Thunb. jap.* 209.

*S. japonica.* *Lin. suppl.* 262. Leaves lanceolate acute serrate subvillose, panicle decomposed subfastigiate.]

4. *Spiræa tomentosa.* Scarlet *Spiræa*.

*Lin. spec.* 701. *Reich.* 2. 520. *Willd.* 2. 1056.

*arb.* 371. *Dubam. arb.* 6. *Du Roi barbecc.* 2.

433. *Wangenb. amer.* 118. *Mill. fig. t.* 257. *f.* 1.

*Ulmaria pentacarpos, integris ferratis foliis parvis subtus*

*incanis, virginiana.* *Pluk. phyt. t.* 321. *f.* 5. *Raii*

*suppl.* 330. *Mor. hist.* 3. 323. Leaves lanceolate unequally serrate tomentose beneath, flowers doubly-racemed.

[5. *Spiræa argentea.* Silvery-leaved *Spiræa*.

*Lin. syst.* 472. *Willd.* 2. 1057. *suppl.* 261.

Leaves silky wedge-shaped marked with lines, serrate at the tip and somewhat plaited, racemes compound.

6. *Spiræa alpina.* Siberian alpine *Spiræa*.

*Lin. spec. ed.* *Willd.* 2. 1057. *Pallas roff.* 1. 35.

*t.* 20.

*Spiræa crenata* varietas. *Georgi itin.* 217. Leaves linear-lanceolate toothletted very smooth, corymbs lateral.]

7. *Spiræa hypericifolia.* Hypericum-leaved *Spiræa*.

*Lin. spec.* 701. *Reich.* 2. 521. *Willd.* 2. 1057.

*hort. cliff.* 190. *ups.* 131. *Du Roi barbecc.* 2. 434.

*Wangenb. amer.* 119. *Willd. arb.* 372.

*S. hyperici folio non crenato.* *Tournef. inst.* 618. *Dubam. arb.* 3.

*Pruno sylvestri affinis canadensis.* *Baub. pin.* 517. *Raii hist.* 1782. *Pluk. phyt. t.* 218. *f.* 5.

*Hypericum frutescens americanum flore albo.* *Park. theat.* 573. *f.* 7.

Leaves obovate quite entire, umbels sessile.

[8. *Spiræa chamædrifolia.* Germander-leaved *Spiræa*.

*Lin. spec.* 701. *syst.* 472. *Reich.* 2. 521. *Willd.* 2.

1058. *arb.* 372. *Du Roi barbecc.* 2. 432. *Thunb.*

*jap.* 210. *Gmel. fib.* 3. 189. *Pallas roff.* 1. 32.

*t.* 15.

*S. chamædryos foliis.* *Amm. ruth.* 269. *S. cantoniensis.* *Lour. cochinch.* 322. *ed. Willd.* 395.

Leaves obovate gash-toothed at the tip, corymbs peduncled.]

9. *Spiræa ulmifolia.* Elm-leaved *Spiræa*.

*Lin. spec. ed.* *Willd.* 2. 1058. *arb.* 372. *Scop. carn.*

*n.* 600. *t.* 22.

*S. chamædrifolia.* *Jacqu. hort.* 2. *t.* 140. *S. betulifolia.* *Pallas roff.* 1. 33. *t.* 16.

*S. foliis ovatis crenatis.* *Gmel. fib.* 3. 189. Leaves ovate-lanceolate doubly toothed, corymbs peduncled.]



10. *Spiræa crenata*. Hawthorn-leaved *Spiræa*.  
*Lin. spec.* 701. *Reich.* 2. 521. *Willd.* 2. 1058.  
*Gouan illustr.* 31? *Gmel. it.* 1. 112. *Kniph.*  
*cent.* 11. n. 94. *Pallas roff.* 1. 35. t. 19. *Thunb.*  
*jap.* 210. *Barr. rar.* 1376. t. 564?  
*S. hyperici folio ampliore, modo integro modo den-*  
*tato. Amm. ruth.* 270.  
*S. fol. variis hirsutis. Amm. ruth.* 189. n. 268.  
*Leaves obovate acute toothed at the tip three-nerved co-*  
*rymbs clustered peduncled.*
- [11. *Spiræa triloba*. Three-lobe leaved *Spiræa*.  
*Lin. syst.* 472. *Reich.* 2. 521. *Willd.* 2. 1059.  
*mant.* 244. *Pallas roff.* 1. 33. t. 17.  
*S. ramosissima, parvo subrotundo opuli folio. Amm.*  
*ruth.* n. 271.  
*Leaves roundish subcordate obtusely lobed toothed, umbels*  
*peduncled.*
12. *Spiræa thalictroides*. Meadow-rue leaved *Spiræa*.  
*Lin. spec. ed. Willd.* 2. 1059. *Pallas roff.* 1. 34. t. 18.  
*S. aquilegifolia. Pallas itin.* 3. app. 734. n. 94. t. P.  
*f.* 3.  
*S. foliis variis per fasciculos congestis. Amm. ruth.*  
*188. n. 267.*  
*Leaves obovate obtuse subtrilobate, umbels lateral sessile.]*
13. *Spiræa opulifolia*. Currant-leaved *Spiræa*.  
*Lin. spec.* 702. *syst.* 472. *Reich.* 2. 522. *Willd.*  
*2. 1059. hort. cliff.* 190. *Gron. virg.* 55. *Willch*  
*obs.* n. 37. *Gärtn. fruct.* 1. 337. *Du Roi*  
*harbecc.* 2. 436. *Wangenb. amer.* 119. *Willd.*  
*arb.* 374.  
*S. opuli folio. Tournef. inst.* 618. *Dubam. arb.* 5.  
*Euonymus virginiana, ribesii folio, capsulis eleganter*  
*bullatis. Comm. hort.* 1. 169. t. 87. *Raii hist.*  
*1622. & dendr.* 69.  
*Leaves ovate three-lobed serrate, corymbs peduncled.*
14. *Spiræa forbifolia*. Service-leaved *Spiræa*.  
*Lin. spec.* 702. *Reich.* 2. 522. *Willd.* 2. 1060.  
*amen.* 2. 352. *Gmel. fib.* 3. 190. t. 46. *Pallas*  
*roff.* 1. 38. t. 24. *Du Roi harbecc.* 2. 436. *Willd.*  
*arb.* 375.  
*S. forbi folio tenuiter crenato, floribus in thyrso albis.*  
*Amm. ruth.* 186.  
*β. S. alpina, caule suffruticoso, floribus corymbosis duplo*  
*majoribus. Pallas roff.* 1. 34. t. 25.  
*Leaves pinnate, leaflets uniform serrate; stem shrubby,*  
*flowers paniced.*  
*\*\* Herbaceous.*
15. *Spiræa Aruncus*. Goat's-beard *Spiræa*.  
*Lin. spec.* 702. *syst.* 472. *Reich.* 2. 522. *Willd.*  
*2. 1060. Gouan illustr.* 31. *Hoffm. germ.* 173.  
*Roth. germ.* 1. 216. 2. 551. *Pollich pal. n.* 479.  
*Krock. files. n.* 764. *Crantz. austr.* 109. *Scop.*  
*carn. n.* 601. *Villars dauph.* 3. 556. *Allion.*  
*pedem. n.* 1621. *Thunb. jap.* 211. *Pallas roff.*  
*1. 39. t. 26. Gmel. fib.* 3. 192. *Kniph. cent.* 3.  
*n.* 89.  
*Aruncus. Lin. hort. cliff.* 463. *Gron. virg.* 121.  
*Filipendula. Hall. helv. n.* 1134.  
*Barba capræ. Cam. hort.* 26. t. 9. *Dalech. hist.*  
*1080.—floribus oblongis. Bauh. pin.* 163. *Tournef.*  
*inst.* 265.  
*Barba capri. Bauh. hist.* 3. 488. *Ger. emac.* 1043.  
*n.* 2. *Raii hist.* 708.  
*Ulmaria major f. altera. Park. theat.* 592.  
*Drymopogon 1. Tabern. ic.* 777.  
*Leaves superdecompound, spikes paniced, flowers dioecious.*
16. *Spiræa Filipendula*. Common Dropwort.  
*Lin. spec.* 702. *syst.* 472. *Reich.* 2. 523. *Willd.*  
*2. 1061. mat. med.* 126. *hort. cliff.* 191. *Fl.*  
*jucc. n.* 439. *Huds. angl.* 217. *Wither. arr. ed.*  
*3. 463. Smith brit.* 535. *engl. bot. t.* 284.  
*Lightf. scot.* 259. *Relb. cant. ed.* 2. n. 415.  
*Sibth. oxon. n.* 453. *Abbot bedf. n.* 367. *Fl. dan.*  
*t.* 635. *Hoffm. germ.* 174. *Roth. germ.* 1. 216.  
*2. 552. Pollich pal. n.* 480. *Krock. files. n.* 765.  
*Crantz austr.* 109. n. 3. *Scop. carn. n.* 602.  
*Villars dauph.* 3. 557. *Allion. pedem. n.* 1622.  
*Gmel. fib.* 3. 191. n. 52. *Pallas roff.* 1. 39. *Ludw.*  
*est. t.* 60. *Blackw. t.* 467. *Kniph. cent.* 3. n. 90.  
*Regnault bot. Plenck, ic.* 399.  
*Filipendula. Camer. epit.* 608. *Matth.* 865. *valgr.*  
*2. 217. Dod. pempt.* 56. 1. *Ger.* 900. 1. *emac.*

1058. 1. *Raii hist.* 623. *syn.* 259. *Petiv. brit.*  
*t.* 71. f. 6. *Hall. helv. n.* 1136.  
*F. vulgaris. Bauh. pin.* 163. *Park. theat.* 435. 1.  
*Mor. hist.* 3. 322. f. 9. t. 20. f. 1.  
*β. Filipendula minor. Bauh. pin.* 167. *prodr.* 85.  
*Park. theat.* 435. f. 3. *Raii hist.* 623.  
*Spiræa angustifolia. Mill. dict. n.* 9.  
*Leaves interruptedly pinnate, leaflets uniform serrate*  
*smooth, stem herbaceous, flowers cymed many-styled.*
17. *Spiræa Ulmaria*. Meadow-sweet.  
*Lin. spec.* 702. *syst.* 472. *Reich.* 2. 523. *Willd.*  
*2. 1061. fl. lapp. n.* 201. *jucc. n.* 440. *hort. cliff.*  
*191. mat. med.* 129. *Huds. angl.* 217. *Wither.*  
*arr. ed.* 3. 464. *Smith brit.* 536. *engl. bot. t.* 960.  
*Curt. lond.* 5. t. 33. 340. *Lightf. scot.* 259.  
*Relb. cant. ed.* 2. n. 416. *Sibth. oxon. n.* 454.  
*Abbot bedf. n.* 368. *Fl. dan. t.* 547. *Hoffm.*  
*germ.* 174. *Roth. germ.* 1. 216. 2. 553. *Pollich*  
*pal. n.* 481. *Krock. files. n.* 766. *Crantz austr.*  
*109. Scop. carn. n.* 603. *Villars dauph.* 3. 557.  
*Allion. pedem. n.* 1623. *Gmel. fib.* 3. 191. n. 53.  
*Pallas roff.* 1. 40. *Ludw. est.* 23. *Kniph. cent.* 1.  
*n.* 84. *Regnault bot. Plenck, ic.* 400.  
*Filipendula. Hall. helv. n.* 1135.  
*Ulmaria. Clus. pan.* 700. *hist.* 2. 198. 1. *Bauh. hist.*  
*3. 488. 2. Raii hist.* 623. *syn.* 259. *Petiv. brit.*  
*t.* 71. f. 8. *Blackw. t.* 465.  
*U. vulgaris. Park. theat.* 592. 1.  
*Regini prati. Dod. pempt.* 57. *Ger.* 886. *emac.*  
*1043.*  
*Barba capræ floribus compactis. Bauh. pin.* 164.  
*Mor. hist.* 3. 323. f. 9. t. 20. f. 3.  
*Leaves interruptedly pinnate tomentose beneath, the end-*  
*leaflet larger lobed, flowers cymed many-styled.*
- [18. *Spiræa digitata*. Finger-leaved *Spiræa*.  
*Lin. spec. ed. Willd.* 2. 1061.  
*S. palmata. Pallas roff.* 1. 40. t. 27. *itin.* 3. app. 735.  
*n.* 95. t. Q. f. 1.  
*S. folio impari majore multifido. Gmel. fib.* 3. 192.  
*Ulmaria foliis profunde laciniatis. Amm. ruth.* 74.  
*Leaves pinnate tomentose beneath, the end one larger*  
*seven-lobed, the lateral ones five-lobed, corymb branched*  
*contracted.*
19. *Spiræa lobata*. Lobe-leaved *Spiræa*.  
*Lin. syst. ed.* 14. 472. *Willd.* 2. 1062. *Jacqu.*  
*hort.* 1. 38. t. 88.  
*S. palmata. Lin. syst. ed.* 13. 393. *Reich.* 2. 524.  
*suppl.* 262.  
*Leaves pinnate smooth, the end one larger seven-lobed, the*  
*lateral ones three-lobed, corymbs proliferous.*
20. *Spiræa camtschatica*. Ear-petioled *Spiræa*.  
*Lin. spec. ed. Willd.* 2. 1062. *Pallas roff.* 1. 41.  
*t.* 28. *Gmel. fib.* 3. 192. n. 55.  
*Leaves five-lobed, petioles eared, stem hirsute, corymbs*  
*proliferous.*
21. *Spiræa palmata*. Hand-leaved *Spiræa*.  
*Lin. spec. ed. Willd.* 2. 1062. *Thunb. jap.* 212.  
*Leaves palmate serrate, panicle superdecompound.]*
22. *Spiræa trifoliata*. Three-leaved *Spiræa*.  
*Lin. spec.* 702. *syst.* 472. *Reich.* 2. 524. *Willd.*  
*2. 1063. hort. cliff.* 191. *ups.* 131. *Gron. virg.*  
*55. Mill. fig.* 171. t. 256. *Curt. magaz. t.* 489.  
*Pluk. phyt. t.* 236. f. 5. *Raii suppl.* 330. *Mor.*  
*hist.* 323.  
*Leaves ternate serrate almost equal, flowers subpaniced.*

## DESCRIPTIONS, &amp;c.

[1. Shrubby with round branches. Leaves alter-  
 nate, bluntish, mucronate, very even. Racemes ter-  
 minating, solitary, erect, composed of alternate, erect,  
 racemelets, supported by a small bracte. Flowers  
 longer than the pedicel, white, alternate. Stamens  
 longer than the corollas<sup>b</sup>.

Stems wand-like, numerous, straight, stout, the  
 thickness of a finger, little branched, covered with a  
 smooth bark, of a glaucous-testaceous colour, very  
 tough, and at the end somewhat herbaceous. Leaves  
 on the older stems in alternate clusters; on the younger  
 branches singly alternate, oblong, smooth, quite entire,  
 soft, narrowed at the base into a sort of winged pe-  
 tiole, having a toothlet or very small point at the end,  
 emerging from the nerve. Racemes composed of

<sup>b</sup> Linn. mant.



partial ones, commonly about twelve; when fruiting, subfastigate. Flowers white, nearly of the same size as in *chamædrifolia*. Calyx flattish, acutely five-cleft, smooth. Petals ovate. Stamens about thirty, a little longer than the petals, with ovate anthers of a pale yellow colour. Germs commonly four or five. Capsules for the most part four, (five or six, immersed in the woolly bottom of the calyx, small, oblong, *Gærtn.*) biggish, testaceous, hard, shaped like filicles, erect; when fresh, somewhat clammy, with a fragrant rosy smell. Seeds usually two in each capsule, very large, linear-lanceolate, testaceous: (four, pendulous, oblong, slightly incurved, acuminate, angular, bay, *Gærtner.*)

Native of Siberia, in vallies at the foot of the loftier Altaic mountains, which are covered with snow. Flowering in the spring, ripening its capsules at the beginning of august, and then flowering again from the lateral branches. The shoots being tough, very straight, and of a proper size, are used by the Cossacks for ramrods. The leaves being gently and pleasantly astringent, may serve as a succedaneum for tea<sup>1</sup>.

Introduced in 1774, by Daniel Charles Solander, L. L. D. It flowers from april to june<sup>k</sup>.

2. This shrub is about four feet high, with rod-like stems, smooth; the branches yellow. Leaves alternate, subsessile, broad-lanceolate, unequally ferrate, smooth on both sides. Racemes terminating, solitary, erect, decompound, obtuse, many-flowered; with linear, solitary bractes. Corollas of a rose-red, paler when expanded<sup>l</sup>.]

Miller describes the shrub as it is commonly cultivated in our nurseries under the name of *Spiræa Frutex*. Stalks very taper, and rough towards the top, and covered with a reddish bark. Leaves about three inches long, and an inch broad in the middle, bluntly ferrate, and of a bright green colour. In rich moist ground the stalks will rise five or six feet high, but in moderate land from three to four; for their whole height is one year's growth from the root. They are terminated by spikes of pale red or flesh-coloured flowers: the lower part of the spike is branched out into smaller, but the upper part is close and obtuse. Some of the stamens stand out much beyond the petals, but others are not so long; they are terminated by brown headed anthers. The capsules are pointed, but rarely come to perfection in England. This shrub flowers in june and july; and in moist seasons there are frequently young shoots from the root which flower in autumn.

[Pallas describes it thus as found wild in Siberia. From a prolific root this shrub is widely luxuriant, with numerous upright shoots, little branched, rod-like, clothed with a greenish bark, and a brownish fissile deciduous epidermis. Branches herbaceous at the end, round, striated, yellowish, hairy, leafed alternately, flowering at the top. Leaves petioled, broad-lanceolate, pubescent, in the larger variety very sharp, deeply and sharply ferrate; the serratures double: in the smaller variety they are blunter, simply ferrate only here and there, more hoary and drier. Racemes in the larger compound and very handsome; in the low one simple, very short, sometimes a little compound, with one or two branchlets having three or four flowers on each. Bractes to the partial racemes lanceolate, together with the peduncles pubescent. The flowers have a little scent, before they open are of a very fine rose colour, but afterwards of a pale flesh-colour. Calyx minute, green, scarcely pubescent. Petals biggish, oval. Stamens more than twenty, much longer than the petals, pale; with yellow anthers. Capsules erect, biggish, testaceous, very seldom ripening in gardens.

By the banks of rivers it is often a fathom high, with longer leaves and large handsome racemes of flowers, as it appears in gardens: but on the rocky sides of mountains it is smaller and more branched, with shorter leaves, and a very short simple raceme. The latter of these Willdenow has distinguished as a variety, under the name of *alpestris*.

It begins from the river Ob, and thence becomes

gradually more abundant about the Jenisea, and in the country beyond the lake Baikal.

Pallas can scarcely believe it to be wild in Silesia. Nor can I credit its being indigenous of England, though it occurs sometimes in moist hedges in Westmoreland, in many places on the borders of Winandermere; and also between Poolbridge and Colthouse near Hawkhead, Cumberland; and in a wood at Hafod, Cardiganshire.]

γ. The stalk of the panicled variety is covered with a bright brown bark, and rises five or six feet high, sending out many slender horizontal branches on every side. The leaves are of a thin consistence, and a bright colour on both sides, sharply ferrate, and upon short petioles. The flowers are disposed in panicles at the end of the branches: the petals are small, roundish and white; filaments many and short, terminated by roundish red anthers. It flowers in july and august, but rarely produces good seeds in England. It grows naturally in North America, whence Mr. Miller received it. [This variety, which is described and figured in Mr. Miller's plates, and described in the seventh edition of his dictionary, as a distinct species, is wholly omitted in the eighth.

δ. The broad-leaved variety is also a native of North America.

It appears from Rea's Flora, that the common *Spiræa Frutex* was cultivated here in 1665<sup>m</sup>.

3. Branches and branchlets alternate, roundish, villose, purplish, erect. Leaves alternate, elliptic, unequally ferrate, serratures remote and not glandular; the lower leaves villose, especially on the nerves; the upper green, glaucous beneath, nerved, erect, an inch and half long. Petioles a line in length, semicylindric, with a smooth red callosity on each side of the base without. Flowers red. Peduncles and pedicels villose.—It differs from *tomentosa* in having villose, not tomentose leaves, and the flowers in panicles:—from *salicifolia*, in having the leaves manifestly petioled, elliptic, sharper and longer, with the serratures remote; the panicle fastigate, not spiked; the under surface of the leaves, the stem, and peduncles villose.

Native of Japan, in the island Nipon; flowering in june<sup>n</sup>.

4. This differs from the *salicifolia* in having the leaves more deeply and unequally ferrate, very tomentose beneath; the terminating compound raceme closer and longer; the flowers of a deeper red, and eight times smaller; the fruits villose<sup>o</sup>.]

The stalks are slender, and branch out near the ground; they have a purple bark covered with a gray mealy down. Leaves smaller than those of *salicifolia*, downy and veined on their under side, but of a bright green above. Branches terminated by a thick raceme of flowers, branched towards the bottom into small spikes. Flowers very small, of a beautiful red colour, appearing in july, [august and september.

Native of Pennsylvania. Introduced in 1736, by Peter Collinson, Esq.<sup>p</sup>

5. Branches striated, erect, with short branchlets. Leaves alternate, petioled, silky-tomentose on both sides. Racemes longer than the branchlets. Flowers very small, with villose germs.

Native of New Granada, where it was found by Mutis<sup>q</sup>.

6. Shoots a cubit and half or two cubits (a yard) high. These and the older branches are of a testaceous colour, with a brownish epidermis, cloven longitudinally and deciduous. Leaves commonly from three to five in a bundle, or else alternate, very much narrowed at the base, sessile, very finely ferrulate at the edge or else entire. Corymbs on the shoots of the year, (which are short and leafy) subglobular, disposed all one way, as in *crenata*, but less abundant, and on more slender and longer peduncles. Flowers a little larger, with smooth calyxes. Capsules oblong, compressed, from erect parallel, gray.

This seems to be a middle species between *crenata* and *hypericifolia*. It differs from the former in its

<sup>1</sup> Pallas.

<sup>k</sup> Hort. kew.

<sup>l</sup> Smith brit. and Withering.

<sup>m</sup> Hort. kew.

<sup>n</sup> Thunb. jap.

<sup>o</sup> Linn. spec.

<sup>p</sup> Hort. kew.

<sup>q</sup> Linn. suppl.



place of growth, time of flowering, leaves which are not three-nerved, but very smooth, tender, attenuated towards the base but not petioled; in the outer skin of the shoots falling off; in the peduncles being more slender and longer; and the capsules being larger, and from upright parallel. It differs from the latter, in having the leaves acute and nerveless, not rounded and three-nerved; the flowers smaller, in many-flowered corymbs, not in sessile few flowered umbels.

Native of eastern Siberia, especially beyond the lake Baikal, and about the lake itself, flowering in June<sup>1</sup>.]

7. This rises with several slender shrubby stalks five or six feet high, covered with a dark-brown bark, sending out small side branches the whole length. Leaves small, wedge-shaped, having many punctures on their surface, as in those of St. John's-wort. Flowers in small sessile umbels, each on a long slender pedicel, and white. They appear in May and June, and as the flowers are produced almost the whole length of the branches, this shrub makes a good appearance during the time of flowering.

[It was cultivated here in 1640, according to Parkinson<sup>2</sup>; who says that it came from the north-west parts of America. Miller says it came originally from Canada, and that country has been generally taken for its native place of growth. Yet Dr. Smith informs us that there is no specimen of this shrub among the North American plants which Kalm gave to Linneus, and that it is to all appearance perfectly wild in Italy, where Dr. Smith found all the hedges full of it in flower, on the 28th of April, between Terni and Foligno. He adds, that its common English name of *Italian May*, seems to confirm the opinion of its being a native of Italy<sup>3</sup>.—I did not know that such is its common name in English; but surely it is a better appellation than that barbarous one of *Hypericum Frutex*, by which it is generally known among the nursery-men.

8. Shoots abundant, seldom two ells high, the thickness of the finger, wand-like, branched. Wood brittle. Bark of the shoots yellowish-brown, with prominent dots scattered over it. Branches alternate, commonly angular, with a testaceous bark somewhat striated, and in the younger branches covered with a tender ash-coloured epidermis, which falls off; the annual shoots are grooved and pubescent. Leaves alternate, softish, pubescent with prostrate hairs, quite entire at the base, but commonly gash-ferrate from the middle to the end, where they are sharp. Corymbs at the top of the stems frequent, many-flowered, terminating the annual alternate shoots: in gardens and in moist shady places these corymbs are more elongated; but in a ruder soil most of the peduncles are clustered at the top like an umbel. Flowers biggish, white, having a weak virose smell, and fugacious. Stamens less than twenty. Capsules five, gray, erect, parallel, acute, mucronate outwardly with the style, inwardly opening longitudinally. Seeds like sawdust, gray and very small.

This species varies very much, especially with larger or smaller leaves, more or less cut, but more commonly quite entire and ovate-acute<sup>4</sup>.

Native of Siberia, Hungary, Japan, and China about Canton.

On the rocks of Dauria, the leaves are very small and very pubescent, inasmuch that they are almost tomentose; the flowers also are much smaller. At Kamtschatka the leaves are somewhat tomentose<sup>5</sup>.

The *chamedrifolia* of Jacquin is the next species, and the same with the *betulifolia* of Pallas.—According to Willdenow, the *cantonensis* of Loureiro is this species.

In Kamtschatka the leaves are used as a succedaneum for tea, being slightly astringent. When the shoots are straight, they make tobacco-pipes of them. This shrub makes beautiful hedges, being entirely covered with flowers in June. The capsules ripen in August; but it does not readily grow from seed, and it does not throw out suckers so freely as some of the species<sup>6</sup>.

9. This is very different from the preceding: having ovate-lanceolate leaves grossly double-toothed; not obovate, gashed only at the end, as in that: it has also larger flowers, and a higher stem<sup>7</sup>.

It was imperfectly known to Pallas, only from dried specimens among Steller's plants. The specimen which Jacquin sent him from Carniola, had the branches more sharply angular than the Siberian *chamedrifolia*; the leaves larger, smoother, ferrate, but scarcely gashed; the flowers much bigger; and the shrub in general stouter<sup>8</sup>.

10. Stems several, scarcely two ells high, very much branched from the bottom. Branches rod-like, round, with a testaceous bark cloven longitudinally. Leaves on the younger branches and annual shoots alternate, attended with smaller ones in little bundles, hoary or glaucous, three-nerved, hardish, varying in form and size; on the luxuriant shoots or branches sometimes ovate-acute, widish, ferrulate from the tip beyond the middle; but commonly oblong, bluntish, crenulate or ferrulate towards the tip, or more commonly quite entire. Corymbs at the ends of the annual twigs, very abundant, disposed along the branches on one side, in hemispherical clusters. Flowers smallish, white, odorous. Calyx bell-shaped, together with the peduncle somewhat pubescent: petals oval: stamens fewer than twenty, longer than the petals; with pale anthers. Capsules very short, conical-mucronate, placed in a star, calyced with the withered calyx, of a dusky testaceous colour<sup>9</sup>.

Thunberg thus describes it as found in Japan.—Stem shrubby, loose, smooth in all its parts. Branches round. Branchlets filiform, alternate, brown, from upright spreading, loose, capillary at the end, rod-like, a foot long, frequent, sometimes subdivided. Leaves alternate, petioled, lanceolate, entire or ferrate at the tip, frequent, erect, half an inch long. Flowers on the branchlets in umbels, two or three from each bud. Umbel simple, sessile. Peduncles capillary, erect, one-flowered, the length of the internodes. The buds consist of about seventeen leaflets, of which the twelve outer are imbricate, ovate, acute, purple; the five inner are equal, ovate, acute, green; for the most part inclosing three flowers. Calyx greenish purple. Petals white, ovate, emarginate, a line in length. Filaments twenty, the length of the calyx. Styles shorter than the filaments. Capsules five. There is a variety, with ovate wider leaves, and double flowers.

Willdenow thinks that the Spanish plant is different from this. It differs from *chamedrifolia*, with which it has been commonly confounded, in having the leaves ferrate at the tip, three-nerved, not gashed at the end and veined; the corymbs more clustered, and in a sort of head, and the flowers a little smaller.]

Mr. Miller says, that the whole appearance of the shrub from Spain is so like *hypericifolia*, as not to be distinguished at a small distance; the only difference being, that the leaves of this are broader at the point, where they have two or three indentures.

[Native of Spain, Russia and Japan. Pallas says it is the only shrubby species of *Spiræa*, which is indigenous of European Russia: and that it is so astringent as to be capable of tanning leather. It flowers about the middle of May, after leafing, and the fruit is ripe in August.—With us it flowers in April and May; and it was cultivated by Mr. Miller in 1739<sup>10</sup>.

11. Stems numerous, scarcely thicker than a swan's quill, very much branched, upright, with a gray bark more or less pale, and somewhat angular with sharp streaks running down from the branches. Branches and branchlets alternate, those of the last year very smooth, and yellow, leafy and terminated by an umbel. Leaves alternate, on very short petioles, smooth, glaucous, wide-ovate, retuse, gash-trilobate. They vary, even in the garden, with fewer or more frequent gashes, with the teeth or lobes obtuse or acute, in breadth, &c. Umbels very frequent at the ends of the annual branches; peduncles often more than thirty, besides a few axillary ones scattered below the umbel. Flowers

<sup>1</sup> Pallas. <sup>2</sup> Hort. kew. <sup>3</sup> Tour, vol. 2. 304.  
<sup>4</sup> Pallas. <sup>5</sup> Idem. <sup>6</sup> Idem.

<sup>7</sup> Willdenow. <sup>8</sup> Pallas. <sup>9</sup> Idem.  
<sup>10</sup> Hort. kew.



middle-sized, white: the five segments of the calyx short and acute: the petals orbicular and emarginate: the stamens shorter than the petals and not very numerous. The five capsules gray, conical, spreading in form of a star, mucronate with the style, calyced with the margined receptacle.

This elegant shrub is a native of Siberia, and is not seen till we arrive at the Altaic chain of mountains; thence it continues eastward to the Jenisea and the lake Baical; being scarcely ever more than two feet high, even in the academical garden at Petersburg; on the Altaic rocks it is yet more dwarf. It multiplies very little by the root<sup>d</sup>.

12. Stature of *crenata*, between which and *triloba* this seems to be a middle species. Branches straight, stiffer, of a yellowish testaceous colour, scariose with the longitudinally cloven and deciduous epidermis. Leaves scattered alternately, here and there collected into little heaps, smooth, glaucous, ovate-wedgeform, produced into a longish petiole, very finely three-nerved; the lower ones almost entire, often oblong, most of them wider at the end, three-lobed-gashed, with the lobes blunt. At the ends of the branchlets and shoots are small alternate sessile umbels, containing from four to twelve flowers, accompanied by small oblong leaves, sometimes lobed. Hence they seem as it were racemed with flowers in bundles. Flowers white, scarcely larger than in *crenata*, with stamens more abundant and longer than in *triloba*. Capsules five, thickish, conical, of a yellow gray colour, mucronate with a setaceous style<sup>e</sup>.

Willdenow remarks, that it has the habit of *hypericifolia*, but that the leaves are very different.

This elegant species is a native of Dauria, especially in the transalpine parts, along with the *chamaedrifolia* and *alpina*. It flowers earlier than the first of these.]

13. This rises with many shrubby branching stalks, eight or ten feet high in good ground, but generally five or six; they are covered with a loose brown bark which falls off. Leaves about the size and shape of those of the common Currant bush, ending in acute points, and serrate on their edges. The flowers are produced in roundish bunches at the end of the branches; they are white with some spots of a pale red.

[Linneus remarks, that this has only three styles. Gærtner describes it as having three or four capsules, which are separate, ovate, acuminate at both ends, submembranaceous, angular inwardly. Seeds two or three, ovate, narrowed and compressed a little towards the navel, bay-straw-coloured, very smooth and shining, fastened to the inner future of the valves, and pendulous.

Native of Canada and Virginia. Cultivated in 1713 by Bishop Compton<sup>f</sup>.] It is commonly known in the nurseries by the name of *Virginian Gelder Rose*.

14. This rises with shrubby stalks like the second, but sends out horizontal branches, which are slender, and covered with a brown bark. Leaves of a thin texture, and a bright green colour on both sides, slightly and acutely serrate. Flowers in terminating panicles, small and white. Stamens a little longer than the petals, with large, brownish, round anthers.

[This shrub is often more than a fathom in height, very much branched from the bottom, and throwing out abundance of suckers from the root. Trunk round, the thickness of the wrist next the root, covered with a brownish ash-coloured bark, having frequent warts on it; on the branches it is more of a gray ash-colour with fewer warts. Wood brittle, hollow within with a soft ferruginous pith. Branches alternate, patulous, round, with herbaceous tops that decay every year. The twigs, petioles and peduncles have hairs thinly scattered over them which are elegantly starred at the top; on the stipules and nerves of the leaves beneath there are also these stellate hairs, but the star is almost sessile; on the leaves they are very much scattered. Stipules at the base of the petioles large, lanceolate, erect, peculiar to this among the shrubby species. Leaves unequally pinnate, with

the petioles often red, round, grooved above: leaflets soft, often ten pairs or more, lanceolate-acuminate, very elegantly doubly-serrate, grooved along the nerves; the end-leaflet often confluent with the next pair, and three-lobed.

Panicles of flowers terminating, on a flourishing shrub very abundant, a span in length or more, composed of smaller ones which are alternate. Bractes to the lower partial panicles like leaves; the upper ones linear-lanceolate; and those to the outmost branchlets of the panicle small and linear. Flowers very large, white, fugacious, odorous: calyx small, acutely five-cleft, spreading; petals ovate; stamens about thirty, much longer than the petals, with small yellow anthers. Styles four or five, shorter than the petals. Capsules four or five, from upright parallel, a little reflexed at the top, crowned with the calycular receptacle and the withered remains of the stamens.

Native of eastern Siberia, in boggy woods, wet vallies, and on the banks of torrents; it is abundant as far as Kamtschatka, along with the *salicifolia*. It flowers in Siberia at the beginning of July; is a very handsome shrub in plantations; and the hollow shoots are used for tobacco-pipes<sup>g</sup>.

It was cultivated here in 1759, by Mr. Miller, and flowers in August<sup>h</sup>.

β. On the very lofty mountains about the lake Baical this shrub becomes gradually smaller, till towards the summit it is scarcely higher than a span, and woody only for a finger's length. The leaflets are less, very elegantly gash-serrate, and almost pinnatifid, with the pinnules serrate all round; they are not so much pointed, and in pairs from five to eleven. The hairs are simple and none of them starred. Panicle simple, consisting of three three-flowered branchlets, and one below from the axil of the upper leaf. Flowers larger, with the stamens less elongated in comparison with the petals<sup>i</sup>.]

15. Root perennial. Stem annual, from three to four feet high. Leaves doubly pinnate; each having three or four pairs of oblong leaflets terminated by an odd one: they are two inches long, and almost an inch broad, serrate, and ending in acute points. Flowers disposed in long slender spikes, formed into loose terminating panicles; they are small, white, and of two sexes in the same spike.

[Gouan remarked this plant to be always polygamous-monoecious. Pollich says that the male flowers are on a distinct plant, and larger than the females. Scopoli, Haller, and Krockner agree with him and Linneus, in assigning dioecious flowers to this plant. Krockner says that the male flowers have the rudiment of a germ: and Haller, that he was informed by Ludwig, that he had observed an androgynous spike in his garden. Thunberg affirms, that in his specimen from Japan, the flowers were all hermaphrodite. He thus describes the plant.—Stem scaly at the base, round, upright, herbaceous, wholly smooth. Leaves alternate, petioled, superdecompound-ternate: leaflets on short round petioles grooved above; the lateral ones smaller, ovate, acuminate, doubly serrate, smooth, paler beneath, nerved, an inch long and more. Racemes numerous, scattered, distich, seldom compound, a finger's length or more. Peduncles filiform, villose; pedicels one-flowered, very short. Calyx half-five-cleft, with ovate blunt segments. Filaments ten, longer than the corolla. Styles two. Linneus says three: and that there are one or two seeds in each capsule. According to Haller, there are three capsules with one seed in each. Pollich also says that the capsules are one-seeded. Scopoli, that there are four or five germs, and four seeds.

Pallas thus describes the Siberian plant.—Root perennial. Stem suffruticose, three feet high or more, slender, smooth, striated, scarcely branched. Leaves alternate, variously compound: leaflets ovate, acuminate, doubly-serrate, pubescent on the nerve and petiole. The upper stem-leaves are often simply pinnate, consisting only of two pairs with an odd leaflet: the lower ones are made up of two which are quinate-

<sup>d</sup> Pallas.<sup>e</sup> Idem.<sup>f</sup> Hort. kew.<sup>g</sup> Pallas.<sup>h</sup> Hort. kew.<sup>i</sup> Pallas.



pinnate, and of one between them composed of a terminating leaflet, two lateral ones which are ternate, and two simple pinnae which are interposed between them. Panicle terminating, very handsome, hairy, close, composed of alternate partial panicles, of which the lower one is axillary, and the upper ones are accompanied by a leaflet or linear bract: each spike of the panicles is sessile, filiform, from an inch to two inches in length, composed of clustered subpetioled flowers. In some panicles these are all male, in others all female on a separate plant; the panicles of the latter are less abundant, and the flowers are nodding. In the males, the calyx is acutely five-cleft; the petals larger, white, patulous; the stamens about fifteen, longer than the petals, pale; the centre bald. In the females, the petals are scarcely larger than the calyx; germs three, parallel, oblong, length of the petals, with a longish style, and a headed stigma. Capsules nodding with reflexed peduncles, in threes, oblong-subventricose, mucronate with the style, gray, two-seeded. Seeds linear-acute, slender.

Native of Germany, Austria, Carniola, Dauphiné, Switzerland, Piedmont, Siberia, Japan, Virginia. It flowers here in June and July, and was cultivated in 1633, by Mr. John Tradescant, sen.<sup>k</sup>: where only Johnson the editor of Gerard had seen it.

16. Root perennial, consisting of oval tubers or solid lumps, hanging from the main body by threads, which has given occasion to its common names of *Filipendula* and *Dropwort*: these tubers enable the herb to resist drought, and render it very difficult to be eradicated. Stem erect, from a foot to a foot and half in height, angular, smooth, leafy, a little branched at top. Leaves alternate, interruptedly pinnate, serrate and jagged, smooth, composed of several pairs of leaflets, all of each set uniform or nearly corresponding in size; the terminating leaflet three-lobed. A pair of roundish united indented stipules, at the base of each leaf, embracing the stem. Flowers many in a cymose loose erect panicle, cream-coloured often tipped with red, or red on the outside. Styles from eight to twelve<sup>l</sup>. Capsules ten to fourteen<sup>m</sup>.

It is an elegant plant, very common in high pastures, on a calcareous soil, where it is sometimes very small. In gardens it grows very luxuriant, and has often double flowers. It flowers early in July. The whole herb is astringent<sup>n</sup>: and has been formerly used in medicine, but is now wholly neglected with innumerable others. Hogs are fond of the roots.

17. Root perennial, fibrous. Stems erect, three or four feet high, angular and furrowed, tinged with red, leafy, branched in the upper part. Leaves interruptedly pinnate: leaflets very unequal in size, sharply serrate, clothed beneath with white down, the end one remarkably large and three-lobed. A pair of rounded serrate stipules are joined to the common leaf-stalk, and clasp the stem. Flowers white, in a large very compound cyme, the side branches of which rise much above the central one. Styles and capsules five or six to eight, twisted spirally.

Meadow-sweet or Queen of the meadows abounds in moist meadows, about the banks of rivers, brooks and ditches, perfuming the air with the sweet hawthorn-like scent of its plentiful blossoms from June to August. The green parts of the herb partake of a similar aromatic flavour, when rubbed or chewed, approaching to the taste of orange-flower water, a flavour possessed in higher perfection by the American *Gualtheria*<sup>o</sup>. The flowers infused in boiling water, give it a fine flavour, which rises in distillation. Sheep and swine eat the herb; goats are fond of it; kine and horses refuse it<sup>p</sup>.]

A variety with double flowers, and another with variegated leaves are to be found in some gardens. The leaves and tops have been used in medicine.

Mr. Miller has a variety of the *Filipendula* which he received from Boerhaave, and considered as a distinct species, under the name of *angustifolia*. The leaves are much longer and narrower than those of

the common sort; some of the leaflets are two inches and a half long, and others not more than an inch. The flower-stalk rises much higher, and sustains a much larger bunch of flowers.

[18. Like the next species, but distinct by having the leaves tomentose underneath, with the segments acuminate; the flowers white, in a contracted branched corymb.

Native of eastern Siberia, in meadows and moist vallies, in the subalpine regions, beyond Baikal, and especially in Dauria. It has much of the habit, taste and smell of our common *Ulmaria*<sup>q</sup>.

19. This also has the stature and appearance of *Ulmaria*. The root smells sweet, but the herb does not. The leaves are very nearly those of *Ulmaria*, with the leaflets lobed. Flowers red. Fruit of *Filipendula*, not twisted spirally but straight<sup>r</sup>. It is probably a native of North America; Jacquin had it from Belgium. It differs from ours, says Pallas, in having the leaves naked beneath, and the flowers red.

It was not distinguished from the preceding in the Supplement of the younger Linneus, and the Kew catalogue, where it is said to have been introduced in 1765, by Messrs. Kennedy and Lee.

20. Root thick, white, black on the outside. Stems two or three, a fathom high or more, as thick as the finger or thumb at bottom. Root-leaves very large, often a foot wide, and eight inches long, white with hairs beneath, five-lobed; lobes acute, doubly serrate. Petioles near the leaf have a few minute stipules. Stem-leaves similar; upper three-lobed; uppermost subhastate or lanceolate: stipules at the base of the petioles, large, lanceolate or semicordate, toothed. Stem roundish or slightly three-sided, hairy, deeply grooved. Cyme terminating, branched, scattered, very handsome. Flowers a little larger than those of *Ulmaria*, with white ovate petals: calyx hairy, reflexed. Stamens fewer than twenty, often ten. Germs four to six, very hirsute; with a subcapitate style, shorter than the stamens. Capsules like filicles, parallel, hispid, gray, two-seeded; but sometimes only one seed comes to perfection<sup>s</sup>.

Willdenow remarks, that the petiole is furnished above with roundish leafy appendages; and that it seems to be allied to the next species.—Native of Kamtschatka and Bering's island.

21. Stem herbaceous, striated, erect, wholly smooth. Leaves alternate, five or seven-lobed, beneath pale,<sup>t</sup> and netted-veined: lobes oblong, acuminate, acutely and doubly serrate: petiole striated, four times shorter than the leaf. Flowers white or red; the latter with four styles. It differs from the *opulifolia*, to which it approaches nearest in the leafing, in having the leaves five or seven-lobed, with the serratures acute; the panicle decomposed, and the stem herbaceous.—Native of Japan<sup>u</sup>.]

22. Root perennial. Stalks annual, about a foot high, sending out branches from the side the whole length. Leaves for the most part trifoliate, but sometimes single or in pairs; they are about an inch and half long, and half an inch broad, ending in acute points, sharply serrate, of a bright green above, and pale beneath. Flowers in loose terminating panicles, on slender peduncles: petals long, lanceolate, spreading. Stamens no longer than the tube of the flower.

[This species, says Mr. Curtis, is one of the most elegant, and when it grows in perfection is certainly a most delectable plant. Another circumstance, that of being rather scarce, will recommend it to many. It increases little, is propagated with difficulty, and is liable to be lost unless planted in a soil and situation quite favourable.

Native of North America. Cultivated by Mr. Miller in 1758. It flowers in June and July<sup>v</sup>.]

#### PROPAGATION AND CULTURE.

The shrubby sorts may be propagated from suckers, which are sent forth in plenty from the stems of the old plant, in some of them; or by laying down the tender branches, which when rooted, should be trans-

<sup>k</sup> Hort. kew.

<sup>l</sup> Smith.

<sup>m</sup> Pollich and Scopoli.

<sup>q</sup> Willdenow and Pallas.

<sup>r</sup> Linn. suppl.

<sup>s</sup> Pallas.

<sup>n</sup> Smith.

<sup>o</sup> Idem.

<sup>p</sup> Withering.

<sup>t</sup> Thunberg.

<sup>u</sup> Hort. kew.



planted out in rows at three feet distance, and the plants a foot asunder in the rows. In this nursery they may remain two years, observing to keep the ground clean from weeds, and in the spring to dig it up between the rows, that the roots may the more easily extend themselves: but if they put out suckers, these should be taken off. Afterwards they may be transplanted where they are to remain, among other flowering shrubs, observing to place them among other sorts of equal growth. For layers, the branches must be laid down in autumn, and in one year they will take root.

These shrubs require no other pruning, but to cut out all the dead branches and such as grow irregularly; and to take off the suckers every year. If these be permitted to grow, they will starve the old plants. The ground between them should be dug every spring, to encourage their roots, and every third year a little rotten dung should be buried in it, to make them flower strong.

The herbaceous sorts may be propagated by seeds, or by parting the roots in autumn.

22. Sow the seeds on a shady border soon after they are ripe, for if they are sown in the spring, the plants will not come up till the year after, and many times fail. Remove the plants in autumn, when the leaves begin to decay, either where they are to remain, or into a nursery-bed, where they may grow a year or two to get strength. This plant loves a shady situation, and a moist light soil.

[It is usually increased by parting the roots; possibly these might grow when made cuttings of. The best situation for this plant is a north border. It should be planted in a light bog or peat earth, or a mixture of one of these with hazel loam<sup>\*</sup>.

SPIRÆA. See *Crassula* and *Diosma*.

Spirææ similis. See *Ceanothus*.

— genus. See *Diosma*.

SPIRIPLOCA. See *Helicteres*.

SPLACHNUM. (Σπλάγχνον, *viscus*.)

Lin. gen. Schreb. n. 1641. amoen. 2. 270. Hedw. fund. 2. 88. musc. 2. 35. With. 790.

Class. 24. 3. Cryptogamia Musci.

#### GENERIC CHARACTER.

Capf. cylindrical, veil and receptacle very large: fringe with eight teeth.

Male, a bud on a different plant; circular, terminating.

In *Systema Vegetabilium* six species only are enumerated; in Dr. Withering's arrangement twelve, chiefly from Hedwig. Two species are figured by Withering:—*ampullaceum*, in English Botany, *Flora Danica*, Dillenius, Vaillant, Morison and Buxbaum:—*tenuis*, by Dickson. Formerly these were not distinguished from the *Bryums*.

SPLEENWORT. See *Asplenium*, *Blechnum*, *Osmunda*.]

SPONDIAS. (From Σπονδω, *libo*, comes σπονδή, *libatio*, σπονδειον the vessel for libation, and σπονδειος, the material of libation, as wine, honey, milk, &c.)

Lin. gen. n. 577. Reich. n. 627. Schreb. n. 786.

Jacqu. amer. 138. Gært. t. 103, 104. Juss. 372.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Terebintaceæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, subcampanulate, small, five-cleft, coloured, deciduous.

COR. Petals five, oblong, flat, spreading.

STAM. Filaments ten, awl-shaped, erect, shorter than the corolla, alternately longer. Anthers oblong.

PIST. Germ ovate. Styles five, short, distant, erect. Stigmas obtuse.

PER. Drupe oblong, large, marked with five dots from the falling of the styles; ten-valved.

SEED. Nut ovate, woody, fibrous, five-cornered, five-celled; covered with a fleshy elastic aril.

#### ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. five-petalled. Drupe with a five-celled nut.

\* Curt. magaz.

#### SPECIES.

1. *Spondias Mombin*. *Purple Hog-Plum*, or *Spanish Plum*.  
Lin. syst. 428. Reich. 2. 375. Willd. 2. 750.  
Læfl. it. 209.

*S. purpurea*. Lin. spec. 613. Mill. dict. n. 1.

*S. Myrobalanus*. Jacqu. amer. 139. t. 88. pict. 69.  
t. 131. Gært. fruct. 2. 102. Brown. jam. 228. 1.  
Sloan. jam. 2. 126. t. 219. f. 3, 4, 5. Raii dendr.  
43. (Myrobalanus.) Pluk. phyt. t. 218. f. 3.

Leaves with the common petiole compressed.

2. *Spondias Myrobalanus*. *Yellow Hog-Plum* or *Jamaica Plum*.

Lin. syst. 428. Reich. 2. 376. Willd. 2. 751.

*S. Mombin*. Jacqu. amer. 138. pict. 69. Gært. fruct. 2. 102.

*S. lutea*. Lin. spec. 613. hort. cliff. 484. Mill. dict. n. 2. Brown. jam. 229. 3. Plum. gen. 44. (Mombin.) Sloan. jam. 2. 125. t. 219. f. 1, 2. Raii dendr. 43. (Myrobalanus.)

Hobo. Læfl. it. 209.

*Prunus americana*. Mer. surin. t. 13.

*P. brasiliensis*, fructu racemoso ligno intus pro officulo.  
Raii hist. 1154.

*Acaja et Ibametara*. Marcgr. bras. 29.

*Arbor nuci juglandi similis* 5. f. Hobos. Baub. pin. 417.

β. *Spondias foliis paucioribus pinnatis ovatis nitidis*.  
Brown. jam. 229. 2.

Petioles round, leaflets shining acuminate.

[3. *Spondias Mangifera*. *Mango Hog-Plum*.

Lin. spec. ed. Willd. 2. 751.

*Mangifera pinnata*. Lin. suppl. 156. Retz. obs. 5. 4.  
Leaflets oblong quite entire, panicle racemed.

4. *Spondias dulcis*. *Sweet Hog-Plum*.

Lin. spec. ed. Willd. 2. 752. Forst. prodr. n. 198.  
escul. 33.

*S. cytherea*. Lamarck encycl. 4. 245. illustr. gen. t. 384. Sonn. it. 2. 222. t. 123. Gært. fruct. 2. 101.

Petioles round six-paired, leaflets serrate ribbed.]

#### DESCRIPTIONS, &c.

1. The usual height of this tree is ten or twelve feet, and the stem is as large as a man's leg, sending out branches towards the top, covered with a gray bark; these are destitute of leaves for some months, and in the spring, before the leaves appear, many purple flowers come out from the side of the branches; these are succeeded by fruit like Plums, having a luscious thin pulp, covering a large fibrous stone. The leaves which come out afterwards are unequally pinnate, with four or five pairs of leaflets, about an inch long, and half an inch broad.

[Jacquin describes it as an ugly tree, varying much in height, and sometimes thirty feet high. The bark is thick, and the wood whitish and brittle. Trunk upright. Branches thick, few, irregular. Leaves pinnate, alternate, shining, mostly at the ends of the branches, falling off especially when the fruit is ripening: leaflets subovate, entire or serrate above the middle, veined, on very short petioles, varying in size, about ten on each side, with an odd one. Racemes short, placed without order, often pretty closely, on the branches; but instead of these there are sometimes peduncles with one, two or more flowers. These are small and red: the segments of the calyx blunt, roundish, concave; the petals blunt, and concave at the end; stigmas simple. Rind of the fruit purple, yellow, or variegated with both; pulp sweet slightly acidulated, yellow, thin, having a singular but not unpleasant taste, and a sweet smell. It varies in form; being oblong, subovate, very blunt at the end, or with a large appendix there. The seed scarcely ever ripens, but it is so easily increased by cuttings, that if a branch laden with young fruit be set in the ground, it will grow, and the fruit will soon come to maturity. Hence in St. Domingo, they make hedges of the boughs, which flower and bear fruit in a few months. If the tree be headed, it pushes out very long upright branches, with numerous leaves scattered the whole length, and puts on an appearance so different, as hardly to be known for the same tree.

Gærtner



Gärtner describes the drupe as being only one third of the size of that in the last species, ovate, narrowed upwards, shortly acuminate at the end: pulp in the old fruit fungous, rufescent: shell woody, muricate with laminæ and fibres variouly netted and anastomosing, neither lobed nor peduncled, but cohering all over, though with hollows here and there: cells five, connected together, and with the other substance of the shell; in each two germs on a thick umbilical chord common to both; only one of these ripens into a seed, and this is ovate-oblong, compressed like a lens, the colour and consistence of an Almond.

Browne describes it as a small spreading tree, which seldom rises above ten or twelve feet in height; its foliage is of a dark gloomy green, and it generally begins to shoot as the blossoms fall. It is cultivated by many for the sake of the fruit, which is pretty pleasant, although not held in any great esteem in Jamaica, where they are always furnished with a great variety of the richest fruits.

There is a variety of this fruit, called the *Leather-coat*, from the appearance of its skin; but this proceeds from the dry soil in which it is produced.

In this, and many other American bacciferous (dru-piferous) plants, where the cup (calyx) stands under the germ, the embryo is always surrounded by a fleshy navel, which swells as that increases, and forms the pulp gradually about it.

Native of South America, whence it has been transplanted into the Caribbee islands; it is very common in St. Domingo, common in Jamaica, Curaçao and St. Martin's, but scarce in most of the others, according to Jacquin.]

2. This rises to the height of thirty feet or more, sending out many crooked irregular branches, which are destitute of leaves for some months: the branches have a light-coloured bark, and unequally pinnate leaves, with four or six pairs of leaflets near two inches long, and an inch broad, having deep longitudinal veins. The flowers come out before the leaves appear; and are succeeded by yellow Plums an inch or more in length, growing in a sort of raceme: they have large fibrous stones with a thin covering of flesh.

[Jacquin describes it as a tall elegant tree, with a very wide branching head. Bark ash-coloured and full of clefts. Wood whitish, smooth, not durable, fit only for fuel and making stoppers. Leaves pinnate, alternate, subfrondose, with a round rib, a foot long: leaflets for the most part eight, with an odd one, ovate-oblong ending in a blunt point, smooth, quite entire, petioled, the middle ones about three inches long, the outer shorter. Racemes loosely panicle, somewhat yellow, length of the leaves, terminating. Flowers very numerous, small, whitish, and sessile: calyx five-toothed, acuminate; petals sublan-ceolate, acute, spreading very much; anthers erect; stigmas compressed and bilamellate. Very few fruits succeed this abundance of flowers in each raceme, being much exposed to the winds by their great height. They are yellow, with sometimes a slight mixture of redness, sweet-smelling, covered with a thin skin, the size of a pigeon's egg, having within a little succulent acidulous pulp, and a very large nut; eaten by children, and some of the inhabitants, but making an excellent food for hogs. As the branches or cuttings grow so readily, it is used by some for hedges: and a tree or two is frequently planted in pastures to afford shade to the sheep.

Gärtner says, that the drupes in his specimens were perfectly ovate, the same size as in the preceding, or near an inch and half long, very indistinctly five-cornered, the corners being formed by the back of the cells: skin fibrous, tough, in the old fruit hard: pulp small, spongy: shell as in the preceding. Seeds solitary, long, narrow and as it were roundish, ferruginous. Seldom more than one cell is fertile.

According to Browne, the filaments stand upright, and grow in an even circular order round the germ; the styles are always four, compressed, and enlarged at the top.

Native of all the Caribbee islands, and the neigh-

bouring continent. Mr. Miller cultivated both this and the preceding in 1768.

β. The fruit of this variety is much esteemed by some persons in the West Indies, and supplies the principal part of the food of the wild hogs in the season<sup>γ</sup>.

3. Leaves a foot long, unequally pinnate; leaflets oblong, quite entire. Panicle racemed large<sup>z</sup>. Stamens commonly ten, but sometimes eight. Nut five-celled, five-seeded<sup>a</sup>.

This species is yet obscure. It is the same with *S. amara* of Lamarck, *encycl.* 4. 245. which is figured by Rheede, *mal.* 1. t. 50?

Found in the East Indies by Koenig<sup>b</sup>.

4. This is a tall shady tree, with a handsome spreading head. Trunk thicker than a man's body, upright, fifty feet high, flowering before the time of leafing in september. Branches diffused, spreading, round, with a brown rugged bark. Leaves scattered, clustered, pinnate, six-paired with an odd one: leaflets oblong-lanceolate, acuminate, very finely serrate, smooth, spreading, ribbed with a marginal nerve, and numerous parallel straight veins, running from the rachis to the ribs at a right angle, dark green. Common petioles round, even, spreading, a foot long: proper nearly opposite, compressed a little, half an inch long. The general peduncle terminates the branchlets; it is round, even, almost upright, the length of the common petiole. Raceme large, compound. Partial peduncles alternate, round, smooth, horizontal, the upper ones gradually smaller, ascending: pedicels one-flowered, scattered, very short. Flowers small, greenish-yellow. Calyx inferior, very small, five-parted; segments equal, acute, pale green. Petals lanceolate, spreading very much, interposed between the segments of the calyx. A fleshy yellow, torulose ring surrounds the germ, which is probably the nectarium. Germs five, small, globular, united at the base. Styles cylindric, approximating at the base, recurved at the top, of the same length with the stamens. Drupe oval, obtuse, large, very smooth, of a golden colour, and a somewhat nauseous fetid smell: outer shell very thin, dotted; pulp fleshy, succulent, sweet, aromatic, fragrant: nut hard, woody, ovate, echinate all over with hard pungent fibrils, five-celled with membranaceous partitions: kernels solitary, ovate, compressed, the greater part abortive<sup>c</sup>.

Gärtner describes the fruit as a superior, berried, oval drupe; with a tough skin formed of the capillary fibres of the shell, or cohering with them: flesh firmish, tasteful, like a rennet Apple: shell woody, fibrous, lobed, on a long peduncle, composed of five cells, which are separate, free at the top and on the sides, but at the base closely united into one body not only with one another but with the lobes of the shell: lobes mostly five, angular inwards and interposed between the cells, but outwardly echinated and muricated variouly with anastomosing laminæ, many-shaped points, and woody fibres. Seeds solitary, resembling Almonds, ovate-attenuate, compressed a little, rufescent, fastened to the bottom of the cells.—This is easily distinguished from the other species, by its peduncled shell, and cells remote both from each other and from the axis<sup>d</sup>.

Cultivated in the Society and Friendly Islands of the South Sea, especially in Otaheite. The golden fruit hangs in little nodding bunches, and is esteemed one of the most tasteful and wholesome; it has almost the same flavour with the Ananas, and not only assuages thirst, but is given to the sick without distinction<sup>e</sup>. It has been introduced by the French into the island of Mauritius.]

#### PROPAGATION AND CULTURE.

These plants grow easily from cuttings planted in pots filled with rich light earth, and plunged into a moderate hot-bed; covering them down either with bell or hand glasses, to exclude the external air, and

<sup>γ</sup> Browne.

<sup>b</sup> Willdenow.

<sup>z</sup> Linn. suppl.

<sup>c</sup> Forster escul.

<sup>e</sup> Forster.

<sup>a</sup> Retz. from Koenig.

<sup>d</sup> Gärtner.



shading them from the sun. The best time for this is in the spring, before the plants put out their leaves.

They may also be propagated by the stones, if they are brought over fresh. Put them into small pots, filled with the same rich earth, and plunge them into a hot-bed of tanner's bark, observing duly to water the earth, and in six or seven weeks the plants will appear. Treat them afterwards in the same way as the Annona, keeping them constantly in the tan-bed in the stove; and when they are destitute of leaves give them but little water.

[SPONGE TREE. See *Mimosa farnesiana*.

SPOONWORT. See *Cochlearia*.

SPRING GRASS. See *Anthoxanthum*.

SPRUCE FIR. See *Pinus*.

SPURGE. See *Euphorbia*.

—— LAUREL. See *Daphne*.

—— OLIVE. See *Daphne Mezereum*.

SPURREY. See *Arenaria* and *Spergula*.

SQUAMARIA. See *Lathræa*.

SQUASH-GOURD. See *Cucurbita*.

SQUILL. See *Scilla*.

SQUINANCY-WORT. See *Asperula*.

SQUIRTING CUCUMBER. See *Momordica*.

STACHYARPAGOPHORA. See *Celosia*.

STACHYOIDES. See *Ornithogalum*.]

STACHYS (of Pliny, *Σταχυς* of Dioscorides. So named from the flowers being in a spike.)

Lin. gen. n. 719. Reich. n. 777. Schreb. n. 974.

Tournef. t. 86. Juss. 114. Galeopsis. Tournef.

t. 86. Zietenia. Gled.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ* or *Labiatæ*.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, angular, half-five-cleft, acuminate, permanent: toothlets acuminate, awl-shaped, a little unequal.

COR. one-petalled, ringent: tube very short: opening oblong, at the base gibbous downwards: upper lip erect, subovate, arched, often emarginate: lower lip larger, reflexed on the sides, trifid; the middle segment very large, emarginate, folded back.

STAM. Filaments four, two of them shorter, awl-shaped, when the anthers have shed their pollen curved back to the sides of the opening. Anthers simple.

PIST. Germ four-parted. Style filiform, situation and length of the stamens. Stigma bifid, acute.

PER. none. Calyx scarcely changed.

SEEDS four, ovate, angular.

#### ESSENTIAL CHARACTER.

Cor. upper lip arched; lower reflexed at the sides; the middle segment larger, emarginate. Stam. finally reflexed towards the sides.

#### SPECIES.

[1. *Stachys sylvatica*. Hedge Woundwort, or Hedge Nettle.

Lin. spec. 811. Reich. 3. 56. Fl. suec. n. 526.

hort. cliff. 309. Hudf. angl. 259. Wither. arr.

ed. 3. 531. Smith brit. 633. engl. bot. t. 416.

Lightf. scot. 312. Curt. lond. 3. t. 34. Relb.

cant. ed. 2. n. 496. Sibth. oxon. n. 528. Gunn.

norv. n. 70. Pollich pal. n. 563. Neck. gallob.

256. Scop. carn. n. 706. Crantz. austr. 265.

Krock. filef. n. 939. Villars dauph. 2. 379.

Allion. pedem. n. 108. Sabb. hort. rom. 3. t. 38.

Riv. mon. t. 26. f. 2. Regnault bot.

Cardiaca. Hall. belv. n. 275.

Galeopsis legitima. Clus. hist. 2. 35. t. 36. f. 1.

Park. theat. 908. 1. Raii hist. 548. syn. 237.

Petiv. brit. t. 32. f. 7. Blackw. t. 84. f. 2.

G. f. *Urtica iners* magna foetidissima. Baub. hist. 3.

853.

G. vera. Ger. emac. 704. 5.

G. procerior foetida spicata. Tournef. inst. 185.

*Urtica herculea* Tragi 5. Dalech. hist. 1244.

*Lamium maximum sylvaticum foetidum*. Baub. pin.

231. Mor. hist. f. 11. t. 11. f. 10.

β. *Lamium sylvaticum spicatum foetidum*, folio anguloso, minus. Dill. in Raii syn. 237.

Whorls six-flowered, leaves cordate petioled.

2. *Stachys circinata*. Blunt-leaved *Stachys*.

L'Herit. stirp. nov. 51. t. 26. Ait. kew. 2. 300.

Vabl. symb. 2. 64. Desfont. atlant. 2. 20.

Whorls six-flowered, leaves cordate-rounded crenate.]

3. *Stachys palustris*. Marsh Woundwort, or Clown's All-heal.

Lin. spec. 811. Reich. 3. 56. fl. suec. n. 528. hort.

cliff. 309. Hudf. angl. 259. Wither. arr. ed. 3.

532. Smith brit. 633. Lightf. scot. 313. Curt.

lond. 3. t. 35. Relb. cant. ed. n. 2. 497. Sibth.

oxon. n. 529. Dickf. hort. ficc. 15. 8. Hall. belv.

n. 257. Pollich pal. n. 564. Neck. gallob. 255.

Scop. carn. n. 707. Crantz. austr. 266. Loefel.

pruss. 41. Krock. filef. n. 940. Villars dauph. 2.

378. Allion. pedem. n. 109. Riv. mon. t. 26.

f. 1. Blackw. t. 273.

St. pal. foetida. Baub. pin. 236.

St. aquatica. Tabern. ic. 577.

*Sideritis anglica strumosa radice*. Park. theat. 852.

Raii hist. 563. syn. 242. Petiv. brit. t. 33. f. 9.

*Panax Coloni*. Ger. emac. 1005.

*Galeopsis angustifolia foetida*. Baub. hist. 3. 854.

*G. palustris Betonicae folio*. Tournef. inst. 185.

*Clymenum minus*. Dalech. hist. 1357.

Whorls six-flowered, leaves linear-lanceolate half-em-

bracing.

4. *Stachys alpina*. Alpine *Stachys*.

Lin. spec. 812. Reich. 3. 57. fl. suec. n. 527. hort.

cliff. 310. upf. 170. Hall. belv. n. 256. Leers

herborn. n. 458. Scop. carn. n. 709. Krock. filef.

n. 938. Villars dauph. 2. 378. Allion. pedem.

n. 110. Sabb. hort. rom. 3. t. 41. Pluk. phyt.

t. 317. f. 4.

*Galeopsis alpina Betonicae folio, flore variegato*. Tournef.

inst. 185. Scheuch. it. 1. 36.

*Pseudo-stachys alpina*. Baub. pin. 236. prodr. 113.

Park. theat. 47. n. 4.

Whorls many-flowered, serratures of the leaves cartila-

ginous at the tip, corollas with a flat lip.

5. *Stachys germanica*. Downy *Stachys* or Woundwort.

Lin. spec. 812. syst. 535. Reich. 3. 57. hort. cliff.

309. upf. 170. Hudf. angl. 259. Wither. arr.

ed. 3. 532. Smith brit. 634. engl. bot. t. 829.

Sibth. oxon. n. 530. Hull. 132. Fl. dan. t. 684.

Hall. belv. n. 255. Pollich pal. n. 565. Jacqu.

austr. 4. 10. t. 319. Scop. carn. n. 710. Krock.

filef. n. 941. Villars dauph. 2. 377. Allion.

pedem. n. 111. Gmel. fib. 3. 239. Kniph. cent.

10. n. 83.

St. lanata. Crantz. austr. 267.

*Stachys*. Fuchf. hist. 766. Dod. pempt. t. 90. f. 3.

Baub. hist. 3. 319, 320. Ger. 563. 2. emac. 695. 2.

Raii hist. 554. syn. 239.

*S. montana*. Riv. mon. t. 27. f. 1.

*S. major germanica*. Baub. pin. 236. Park. theat.

t. 48. f. 2. Mor. hist. f. 11. t. 10. f. 1. Tournef.

inst. 186.

*S. alba latifolia major*. Barrel. ic. t. 297.

*Pseudo Stachys*. Matth. 830.

Whorls many-flowered, leaves crenate, stem woolly.

[6. *Stachys intermedia*. Oblong-leaved *Stachys*.

Ait. kew. 2. 301.

Whorls many-flowered, calyxes subpungent, leaves ob-

long subcordate crenate, stem somewhat woolly.

7. *Stachys lanata*. Woolly *Stachys*.

Lin. syst. 536. Jacqu. misc. 2. 342. Ait. kew. 2.

301.

Whorls many-flowered, leaves woolly, stems procumbent

and rooting at the base.]

8. *Stachys cretica*. Cretan *Stachys*.

Lin. spec. 812. syst. 536. Reich. 3. 58. hort. upf.

170. Walth. hort. 108. t. 19. Baub. pin. 236.

prodr. 113. Raii hist. 555. Park. theat. 47.

n. 3.

Whorls thirty-flowered, calyxes pungent, stem rough-

haired.

[9. *Stachys patens*. Spreading *Stachys*.

Swartz prodr. 88.

Very much branched, branches filiform, spreading, leaves

lanceolate serrate smooth, flowers subverticillate.]



10. *Stachys glutinosa*. *Clammy Stackys*.  
*Lin. spec.* 813. *Reich.* 3. 58. *hort. cliff.* 310. *Vahl symb.* 3. 76.  
*Sideritis glutinosa bitumen redolens*. *Mor. hist.* 3. 389. f. 11. t. 4. f. 17.  
*S. viscosa cretica bitumen redolens*. *Zan. hist.* 136.  
*Branches very much branched, leaves lanceolate smooth.*
11. *Stachys spinosa*. *Thorny Stackys*.  
*Lin. spec.* 813. *Reich.* 3. 58. *hort. cliff.* 310. *Vahl symb.* 3. 76.  
*St. spinosa*. *Park. theat.* 47. 6. t. 48. f. 6.—*cretica*.  
*Bauh. pin.* 236. *Ger. emac.* 695. 3. *Mor. hist.* 3. 382.  
 f. 11. t. 10. f. 9. *Raii hist.* 555.  
*Gaidarothymo*. *Clus. hist.* 2. 311.  
*Branchlets terminated by a spine.*
12. *Stachys orientalis*. *Levant Stackys*.  
*Lin. spec.* 813. *Reich.* 3. 58. *Vahl symb.* 2. 64.  
*St. orientalis altissima foetidissima*. *Tournef. cor.* 12.  
*Boerb. lugdb.* 1. 154.  
*Leaves tomentose ovate-lanceolate, floral-leaves shorter than the whorl.*
- [13. *Stachys palæstina*. *Palestine Stackys*.  
*Lin. spec.* 1674. *syf.* 536. *Reich.* 3. 58.  
*St. alba, angusto salviae folio*. *Barr. ic.* 279.  
*Sideritis incano oleæ foliis, flosculis ex incarnato candidantibus montis Libani*. *Volk. norib.* 353. *Raii suppl.* 306.  
*Sid. molli cinereo oleæ folio caulem ambiente, flore violaceo, ex monte Carmelo*. *Bocc. mus.* 2. 145. t. 109, 112.  
*Flowers subspliked, leaves lanceolate sessile tomentose wrinkled quite entire, calyxes awnless.*
14. *Stachys maritima*. *Yellow or Sea Stackys*.  
*Lin. syf.* 536. *Reich.* 3. 59. *mant.* 82. *Jacqu. hort.* 1. 29. t. 70.  
*Betonica maritima, flore ex luteo pallescente*. *Dill. elth.* 50. t. 42. f. 50.  
*B. heraclea latifolia Dioscoridis*. *Donat. venet.* 84.  
*Bocc. mus.* 2. 164. t. 127.  
*Sideritis salviae folio nostras*. *Magnol. monsp.* 203.  
*Park. theat. app.* 1681. 16. *Raii hist.* 566. n. 17.  
*Leaves cordate obtuse tomentose crenate, bractes oblong quite entire.*
15. *Stachys æthiopica*. *Cape Stackys*.  
*Lin. syf.* 536. *Reich.* 3. 59. *mant.* 82. *Jacqu. obs.* 4. 2. t. 77. *L'Herit. stirp. nov.* 2. t. 27.  
*Pluk. phyt. t.* 315. f. 3. (*Sideritis*).  
*Whorls two-flowered.*
16. *Stachys hirta*. *Procumbent Stackys*.  
*Lin. spec.* 813. *Reich.* 3. 60. *Allion. pedem. n.* 113. t. 2. f. 3. *Desfont. atlant.* 20.  
*Galeopsis hirsuta*. *Lin. spec. ed.* 1. 580.  
*G. hispanica rotundiore folio*. *Tournef. inst.* 186.  
*Ocimastrum valentinum*. *Clus. hist.* 2. 42. *Dalech. hist.* 684.  
*Marrubium hispanicum odore Stœchados*. *Lob. ic.* 519.  
*M. nigrum rotundifolium*. *Bauh. pin.* 230. *Mor. hist.* f. 11. t. 9. f. 15.  
*M. nigrum hispanicum*. *Park. theat.* 45.  
*Whorls six-flowered, stems prostrate, upper lip of the corolla bifid divaricate reflexed.*
17. *Stachys canariensis*. *Canary Stackys*.  
*Lin. syf.* 536. *Jacqu. collect.* 1. 37. *icon. rar.*  
*Whorls six-flowered, leaves cordate villose crenate, stems almost erect, fruiting calyxes of a very spreading bell shape.*
18. *Stachys lavandulifolia*. *Lavender-leaved Stackys*.  
*Vahl symb.* 1. 42.  
*Galeopsis orientalis, Lavandulæ folio, calyce villosissimo*. *Tournef. cor.* 11.  
*Whorls six-flowered very hirsute, leaves lanceolate quite entire marked with lines.*
19. *Stachys recta*. *Upright Stackys*.  
*Lin. syf.* 536. *Reich.* 3. 60. *mant.* 82. *Pollich pal. n.* 567. *Jacqu. austr.* 4. 31. t. 359. *Gouan illustr.* 36. *Neck. in æt. palat.* 2. 474. *Krock. files. n.* 942. *Allion. pedem. n.* 114.  
*St. Betonica*. *Crantz austr.* 264. *non descr.*  
*Betonica*. *Hall. helv. n.* 262.  
*Sideritis flore luteolo*. *Riv. mon. t.* 70.  
*Sid. vulgaris*. *Ger. emac.* 697. f. 1. *Raii hist.* 563.—*hirsuta*. *Bauh. hist.* 3. 425. *Magn. bot.* 240.

- S. vulg. hirs. erecta*. *Bauh. pin.* 233.  
*S. vulg. Clusii*. *Park. theat.* 585. f. 4.  
*Whorls subspliked, leaves cordate-elliptic crenate rugged, stems ascending.*
20. *Stachys arenaria*. *Sand Stackys*.  
*Vahl symb.* 2. 64. *Desfont. atlant.* 2. 21. t. 126.  
*Whorls subspliked six-flowered villose, leaves lanceolate obtuse ferrate, stems procumbent at the base.*
21. *Stachys annua*. *White annual Stackys*.  
*Lin. spec.* 813. *syf.* 536. *Reich.* 3. 61. *mant.* 411. *hort. cliff.* 210. *Pollich pal. n.* 566. *Jacqu. austr.* 4. 31. t. 360. *Krock. files. n.* 943. *Allion. pedem. n.* 115. *Neck. in æt. palat.* 2. 475. *Gron. virg.* 66. β.  
*St. Betonica*. *Crantz austr.* 264. *descr.* *Scop. carn. n.* 608.  
*Betonica annua*. *Lin. spec. ed.* 1. 573. *hort. uff.* 165. *Hall. helv. n.* 263.  
*B. arvensis annua flore ex albo pallescente*. *Tournef. inst.* 203.  
*Sideritis flore albo, barba luteola*. *Riv. mon. t.* 69.  
*S. arvensis latifolia glabra*. *Bauh. pin.* 233. *Park. theat.* 587. n. 14. *Raii hist.* 566.  
*S. glabra arvensis*. *Bauh. hist.* 3. 427.  
*Alyssum majus*. *Tabern. hist.* 929.  
*Whorls six flowered, leaves ovate-lanceolate three-nerved even petioled, stem erect.*
22. *Stachys rugosa*. *Rough Stackys*.  
*Ait. kew.* 2. 303.  
*Whorls six-flowered, leaves lanceolate attenuated at the base tomentose wrinkled ferrate, calyxes awnless.*
23. *Stachys arvensis*. *Corn Stackys or Woundwort*.  
*Lin. spec.* 814. *syf.* 536. *Reich.* 3. 61. *Huds. angl.* 260. *Wither. arr. ed.* 3. 552. *Smith brit.* 634. *Lightf. scot.* 313. *Curt. lond.* 4. t. 41. 246. *Relb. cant. ed.* 2. n. 498. *Sibth. oxon. n.* 531. *Dicks. hort. succ.* 15. 7. *Fl. dan. t.* 587. *Pollich pal. n.* 568. *Neck. gallob.* 225. *Krock. files. n.* 944. *Allion. pedem. n.* 116. *Sabb. hort. rom.* 3. t. 51.  
*St. arvensis minima*. *Riv. mon. t.* 27. f. 2.  
*Trixago*. *Hall. helv. n.* 231.  
*Sideritis humilis lato obtuso folio*. *Ger. emac.* 699. n. 5. *Raii hist.* 565. *syn.* 242. *Petiv. brit.* t. 33. f. 12.  
*Sid. alfine trixaginis folio*. *Bauh. pin.* 233. *prodr.* 111.  
*Sid. Hederulæ folio*. *Park. theat.* 587. f. 11.  
*Glecoma arvensis*. *Lin. spec. ed.* 1. 578. *fl. suec.* n. 519. *hort. cliff.* 307.  
*Marrubiastrum vulgare*. *Tournef. inst.* 190.  
 β. *Lamium paludosum belgicum*. *Herm. lugdb.* 351. t. 353.  
*Whorls six-flowered, leaves cordate obtuse crenate somewhat hairy, stem weak.*
24. *Stachys latifolia*. *Broad-leaved Stackys*.  
*Ait. kew.* 2. 303.  
*Whorls many-flowered subspliked, upper lip bifid with the little segments acute, leaves broad cordate wrinkled hairy.*

## DESCRIPTIONS, &amp;c.

1. Root perennial, creeping but not very extensively. Stems about two feet, or from one to three feet high, upright, little branched, square, hairy, leafy. Leaves cordate-ovate, acute, strongly ferrate, veiny, hirsute on both sides, thin and pliable when handled, of a deep dull green; leaf-stalks hirsute, lower ones the length of the leaves, but shorter upwards and gradually diminishing to lanceolate entire bractes. Spike erect, terminating, leafy at the base, bracted above, consisting of many separate whorls of six flowers each. Calyx brownish, hispid, with five large sharp teeth. Corolla of a deep blood-colour, prettily marbled about the orifice with a darker hue intermixed with white; tube cylindrical, with a small pouch on the under side near the base, similar to what may be observed in some species of *Origanum*. This herb has a pungent fetid smell when rubbed, approaching to that of Black Horehound. Being one of those that powerfully affect the nerves, it might prove no contemptible stimulant, if judiciously used<sup>f</sup>. Toads are thought to be fond

<sup>f</sup> Smith brit. Engl. bot. Curtis.



of living under its shade. Sheep and goats eat it; horses, cows and swine refuse it. The herb will dye yellow<sup>g</sup>.

Frequent in hedges and other shady places; flowering in July and August.

2. Root perennial. Stems several, decumbent at the base and then ascending, scarcely a foot high, very hairy. Leaves an inch and half long, remote, veined, hairy on both sides, with large blunt teeth: petioles hirsute, the lower ones twice as long as the leaves: the floral leaves sessile. Whorls subspiked, approximating. Spike two inches long, hirsute. Bractes cordate, length of the whorls: lower serrate, upper quite entire; all terminated by a soft spinule, as are also the segments of the calyx. Corolla purple, with the upper lip pubescent<sup>h</sup>.—According to Desfontaines, pale rose-colour, the same size as in *St. sylvatica*; with the upper lip quite entire, the lobes of the lower rounded and entire, the middle one double the size of the side ones: anthers purple. Seeds brown, ovate-three-sided.

L'Heritier remarks, that it differs from *sylvatica* in having rounder leaves, crenate not serrate, somewhat hoary:—from *birta* in having the upper lip entire.

Found in the mountains Zouwans of Tunis by Desfontaines and Vahl; and in the fissures of mount Atlas by the former; flowering in May.

Introduced about 1777, by Messrs. Gordon and Græfer. It flowers here from May to July<sup>i</sup>.

3. Root perennial, creeping to a great extent; the extremities at the close of summer becoming tuberosous. Stems two feet high, upright, hollow, four-cornered, the sides flattish, the corners rough with hairs pointing downwards; the joints also are hairy and purple. Leaves acute, ferrulate, silky-haired above, woolly beneath, netted-veined and somewhat wrinkled, widening at the base and embracing; lower on short petioles: a pair of small leaves under each whorl, the uppermost quite entire. Spike six or eight inches high, formed of many whorls, in each of which, according to Linneus, are six flowers; but Curtis says ten, eight placed circularly, and one on each side above them; (Haller and Pollich say, from six to twelve; Scopoli six, but that he has a variety with ten.) Calyx purplish, beset with fine hairs terminating in small globules, marked with ten raised lines, the teeth nearly equal and pointed. Corolla pale reddish purple: tube crowned internally with hairs; mouth marked with two prominent dots at the base of the upper lip; lower lip beautifully variegated with white and purple. Filaments appearing hairy when magnified, thickest in the middle, reddish and shining: anthers purplish black, but the pollen white<sup>k</sup>.

Native of Europe in marshes, on the banks of rivers, in watery places, by road sides and in corn fields, especially in moist situations; flowering in July and August. It behoves the farmer to know it, says Mr. Curtis, as a very noxious plant in many corn fields, increasing much by its roots, and also by seed. If Linneus's information be accurate, that swine are fond of the roots, those animals might be turned into fields that abound with this plant, after the crop is off, to great advantage.

4. Root perennial. Colour of the plant dusky. Leaves greenish yellow, with the serratures dark-cartilaginous at the point: the upper floral ones ovate, with the margin flat and quite entire. Whorls involucre, as in *germanica* and *cretica*. Corollas dull purple, with the upper lip horizontal, not erect as in them: the lower lip also is not reflexed at the sides<sup>l</sup>.

Stem often not branched. Leaves soft, wrinkled, hirsute, serrate, petioled, cut next the petiole; the lower cordate, the upper elliptic-lanceolate. Whorls dense, but much less so than in *germanica*, with fewer flowers. Awns of the calyx long. The herb has the smell of Baum<sup>m</sup>.

Scopoli remarks, that the teeth of the leaves are terminated by a gland; that the whorls have fourteen

flowers; and that the calyxes are nerved, rigid and peduncled.

Stem from two to three feet high, erect, shining, often livid at the base, villose, slightly grooved. Leaves oblong-cordate, earletted as it were at the base, the serratures withering and brown at the points; the uppermost often quite entire, on short petioles or sessile, not cut out at the base, lanceolate; the root-leaves on long firm petioles. Whorls very close involucre with hairy coloured bristles bent upwards. Calyx erect, hairy at the corners; the teeth awned, hirsute, the two lower longer than the other three. Upper lip of the corolla almost incumbent, bifid, ciliate with white hairs within and without: the two side segments of the lower lip reflexed, the middle segment crenulate, not reflexed at the sides, sinuate in the middle, all pale purple with one blood-red line running along them<sup>n</sup>.

Native of Germany, Switzerland, Carniola, Italy and the South of France. Cultivated in 1759 by Mr. Miller. It flowers from June to August<sup>o</sup>.

5. Root perennial. The whole herb remarkably invested with a white soft silky pubescence, in which respect it is only inferior to the garden *Stackys lanata*, a species that differs from it besides in having blunter leaves, with stems procumbent at the base and taking root at that part. The stems of our plant are erect. Leaves ovate, rather pointed, sharply crenate, reticulated with veins, silky above, most woolly beneath, the radical ones on long petioles, the rest smaller and nearly sessile: they feel very thick and soft like woollen cloth. Whorls axillary, numerous, many-flowered, (forty or fifty Pollich; forty Scopoli:) the upper ones crowded. Bractes linear; both they and the calyxes very densely villose. Corollas purple within, streaked about the mouth with white; their outside whitish and very downy, especially the upper lip. Stamens hairy. Seeds roundish, black<sup>p</sup>. It varies with a white flower, and with narrower leaves<sup>q</sup>.

Native of Denmark, Germany, Switzerland, France, England, Austria, Carniola, Piedmont, Siberia.—In corn fields and by way sides, on the limestone soil of Oxfordshire, it was long ago observed, especially towards Witney, in 1632 by Mr. Buckner, an apothecary of London. Mr. Woodward found it between Bleghheim and Ditchley: Dr. Sibthorp, near Witney, Stonesfield, and between Woodstock and Enstone: and Dr. Goodenough, at Brizenorton. It has also been found four miles south of Grantham near the London road, opposite Easton: and lately by the Rev. Mr. Hemsted, on a hill two miles from Bedford. It flowers in July<sup>r</sup>.

6. Native of Carolina. Introduced about 1762. It flowers in June and July. Perennial<sup>s</sup>.

7. Root perennial. Stems somewhat woody at bottom, whence proceed herbaceous branches or stems a foot high or more, four-cornered, little branched, erect, covered with a very thick white wool; as are also the leaves on both sides, the bractes and calyxes. Leaves ovate-oblong, sharpish, three or four inches long, petioled, minutely crenulate, veined. Whorls close, shorter than the floral leaves, approaching at top. Calyx scarcely angular, divided to one third of the length; segments ovate, acuminate, almost equal. The whole corolla so resembles that of *St. germanica* as scarcely to be distinguished from it, except that in the *germanica* the back of the upper lip is bearded with hairs stretched beyond it, whereas in this it is only a little hirsute: the colour also is somewhat deeper. It has not much smell. The seeds were sent from Astracan<sup>t</sup>. It is a native of Siberia; and was introduced in 1782, by William Pitcairn, M.D. It flowers most part of the summer<sup>u</sup>.

8. This resembles the *germanica*, but the plant is lurid, and rough-haired without any white wool. The floral leaves are lanceolate, and serrate-waved, but not reflexed or arched as in *germanica*.

Native of the island of Crete or Candia<sup>x</sup>. Cul-

<sup>g</sup> Withering.

<sup>h</sup> Vahl.

<sup>i</sup> Hort. kew.

<sup>k</sup> Curtis, Smith, Withering.

<sup>l</sup> Linn. spec.

<sup>m</sup> Haller.

<sup>n</sup> Krockner.

<sup>o</sup> Hort. kew.

<sup>p</sup> Engl. bot.

<sup>q</sup> Linn. from Boerh.

<sup>r</sup> Smith and Wither.

<sup>s</sup> Hort. kew.

<sup>t</sup> Jacquin.

<sup>u</sup> Hort. kew.

<sup>x</sup> Linn. spec.



tivated in 1723, in the botanic garden at Chelsea. It flowers from June to August, and is perennial<sup>y</sup>.

9. Native of Hispaniola<sup>z</sup>.

10. This is a little shrub, a foot high, very much branched, wholly smooth: branches opposite, dichotomous at top, four-cornered; the last branchlets end in a spine. Leaves quite entire, somewhat veined; the lower lanceolate, attenuated into the petiole, scarcely an inch long: those on the branchlets linear, sessile, length of the interstices. Peduncles on the upper branches, solitary, one-flowered, shorter than the leaf, with two linear leaves at top, almost the length of the calyx. Teeth of the calyx lanceolate, acute. Corolla villose on the outside<sup>a</sup>.

Morison says that it is annual, a long span in height, branched from the very bottom. Leaves crenate and moderately hairy. Flowers white. The whole plant clammy, with a strong bituminous scent. Zanoni observed it in Candia.—Cultivated by Mr. Miller in 1759.

11. Stem very much branched. Branches four-cornered, brachiate: branchlets rigid, ending in a spine. The whole plant hoary with white hairs pressed close. The lower leaves attenuated at the base, linear-lanceolate, an inch long, quite entire: upper ones linear, sessile. Flowers on the extreme branchlets, axillary, solitary or in threes, small. Calyxes pungent<sup>b</sup>.

Native of Candia, in the western part of the island, in very dry places, among Thyme: it is called by the countrymen there γαιδαρο θυμο or Asses Thyme<sup>c</sup>.—Clusius raised it from seed in 1597. Mr. Miller cultivated in 1768.

12. Stem very hairy. Leaves wrinkled, crenate, very closely hairy, soft, hoary, the upper ones sessile. Whorls remote, many-flowered. Upper bractes ovate, quite entire. Calyxes very hirsute, ash-coloured, pungent. Corolla yellow, with the upper lip very hirsute on the outside<sup>d</sup>.

Native of the Levant. Cultivated by Mr. Miller in 1768.

13. Stems shrubby, round, white-tomentose. Leaves also white-tomentose, soft, not very acute. Calyx ten-cornered. Upper lip of the corolla concave, entire, purple, with a deeper purple line along the edge: lower lip also purple, spotted with white at the throat: middle lobe larger, concave.

Native of Palestine<sup>e</sup>. In the appendix to the Species Plantarum Linneus adds, that the spikes are composed of six-flowered whorls, with ovate, tomentose, veined bractes; and acute calyxes. The same synonym from Volkamer is given both under this species and *Dracocephalum canescens*.

14. Root perennial. Leaves cordate-oblong, veined. Stem suffruticose, a span high, erect, pubescent. Spike composed of interrupted whorls; with bractes the length of the flowers. Whorls six-flowered. Calyxes woolly, sharp, scarcely awned. Corollas yellow<sup>f</sup>.

Native of the South of Europe, on the coast. Cultivated here in 1714. It flowers in July<sup>g</sup>.

Respecting the colour of the corolla, Dillenius remarks, that the upper lip is paler than the lower, which towards the throat is variegated with some small purple streaks and dots; and that the upper lip has an oblong purple spot on each side near the stamens. He will by no means allow *Sideritis heraclea* of Columna to be this plant. Linneus says there is a similitude, but the flowers in Columna's plant being purple, it is doubtful whether they are the same.

15. Root perennial. The whole plant hairy. Stems annual with opposite branches. Leaves oblong-cordate, very bluntly ferrate, wrinkled, sometimes shorter than the petioles. Flowers on short peduncles and solitary, in the axils of the leaves, on the upper part of the branchlets, in form of a loose spike. Calyx cloven half way down into setaceous-acuminate segments. Corolla incurved, three times as long as the calyx; the upper lip villose on the outside, erect,

arched, obovate, entire, the length of the lateral segments of the lower lip; the middle segment of which is very wide, flat, twice as long as the two side ones, and crenate in front<sup>h</sup>.

Stem a palm high, erect or diffused. Habit of *Lamium purpureum*, subhispid-hairy. Leaves cordate, deeply and bluntly ferrate, wrinkled, shining, subvillose, shorter than the petioles. Spikes terminating, interrupted, made up of whorls, which have two flowers opposite or one on each side. Calyx almost equal, slightly awned. Tube of the corolla curved; upper lip erect, arched, short, villose; lower very large and stretched out, middle segment very wide, flat and crenate, the side ones revolute. Stamens scarcely longer than the tube, with two-parted anthers<sup>i</sup>.

Native of the Cape of Good Hope. Introduced in 1770, by Mons. Richard. It flowers from April to July<sup>k</sup>.

16. Root perennial. Stems prostrate, four-cornered, hollow, brittle with hairs very thinly scattered over them. Leaves petioled, cordate, hairy on both sides, veined: lower bluntly ferrate, obtuse, on longer petioles; upper acute and acutely ferrate. Flowers in whorls, three on each side, without an involucre. Calyx awned. Tube of the corolla shorter than the calyx, incurved: upper lip arched, cloven half way, the clefts divaricating and obtuse; lower very blunt, flat, indistinctly three-lobed, with a segment so small as to be scarcely apparent on each side of the base. At the edge of the base of the upper lip, and on the disk of the base in the lower are purple dots<sup>l</sup>.

According to Desfontaines it is annual. Stems hirsute and branched. Bractes ovate, longer than the calyx, leafy, mucronate at the tip; the lower crenate, the upper quite entire. Whorls from four to six-flowered. Calyx villose, bell-shaped, with long, awl-shaped, almost equal teeth, mucronate-spiny at the tip. Tube of the corolla shorter than the calyx, bowed: upper lip erect, obtuse, cloven half way: lower three-lobed.

Native of Spain, Italy, the Levant, and Barbary about Tunis.—It was cultivated in the Apothecary's garden at Chelsea in 1725. It flowers from June to August<sup>m</sup>.

17. Root perennial, branched. Stems several, two feet high, ascending at the base and then upright, sharply four-cornered, green, very hirsute with white hairs. Leaves petioled, cordate, obtuse, crenate, veined, inodorous, soft on both sides with scarcely visible hairs, on a hirsute petiole: upper ones more oblong and sharper: uppermost lanceolate and very sharp. Whorls six-flowered; flowers sessile, with little and a not unpleasant smell. Calyx somewhat villose, green; segments lanceolate. Corolla rose-purple: upper lip quite entire; disk of the lower lip above the throat pale dotted with purple. The fruiting calyx increases, and becomes bell-shaped with the border spreading.

Native of the Canary islands, where it was first found by Masson<sup>n</sup>.

18. Stem erect, a span high, simple, hirsute. Lower leaves connate at the base, upper distinct, sessile; all blunt, smoothish above, softly hairy beneath: floral leaves cordate-ovate, reflexed, shorter than the whorls, smooth on the inner side. Spike the length of the stem, composed of remote whorls. Calyxes very hirsute: segments awl-shaped, spreading very much, three times as long as the calyx. Corolla purple. It is well distinguished by the very long spreading segments of the calyx.—Native of the Levant<sup>o</sup>.

19. Root perennial. Stems stiffish, with hairs thinly scattered over them. Leaves subpetioled, cordate, elliptic or often lanceolate, deeply crenate, rugged with thinly scattered hairs on both sides, somewhat wrinkled. Spikes terminating, growing out into distant whorls, each having about ten flowers. Calyxes subspiny. Flowers yellow<sup>p</sup>.

<sup>y</sup> Hort. kew.

<sup>z</sup> Swartz.

<sup>a</sup> Vahl.

<sup>b</sup> Idem.

<sup>c</sup> Clusius.

<sup>d</sup> Vahl.

<sup>e</sup> Linn. syst.

<sup>f</sup> Linn. mant.

<sup>g</sup> Hort. kew.

<sup>h</sup> Jacquin.

<sup>i</sup> Royen in Linn. mant.

<sup>k</sup> Hort. kew.

<sup>l</sup> Linn. spec.

<sup>m</sup> Hort. kew.

<sup>n</sup> Jacquin, collect.

<sup>o</sup> Vahl from Vaillant's herbarium.

<sup>p</sup> Linn. mant.



Native of the South of Europe. Cultivated in 1758 by Mr. Miller. It flowers from June to August<sup>1</sup>.

20. This has the air of the preceding. Root perennial. Stems a foot high, rigid, hairy, branched. Leaves hairy, somewhat wrinkled, shorter than the internodes; lower petioled, middle and upper sessile. Whorls distinct, the lower ones more remote. Flowers subsessile. Bractes sessile, lanceolate-mucronate or cordate-ovate acuminate, pungent at the end, length of the calyxes, quite entire. Calyx very hirsute, with the segments lanceolate, almost equal, spreading, rigid, spiny at the end. Corolla purple, villose, the same size as in *St. recta*: tube the length of the calyx, hairy: upper lip erect, emarginate; lower three-lobed, hairy on the outside, the middle lobe much the largest.—It differs from the preceding, to which it is allied, in having the calyxes very hirsute, spiny, and twice as big; the whorls six-flowered; the corollas purple, with the upper lip emarginate. The leaves in *recta* are acute outwards, not dilated, the awns of the calyx soft, the whorls ten-flowered, and the corollas yellow<sup>2</sup>.

21. Root annual. Lower leaves ovate, wrinkled, very blunt; middle ones oblong, petioled; those above sessile, lanceolate, three-nerved. Corollas yellow: upper lip recurved, emarginate, with the lateral edges ferruginous: calyxes mucronate but not thorny. The stem in mountainous situations is upright, in meadows procumbent. The stamens reflexed to the sides indicate the genus<sup>3</sup>. Crantz's description of *Stachys Betonica* belongs to this species<sup>4</sup>.

Native of Germany, Austria, Carniola, Switzerland, Piedmont, and France. Cultivated in England in 1713. It flowers in July and August<sup>5</sup>.

22. Native of the Cape of Good Hope, where it was found by Masson; and introduced in 1774: it flowers in July. Shrubby<sup>6</sup>.

23. Root small, annual. Stem from a span to a foot in height, among corn upright, but alone weak or procumbent, branched, somewhat hairy: branches brachiate. Leaves three-nerved at the base, widely crenate, somewhat hairy on both sides, petioled except the uppermost. Flowers all in whorls. Calyx hairy, with the teeth ciliate. Corolla small, scarcely exceeding the calyx, pale purple or flesh-coloured: upper lip short, blunt and entire. Filaments white below and purple above: anthers blackish; pollen yellow. Seeds greenish dotted with black<sup>7</sup>.

Authors seem to have been at a loss in what genus to place this humble plant: it does not appear to possess the striking characters of any, or to afford sufficient distinction for making it a separate genus. As a species, the smallness of its flowers, the form of its leaves, and the place of growth, obviously distinguish it from any other English plant<sup>8</sup>.

Native of Europe, in corn fields, in a gravelly or calcareous soil: flowering from June to August.

24. Introduced about 1775 by William Pitcairn, M.D. It flowers in June and July. Shrubby.—Native place of growth unknown<sup>9</sup>.]

#### PROPAGATION AND CULTURE.

Most of the sorts are hardy, and may be propagated by seeds sown in March upon a bed of light fresh earth: when the plants come up, set them out into beds six inches asunder, watering them till they have taken root, and keeping them clear from weeds. At Michaelmas transplant them where they are to remain, in an open situation, and upon a dry light soil, not over rich. The summer following these plants will flower, and in August their seeds will ripen: many of them die soon after. Some continue several years, and may be increased by parting the roots.

*St. sylvestrica*, *palustris* and *germanica* are wild creeping plants, and spread very much where they have liberty.

*Annua* and *arvensis* are annual, the rest are perennial.

<sup>1</sup> Hort. kew.      <sup>2</sup> Desfontaines and Vahl.  
<sup>3</sup> Linn. spec. and mant.      <sup>4</sup> Jacquin.      <sup>5</sup> Hort. kew.  
<sup>6</sup> Idem.      <sup>7</sup> Curtis and Smith.      <sup>8</sup> Curtis.  
<sup>9</sup> Hort. kew.

*Glutinosa*, *æthiopica* and *rugosa* require to be sheltered in winter in a glass case or dry stove.

[*STACHYS*. See *Ballota*, *Phlemis*, *Sideritis*.

*Stachys italica*. See *Sideritis syriaca* β.

*STACHAS*. See *Stachas*.]

*STÆHELINA*: (So named from John Henry Stæbelin, and his son Benedict, Swiss physicians.)

Lin. gen. n. 938. Reich. n. 1018. Schreb. n. 1274: Juss. 175.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat order of *Compositæ Discoidææ*. *Cinerocephalæ*, Juss.

#### GENERIC CHARACTER.

CAL. Common oblong, cylindric, imbricate: scales lanceolate, erect, terminated by a shorter coloured scalelet.

COR. Compound uniform, tubular. Corollæ hermaphrodite, equal.

Proper one-petalled, funnel-form: border five-cleft, equal, acute, bell-shaped.

STAM. Filaments to each five, capillary. Anthers connate, tailed.

PIST. Germ very short. Style filiform. Stigma double, oblong, obtuse, erect.

PER. none. Calyx unchanged.

SEEDS solitary, oblong, very short, four-cornered. Down branched or cloven, longer than the calyx.

REC. chaffy, flat. Chaffs very short, permanent.

#### ESSENTIAL CHARACTER.

Anthers tailed. Down branched. Recept. with very short chaffs.

#### SPECIES.

1. *Stæhelina gnaphaloides*.

Lin. spec. 1176. Juss. 738. Reich. 3. 722. Berg. cap. 232. Pluk. phyt. t. 302. f. 3. (Jacea.)

Leaves filiform tomentose, scales of the calyx lanceolate membranaceous at the tip and reflexed.

2. *Stæhelina dubia*.

Lin. spec. 1176. Juss. 738. Reich. 3. 722. Gouan monsp. 430. Ger. prov. 190. t. 6. Allion. pedem. n. 633. Barr. ic. 406. (Chamæ-Chrysocome.)

*Stæchys odorata purpurea*. Lob. illustr. Magn. monsp. 247. 297.

*Stæchadi citrinæ affinis*, capitulis longioribus. Baub. hist. 3. 156.

*Elichrysum sylvestre flore oblongo*. Baub. pin. 265.

*Jacea capitata, rosmarini folio*. Tournef. inst. 444.

Leaves linear toothblotted, scales of the calyx lanceolate, seed-down twice as long as the calyxes.

[3. *Stæhelina arborescens*.

Lin. Juss. 738. Reich. 3. 723. mant. 111. Schreb. dec. 1. t. 1.

*Centaurea*. Ger. prov. 187. n. 10.

*Rhaponticoides frutescens, styracis folio*. Vaill. aët. 179.

*Jacea arborescens styracis folio*. Tournef. inst. 445.

*Cyanus arb. altera styr. folio*. Alp. exot. 33. t. 32.

*Frutex rotundo argenteo folio, cyani flore*. Baub. pin. 452.

Leaves oval, stem arborescent.

4. *Stæhelina fruticosa*.

Lin. Juss. 738. Reich. 3. 723. Schreb. in nov. aët. nat. cur. 4. 142.

*Centaurea fruticosa*. Lin. spec. 1286.

*Cyanus repens*. Lob. ic. 548.—angustifolius. Baub. pin. 274. Raii hist. 322.

*C. minimus repens angustif.* Park. theat. 483. f. 6.

*Jacea frutescens, plantaginis folio, flore albo*. Tournef. cor. 32.

*Rhaponticoides frutescens, oleæ folio*. Vaill. aët. 179. Leaves lanceolate obtuse, stem shrubby.

5. *Stæhelina spinosa*.

Vahl symb. 1. 69.

*Chrysocoma mucronata*. Forsk. descr. 147.

*Conyza ægyptiaca juniperi folio tricuspidæ sæpius auriculato, floribus aureis*. Vaill. aët. par. 1719. 397. ed. in 8vo.

*Jacea ægypt. spinosa*. Petiv. herb.

Leaves awl-shaped spinescent, with a spinule at the base on each side, stem shrubby.

6. *Stæhelina hystata*.

Vahl symb. 1. 70.



- Chrysocoma spathulata.* *Forsk. descr.* 147.  
*Leaves hastate hoary, stem shrubby.*
7. *Stæhelina ilicifolia.*  
*Lin. syst.* 739. *suppl.* 358. *Smith ic. ined.* 3. t. 71.  
*Leaves opposite on very short petioles cordate toothed*  
*shining above tomentose beneath, stem arborescent.*
8. *Stæhelina corymbosa.*  
*Lin. syst.* 739. *suppl.* 359.  
*Leaves wedge-shaped præmorse, flowers corymbed.*
9. *Stæhelina Chamæpeuce.*  
*Lin. syst.* 739. *Reich.* 3. 723.  
*Serratula Chamæpeuce.* *Lin. spec.* 1147.  
*Centaurea.* *Lin. hort. cliff.* 421.  
*Jacea fruticans, pini folio.* *Bauh. pin.* 271. *Pluk.*  
*phyt. t.* 94. *f.* 3.  
*Chamæpeuce.* *Alp. exot.* 77. *t.* 76.  
*Stœbe capitata, chainæpinus fruticosa cretica.* *Pon.*  
*ital.* 75.  
*S. cretica fruticans, pinæ angustis foliis.* *Mor. hist.* 3.  
*133. f.* 7. *t.* 26. *f.* 8.  
*Leaves linear clustered very long revolute.*
10. *Stæhelina imbricata.*  
*Lin. syst.* 739. *Reich.* 3. 724. *mant.* 281. *Berg.*  
*cap.* 233.  
*Leaves awl-shaped erect tomentose.]*

## DESCRIPTIONS, &amp;c.

1. This rises with a shrubby stalk about three feet high, and divides into several branches. Leaves long, taper, woolly, thinly set upon the branches. Flowers terminating in single heads, which are pretty large, and have scaly calyxes ending in recurved spines. The florets are yellow. [Style bifid. Calyx scarious. Seed-down feathered, connate at the base. Anthers tailed<sup>b</sup>.

Native of the Cape of Good Hope, whence it was long since introduced into the Dutch gardens. Mr. Miller cultivated it in 1759.]

2. This is a biennial plant, with the stalks rarely above a foot high. Leaves narrow and very woolly, opposite or alternate, having much the appearance of one sort of *Elichrysum*. Flowers terminating. Calyxes long, with the scales ending in acute recurved points: florets a little longer than the calyx. It flowers in July.

[Linneus remarks, that it is a singular plant, intermediate as it were between the *Serratulas*, *Gnaphaliums*, and *Stæhelinas*: hence he named it *dubia*.—Seed-down hairy, connate at the base. Stem and leaves beneath tomentose.

Native of Spain, the South of France, and Italy. Mr. Miller cultivated it in 1759.

3. Calyx imbricate with awnless scales. Chaffs many-parted. Seed-down branched and feathered. Anthers as in *Inula*, toothed at the base. Florets naked, neuter<sup>c</sup>.—Leaves petioled, oval, quite entire, silky and silvery beneath<sup>d</sup>.

Root black, with long black fibres. Stem simple, erect, striated, smooth, almost naked. Root-leaves ovate, smooth: stem-leaves narrower, lanceolate, subferrate, fewer, and only towards the lower part. Flower terminating: scales of the calyx lanceolate, naked, blackish at the tip; the upper ones pellucid and yellowish. Corollas purple<sup>e</sup>.

Native of the South of France, and the island of Candia.

In alpine situations it varies with a stem two feet high and more.

4. Native of the Levant.

5. Stem shrubby, rigid, very much branched. Branches alternate, round, striated, smooth. Leaves alternate, sessile, rigid, pungent, remote, spreading very much, somewhat striated, having a spinule on each side at the base. Flower solitary at the end of the branches, with a pair of small leaflets at the base. Calyx before flowering cylindric, but afterwards turbinate, imbricate, smooth: scales linear-oblong, ending in a dagger-point. Seeds hairy, three-sided: down length of the calyx, gray, appearing to be very finely

toothed when examined by a magnifier. Receptacle with very short, bristle-shaped chaffs.—Native of Egypt.

6. This is a low stiff and very branching shrub. Branches round, hoary, blunt. Leaves oblong, sessile, widened on each side towards the middle by a small horizontal lobe, very blunt, but acute at the base, hoary especially beneath, and sometimes there is a small toothlet in the axil of the lobules. Flowers towards the end of the branchlets, solitary, sessile. Calyx of the same form as in *spinosa*, with linear keeled scales. Seeds villose: down ferruginous, simple, very finely toothletted beyond the calyx, and somewhat rigid. Receptacle scarcely chaffy.—Native of Egypt<sup>f</sup>.

7. This is a tree or a shrub, with ever-green shining leaves, and round, pubescent, closely leaved branchlets, flowering at the top. Leaves spreading, an inch long, cordate-ovate, obtuse, a little rolled back at the edge, grossly toothed, netted-veined, very smooth and varnished as it were above, densely woolly and white beneath. Petioles thick, pubescent, curved in. Panicle terminating, subcymed, densely woolly. Peduncles round. Bractes lanceolate. Calyx hemispherical, subcylindrical, imbricate or rather calyced: scales oblong, very densely woolly on the outside, membranaceous and naked above and along the edge, lacerate-ciliate at the tip; after flowering closely bent in, permanent. Florets numerous, yellow, funnel-shaped, five-cornered, smooth: border five-cleft, obtuse, erect. Filaments capillary, white: anthers included, obtuse, converging, cloven at the base and inserted laterally into the filament, yellow. Germ oblong, quadrangular, smooth: style a little longer than the stamens, cloven at the top: stigmas divaricating, obtuse. Receptacle flattish, densely chaffy: chaffs short, rigid, commonly bifid or trifid. Seeds form of the germ: down shorter than the corolla, feathered.

Native of New Granada, where it was found by Mutis<sup>g</sup>.

8. This is a shrub, with proliferous, hoary, erect branches. Leaves alternate, subpetioled, distant, wedge-shaped or lanceolate, end-bitten and blunt, retuse or three-toothed, somewhat white-tomentose beneath. Corymb compound, terminating. Calyx hoary, with very short scales. Seed-down white, longer than the calyx.—Native of the Cape of Good Hope<sup>h</sup>.

9. Native of the island of Crete or Candia.

10. Native of the Cape of Good Hope.]

## PROPAGATION AND CULTURE.

1. Plant cuttings in any of the summer months, covering them closely with a bell or hand-glass. When they have made good roots, take them up carefully, and plant them in pots, filled with fresh light earth, not over rich, and place them in the shade until they have taken new root; then remove them to a sheltered situation, and in autumn place them in the house. They do not require any artificial heat in winter, but should have a dry air; their tender shoots being very subject to rot with damp.—This sort does not always ripen its seeds in England. Several of the other species may have the same treatment, whenever they shall be introduced.

2. Sow the seeds upon a warm border of light ground in the spring, where the plants are designed to stand; for unless they are carefully transplanted when young, they do not bear removal well. The second year they will flower, and if the season prove favourable, the seeds will ripen, and the plants will decay soon after. This sort will live through the winter in the open air, on a dry poor soil, and in a sheltered situation; but in rich ground it becomes luxuriant in summer, and is therefore more liable to suffer from cold in winter.

[STÆHELINA. See *Athanasia*.

STÆHELINIA. See *Bartsia*.

STAFF-TREE. See *Celastrus*.

STAG'S-HORN TREE. See *Rhus*.]

<sup>b</sup> Linn. syst.

<sup>c</sup> Schr. ber.

<sup>d</sup> Linn. mant.

<sup>e</sup> Ger. prov.

<sup>f</sup> Vahl.

<sup>g</sup> Smith.

<sup>h</sup> Linn. suppl.



STAPELIA. (So named by Linneus, in memory of Bodeus a Stapel, a physician of Amsterdam, commentator on Theophrastus, 1644.)

Lin. gen. n. 307. Reich. n. 334. Schreb. n. 432.

Juss. 146. Jacqu. misc. 1. t. 3, 4.

Class. 5. 2. Pentandria Digynia.

Nat. order of Contortæ. Apocineæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-cleft, acute, small, permanent.

COR. one-petalled, large, flat, thick, five-cleft beyond the-middle: segments wide, flat, acuminate.

Nectary, five leaflets, spreading, linear, grooved, emarginate with a dagger point, opposite to the segments of the corolla.

Leaflets five others, fastened alternately with these a little higher to the tube of the filaments, and running along it, vertical, bifid: interior segment erect, with the summit bent outwards; outer segment straight, compressed.

STAM. Filaments five, united into a short tube. Each Anther fastened internally to the base of each vertical leaflet of the nectary, and wider than it, incumbent on the stigma, short, two-lobed, two-celled, produced below on both sides into an earlet, contiguous at the margin to each of the neighbouring anthers as far as the tip, and ascending at the tip. Pollen united into ten corpuscles, crescent-shaped, flattish, ascending obliquely into the cells of the anther, each on a very short pedicel (with a transverse base, incumbent on the upper margin of the earlet,) fastened by pairs to five small twin coloured tubercles, placed on the apex of the earlets, and adhering to the angles of the stigma.

PIST. Germs two, ovate, flat inwards. Styles none. Stigma common to both germs, large, placed on the tube of stamens, acutely five-cornered, flat above, obliquely truncate-excavated at the sides for the reception of the anthers.

PER. Follicles two, long, awl-shaped, one-celled, one-valved.

SEEDS numerous, imbricate, compressed, crowned with a down. Receptacle free.

ESSENTIAL CHARACTER.

Contorted. Nect. a double little star covering the genitals.

SPECIES.

1. Corolla five-cleft, segments hairy at the edge.

[1. Stapelia ciliata. Ciliate Stapelia.

Lin. spec. ed. Willd. 1. 1277. Masson monogr. 9. n. 1. t. 1. Thunb. prodr. 46.

Stem four-cornered branched decumbent rooting flowering at top, peduncles shorter than the corolla, which is papillose at bottom.

2. Stapelia revoluta. Revolute-flowered Stapelia.

Lin. spec. ed. Willd. 1. 1277. Masson monogr. 12. n. 10. t. 10.

Stem four-cornered branched at the base erect flowering at top, peduncles shorter than the corolla, which is smooth, with the segments ovate hairy at the edge and revolute.]

3. Stapelia hirsuta. Hairy Stapelia.

Lin. spec. 316. Syst. 260. Reich. 1. 614. Willd. 1. 1278. hort. cliff. 77. Jacqu. misc. 1. 28. t. 3. Thunb. prodr. 46. Ait. kew. 1. 309. Desfont. atlant. 1. 213. Lamarck illustr. t. 178. f. 2. Mill. fig. t. 258. Shaw nat. misc. t. 54. Roef. inf. musc. t. 9. Kniph. cent. 2. n. 89.

Asclepias africana aizoides, flore pulchre fimbriato. Comm. rar. t. 19. Bradl. succ. 3. 5. t. 23.

Branches ascending four-cornered flowering at the base, peduncles round length of the corolla, which is villose at bottom with the segments ovate sharpish and villose at the edge.

[4. Stapelia fororia.

Lin. spec. ed. Willd. 1. 1278. Masson monogr. 23. n. 39. t. 39.

Branches divaricating four-cornered flowering at the base, peduncles round longer than the corolla, which is very villose at bottom and wrinkled transversely with the segments oblong acute villose at the edge.

5. Stapelia grandiflora. Great-flowered Stapelia.

Lin. spec. ed. Willd. 1. 1278. Masson monogr. 13. n. 11. t. 11.

Branches erect four-cornered club-shaped flowering at the base, peduncles thickened at the base shorter than the corolla, which is villose with the segments lanceolate-acuminate ciliate at the edge.

6. Stapelia ambigua.

Lin. spec. ed. Willd. 1. 1279. Masson monogr. 13. n. 12. t. 12.

Branches erect four-cornered club-shaped flowering at the base, peduncles many-flowered, corollas hispid with the segments ovate-lanceolate acute villose at the edge.

7. Stapelia pulvinata. Cushioned Stapelia.

Lin. spec. ed. Willd. 1. 1279. Masson monogr. 13. n. 13. t. 13.

Stem four-cornered decumbent, branches ascending flower-bearing, bottom of the corolla raised and villose, segments roundish wrinkled acuminate villose at the edge.

8. Stapelia Asterias. Starry Stapelia.

Lin. spec. ed. Willd. 1. 1280. Masson monogr. 14. n. 14. t. 14.

Branches erect four-cornered attenuated flowering at the base, peduncles length of the corolla, the segments of which are ovate-acuminate wrinkled revolute and villose at the edge.

9. Stapelia gemmiflora. Bud-flowering Stapelia.

Lin. spec. ed. Willd. 1. 1280. Masson monogr. 14. n. 15. t. 15.

Branches erect four-cornered flowering at bottom, peduncles length of the corolla, which is rugged with the segments ovate acute ciliate at the edge five-nerved above.

10. Stapelia divaricata. Straddling Stapelia.

Lin. spec. ed. Willd. 1. 1280. Masson monogr. 17. n. 22. t. 22.

Branches four-cornered attenuated divaricate-spreading flowering in the middle, peduncles longer than the corolla, which is smooth with the segments lanceolate acuminate rolled back and ciliate at the edge.

11. Stapelia rufa.

Lin. spec. ed. Willd. 1. 1281. Masson monogr. 16. n. 20. t. 20.

Branches four-cornered erect flowering at the base, peduncles shorter than the corolla, which is wrinkled and starred at the bottom, with the segments lanceolate acuminate ciliate at the edge.

12. Stapelia acuminata.

Lin. spec. ed. Willd. 1. 1281. Masson monogr. 15. n. 17. t. 17.

Branches four-cornered ascending flowering in the middle, peduncles shorter than the corolla, which is wrinkled, and the segments are ovate cusp-acuminate ciliate at the edge.

13. Stapelia reclinata.

Lin. spec. ed. Willd. 1. 1282. Masson monogr. 19. n. 28. t. 28.

Branches spreading four-cornered flowering above the base, peduncles longer than the corolla, which has a raised bottom with lanceolate segments ciliate at the edge.

14. Stapelia elegans.

Lin. spec. ed. Willd. 1. 1282. Masson monogr. 19. n. 27. t. 27.

Branches diffused oblong roundish four-cornered flowering in the middle, peduncles longer than the corolla, which is hispid with a pentagon bottom and lanceolate segments ciliate at the edge.

15. Stapelia cæspitosa. Tufted Stapelia.

Lin. spec. ed. Willd. 1. 1282. Masson monogr. 20. n. 29. t. 29.

Branches procumbent four-cornered flowering above the base, peduncles length of the corolla, the segments of which are lanceolate acute revolute and ciliate at the edge.

16. Stapelia arida. Dry Stapelia.

Lin. spec. ed. Willd. 1. 1283. Masson monogr. 21. n. 33. t. 33.

Branches four-cornered erect flowering at the top, peduncles longer than the corolla, which has a circular bottom and oblong acute segments ciliate at the top of the margin.

17. Stapelia parviflora. Small-flowered Stapelia.

Lin. spec. ed. Willd. 1. 1283. Masson monogr. 22. n. 35. t. 35.

Branches four-cornered spreading flowering in the middle



- on the outside of the teeth, peduncles longer than the corolla, the segments of which are lanceolate bluntish and ciliate at the edge.
18. *Stapelia subulata*. *Awl-shaped Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1283. *Forsk. cat. arab.* 108. n. 193. t. 7.  
 Branches four-cornered attenuated nodding flowering below the top, corollas nodding, segments oblong acuminate-cusped with the hairs pointing one-way.
19. *Stapelia concinna*. *Neat Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1284. *Masson monogr.* 15. n. 18. t. 18.  
 Stem four-cornered erect branched at top, branches spreading simple flowering at the base, peduncles length of the corolla, corollas hispid with the segments ovate acute ciliate.
20. *Stapelia glandulifera*. *Glandular Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1284. *Masson monogr.* 16. n. 19. t. 19.  
 Branches spreading four-cornered flowering at the base, peduncles longer than the corolla, which is covered with hairs glandular at the tip, with the segments ovate acute.
2. Corollas five-cleft, segments smooth at the edge.
21. *Stapelia pedunculata*. *Long-peduncled Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1284. *Masson monogr.* 17. n. 21. t. 21.  
 Branches four-cornered two or three-toothed at the tip flowering in the middle, peduncles twice as long as the branches, segments of the corolla lanceolate acuminate, at the base surrounded at the edge by pedicelled glands
22. *Stapelia aperta*. *Open-flowered Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1285. *Masson monogr.* 23. n. 37. t. 37.  
 Branches four-cornered three or two-toothed at the tip flowering at the base, peduncles twice as long as the branches, corollas wrinkled, segments ovate obtuse smooth at the edge.
23. *Stapelia Gordonii*. *Gordon's Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1285. *Masson monogr.* 24. n. 40. t. 40.  
 Branches flowering at the top round tubercles, tubercles spiny, peduncles shorter than the corolla, which is five-toothed flat and wheel-shaped.
24. *Stapelia pilifera*. *Hairy-tubercled Stapelia*.  
*Lin. syst.* 260. *Willd.* 1. 1286. *suppl.* 171. *Masson monogr.* 17. n. 23. t. 23. *Thunb. prodr.* 46.  
 Branches flowering at the top round tubercles, tubercles bristled, flowers sessile, segments ovate cusp-acuminate smooth at the edge.
25. *Stapelia caudata*. *Tailed Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1286. *Thunb. prodr.* 46.  
 Stem rough-haired leafy, peduncles shorter than the corolla drooping, segments of the corolla linear acute.
26. *Stapelia articulata*. *Jointed Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1287. *Ait. kew.* 1. 310. *Masson monogr.* 20. n. 30. t. 30.  
 Branches flowering at the top round tubercles, tubercles mucronate, flowers subsessile, corollas papillose, segments lanceolate.
27. *Stapelia mammillaris*. *Prickly Stapelia*.  
*Lin. syst.* 260. *Reich.* 1. 614. *Willd.* 1. 1287. *mant.* 216. *Thunb. prodr.* 46. *Burm. afr.* 27. t. 11.  
 Branches flowering in the middle erect hexagonal tubercled, tubercles spiny, peduncles shorter than the corolla, which is smooth with the segments lanceolate.
28. *Stapelia pruinosa*. *Frosted Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1287. *Masson monogr.* 24. n. 41. t. 41.  
 Branches erect four-cornered flowering in the middle, peduncles shorter than the flower, corollas pubescent, segments ovate acute.
29. *Stapelia ramosa*. *Branched Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1288. *Masson monogr.* 21. n. 32. t. 32.  
 Branches almost upright four-cornered flowering in the middle on the outside of the teeth, peduncles shorter than the flower, corollas flat, segments lanceolate rolled back at the edge.

30. *Stapelia pulsa*. *Black-flowered Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1288. *Masson monogr.* 21. n. 31. t. 31.  
*S. fasciculata*. *Thunb. prodr.* 46?  
 Branches erect subhexagonal flowering in the middle on the outside of the teeth, peduncles shorter than the flower, segments of the corolla erect lanceolate-acuminate rolled back at the edge.
31. *Stapelia adscendens*.  
*Lin. spec. ed. Willd.* 1. 1288. *Roxb. corom.* 1. 28. t. 30.  
 Stem four cornered ascending flowering at the top, peduncles shorter than the corolla, which is smooth with the segments linear reflexed at the edge and acute.
32. *Stapelia quadrangula*.  
*Lin. spec. ed. Willd.* 1. 1289. *Forsk. descr.* 52. t. 6.  
 Stem four-cornered, branches divaricating flowering at the top, teeth truncate, flowers sessile.
33. *Stapelia incarnata*. *Flesh-coloured Stapelia*.  
*Lin. syst.* 260. *Willd.* 1. 1289. *suppl.* 171. *Thunb. prodr.* 46. *Masson monogr.* 22. n. 34. t. 34. *Burm. afr.* 15. t. 7. f. 1. (*Euphorbium*.)  
 Branches four-cornered stiff flowering at the top on the outside of the teeth, peduncles shorter than the corolla, the segments of which are lanceolate and acute.
34. *Stapelia punctata*. *Dotted Stapelia*.  
*Lin. spec. ed. Willd.* 1. 1289. *Masson monogr.* 18. n. 24. t. 24.  
 Branches decumbent oblong somewhat four-cornered flowering in the middle, peduncles twice as long as the corolla, which is bell-shaped with the segments spreading lanceolate acute.
35. *Stapelia geminata*.  
*Lin. spec. ed. Willd.* 1. 1290. *Masson monogr.* 18. n. 25. t. 25.  
 Branches decumbent round flowering at the top, peduncles geminate length of the corolla, the segments of which are lanceolate rolled back at the edge.
36. *Stapelia decora*.  
*Lin. spec. ed. Willd.* 1. 1290. *Masson monogr.* 19. n. 26. t. 26.  
 Branches oblong decumbent round obscurely four-cornered flowering at the base, peduncles longer than the flower, bottom of the corolla five-cornered, segments ovate-lanceolate rolled back at the edge.
37. *Stapelia pulchella*.  
*Lin. spec. ed. Willd.* 1. 1290. *Masson monogr.* 22. n. 36. t. 36.  
 Branches four-cornered decumbent flowering above the base, peduncles many-flowered, bottom of the corolla circular, segments ovate acute.
38. *Stapelia vetula*.  
*Lin. spec. ed. Willd.* 1. 1291. *Masson monogr.* 15. n. 16. t. 16.  
 Branches four-cornered erect flowering at the base, peduncles shorter than the corolla, which is smooth, with the segments ovate acuminate three-nerved above.
39. *Stapelia verrucosa*.  
*Lin. spec. ed. Willd.* 1. 1291. *Masson monogr.* 11. n. 8. t. 8.  
 Branches ascending four-cornered flowering at the base, peduncles longer than the corolla, which is warted, with the segments ovate and acute, and the bottom five-cornered and rugged.
40. *Stapelia irrorata*.  
*Lin. spec. ed. Willd.* 1. 1291. *Masson monogr.* 12. n. 9. t. 9.  
 Branches from erect spreading four-cornered flowering at the base, peduncles longer than the corolla, which is wrinkled, with ovate acuminate segments.
41. *Stapelia mixta*.  
*Lin. spec. ed. Willd.* 1. 1292. *Masson monogr.* 23. n. 38. t. 38.  
 Branches four-cornered ascending flowering at the base, peduncles length of the corolla, which is wrinkled, with a circular raised papillose bottom, and ovate acuminate segments.]
42. *Stapelia variegata*. *Variegated Stapelia*.  
*Lin. spec.* 316. *Reich.* 1. 614. *Willd.* 1. 1292. *vir. cliff.* 20. *hort. cliff.* 77. *ups.* 53. *Jacqu. misc.*



misc. 1. 27. t. 4. Thunb. prodr. 46. Ait. kew. 1.

309. Curt. magaz. t. 26. Knorr. del. 1. t. F. 4.

*Asclepias aizoides africana*. Bradl. succ. 3. p. 3. t. 22.

Mor. hist. 3. 610. f. 15. t. 3. f. 4.

*Apocynum humile aizoides*, filiquis erectis, africanum.

Herm. lugdb. 52. t. 53. Stiff. bot. 32.

*Fritillaria crassa promont. bonæ spei*. Stap. theophr. 335.

Branches four-cornered ascending flowering at the base, peduncles longer than the corolla, which is wrinkled, with a circular concave wrinkled bottom, and ovate acute segments.

3. Corolla ten-toothed.

[43. *Stapelia campanulata*. Bell-shaped *Stapelia*.

Lin. spec. ed. Willd. 1. 1293. Masson monogr. 11. n. 6. t. 6.

Branches erect four-cornered flowering at the base, peduncles three-flowered, segments of the corolla larger lanceolate, with a bell-shaped bottom.

44. *Stapelia barbata*.

Lin. spec. ed. Willd. 1. 1293. Masson monogr. 11. n. 7. t. 7.

Branches mostly four-cornered erect flowering at the base, peduncles shorter than the corolla, which is bell-shaped with the segments larger lanceolate acuminate rugged clubbed and bearded.

45. *Stapelia venusta*.

Lin. spec. ed. Willd. 1. 1294. Masson monogr. 10. n. 3. t. 3.

Stem four or five-cornered erect branched at top, branches flowering at the base, peduncles longer than the corolla bent down, corolla smooth, segments larger ovate-acuminate, bottom concave surrounded by an elevated ring.

46. *Stapelia guttata*.

Lin. spec. ed. Willd. 1. 1294. Masson monogr. 10. n. 4. t. 4.

Branches somewhat spreading and four-cornered flowering at the base, peduncles length of the corolla, the segments of which are larger ovate acute, the bottom concave rugged surrounded by an elevated ring.

47. *Stapelia humilis*.

Lin. spec. ed. Willd. 1. 1294. Masson monogr. 10. n. 5. t. 5.

Branches four-cornered spreading flowering at the base, peduncles solitary shorter than the corolla, the segments of which are larger lanceolate acute.

48. *Stapelia reticulata*. Netted *Stapelia*.

Lin. spec. ed. Willd. 1. 1295. Masson monogr. 9. n. 2. t. 2.

Branches five-cornered spreading flowering at the base, peduncles in pairs shorter than the corolla, the segments of which are larger ovate acute, the bottom bearded surrounded by an elevated ring.

4. Uncertain, the flowers being not yet known.

49. *Stapelia clavata*. Club-shaped *Stapelia*.

Lin. spec. ed. Willd. 1. 1295. Patterson voy.

Stem simple thick club-shaped nettedly and obscurely warted, fruiting at the top.

#### DESCRIPTIONS, &c.

We have a remarkable instance in this singular genus how much may be accomplished by the industry of one man. Only two species of *Stapelia* were known to Linneus when he published his *Species Plantarum* in 1762; and there are no more than five in Murray's edition of the *Systema Vegetabilium* of 1784. Thunberg in his *Prodomus* (1794) has eight species. But Masson, in his beautiful monogram upon this genus has described and figured forty-one species, to which if we add the *hirsuta* and *variegata* long since known; two species discovered by Forskahl in Arabia Felix; two by Thunberg not mentioned in Masson's work; one in the splendid work on East India plants now publishing by the East India Company; and one discovered by Colonel Gordon and Captain Paterson at the Cape of Good Hope; we shall have the forty-nine species recited above. The last gentlemen found several others, but for want of complete figures and descriptions they cannot be sufficiently characterized to be inserted here. Forskahl discovered five new species in Arabia Felix, of which two only that he figured well are in our catalogue. Father Loureiro has given two

species, one native of China, the other of Cochinchina. He suspects that it may be the same with the *carnosa*. Ample as the harvest has been, many probably yet remain undiscovered. Mr. Masson is certain that the Cape countries contain several that he had not an opportunity of procuring. The whole genus seems peculiar to deserts. Most of them are natives of the southern promontory of Africa. The *hirsuta* has been found also by Monf. Desfontaines near Kerwan in the kingdom of Tunis. Several are natives of Arabia Felix, and one of the East Indies, as mentioned above.

The deserts between the ridges of mountains above the Cape of Good Hope are furnished with a great variety of these and other succulent plants, which, says Mr. Masson, are endowed by nature, as the camel is, with the power of retaining within them water, sufficient to enable them to survive the long periods of drought which prevail in those regions. The climate there differs very much from that of the Cape itself; where the vegetable productions approach more to the nature of Alpine plants.

In the distribution of this genus I have followed Willdenow, and have given his specific characters.

1. This is distinguished from all the other species by its procumbent branched rooting stem, squarrose toothlets of the leaves, and the corolla (which is of the same size as in *hirsuta*) being deeply five-cleft, and of a uniform yellow colour<sup>1</sup>.

Branchlets erect, smooth, an inch long, grooved; the angles toothletted and tubercled; the toothlets spreading, acute. Flowers lateral on the branchlets, erect, large, solitary. Peduncle round, erect, smooth; one-flowered. Calyx five-leaved: leaflets lanceolate, acute, smooth. Corolla wheel-shaped, on the outside smooth and purple, within ash-coloured, papillose, rugged, the papillæ rufescent at the tip; segments ovate, acute, with subclavate, spreading, snow-white ciliæ at the edge. Corolla the size of *S. variegata*.

Native of southern Africa, below Boekland Berg; flowering in november and december<sup>k</sup>.

2. Branches a foot high, glaucous, with the angles acute and toothed; the teeth spreading, remote, in the younger ones acute. Peduncles seemingly solitary, one-flowered, from the upper part of the branch, round, smooth, three lines long. Calyx five-parted; the parts ovate, acute, smooth. Corolla even, five-cleft beyond the middle: segments ovate, acute, revolute, ciliate at the edge with very fine club-shaped hairs: tube short: genitals exsert<sup>l</sup>. Toothlets of the stem straight, so that it appears as if it were repand. Corolla a little smaller than that of the preceding, of a uniform pale violet colour<sup>m</sup>.

Native of southern Africa in dry fields under shrubs, in the desert beyond Olifant's rivier: flowering in september and october<sup>n</sup>.

3. Root composed of many strong fibres, from which arise several stalks, which send out other branches of the same shape from their side, having indentures at each angle their whole length, the points of which are erect. Stalks or branches deep green, but the angles and points of the indentures inclining to brown, especially if the plants be exposed to the open air in summer. The flowers come out from the side of the stalks upon long fleshy peduncles. Petal of a thick leathery substance; the inside variegated and hairy, and the borders of the segments closely furnished with long brown hairs. In the centre is the double starry nectarium, the points of which are lacerated; it covers the genitals and is of a purple colour. The outside of the petal is of an herbaceous pale colour and smooth<sup>o</sup>.

The corolla is yellow with transverse streaks of a dark violet colour; the segments violet at the end and along the edge; the bottom pale red, with red nectaries<sup>p</sup>.

Native of the Cape of Good Hope. Introduced in 1714, by Professor Richard Bradley. It flowers in june and july<sup>q</sup>.

<sup>1</sup> Willdenow.

<sup>k</sup> Masson.

<sup>l</sup> Idem.

<sup>m</sup> Willdenow

<sup>n</sup> Masson.

<sup>o</sup> Mill. fig.

<sup>p</sup> Willdenow.

<sup>q</sup> Hort. kew.



4. Plant a foot high, branched, purple: branches and branchlets thick: teeth at the angles remote, acute, curved in. Peduncles mostly solitary, from the younger branchlets, three inches long, nodding, brown, turning purple. Calyx deeply five-parted; parts linear, acute. Corolla dark-purple with transverse yellow wrinkles. It differs from *hirsuta* in its whole habit; in having the branches divaricating, deeply five-cornered and somewhat reclining, the flowers nodding, and the corolla of one colour<sup>a</sup>.

Willdenow remarks, that it resembles the two next species in colour, but that it is sufficiently distinct in the peduncle and stem. The bottom, centre or eye of the corolla is redder and very villose.

Native of the Cape of Good Hope. Masson cultivated it there, and it flowered in 1792. He introduced it at Kew, where it also flowered in 1797.

5. Plant a foot and half high. Branches club-shaped, pubescent, teeth at the angles remote and curved in, terminated by a very soft spinule. Peduncles often three-flowered, from the lower part of the branchlets. Calyx five-parted: parts lanceolate, acute. Corolla large, flat, dark-purple: segments towards the end smooth, with a transverse wrinkle; the edge is fringed with long distich gray hairs<sup>a</sup>.

Willdenow remarks that the centre of the corolla and the ends of the segments are of a darker colour than the rest.

Native of southern Africa in hot places, as at Sondags Rivier. It flowered in Masson's garden at the Cape in 1792.

6. Plant a foot and half high or more, pubescent. Teeth at the angles of the branches curved in. Peduncles three or four-flowered, from the lower part of the branches. Bracte at the base of the pedicel. Calyx five-parted: parts lanceolate, acute. Corolla large, flat: segments five-nerved, fringed with distich hairs<sup>a</sup>.

It is sufficiently distinct from the species most nearly allied to it by its many-flowered peduncles. The corolla, which is of the same size as in *hirsuta*, is hispid, of a dark red purple colour, variegated with short transverse wrinkles of an almost black purple, and having the edge of the segments of a dark violet colour<sup>a</sup>.

Native of southern Africa in dry deserts. It flowered in Masson's garden at the Cape in march 1794.

7. Plant a span high. Branches and branchlets many, reclining, rooting; teeth suberect. Peduncles mostly solitary, round, from the axils of the branches. Corolla large, flat, with the middle raised and extremely villose; segments spreading very much, oblong-rounded, ciliate. Before it flowers, the corolla is inflated and five-nerved, concave towards the end of the segments. The colour is very dark purple, with whitish wrinkles<sup>a</sup>.

It is distinct from all the other species in the form of the corolla. The nectaries are very dark violet<sup>a</sup>.

Native of southern Africa; at Camies Berg among shrubs. It is called by the inhabitants *Arabisch Rose*; and flowered in Masson's garden at the Cape in 1792<sup>a</sup>.

8. Branches many, a span and more in height, with small erect teeth, a little curved in with a point. Peduncles often solitary, from the younger branchlets, round, pubescent, two inches long. Calyx five-parted: parts linear, acute. Corolla large, purple with pale yellow transverse bands, deeply five-cleft, wrinkled, spreading: segments lanceolate, oblique, ciliate: tube none<sup>a</sup>.

The nectaries or star in the middle are white; the bottom is very dark purple<sup>b</sup>.

Native of the deserts of southern Africa. It flowered in Masson's garden at the Cape in 1792.

9. Plant a span high: branches many, smooth, with suberect teeth terminated by a spinule. Peduncles two or three, from the axil of the teeth, round, smooth, two inches long. Calyx five-parted, with the segments lanceolate, acute. Corolla large, dark, flat, tubercled,

rugged: segments ovate-lanceolate. There is a variety, in which the corolla has golden dots scattered over it<sup>c</sup>.

The corolla is of a dusky purple colour or almost black, with small transverse stripes of a paler hue; the bottom is very dark studded with minute yellow dots. It is sufficiently distinct from all the other species in having the segments of the corolla five-nerved above, and the outside of it yellow dotted with purple, whereas in the rest it is almost always pale and of one colour<sup>d</sup>.

Native of southern Africa, in dry places among shrubs beyond Platte Kloof. It flowered in the royal garden at Kew in 1796<sup>e</sup>.

10. Branches and branchlets a span long, very smooth, with remote small blunt teeth. Peduncles one to three, from the younger branches, round, smooth, an inch long. Calyx five-parted: segments linear, acute. Corolla very smooth, shining: segments spreading: flesh-coloured<sup>f</sup>: double the size of Borage flowers, with orange-coloured nectaries<sup>g</sup>.

Native of southern Africa. It flowered in Masson's garden at the Cape in 1792.

11. Plant a hand high, rufous. Teeth at the angles of the branches erect, obtuse. Peduncles commonly two or three, short, round, purple. Calyx five-parted: segments linear, acute. Segments of the corolla triangular, colour rufous<sup>h</sup>: the size of *Periploca græca* or a little larger, of a dark violet colour variegated with transverse streaks of a very dark purple, with the bottom stellate and of a uniform rufous colour. Nectaries variegated<sup>i</sup>.

Native of southern Africa, in hot places beyond Platte Kloof. It flowered in Masson's garden at the Cape in 1793.

12. Plant a hand high. Branches many, smooth, suberect, toothed. Peduncles four or five, short, round, smooth. Calyx five-parted, with ovate acute segments. Corolla flat, smooth, ash-coloured, very dark purple towards the ends of the segments, which are narrow, tailed and very sharp-pointed<sup>k</sup>.—The corolla is a little larger than in the preceding, variegated with dark-purple transverse waved streaks, very finely fringed with white at the edge<sup>l</sup>.

Native of southern Africa, in Namaqualand. It flowered in Masson's garden at the Cape in 1791.

13. Plant a hand high and smooth. Branches clustered, reclining; with spreading, acute teeth. Peduncles mostly solitary, seldom branched, round, smooth, an inch long, from the younger branchlets. Calyx five-parted: parts lanceolate-acute. Corolla dark-purple, with the middle recurved, and the segments spreading, wheel-shaped, folded back, fringed at the edge<sup>m</sup>.

Corolla the same size as in *S. rufa*, uniformly dark-purple, with yellow nectaries. It is distinct from the two preceding species in having the branches spreading and reclining, with larger teeth; the corolla of one colour, with lanceolate segments, and the bottom raised by an impression from without, and longer peduncles<sup>n</sup>.

Native of southern Africa.

14. This is a low plant: branches abundant, clustered, smooth, pressed to the ground, rooting, with recurved acute teeth. Peduncles two or three, from the lower branchlets, half an inch long. Calyx five-parted: segments triangular, acute. Corolla five-cornered, slightly recurved, dark-purple: segments triangular, acute, hispid, folded back and fringed at the edge<sup>o</sup>.

Corolla less than that of the preceding, very dark violet with a rufescent bottom; and yellow nectaries<sup>p</sup>.

Native of southern Africa.

15. This is a dwarf plant: branches numerous, clustered, smooth; with spreading acute teeth. Peduncles two or three, from the lower part of the branchlets, round, smooth, purple, three lines long. Calyx five-parted: parts lanceolate, acute. Corolla

<sup>a</sup> Masson. <sup>b</sup> Idem. <sup>c</sup> Idem. <sup>d</sup> Willdenow.  
<sup>e</sup> Masson. <sup>f</sup> Willdenow. <sup>g</sup> Masson. <sup>h</sup> Idem.  
<sup>i</sup> Willdenow. <sup>j</sup> Willdenow.

<sup>k</sup> Masson. <sup>l</sup> Willdenow. <sup>m</sup> Masson. <sup>n</sup> Idem.  
<sup>o</sup> Willdenow. <sup>p</sup> Masson. <sup>q</sup> Willdenow. <sup>r</sup> Masson.  
<sup>s</sup> Willdenow.



five-cornered, recurved in the middle: segments spreading, narrowed, folded back and ciliate. Colour dark-purple\*. Size nearly that of the preceding; with the bottom circular, greenish, and the nectaries yellow<sup>p</sup>.

Native of southern Africa under shrubs. It flowered in Masson's garden at the Cape in 1793.

16. Plant a hand high. Teeth of the branches spreading, acute. Peduncles erect, solitary, on the upper part of the branches. Calyx five-parted: parts lanceolate, acute. Corolla small, yellowish-white: segments ovate-lanceolate, flat, dotted, setaceous towards the tip<sup>q</sup>.—The size as in *Asclepias Vincetoxicum*, pale yellow dotted at the base, hairy and sub-ciliate at the tip, with a yellow bottom, and whitish nectaries<sup>r</sup>.

Native of southern Africa, in Kanna Land. Found by Masson in 1792.

17. Plant a foot high, smooth, upright, branched: teeth recurved. Peduncles on the upper part of the branches, two seldom three, nodding. Calyx five-parted: parts small, acute. Corolla small: segments linear-lanceolate, wrinkled, flat, spreading. Colour of the plant purplish; of the corolla greenish-yellow<sup>s</sup>.

Flowers the least in this genus, the size of *Cynanchum erectum*, dotted with purple, very finely ciliate. Nectaries orange-coloured. Peduncles not from the axils of the teeth, but from a callus between them: incarnata and ramosa flower in the same manner<sup>t</sup>.

Native of southern Africa, in Namaqua Land.

18. Flower of the same size as in *S. arida*. Segments of the corolla beset at the tip with hairs all directed one way.—Native of Arabia Felix<sup>u</sup>.

19. Plant a hand high and very smooth: branches and branchlets toothed; teeth erect, acute. Peduncles commonly two, from the lower part of the branchlets, round, smooth, purple, an inch long. Calyx five-parted: segments linear, acute. Corolla flat, ash-coloured with whitish bristles: segments ovate-lanceolate, wrinkled, hispid<sup>x</sup>.—Size of *Anemone nemorosa*, ash-coloured with transverse brown streaks and covered with white bristles; bottom of a uniform brown colour<sup>y</sup>.

Native of southern Africa. It flowered in Masson's garden at the Cape in 1794.

20. Plant a span high: branches many, almost upright, toothed, acute. Peduncles two or three, axillary, two inches long, round, purplish. Calyx five-parted: parts linear, acute, rough-haired. Corolla flat: segments ovate-lanceolate, spreading, having blood-red dots scattered over them, and being covered with club-shaped hyaline hairs: colour sulphureous<sup>z</sup>. Size the same as in the preceding: nectaries orange and black<sup>a</sup>.

Native of southern Africa, in the deserts about Nord Olifant's Rivier. It flowered in Kew garden, october 1796<sup>b</sup>.

21. Plant a hand high, very smooth, glaucous. Branches divaricating, obscurely toothed; teeth very blunt. Peduncles four or five, in bundles from the lower part of the branchlets, round, smooth, twice as long as the branches. Calyx five-parted, acute. Segments of the corolla obscurely wrinkled; fringed at the angles, dotted with gray beneath, rolled back at the edge. Colour purplish-brown, varying to yellow<sup>c</sup>.

This species is very distinct from the rest, in the length of the peduncle, and the structure of the flower and branches. The peduncles are five inches long. The corolla is the size of *Cineraria lanata*: the base is ash-coloured dotted with brown, and has a bundle of pedicelled glands; the bottom is blackish<sup>d</sup>.

Native of southern Africa in Camies Berg. It flowered in Masson's garden at the Cape in 1792.

22. Plant half a hand high, smooth, glaucous. Branches many, divaricating, with very blunt teeth. Peduncles solitary? Corolla flat: segments wrinkled, five-nerved<sup>e</sup>. It resembles the preceding in the pe-

duncle and branches, but the flower is very different. Branches obscurely toothed, obtusely three or two-toothed at the tip. Peduncles three inches long and more, spreading. Corolla of a dirty dusky purple, wrinkled with very short darker stains: bottom circular, ash-coloured dotted with black. The flower is smaller than in the preceding<sup>f</sup>.

Native of southern Africa, in Namaqua Land, near Kok Fontein<sup>g</sup>.

23. Branches thick, erect, set with tubercles which have a spine in the middle. Corolla one of the largest in this genus, being near three inches in diameter, repand and five-toothed, with wide very short roundish very shortly acuminate teeth. Colour yellowish brown with a whitish centre, and black nectaries. It differs abundantly from all the other species in the singular form of the corolla, inasmuch that it might be doubted whether it belongs to this genus.

Native of the Cape of Good Hope in Groot Namaqua Land toward Orange Rivier<sup>h</sup>. Masson had this species from Gordon.

24. Plant a span high or more. Branches erect, round, grooved, tubercled: tubercle bristly. Flowers solitary, between the tubercles, on the upper part of the branches. Calyx five-parted: parts lanceolate, acute. Corolla dark-purple, with a small, raised, red circle in the middle; surrounding the genitals.

Native of southern Africa, on very dry hills, under shrubs; as below Roggeveldt Bergen. It is eaten by the Hottentots, who call it Guaap<sup>i</sup>.

25. Native of southern Africa, where it was found by Thunberg.

26. This is a low ferruginous plant. Branches purplish; divaricating, oblong, netted: net hexagonal, convex: spinules of the teeth minute. Peduncles solitary. Flowers at the top of the branches, dark-coloured: segments triangular, papillose above<sup>k</sup>.

Corolla the same size as in *pilifera*. The branches are not unlike the female spikes of *Zea Mays*<sup>l</sup>.

Native of southern Africa at Roggeveldt. The Hottentots eat the stalks raw, and the Dutch pickled with vinegar<sup>m</sup>. Introduced in 1774, by Masson<sup>n</sup>.

27. Flower small. Suspected by Masson to be the same with the *articulata*, but it appears from Burman's figure, and several marks to be different<sup>o</sup>. Introduced in 1774 by Masson<sup>p</sup>.

28. Plant a foot and half high, purplish: branches almost erect, with recurved teeth. Flowers from the upper part of the younger branches, dark-purple with white hairs. Peduncles two or three, short, round. Calyx five-parted: parts ovate, acute. Corolla small: segments flat, covered with very small white hairs, as if with a hoar frost. The same size as in *S. pilifera*.

Native of southern Africa, in Namaqua Land among shrubs. It flowered in the Kew garden, in june 1797<sup>q</sup>.

29. Plant a foot high or more, extremely branched and very smooth: angles of the branches very bluntly toothed. Flowers aggregate on the upper part of the branchlets, on short peduncles. Calyx five-parted: parts small, acute. Corolla dark-purple<sup>r</sup>: size of the preceding, with the bottom circular, whitish. The flower proceeds from a callus on the outside of the teeth<sup>s</sup>.

Native of southern Africa, beyond Platt Kloof, near the hot baths. It flowered in Masson's garden at the Cape in august 1792.

30. Plant a span high. Teeth at the angles of the branches spreading, prickly. Flowers aggregate, three or four, on very short peduncles. Calyx five-parted: parts small, acute. Corolla dark-purple, deeply five-cleft<sup>t</sup>.

Distinct from the preceding by its hexagonal acuminate-toothed branches, and flowers a little larger, growing on the outside of the teeth but not placed on a callus, with the segments erect<sup>u</sup>.

Native of southern Africa, in hot sandy places in the desert. It flowered in march, in Masson's passage from the Cape to St. Helena<sup>v</sup>. He introduced

\* Masson. <sup>p</sup> Willdenow. <sup>q</sup> Masson. <sup>r</sup> Willdenow.

<sup>s</sup> Masson. <sup>t</sup> Willdenow. <sup>u</sup> Idem. <sup>v</sup> Masson.

<sup>w</sup> Willdenow. <sup>x</sup> Masson. <sup>y</sup> Willdenow. <sup>z</sup> Masson.

<sup>a</sup> Idem. <sup>b</sup> Willdenow. <sup>c</sup> Masson.

<sup>f</sup> Willdenow. <sup>g</sup> Masson. <sup>h</sup> Willdenow. <sup>i</sup> Masson.

<sup>k</sup> Idem. <sup>l</sup> Willdenow. <sup>m</sup> Masson. <sup>n</sup> Hort. kew.

<sup>o</sup> Willdenow. <sup>p</sup> Hort. kew. <sup>q</sup> Masson. <sup>r</sup> Idem.

<sup>s</sup> Willdenow. <sup>t</sup> Masson. <sup>u</sup> Willdenow. <sup>v</sup> Masson.



it in 1774 at Kew, and it flowered there in august and september<sup>y</sup>.

31. Stems several, a foot or two high, at the base resting on the ground and striking root; above erect, with blunt notched angles. Branches erect like the stems. Leaves alternate, sessile, on the angles of the branches, lanceolate, very minute. Flowers axillary, about the extremities of the branches, generally single, erect, small, variegated with dark purple and yellow. Calyx five-cleft to the bottom: divisions lanceolate. Corolla tube scarcely any: border flat. Follicles erect, as thick as a goose quill, four or five inches long.

This plant is not very common in the East Indies, of which it is a native: it grows among bushes, on high dry barren ground; flowering during the wet season. The natives eat the most succulent tender branches raw, although they are bitter and salt to the taste<sup>z</sup>.

Willdenow remarks, that the flower is of the same size with that of *Periploca græca*; yellow with violet tips.—The Telingas name it *Car-allum*.

32. Angles of the stem somewhat toothed. It is of a dusky green, a foot and half high and branched; the sides half an inch wide. Flowers clustered, small, terminating, yellowish-green. Calyx five-toothed, permanent. Follicles two inches, and often a span long. Seeds downy. Juice not milky but watery.—Native of Arabia Felix<sup>a</sup>.

33. Plant a foot high or more, smooth. Branches erect, with spreading, acute, callous teeth at the angles. Flowers subsessile, mostly solitary at the ends of the branches. Calyx five-parted: parts lanceolate acute. Corolla flat, smooth, flesh-coloured varying to white<sup>b</sup>.

The flowers are small, (the size of *S. pilifera*.) The tender branches are eaten by the Hottentots<sup>c</sup>.

Native of southern Africa, in dry sandy fields.

34. This is a procumbent plant: joints oblong, smooth, with sharp teeth thickened at the base. Peduncles three or four, from the axils of the teeth, an inch and half long, round, smooth, purplish. Calyx five-parted: segments lanceolate, acute, purple. Corolla whitish, with blood-red dots<sup>d</sup>. Size as in *S. rufa*.

Native of southern Africa, in Namaqua Lands. It flowered in Maffon's garden at the Cape in 1790.

35. This is a low plant: branches very abundant, pressed to the ground and rooting, oblong, somewhat four-cornered, smooth, having small sharp teeth. Peduncles in pairs, round, smooth. Calyx five-parted: parts lanceolate, acute. Corolla orange-coloured with blood-red dots: divisions narrow, spreading, glandular<sup>e</sup>. The size of the preceding; from which it differs, in not having the bottom of the corolla bell-shaped, in the peduncles being geminate not aggregate, and the branches round with four rows of very minute distant toothlets<sup>f</sup>.

Native of southern Africa, in hot places under shrubs. It flowered in Maffon's garden at the Cape, in february 1794.

36. Branches many, smooth, composed of oblong roundish joints, with small acute teeth. Peduncles two, round, smooth, purple. Calyx five-parted: parts lanceolate, acute. Corolla yellow mixed with black, narrowed, lanceolate, spreading, rugged above, rolled back at the edge. Perhaps a variety of the preceding<sup>g</sup>: from which however it differs in having smaller joints, stouter teeth, and the corolla a little bigger, rugged with dark-purple dots<sup>h</sup>.

Native of southern Africa. It flowered in Maffon's garden at the Cape in 1794.

37. This is a smooth branching plant: branches and branchlets reclining, with acute and somewhat spreading teeth. Peduncles from the axils of the branchlets, reclining. Calyx five-parted, lanceolate, acute. Corolla an inch in diameter, pale with blood-red dots: segments triangular, acute, dotted: a small ring surrounds the genitals<sup>i</sup>.

Corolla the same size as in *S. concinna*. The segments at the tip and the circular bottom are brownish<sup>k</sup>.

<sup>y</sup> Hort. kew.    <sup>z</sup> Roxburgh.    <sup>a</sup> Forsk. in Willdenow.  
<sup>b</sup> Maffon.    <sup>c</sup> Linn. suppl.    <sup>d</sup> Maffon.    <sup>e</sup> Idem.  
<sup>f</sup> Willdenow.    <sup>g</sup> Maffon.    <sup>h</sup> Willdenow.    <sup>i</sup> Maffon.  
<sup>k</sup> Willdenow.

Native of southern Africa. It flowered in Maffon's garden at the Cape of Good Hope in 1793.

38. Plant a hand high, very much branched, smooth: Teeth of the branches erect, curved in at the top. Peduncles two or three, from the lower part of the branches; the younger ones round and smooth. Calyx five-parted: parts lanceolate, acute. Corolla dark-purple, flat, deeply five-cleft, smooth: segments lanceolate, obtuse, three-nerved; with wrinkled transverse bands: tube none<sup>l</sup>. Size rather less than that of *S. variegata*, (n. 42.) deep violet, with short transverse very dark violet bands, and a very dark purple bottom: but it is sufficiently distinguished by the segments being three-nerved above<sup>m</sup>.

Native of southern Africa on mountains: Hex Rivier.

39. Branches many, clustered, suberect, toothed: branchlets decumbent: toothlets of the branches decussated, acute, somewhat spreading. Peduncles one or two, from the lower part of the branchlets, an inch long, round, smooth. Calyx small, five-parted: parts ovate, acute. Corolla flat, warted, pale yellow with blood-red dots, a little raised into a pentagon form in the middle, and there rugged and surrounding the genitals<sup>n</sup>. Size of *S. variegata*, at the ends of the segments and round the bottom brownish<sup>o</sup>.

Native of southern Africa, in dry places; flowering in september and october.

40. Branches many, a hand high, clustered, toothed, smooth, suberect; branchlets decumbent; toothlets of the branches acute, somewhat spreading, decussated. Peduncles often solitary, round, smooth, an inch long. Calyx small, five-parted: parts ovate, acute. Corolla large, flat, pale yellow with blood-red dots, without any ring<sup>p</sup>.

It differs from the preceding in having no warts or pentagon ring to the corolla; the branches from upright spreading; and the colour of the corolla sulphureous with bloody dots and a blood-red bottom<sup>q</sup>.

Native of southern Africa, in dry places; flowering in september and october.

41. Branches many, diffused, reclining, rooting, teeth subrecurved, acute. Peduncles mostly solitary: nodding, three inches long, purplish. Corolla large, smooth, purple with transverse yellow wrinkles: ring yellow, with purplish papillæ<sup>r</sup>.

It is so like the next species that it might be taken for a variety; but it differs in the form of the toothlets on the branches, in the size of the flower which is double of that, with the segments acuminate, and a raised papillose centre, in the colour and especially the form of the nectary. The corolla is dusky violet wrinkled with transverse yellow streaks; the bottom yellow with red papillæ<sup>s</sup>.

Native of southern Africa. It flowered in Kew garden in 1796<sup>t</sup>.]

42. Branches many, the size of a man's finger, four or five inches long, having several protuberant indentures on their sides which spread open horizontally, and ending in acute points; these branches spread on the ground and emit roots from their joints; they are angular, and of a deep green colour in summer, but in winter change to purplish; they abound with a viscous juice of a nauseous taste. From the side of the branches towards the bottom comes out the peduncle, at one of the sinuses; it is short, and sustains one flower. Corolla large and thick, cut half way, and spreading open flat; greenish on the outside, but yellow within, having a circle of purple round the nectaries, which are prominent and of a livid colour: the whole corolla is finely spotted with purple, resembling the belly of a frog. The flower when blown has a very fetid odour like that of carrion; so that the common flesh fly deposits its eggs on it, which frequently are hatched, but wanting proper food, die soon after. After the flowers are past, the double germ changes into four taper pods (follicles) joined at their base, near a span long, and almost as thick as a man's finger.

<sup>l</sup> Maffon.    <sup>m</sup> Willdenow.    <sup>n</sup> Maffon.    <sup>o</sup> Willdenow.  
<sup>p</sup> Maffon.    <sup>q</sup> Willdenow.    <sup>r</sup> Maffon.    <sup>s</sup> Willdenow.  
<sup>t</sup> Maffon.



[Corolla sulphur-coloured, with transverse wrinkles, variegated with dusky purple irregular spots, and a paler circular bottom. It differs from *verrucosa* and *vetula*, in its wrinkled corolla, circular bottom, and the whole habit<sup>a</sup>.

Native of southern Africa, on rocks, into the crevices of which it strikes the fibres of its roots. Introduced in 1690, by Mr. Bontick. It flowers in June and July<sup>x</sup>.

43. Branches many, erect, four-cornered, or sometimes, but rarely, five-cornered, clouded with purple: teeth spreading, acute. Peduncles from the lower part of the branchlets, branched: branches two or three, one-flowered. Calyx five-parted to the base; segments lanceolate, acute. Corolla bell-shaped, without a ring, ten-cleft, five of the divisions longer, five shorter, spreading: tube bearded within, with club-shaped hairs. Colour sulphureous, the whole surface having rugged raised purple dots scattered over it. Genitals in the bottom of the tube<sup>y</sup>.

It is sufficiently distinct from the following species; the corolla being spotted not only within, but on the outside also; the bottom bell-shaped; and the peduncles many-flowered<sup>z</sup>.

Native of southern Africa.

44. Branches many, clustered, smooth, four or five-cornered: toothlets somewhat spreading, acute. Peduncles mostly three, from the lower part of the branchlets, purple, three lines long, one-flowered. Calyx five-parted: parts linear-lanceolate, acute. Corolla bell-shaped, without a ring, rugged within, bearded with club-shaped hairs, whitish with rugged purple dots scattered over it: five segments shorter, acute, five longer, almost tailed, somewhat spreading. Genitals in the bottom of the corolla<sup>a</sup>.

Corolla bell-shaped, with the segments spreading, not with the bottom only bell-shaped, and the border flat, of a whitish yellow colour, with raised dark-purple dots, and club-shaped hairs<sup>b</sup>.

Native of southern Africa. It flowered in Masson's garden at the Cape, in March 1794.

45. Branches a span long, smooth, quadrangular or sometimes but seldom quinquangular: branchlets divaricating: toothlets of the branches spreading, acute. Peduncles commonly two in the axils of the teeth, round, smooth, an inch long, pendulous, one-flowered. Calyx five-parted: parts ovate, acute. Corolla large, sulphur-coloured with blood-red dots; with five segments longer, and five shorter spreading, a little acute: tube smooth, gradually widening into a ring. Genitals in the bottom of the tube<sup>c</sup>.

This differs from the rest in having the stem erect, branched at top, and the peduncles hanging down<sup>d</sup>.

Native of southern Africa; in Karro.

46. Branches many, clustered, four-cornered, (the younger ones often five-cornered,) a hand long, smooth: toothlets acute, spreading. Peduncles three or four, from the lower part of the branchlets, one-flowered, divaricating, bracted at the base. Calyx five-parted: parts linear, lanceolate, acute. Corolla sulphur-coloured with blood-red dots: five of the segments longer five shorter acute spreading: tube rugged within, bell-shaped, gradually widening into a ring<sup>e</sup>.

The figure of the corolla as in the preceding, but the bottom rugged: the stem also is different<sup>f</sup>.

Native of southern Africa.

A new species is figured in Mr. Curtis's magazine, (t. 506.) which in the shape and colour of the corolla agrees very well with this; but the flowers in that sit on longer peduncles, which arise from the base of the stalk, the stalks are undivided, and the tubercles are not hooked. It is named *Stapelia lentiginosa* or Freckled Stapelia. It was introduced into the royal garden at Kew by Mr. Masson, and flowered in the collection of E. D. Woodford, Esq. at Vauxhall, in 1801.—The stems are branched at top; the branches are five-cornered, spreading, and tubercled, the tubercles hooked. The corollas are ten-toothed, with the seg-

<sup>a</sup> Willdenow.

<sup>x</sup> Hort. kew.

<sup>y</sup> Masson.

<sup>z</sup> Willdenow.

<sup>a</sup> Masson.

<sup>b</sup> Willdenow.

<sup>c</sup> Masson.

<sup>d</sup> Willdenow.

<sup>e</sup> Masson.

<sup>f</sup> Willdenow.

ments alternate and indistinct, the bottom concave girt with a raised ring.

47. Branches many, half a hand high, almost upright, four or five-cornered; branchlets spreading: teeth of the branches spreading, acute. Peduncles solitary, three lines long, round, smooth, one-flowered. Calyx five-parted: parts linear-lanceolate, acute. Corolla about an inch wide: five of the segments longer, five shorter acute spreading: tube bell-shaped, widening into a ring; which is of a dark purple colour with white waved spots; segments sulphur-coloured with purple dots. Genitals in the bottom of the tube<sup>g</sup>.

It differs from the other ten-toothed species, in the shortness of the stem, the smallness of the flower, and the peduncles being invariably single<sup>h</sup>.

Native of southern Africa.

48. Branches many, clustered, clouded with purple: angles acute, with acute very spreading or recurved teeth. Peduncles two or three, round, smooth, one-flowered. Bractes three or four, at the base of the peduncles. Calyx five-parted: parts linear, acute. Corolla ten-angled: five of the angles shorter, five longer, spreading a little, acute: tube bell-shaped, bearded within, gradually widening into a raised ring. Colour of the corolla dark-purple, with white lines like the meshes of a net. Genitals in the bottom of the tube.

Native of southern Africa, in hollows of rocks towards Olifant's Rivier; flowering in spring and autumn<sup>i</sup>.

49. This species is yet obscure, the fruit only having been figured by Captain Paterfon.

Native of southern Africa, in sandy fields beyond Kopper-berg<sup>k</sup>.]

#### PROPAGATION AND CULTURE.

They are propagated here very easily during the summer months, by taking off any of the side branches, which, when planted, put out roots very freely. The branches should be slipped off from the plants to the bottom, where being joined by a small ligature, they will not occasion a great wound, the joints at the place where they are connected being almost closed round; for if they are cut through the branch, the wound will be so great as to occasion their rotting when planted: these should be laid in a dry place under cover for eight or ten days, that the wounded part may dry and heal over, otherwise they will rot; then they should be planted in pots filled with fresh sandy earth, mixed with lime rubbish and sea sand; and if the pots are plunged into a very moderate hot-bed, it will promote their taking root; they should be now and then sprinkled with water, but it must be given them sparingly; and as soon as they have taken root, they must be inured to the open air. If these plants are kept in a very moderate stove in winter, and in summer placed in an airy glass-case, where they may enjoy much free air, but be screened from wet and cold, they will thrive and flower very well; for although they will live in the open air in summer, and may be kept through the winter in a good green-house, yet those plants will not flower so well as those managed in the other way. They must have little water given them, especially in winter.

The *hirsuta* and *variegata* only were cultivated in Mr. Miller's time, but the rest are to be increased and treated in the same manner. In upwards of forty years that Mr. Miller cultivated the *variegata*, he never saw it produce pods but three times; and that was when the plants were plunged into the tan-bed in the stove, into which the branches had put out long roots, and thereby became very luxuriant. Of the *hirsuta* he never saw any pods produced in England.

[STAPHISAGRIA. See *Delphinium*.]

STAPHYLEA. (Abbreviated by Linneus from *Staphylodendrum*. From *σταφύλη*, a raceme or bunch, that being the inflorescence of this shrub.)

Lin. gen. n. 374. Reich. n. 404. Schreb. n. 507.

Gartn. t. 69. Juss. 377. Staphylodendron.

Tournef. t. 386.

<sup>g</sup> Masson.

<sup>h</sup> Willdenow.

<sup>i</sup> Masson.

<sup>k</sup> Willdenow.



Class. 5. 3. Pentandria Trigynia.  
Nat. order of Tribilatae. Rhamni, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* five-parted, concave, roundish, coloured, almost as big as the corolla.

COR. *Petals* five, oblong, erect, like the calyx.

*Nectary* from the receptacle of the fructification, in the bottom of the flower, concave, pitcher-shaped.

STAM. *Filaments* five, oblong, erect, length of the calyx. *Anthers* simple.

PIST. *Germ* thickish, three-parted. *Styles* three, simple, much longer than the stamens. *Stigmas* obtuse, contiguous.

PER. *Capsules* three, inflated, flaccid, united longitudinally by a future, opening inwards by the acuminate apices.

SEEDS two, bony, globular, with an oblique point and an orbicular excavation by the side of the apex.

OBS. *The ternary number of the pistil and pericarp, in S. pinnata becomes binary.*

## ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Caps. inflated, connate. Seeds two, globular with a wart.

## SPECIES.

[1. *Staphylea occidentalis*.

*Lin. spec. ed. Willd.* 1. 1497. *Swartz prodr.* 55. *descr.* 1. 566. *Sloan. jam.* 2. t. 220. f. 1. (Pruno affinis.) *Pluk. phyt. t.* 269. f. 1. (Arbor jamaicensis.)

*Leaves doubly-pinnate, capsules three-cornered, seeds solitary, stem arboreous.*

2. *Staphylea pinnata*. Five-leaved Bladder-nut.

*Lin. spec.* 386. *Reich.* 1. 739. *Willd.* 1. 1497. *hort. cliff.* 112. *ups.* 69. *Huds. angl.* 131. *Wither. arr. ed.* 3. 317. *Smith brit.* 337. *Gært. fruct.* 1. 335. *Hoffm. germ.* 210. *Rock. germ.* 1. 137. 2. 368. *Hall. herb. n.* 831. *Leers herb. n.* 231. *Krock. files. n.* 480. *Allion. pedem. n.* 1625. *Du Roi barbecc.* 2. 439. *Willd. arb.* 376. *Knorr. del. hort.* 2. t. S. 1.

*Staphylodendron. Dalech. hist.* 102. *Matth.* 274. *Camer. epit.* 171. *Baub. hist.* 1. 274. *Raii hist.* 1681. *syn.* 468. *Dubam. arb.* 1. *Best. exst. vern. frut. t.* 8. f. 1.

*S. pinnatum. Scop. carn. n.* 374.

*Pistacia sylvestris. Baub. pin.* 401.

*Nux vesicaria. Dod. pempt.* 818. *Ger.* 1249. *emac.* 1437. *Park. theat.* 1418.

*Leaves pinnate, styles and capsules two.*

3. *Staphylea trifolia*. Three-leaved Bladder-nut.

*Lin. spec.* 368. *Reich.* 1. 739. *Willd.* 1. 1498. *hort. cliff.* 112. *Cold. noveb.* 62. *Du Roi barbecc.* 2. 441. *Willd. arb.* 376.

*Staphylodendron triphyllum vasculo tripartito. Gron. virg.* 34.

*S. virginianum trifoliatum. Herm. lugdh.* 230. *Dubam. arb.* 3.

*Pistachia virginica sylvestris trifolia. Mor. blas.* 295. *Leaves ternate, styles and capsules three.*

## DESCRIPTIONS, &amp;c.

[1. This is a tree from twenty to thirty feet high, with a smooth unarmed trunk, and round, smoothish, shining branches. Leaves petioled, alternate: pinnae two or three pairs with an odd one, petioled, ovate, acuminate, ferrate, smooth, shining: petioles both general and partial roundish, smooth. Stipules in pairs between the pinnae, minute, curved in. Panicles terminating, erect, loofish; with opposite decussated branches, and three-flowered pedicels. Flowers white odorous. Calyx five-leaved; the two inner leaflets the size of the petals. Capsule the size of a Cherry, smooth not inflated, three-celled.

Native of Jamaica; flowering there in spring and autumn<sup>1</sup>.]

2. This has several shrubby stalks arising from the same root, and growing ten or twelve feet high, covered with a smooth bark, and dividing into several branches, which are soft and pithy. The leaves are

composed of two pairs of ovate leaflets terminated by an odd one: these differ greatly in size, according to the strength and vigour of the shrubs; some being more than two inches long, and an inch and half broad; but on old weak shrubs they are much smaller: they are smooth, entire, and of a light-green colour, standing upon pretty long foot-stalks. The flowers come out upon long slender pendulous peduncles, from the axils of the stalks near their extremity, in oblong bunches. The petals are white, and expand in form of a Rose. The flowers appear in May, and are succeeded by inflated capsules, composed of three cells, one or two of which have a roundish, smooth, hard seed, and the other is barren. [Leers says, that the styles are sometimes two, but mostly three; that the capsule is three-celled; and that the seeds are constantly two in the larger cells, that in the third being abortive. According to Smith, the capsules are two, very seldom three, membranaceous, ventricose, commonly two-seeded. Seeds globular, brown, shining, hard.

Gärtner describes the capsule as composed of two joined together, ovate, twin, membranaceous, inflated, veined, two-celled, opening inwards by its acuminate apices. Receptacle a thick nerve in the middle of the partition, putting forth on each side very short umbilical chords nearly opposite, changing when ripe into broad umbilical fungous areas. Seeds six to ten in each cell, of which one or two only ripen; these are subglobular, bony, very smooth, shining, brownish-yellow, contracted towards the base, and ending in an oblique point; but there truncate as it were, and marked with a wide umbilical area.

It is a low branching smooth shrub, somewhat like a dwarf Ash. Leaves alternate: leaflets ovate, (or varying to lanceolate, but always pointed,) serrulate. Racemes terminating, compound, nodding. Bractes bristle-shaped, membranaceous. Flowers bell-shaped, whitish, or yellowish-white<sup>m</sup>.

Native of the South of Europe. It is found in England, in hedges, but is scarcely indigenous with us. Gerarde says that in his time it grew at the house of Sir Walter Culpepper, near Flinmewell in the Weald of Kent, as also in the Fryer-yard without St. Paul's gate in Stamford, and about Spalding Abbey, and in the garden of the Right Hon. the Lord Treasurer his very good lord and master, and by his house in the Strand. Also in his own garden, and in the garden hedges of Sir Francis Carew, near Croydon.—Parkinson says, it groweth in many places of this land, as at Ashford in Kent, and at Milton near Cambridge. According to Ray, it is found in hedges about Pontefract in Yorkshire, but scarcely in sufficient plenty to be deemed certainly wild.]

Mr. Miller affirms, that it is found in woods in several parts of England.

It is cultivated as a flowering-shrub, and makes a variety, when intermixed with others, though the flowers are not very beautiful. The nuts being hard and smooth are strung for beads by the Roman Catholics in some countries; and the children of the poor inhabitants eat the nuts, though they have a disagreeable taste.

3. This has a more substantial stem than the preceding, the bark of the old branches and stalks is smooth and of a gray colour; that of the young ones is of a light green and very smooth. The leaflets are ovate, ending in a point, and serrate on the edges: the largest three inches long and two broad; but in old plants they are not much more than half the size. The flowers are produced from the side of the branches in longer bunches than those of the former sort, but their peduncles are much shorter; the flowers are of a clearer white, and their petals are somewhat larger; as are also the bladder capsules: the seeds are larger, and ripen better.

Native of North America; and now as common in the nursery-gardens as the other sort. [It was introduced before 1640, by Mr. John Tradescant, senior<sup>n</sup>.]

<sup>1</sup> Swartz.<sup>m</sup> Smith.<sup>n</sup> Hort. kew. from Parkinson.



## PROPAGATION AND CULTURE.

2, 3. Both these sorts are usually propagated by suckers from the root, which the second sends out in plenty; these should be taken from the old plants in autumn, and their roots trimmed, then planted in a nursery, in rows at three feet distance, and one foot asunder in the rows; in this nursery the plants should stand one or two years according to their strength, and then be transplanted to the places where they are to remain.

The plants which are propagated in this manner from suckers, are more subject to put out suckers in greater plenty from their roots, than those which are raised from seeds, or propagated by layers or cuttings, so are not to be chosen when the others can be had; therefore those who propagate them for their own use, should prefer the other methods. If they are propagated by layers, the young branches should be laid down in autumn, in the same manner as is practised for other trees and shrubs; these will have put out roots the following autumn, when they may be taken from the old plants and planted in a nursery, where they may grow one or two years to get strength, and then may be removed to the places where they are to stand.

When these are propagated by cuttings, it should be the shoots of the former year, and if they have a small piece of the two years wood at the bottom, they will more certainly succeed; for as the young shoots are soft and pithy, so they are very subject to rot, when they have no part of the old wood to them. They should be planted in autumn on a shady border, but must not have too much wet.

They may also be propagated by sowing their seeds early in autumn, in beds of light fresh earth, and when the plants are come up, they must be carefully kept clear from weeds, and in very dry weather, if they are now and then refreshed with water, it will greatly promote their growth; in these beds they may remain until october following; at which time they should be carefully taken up and planted in a nursery, placing them in rows three feet asunder, and the plants one foot distance in the rows; and, if the following spring should prove very dry, it will be convenient to give them a little water to encourage their taking root; after which they will require no farther care but to keep the ground clear from weeds in summer, and every spring to prune off irregular branches, and dig the ground between the rows to loosen the earth, that their roots may the more easily extend. In this nursery they may remain two years, by which time it will be proper to transplant them out where they are to remain, either in wilderness quarters, or in clumps of various trees, where they will add to the diversity. The best season for transplanting these trees is in autumn, with other deciduous trees. When these seeds are sown in the spring, the plants seldom come up till the following year.

[STAPHYLINUS. See *Daucus*.

STAPHYLODENDRON. See *Dodonæa*, *Royena* and *Staphylea*.

STAR APPLE. See *Chrysophyllum*.]

— FLOWER. See *Ornithogalum*.

[— HEADED CHICKWEED. See *Callitriche*.

— HYACINTH. See *Scilla*.

— OF BETHLEHEM. See *Ornithogalum*.

— THISTLE. See *Centaurea*.]

STARWORT. See *Aster* [and *Callitriche*.

— American. See *Tridax*.]

STATICE (of Pliny. *Στατική*, from *στατήρ*, *statuo*; perhaps from its uprightness.)

*Lin. gen. n. 388. Reich. n. 418. Schreb. n. 527.*

*Tournef. t. 177. Juss. 92. Gært. t. 44. Limonium. Tournef. t. 177.*

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Aggregatæ*. *Plumbagines*, Juss.

## GENERIC CHARACTER.

CAL. Perianth common of a different structure in the several species.

Perianth proper one-leafed, funnel-form: tube narrowed: border entire, plaited, scarious.

COR. funnel-form. Petals five, united at the base, narrowed below, above wider, obtuse, spreading.

STAM. Filaments five, awl-shaped, shorter than the corolla, inserted into the corolla by their claws. Anthers incumbent.

PIST. Germ very minute. Styles five, filiform, distant. Stigmas acute.

PER. Capsule oblong, somewhat cylindrical, membranaceous, five-cusped, one-celled, valveless.—Proper calyx contracted at the neck, expanded in the border, cherishing the capsule when the corolla withers.

SEED single, oblong, hanging from a long cord.

OBS. Statice of authors with the common calyx three-fold, composes a roundish flower.

Limonium of authors with the common calyx imbricate exhibits florets in an oblong row.

S. monopetala ought not to be distinguished generically, since in the other species which are pentapetalous the filaments are inserted into the very claws of the petals.

## ESSENTIAL CHARACTER.

Cal. one-petalled, entire, plaited, scarious. Pet. five. Seed one, superior.

## SPECIES.

1. Statice Armeria. Thrift or Sea Gilliflower.

*Lin. spec. 394. Reich. 1. 753. Willd. 1. 1522.*

*hort. cliff. 115. Fl. suec. n. 269. Hudf. angl.*

*132. Wither. arr. ed. 3. 319. Smith brit. 341.*

*engl. bot. t. 226. Lightf. scot. 173. Relb. cant.*

*ed. 2. n. 284. Dicks. hort. succ. 219. Gron. virg.*

*150. Hall. belv. n. 835. Gunn. norv. n. 113.*

*Hoffm. germ. 111. Roth. germ. 1. 141. 2. 374.*

*Pollich pal. n. 317. Krock. files. n. 491. Scop.*

*carn. n. 379. Villars dauph. 2. 553. Allion.*

*pedem. n. 1605. Affo arag. n. 283. Pallas it. 3.*

*33. Kniph. cent. 5. n. 85.*

S. polyanthemum. Neck. gallob. 160.

Limonium aphyllocaulon gramineum globosum.

Mor. hist. 3. 601. f. 15. t. 1. f. 29.

Caryophyllus montanus major, flore globoso. Baub.

pin. 211. Raii hist. 1037.

C. mediterraneus. Lob. ic. 452. Ger. 482. 2. emac.

602. 2.

Caryophyllus flos aphyllocaulos, vel junceus major.

Baub. hist. 3. 336. 1.

Gramen marinum mediterraneum majus, Statice

quibusdam. Park. theat. 1279. 11.

Gr. polyanthemum majus. Dod. pempt. 564. f. 2.

β. Statice montana. Mill. dict. n. 2.—item, maritima.

n. 3. S. mont.—minor. Raii syn. 203. Petiv.

brit. t. 72. f. 8.

Caryophyllus montanus minor. Baub. pin. 211.

C. marinus minimus. Lob. obs. 242. 1. ic. 452.

Ger. 482. 1. emac. 602. 1.

Caryophyllus flos aphyllocaulos vel junceus minor.

Baub. hist. 3. 336. 2.

Gramen marinum minus. Park. theat. 1279. f. 13.

Gr. polyanthemum minus. Dod. pempt. 564. f. 1.

Scape simple headed, leaves linear flat obtuse.

[2. Statice juniperifolia. Juniper-leaved Thrift.

*Lin. spec. ed. Willd. 1. 1522. Vahl symb. 1. 25.*

S. cespitosa. Cavan. ic. 1. 38. Quer. hisp. 6. 334.

t. 15. f. 1.

S. maritima humillima, folio capillaceo rigido. Tournef.

inst. 341.

Scape simple headed, leaves linear three-sided rigid pungent.

3. Statice alliacea.

*Lin. spec. ed. Willd. 1. 1523. Cavan. ic. 2. 6.*

t. 109.

Scape simple headed, leaves linear-lanceolate acute flat.

4. Statice cephalotes. Large simple-stalked Thrift.

*Ait. kew. 1. 383. Lin. spec. ed. Willd. 1. 1523.*

S. Pseud-armeria. *Lin. syst. 300. Desfont. atlant. 273.*

S. Armeria major. Jacqu. hort. 1. 16. t. 42.

Scape simple headed, leaves oblong flat acuminate attenuated at the base.

5. Statice graminifolia. Grass-leaved Thrift.

*Ait. kew. 1. 383. Lin. spec. ed. Willd. 1. 1523.*

Scape panicled, branches three-sided, leaves linear channelled.]

6. Statice Limonium. Sea Thrift or Sea Lavender.

*Lin. spec. 394. syst. 300. Reich. 1. 753. Willd.*

*1. 1523. mat. med. 90. hort. cliff. 115. fl. succ.*

*n. 270.*



- n. 270. *Huds. angl.* 132. *Wiber. arr. ed.* 3. 320. *Smith brit.* 341. *engl. bot. t.* 102. *Relb. cant. ed.* 2. n. 285. *Gärtn. fruct. i.* 210. *Fl. dan. t.* 315. *Hoffm. germ.* 111. *Roth. germ.* 1. 147. 2. 375. *Scop. carn. n.* 380. *Krock. filif. n.* 492. *Allion. pedem. n.* 1607. *Desfont. atlant.* 273. *Gron. virg.* 150. *Blackw. t.* 481. *Kniph. cent. 4. n.* 86. *Plenck, ic. t.* 246.
- Limonium vulgare.* *Mill. dict. n.* 1.—item, *narbonense. n.* 2.
- Limonium.* *Camer. epit.* 721. *Matth.* 980. *Lob. ic.* 295. *Tabern. ic.* 430. *Ger. emac.* 411. 1. *Raii hist.* 395. *syn.* 201.
- L. majus vulgatius.* *Park. theat.* 1234. 1.
- L. maritimum majus.* *Baub. pin.* 192. *Mor. hist. f.* 15. *t.* 1. *f.* 1. *Tournef. inst.* 341.
- L. majus multis, aliis Behen rubrum.* *Baub. hist.* 3. 876. 3.
- Valerianæ rubræ similis pro Limonio missa.* *Dod. pempt.* 351. 2.
2. *Limonium minus.* *Raii syn.* 202.
- L. parvum.* *Ger. emac.* 411. 2.
7. *L. humile.* *Mill. dict. n.* 4.
- L. anglicum minus, caulibus ramosioribus, floribus in spicis rarius sitis.* *Raii hist.* 3. 247. *Dill. in Raii syn.* 202.
- Scape panicled round, leaves oblong obtuse smooth nerveless, with a sharp point under the tip, waved at the edge.*
- [7. *Statice Gmelini.*
- Lin. spec. ed. Willd.* 1. 1524. *Gmel. fib.* 2. 220. *t.* 90.
- Limonium elatius, floribus parvis dense congestis azureis.* *Amm. ruth.* 128.
- Scape panicled angular, leaves oblong-ovate emarginate flat cartilage-edged, mucronate beneath.*
8. *Statice scoparia.*
- Lin. spec. ed. Willd.* 1. 1524.
- Scape panicled round, leaves oblong-ovate coriaceous mucronate dotted beneath.*
9. *Statice latifolia.* *Broad leaved Sea Lavender.*
- Smith in Linn. trans.* 1. 250. *Lin. spec. ed. Willd.* 1. 1524.
- S. Coriaria.* *Pallas ind. fl. taur.*
- Limonium folio Enulæ flabellis tenuissimis ramosissimis, floribus parvis cæruleis.* *Gerber MSS. herb. Linn.*
- Scape panicled very much branched rugged, leaves pubescent with hairs in stellated bundles.]*
10. *Statice oleæfolia.* *Olive-leaved Sea Lavender.*
- Lin. spec. ed. Willd.* 1. 1525. *Scop. insubr.* 1. 24. *t.* 10. *Cavan. ic.* 1. 38.
- Limonium parvum oleæfolium.* *Lob. adv.* 123. *Raii hist.* 395.
- L. maritimum minus oleæ folio.* *Baub. pin.* 192.
- L. minus oleæ folio polycladon.* *Barr. ic.* 65. n. 689. *t.* 790.
- L. oleæfolium.* *Mill. dict. n.* 3.
- Scape panicled, branches angular-winged, leaves lanceolate mucronate-cusped cartilaginous at the edge.*
- [11. *Statice incana.* *Hoary Sea Lavender.*
- Lin. syst.* 300. *Reich.* 1. 754. *Willd.* 1. 1525. *mant.* 59. 513. *Vahl symb.* 1. 25.
- S. speciosa.* *Forsk. ægypt.* 65. n. 192.
- Scape panicled, leaves lanceolate three-nerved somewhat waved mucronate at the tip, branches of the panicle three-sided.*
12. *Statice auriculæfolia.* *Auricula-leaved Sea Lavender.*
- Lin. spec. ed. Willd.* 1. 1525. *Vahl symb.* 1. 25.
- Limonium lusitanicum auriculæ urfi folio.* *Tournef. inst.* 342.
- Scape simple round, spikes lateral and terminating directed one way, leaves spatulate acute.]*
13. *Statice cordata.* *Heart-leaved Sea Lavender.*
- Lin. spec.* 394. *syst.* 301. *Reich.* 1. 754. *Willd.* 1. 1526. *Sauv. monsp.* 15. *Allion. pedem. n.* 1608. *Desfont. atlant.* 273. *Affo arag. n.* 284.
- Limonium cordatum.* *Mill. dict. n.* 10.
- L. maritimum minus, foliis cordatis.* *Baub. pin.* 192. *prodr.* 99. *Baub. hist.* 3. *app.* 877. *Park. theat.* 1234. n. 4. *Raii hist.* 395.
- L. minimum cordatum, folio retuso.* *Barr. ic. t.* 805.
- Scape panicled, leaves spatulate retuse.]*
- [14. *Statice scabra.* *Rough-branched Sea Lavender.*
- Lin. spec. ed. Willd.* 1. 1526. *Thunb. prodr.* 54.
- Leaves radical obovate oblong obtuse, branches rugged.]*
15. *Statice tetragona.* *Square-stalked Sea Lavender.*
- Lin. spec. ed. Willd.* 1. 1526. *Thunb. prodr.* 54.
- Scape panicled four-cornered, leaves obovate.]*
16. *Statice reticulata.* *Matted Sea Lavender.*
- Lin. spec.* 394. *Reich.* 1. 754. *Willd.* 1. 1526.
- Huds. angl.* 133. *Wiber. arr. ed.* 3. 320. *Smith brit.* 342. *engl. bot. t.* 328. *Hill. fl. brit. t.* 25. *f.* 2. *Relb. cant. ed.* 2. n. 286. *Sauv. monsp.* 15.
- Limonium reticulatum lupinum.* *Bocc. sic.* 82. *t.* 44. *Raii hist.* 396.
- L. minus, virgulis retiformiter se invicem implicatis.* *Pluk. phyt. t.* 42. *f.* 4.
- L. reticulatum.* *Mill. dict. n.* 9.
- [17. *Statice dichotoma.* *Cavan. diff.* 1. 37. *t.* 50.
7. *St. foliis lineari-cuneiformibus acutiusculis, ramis glabris.* *Willd. spec.*
- Scape panicled prostrate flexuose, lower branches barren, leaves wedge-shaped awnless.]*
17. *Statice echioides.* *Rough-leaved Sea Lavender.*
- Lin. spec.* 394. *syst.* 301. *Reich.* 1. 754. *Willd.* 1. 1527. *Desfont. atlant.* 274. *Gouan monsp.* 230. *illustr.* 22. *t.* 2. *f.* 4. *Sauv. monsp.* 15.
- Limonium echiodeum.* *Mill. dict. n.* 11.
- L. minus annuum, bullatis foliis, vel Echioides.* *Magn. monsp.* 157. *ic.*
- Scape panicled round jointed, leaves rugged.]*
- [18. *Statice speciosa.* *Plaintain-leaved Sea Lavender.*
- Lin. spec.* 395. *Reich.* 1. 755. *Willd.* 1. 1527. *hort. ups.* 71. *Gmel. fib.* 3. 221. *t.* 91. *f.* 1. (*Limonium.*)
- Limonium floribus elegantissimis.* *Raii hist.* 397.
- L. elatius, plantaginis foliis, &c.* *Amm. ruth.* 129.
- Scape branched round, branches ancipital winged, flowers imbricate, leaves obovate-cusped mucronate cartilaginous at the edge.]*
19. *Statice tatarica.* *Tartarian Sea Lavender.*
- Lin. spec.* 395. *Reich.* 1. 755. *Willd.* 1. 1527. *Gmel. fib.* 2. 223. *t.* 92.
- Limonium tataricum.* *Mill. dict. n.* 5.
- L. orientale, plantaginis folio, floribus umbellatis.* *Tournef. cor.* 25. *Boerb. lugdb.* 1. 76. *t.* 76.
- L. elatius plantaginis foliis, &c. floribus spicatis.* *Amm. ruth.* 130.
- Scape branched divaricating, branches three-sided, flowers distant, leaves lanceolate-obovate mucronate.]*
- [20. *Statice Echinus.*
- Lin. spec.* 395. *Reich.* 1. 755. *Willd.* 1. 1528.
- Limonium orientale frutescens, caryophylli folio in aculeum rigidissimum abeunte.* *Tournef. cor.* 25.
- L. cespitosum, foliis aculeatis.* *Buxb. cent.* 2. 18. *t.* 10.
- β. *L. græcum, juniperi folio.* *Tournef. cor.* 25.
- Echinus f. Tragacantha altera.* *Alp. exot.* 57. *t.* 56.
- Scape panicled, leaves subulate mucronate.]*
21. *Statice flexuosa.*
- Lin. spec.* 395. *Reich.* 1. 756. *Willd.* 1. 1528. *Gmel. fib.* 2. 217. *t.* 89. *f.* 1.
- S. rosea.* *Pallas it.* 3. 260. *in nota.*
- Scape dichotomous corymb-fastigiate, spikes headed, flowers imbricate, leaves lanceolate wedge-shaped obtuse mucronate three-nerved.]*
22. *Statice purpurata.*
- Lin. syst.* 301. *Reich.* 1. 756. *Willd.* 1. 1258. *mant.* 59. *Thunb. prodr.* 54.
- S. peregrina.* *Berg. cap.* 80.
- Stem somewhat leafy, leaves obovate-cuneate three-nerved mucronate.]*
23. *Statice longifolia.*
- Lin. spec. ed. Willd.* 1. 1529. *Thunb. prodr.* 54.
- Stem panicled rugged erect, leaves obovate-linear.]*
24. *Statice minuta.*
- Lin. syst.* 301. *Reich.* 1. 756. *Willd.* 1. 1529. *mant.* 59. *Desfont. atlant.* 275.
- Limonium maritimum minimum.* *Baub. pin.* 192. *prodr.* 99. *Bocc. sic.* 26. *t.* 13. *f.* 3. *Tournef. inst.* 342.
- L. fruticosum minimum glabrum.* *Pluk. phyt. t.* 200. *f.* 3.
- L. ficulum folio cordato.* *Bocc. sic.* 64. *t.* 34.



- Stem suffruticose leafy, leaves clustered wedge-shaped smooth awnless, scapes few-flowered.*
25. *Statice pectinata*. Triangular-stalked Sea Lavender.  
*Ait. kew. 1. 385. Lin. spec. ed. Willd. 1. 1529.*  
*Stem and branches panicled three-sided, leaves obovate petioled, spikes directed one way.*
26. *Statice suffruticosa*. Narrow-leaved shrubby Sea Lavender.  
*Lin. spec. 369. Reich. 1. 756. Willd. 1. 1529. Gmel. fib. 2. 216. t. 88. f. 2, 3.*  
*Stem shrubby naked and branched at top, heads sessile, leaves lanceolate sheathing.]*
27. *Statice monopetala*. Broad-leaved shrubby Sea Lavender.  
*Lin. spec. 396. Reich. 1. 757. Willd. 1. 1530. hort. cliff. 116. Kniph. cent. 8. n. 91. Desfont. atlant. 277.*  
*Limonium ficulum. Mill. dict. n. 7.*  
*L. lignosum. Bocc. fic. 34, 35. t. 16, 17. Raii hist. 396.*  
*L. foliis Halimi. Tournef. inst. 342.*  
*L. frutescens, Portulacæ marinæ folio. Dodart icones.*  
*Stem shrubby leafy, flowers solitary, leaves lanceolate sheathing.*
- [28. *Statice axillaris*. Axil-flowering Sea Lavender.  
*Lin. spec. ed. Willd. 1. 1530. Vahl symb. 1. 26. t. 9. Forsk. descr. 58.*  
*Stem shrubby leafy, panicles spiked axillary, leaves lanceolate sheathing.*
29. *Statice cylindrifolia*. Cylinder-leaved Sea Lavender.  
*Lin. spec. ed. Willd. 1. 1530. Vahl symb. 1. 26. t. 10. Forsk. descr. 59.*  
*Limonium galliferum, foliis cylindricis. Shaw afr. 369.*  
*Stem shrubby leafy dichotomous, leaves round sheathing.*
30. *Statice linifolia*. Flax-leaved Sea Lavender.  
*Lin. syst. 301. Willd. 1. 1530. suppl. 187. Thunb. prodr. 54.*  
*Stem shrubby prostrate, flowers panicled directed one way, leaves linear.*
31. *Statice aurea*. Golden-cupped Sea Lavender.  
*Lin. spec. 396. Reich. 1. 757. Willd. 1. 1531. Gmel. fib. 2. 218.*  
*Limonium montanum humile, ephedræ facie, calycibus florum aureis. Amm. ruth. 132. t. 18. f. 2.*  
*Stem shrubby leafy branched, leaves awl-shaped.*
32. *Statice ferulacea*. Cut-leaved Sea Lavender.  
*Lin. spec. 396. Reich. 1. 757. Willd. 1. 1531. Pallas it. 3. 314. Desfont. atlant. 276.*  
*Limonium ferulaceo folio. Griseb. lusit. Mor. hist. 3. f. 15. t. 1. f. 23. Pluk. phyt. t. 28. f. 4.*  
*L. hispanicum multifido folio. Tournef. inst. 342.*  
*Stem shrubby branched, branchlets imbricate with chaffs terminated by a hair.*
33. *Statice pruinosa*. Frosty Sea Lavender.  
*Lin. syst. 301. Reich. 1. 757. Willd. 1. 1531. mant. 59. Vahl symb. 1. 26.*  
*S. aphylla. Forsk. descr. 60.*  
*Stem flexuose branched scurfy.]*
34. *Statice sinuata*. Scallop-leaved Sea Lavender.  
*Lin. spec. 396. Reich. 1. 758. Willd. 1. 1531. hort. cliff. 116. upf. 71. Gron. orient. 96. Desfont. atlant. 276. Kniph. cent. 2. n. 90. Curt. magaz. t. 71.*  
*Limonium sinuatum. Mill. dict. n. 6.*  
*L. peregrinum, foliis Asplenii. Baub. pin. 192. Tournef. inst. 342.*  
*L. rauwolfii. Clus. cur. t. 33. Park. parad. 250.*  
*L. quibusdam rarum. Bank. hist. 3. app. 877.*  
*L. peregrinum Rauwolfii. Park. theat. 1235.*  
*L. folio sinuato. Ger. emac. 412. 3. Raii hist. 397.*  
*L. syriacum Asplenii folio. Dodart. icones.—inciso folio, Buglossi flore. Barr. ic. t. 1124.*  
*Limonii species. Rauw. itin. 313. t. 314.*  
*Elegans genus Limonii. Dalech. app. 35. ic.*
- β. *Limonium africanum, caule alato, foliis integris hirsutis, petalo pallide flavo, calyce amoene purpureo.*  
*Mart. cent. t. 84.*  
*L. africanum. Mill. dict. n. 8.*
- γ. *Limonium caulibus alatis, Asplenii foliis minus asperis, calycibus acutioribus flavescentibus. Shaw afr. 363.*

- Stem herbaceous ancipital, root-leaves lyrate, stem-leaves linear.*
- [35. *Statice lobata*.  
*Lin. syst. 301. Willd. 1. 1532. suppl. 187.*  
*Leaves sinuate, stems round leafless.*
36. *Statice spicata*.  
*Lin. spec. ed. Willd. 1. 1532. Gmel. fib. 2. 224. t. 91. f. 2.*  
*Stem round leafless, spikes alternate cylindrical, leaves sinuate.*
37. *Statice mucronata*. Curled Sea Lavender.  
*Lin. syst. 301. Willd. 1. 1532. suppl. 187. L'Herit. stirp. nov. 25. t. 13. Ait. kew. 1. 386. Desfont. atlant. 275.*  
*Limonium peregrinum appendicibus crispis adhaerentibus.*  
*Pluk. alm. 221.*  
*L. africanum elatius & humile. Park. theat. 1235. f. 6.*  
*Stem curled, leaves elliptic entire, spikes directed the same way.*
38. *Statice globulariæfolia*.  
*Desfont. atlant. 274.*  
*S. ramosissima. Poir. et. in. 2. 142.*  
*Limonium medium, Globulariæ folio majus. Barr. ic. 793. & 794.*  
*Leaves acuminate horizontal, panicle loose, racemes terminating directed one way.*
39. *Statice ipathulata*.  
*Desfont. atlant. 275.*  
*Leaves radical spatulate obtuse glaucous quite entire on long petioles, scape round, branches panicled, flowers racemed, directed one way.*

## DESCRIPTIONS, &amp;c.

i. Common Thrift has a perennial woody root, bearing many thick tufts of lax, linear, channelled, smooth, entire leaves. Scapes erect, simple, pubescent, varying much in height (from two to eight inches or even a foot,) terminated by a globular head of many flowers, encompassed by a many-leaved involucre, the base of which is attached to a singular cylindrical membranous sheath, about an inch long, and investing the top of the scape, its lower end being loose and lacerated, so that it seems to have been torn off from the root, and carried up with the young growing stem. Calyx small, erect. Corolla rose-coloured or pink, (varying to deep red, scarlet and white.) Petals obovate, clawed. Crown of the seed fringed.

Native of Europe and North America. Common in England, Wales and Scotland, both on the sea shores and on the highest mountains. Its favourite maritime soil is in the mud or ouze. It grows well in gardens, even within the smoke of London, and probably derives its English name from its readiness to thrive in any situation. It flowers from June to August.

Mr. Miller makes three species of this, two growing on the Alps and other mountains, and the third in salt marshes. The first, which he names *Statice Armeria* or great mountain Pink, has the leaves about four inches long, and half an inch broad in the widest part. The scapes are about a foot high; and the flowers are pale red, varying to white: they appear in June.

The second, which is also a native of mountains, seldom rises more than two inches high, but when planted in gardens, becomes much larger. The leaves are narrow, and three-cornered at the base. The scapes are about six inches high; and the corollas are of a pale purplish colour, appearing in May, and continuing the greater part of June.

There is a variety of this with bright red flowers, commonly called Scarlet Thrift. The flowers make a much better appearance than those of the other.

This, which Mr. Miller names *Statice montana*, or smaller mountain Thrift, was formerly in great esteem for edgings on the sides of borders in flower-gardens. But it requires to be transplanted every year, to keep it within due bounds; and where a plant fails, as is frequently the case, it leaves a large unsightly gap.



The third sort, which he names *Statice maritima*, or least Sea Pink; and grows naturally in salt marshes, where the sea flows over it frequently, has very narrow, short, flat leaves, the scapes seldom rise more than three or four inches high; the heads of flowers are small, and of a pale flesh colour. It flowers later in the season than either of the former.

[2. Tufted, smooth. Leaves half an inch long, with a white dagger point. Scape twice as high as the leaves, striated. Head, flowers, &c. as in St. Armeria. If it be a variety of that, it is certainly a remarkable one; retaining its habit after being cultivated several years in a garden; and not having been remarked any where on the coast of the Mediterranean except in Spain and Portugal<sup>1</sup>.

3. This is very like the first species, but the leaves are twice the width, shorter, acute, and narrowed at the base.—Native of Spain, on the mountains of Enguera, and at the foot of the mountain Montduber and Orospe<sup>2</sup>.

4. Leaves broad-lanceolate, sometimes elliptic, smooth, quite entire, nerved, for the most part mucronate, on a channelled petiole sheathing at the base. Scape round, striated, erect. Sheath reflexed, membranaceous, toothed at bottom, involving the scape at top. Bractes scariose, oblong, obtuse. Calyx membranaceous, funnel-shaped. Petals rose-coloured, obtuse<sup>3</sup>.]

This seems to be the species, which Mr. Miller says was some years past in the English gardens, and came from Portugal. He describes the stalk as thick and perennial, becoming shrubby by age, and rising to a foot and half in height; the leaves like those of the first sort, but much larger; the scapes a foot and half long, terminated by one large globular head of flowers, of a pale red colour. All the plants in England were destroyed by the severe frost in the beginning of the year 1740. [It was introduced again in 1775, by Jos. Nich. de Jacquin, M.D.; and is a native of Algarbia<sup>4</sup> in Portugal: also of Spain, about Cadiz, &c. Desfontaines found it in sands near La Calle in Barbary.

5. This was introduced in 1780, by Mr. William Malcolm, but from what place is unknown. It flowers in June and July<sup>5</sup>.

6. Sea Lavender, as it is commonly called, though it has scarcely any resemblance to Lavender, and none of its aromatic quality, has a strong, perennial, woody root. This plant varies much as to luxuriance, being sometimes found with leaves scarcely an inch long, and not more than six or eight flowers in a panicle, and at other times much larger, with the flowers far more abundant. The bright blue colour distinguishes it at a distance, and that colour is tolerably permanent. Though less magnificent than some of the foreign species, it is a beautiful plant<sup>6</sup>. The leaves are obovate-lanceolate and quite entire. The scape is alternately branched, with the branchlets corymbed<sup>7</sup>. Capsule covered by the calyx and corolla, oblong, roundish, membranaceous, five-cusped at the top. Seed smooth, somewhat of a rust colour<sup>8</sup>.]

Mr. Miller separates the Limoniums from the Statice; and makes three species of this. 1. Our common Sea-Lavender, (*Limonium vulgare*, which grows in salt-marshes in several parts of England: the roots of which are thick, of a reddish colour, and an astringent taste, sending out many strong fibres, which strike deep in the ground: from the upper part of this come out several smooth stiff leaves, of a pretty thick consistence, and a dark or glaucous green, from four to five inches long, and more than two inches broad in the middle. Stalks naked, more than a foot high, dividing into many branches, which are subdivided into others smaller towards the top; the latter are terminated by slender spikes of pale blue flowers, ranged on one side the stalk above each other, coming out of narrow covers like sheaths. These appear in July; and are succeeded by oblong seeds, inclosed in the calyx, and ripening in autumn.

<sup>1</sup> Vahl.

<sup>2</sup> Willdenow.

<sup>3</sup> Desfontaines.

<sup>4</sup> Hort. kew.

<sup>5</sup> Idem.

<sup>6</sup> Engl. bot.

<sup>7</sup> Smith brit.

<sup>8</sup> Gertner.

2. *L. narbonense*, or large late-flowering Sea Lavender of Narbonne; growing naturally on the sea coast of the South of France. The leaves are six inches long, and three broad. The stalk rises fifteen or sixteen inches high. It seldom flowers till the end of August, and never produces any good seeds in England.

3. *L. humile*, or smallest English Sea-Lavender, (n. 4.) Leaves lanceolate, about three inches long, and an inch broad in the middle, lessening gradually to both ends. Stalk four or five inches high, dividing into many spreading branches, which are very thick set with short spikes of whitish-blue flowers. These appear in August, and the seeds ripen in October.

[In Dillenius's edition of Ray's synopsis, three English species of *Limonium* or Sea Lavender are distinguished. 1. The common sort, which is larger in salt marshes, smaller on cliffs and in the fissures of rocks. 2. *L. minus*, observed in England by Plukenet; near Harwich by Doody, and near Ramsgate by Dale. Doody, who observed it in flower in the royal garden at St. James's, says it differs not only in its smallness, but in having the leaf decurrent along the petiole to the very root. 3. Smaller Sea Lavender, with more branching stalks, and flowers more thinly set. The leaves are longer and more pointed, and it flowers later. Dale found it on the sea banks by the tide mill at Walton in Essex, and between Heybridge and Maldon. Mr. Sherard and Mr. Rand found it at the mouth of the river that runs from Chichester.

Both varieties are on the Lancashire coast at Low Furness, and on the west side of Milnthorpe sands in Westmoreland. Mr. Gough<sup>9</sup>.

Mr. Woodward remarks, that there are two varieties on the Suffolk coast, much smaller than the common, and which differ in having no regular footstalk, but only a continuation of the leaf: the one has the leaves short and blunt, the other has them longer and more pointed. The sharp point at the end of the leaf marks them as belonging to this species<sup>10</sup>.

7. This resembles the preceding very much, but the leaves are firmer, and not plaited and waved about the edge; their obovate form, the more distant point, the flowers only half the size and more clustered, and the different habit of the whole scape, proclaim this to be a distinct species.

Native of Siberia, in salt places from the Jaick to Angara.

8. Very like the next species but not hairy; leaves smaller; and the scapes almost as in St. *Limonium*. The margin of the leaves appears to be crenate, but on a nicer inspection it is very fine waved. The lower surface is covered with small raised dots, visible only with a magnifier. The trivial name was given it by Pallas from the use to which the scapes are applied.—Native of Siberia<sup>11</sup>.

9. Leaves all radical, oblong, a foot or more in length, entire, slightly waved, sometimes emarginate, pubescent and soft to the touch, being sprinkled all over with little stellated bundles of soft short hairs. Stalks very much branched, and spreading in every direction, covered with the same kind of pubescence as the leaves, but rather more harsh; branches roundish, alternate, terminating in simple horizontal racemes. Bractes small, concave, acute, two together at each division of the panicle, one of which is placed on the outside of the branch at its base, and the other in its axil. Flowers mostly two together, emerging from two small bractes, like those on the stalk; but furnished also with two larger and more obtuse bractes, with a large membranous margin. Calyx tubular, membranous, five-toothed, whitish with five green angles. Corolla longer than the calyx, blue. Anthers yellow.

First gathered by Gerber in Russian Tartary, on the banks of the river Don, near Asoph. It flowered in the Duke of Northumberland's garden at Sion in 1788. Communicated by Mr. Hoy his Grace's gardener<sup>12</sup>.

10. Root perennial, woody. Leaves radical, entire, flat, running down into the petiole, margined,

<sup>9</sup> Withering.

<sup>10</sup> MSS.

<sup>11</sup> Willdenow.

<sup>12</sup> Smith in Linn. trans.



acuminate with a small stiffish point. Stems tough, upright, dichotomous, somewhat flexuose, round, smooth, naked or having a single leaf near the base. Flowers on the extreme branches in close spikes, all on one side upwards, three together; the middle one flowering first, next one of those on the side, and then the other. A bracte under each side flower. Calyx funnel-shaped, membranaceous above the middle, permanent, five-cleft; clefts ovate; greenish at the base, and rayed with five raised reddish lines. Corolla red, consisting of five petals, but cohering so as to appear to be one-petalled: the claws seem as it were connate into a tube longer than the calyx; but the borders are ovate and emarginate. The stamens do not rise above the corolla. Anthers sagittate, yellowish with a white pollen. Styles bristle-shaped, white, longer than the calyx. Seed brown, striated, subovate, covered with the base of the dry corolla.—Raised from seeds sent by Professor Allione of Turin<sup>d</sup>.]

This has small, oval, obtuse leaves about two inches long and an inch broad, of a lighter green than the common Limonium, on pretty long foot-stalks, which are bordered or winged with a membrane which runs close to and partly embraces the upper part of the root. The stalk rises a foot and half high, sending out branches alternately on each side; the lower ones are long, and the others gradually diminish to the top, forming a loose kind of pyramid; they all point upwards, and towards their ends send out spikes of pale-blue flowers, which are erect. It flowers late in August, and never perfects seeds in England. It grows naturally in Narbonne and Provence. [Italy and Spain. Cultivated by Mr. Miller in 1759. Willdenow warns us not to confound it with the *reticulata*.]

11. Root perennial. Leaves radical elliptic-lanceolate, three-nerved, hoary, somewhat waved, mucronate at the point. Scape round, with triangular branches. Calyx white, surrounded with five acute green streaks; and having three or four, awl-shaped, spreading, short bractes. Flowers white<sup>e</sup>. Vahl describes the bractes as ovate-acuminate, embracing, and membranous at the edge: with four glumes which are oblong, acuminate, unequal, concave, spreading at the top, membranous at the edge, the inmost trifid: segments linear, acute.—Native of Egypt and Siberia.

12. Leaves all radical, thick, nerveless, terminated by a rigid point, half an inch long. Scape erect, even, a span high. Branches none but simple peduncles, round, spreading, lateral and terminating. Spikes solitary or sometimes two together, oblong, peduncled, spreading. Flowers very much clustered, directed one way, erect, in a double row, four inclosed in as many bractes. Bractes unequal: two outer shorter, ovate; two inner larger, all of a brownish glaucous colour, with a membranaceous shining margin and a marginal purplish line. Besides there are two very tender bractes at the base of each floret.—Native of the coast of Barbary.

Broussonet sent another plant gathered in Spain, with wider shorter leaves, the scape a finger's length, and fastigate peduncles, but scarcely differing specifically from this. It differs from the *cordata*, which has the leaves rounded at the tip or retuse without a point, the scape branched, the spikes alternate, erect, round, many on one common peduncle, the flowers alternate, solitary within the scales. It is allied to Scopoli's *cleafolia*, but different<sup>f</sup>.

13. Leaves wedge-shaped, emarginate at the end, and sometimes quite entire, rigid, running down into the petiole. Leaves varying in size, according to the soil<sup>g</sup>.

Leaves spatulate, scarcely retuse. Flowers numerous, blue, imbricate, one-ranked<sup>h</sup>.]

Leaves many thick fleshy spatulate smooth grayish, growing next the root and spreading on the ground. Stalks naked about six inches high, dividing towards the top into many smaller branches, which are terminated by short crooked panicles of small pale-red flowers. These appear in August, but never produce

seeds in this country. It grows naturally near the sea, about Marseilles, Leghorn; [the maritime rocks of Piedmont, Spain, &c. and in Barbary.—It was cultivated in 1752, by Mr. Miller<sup>i</sup>.

14. 15. Natives of the Cape of Good Hope, where they were found by Thunberg<sup>k</sup>.

16. Root strong, woody and perennial, bearing thick tufts of small narrow obovate spatulate or wedge-shaped leaves, slightly pointed but not awned, and entire. Scapes prostrate, very much branched; the branches flexuose, matted and entangled with each other, having an ovate sharp membranous bracte at each divarication: many of the branches are barren, and those often reflexed, but not always. Flowers few together in simple terminating spikes or bundles; erect, each enveloped in three or four larger blunt bractes. The ribs of the calyx; and the petals; are of a bright purplish blue, which turns white in drying<sup>l</sup>.

Native of the South of France and Malta. Wheeler observed it in Greece. It is also found on the East coast of England, particularly in Norfolk; where it covers many acres of muddy salt-marshes with its blue flowers in July and August, especially about Wells, Cley and Holkham. Mr. Woodward observed it abundant about Wells; Messrs. Crowe and Pitchford at Blakeney, Wells, Cley and Brancaster; Mr. Sutton at Holme by the sea. Mr. Hemsted found it below Wisbeach, and Mr. Skimshire in Tydd marsh, Cambridgeshire. Mr. Miller, in the seventh edition of his Dictionary, 1759, says it was found on the coast of Norfolk by Mr. Scott, a gardener, now (1759) residing at Weybridge in Surry; and in the eighth edition (1763) he adds, that it has been since found in plenty in Lincolnshire, by Joseph Banks, Esq. [now the Right Hon. Sir Joseph Banks.—Hill, in his *Flora Britanica* (1780) says that it was found near Wells in Norfolk by Dr. Watson, afterwards Sir William Watson. In the first edition of Hudson's *Flora Anglica* (1762) it is said to grow on our sea coasts, but without mention of any particular place.

Dr. Smith remarks, that Plukenet's figure most resembles *S. echioides*; and that Boccone's is too imperfect to be of any service.

β. Root woody. Leaves all radical, imbricate-patulous, spatulate, quite entire. Stem a foot and half high, flexuose, round, leafless; branches alternate, with a scale at the base of each, which is embracing, short, acute: these are subdivided, and are many times dichotomous: the lower sterile, the upper flowering in corymbs. Flowers in several rows, oblong, subimbricate, one-ranked, erect. Calyx turbinate, with a white, scarious, five-cleft border. Corolla pale blue.

Native of Spain: abundant near the Convent of Santa Barbara, by Rivar, two miles from Madrid: flowering in June and July. It seems to be intermediate between the *reticulata* and *echioides*. The stem is upright in this, whereas in *reticulata* it is prostrate: the leaves are spatulate, and not tubercled as in *echioides*; the petals also are united at the base<sup>m</sup>.

According to Willdenow, this differs from the *reticulata* only in its smoothness, and in having the radical leaves larger.

The same author suspects that the variety γ may be a distinct species. The leaves are linear-cuneiform sharpish at the point; the flowers are larger and more distant.—It is a native of Siberia.

17. Leaves tongue-wedge-shaped, bluntish, not perfectly even. Panicle bifarious, jointed; joints divaricating, sub-tubercled: branchlets dichotomous. Calyxes small, acute. Petals emarginate, pale blue with a purplish streak<sup>n</sup>.

Leaves radical, spreading in a rose, obovate, tubercled, sometimes spatulate, quite entire; on a broadish petiole. Scape slender, upright, branched at top. Branches filiform, paniced. Flowers distinct, solitary, sessile, spreading, loosely racemed. Calyx thin, somewhat bowing, involved in an elongated, acute, tubercled bracte. Petals very narrow, scarcely longer than the calyx<sup>o</sup>.]

<sup>d</sup> Scop. infubr.

<sup>e</sup> Linn. mant.

<sup>f</sup> Vahl.

<sup>g</sup> Desfontaines.

<sup>h</sup> Affo.

<sup>i</sup> Hort. kew.

<sup>k</sup> Thunb. prodr.

<sup>l</sup> Engl. bot. & Smith brit.

<sup>m</sup> Cavanilles.

<sup>n</sup> Linn. syst.

<sup>o</sup> Desfontaines.



It is an annual plant, (rather biennial) with long narrow leaves, which are set with rough tubercles, like those of Viper's Bugloss. Stalks about eight inches high, dividing into two or three small branches, which are terminated by short reflexed spikes of pale-blue flowers, coming out late in august, and seldom perfecting seeds in England.

[Native of the South of Europe, and in Barbary near Mascar, in the clefts of rocks. Cultivated in 1752, by Mr. Miller<sup>p</sup>.

18. Radical leaves many, oblong, smooth, curled, ending in a sharp point. Stems a foot high, branched, round, firmer than in the other species, sometimes winged, three or four spreading round the bottom, where there is abundance of very elegant flowers which are larger than those of the common Limonium and white, forming a handsome silvery head. The whole plant has a bitterish salt taste<sup>q</sup>.

Linneus remarks, that the root is biennial, and the calyxes undivided.

Native of Russia. Introduced in 1776, by Chevalier Murray. It flowers in july and august<sup>r</sup>.]

19. Leaves about four inches long, and three quarters of an inch broad in the middle, diminishing gradually to both ends. The stalks rise about five or six inches high, dividing into several spreading branches, which are again divided into smaller; these are terminated by spikes of pale-blue flowers ranged on one side the foot-stalk; the whole, when growing, being spread wide, has somewhat the appearance of an umbel of flowers. These come out in august, but never ripen seeds here. It was discovered by Tournefort in the Levant, whence he sent the seeds to the royal garden at Paris.

[Native of Russia. Cultivated by Mr. Miller in 1731. It flowers in june<sup>s</sup>.

20. Leaves imbricate, flat above, rugged about the edge, mucronate-spiny at the end; the lower ones reflexed.—Native of Greece and the deserts of Media.

21. Native of Siberia<sup>t</sup>.

22. Leaves radical, obovate-lanceolate, even, petioled, obtuse, with a terminating point: stem-leaves few. Scape almost naked, branched. Calyxes purplish, with five blood-red rays. Corollas purplish. It resembles *S. Limonium* very much, but the leaves are blunter; the flowers are twice as large and coloured; and there are a few leaves on the scape above the root. Native of the Cape of Good Hope<sup>u</sup>.

23. Native of the Cape of Good Hope.

24. Plant scarcely the length of a finger. Flowers pale red<sup>x</sup>.

Stems shrubby, forming a close tuft. Leaves very small, obcordate, glaucous, rigid, perennial. Scape almost filiform, upright, branched. Flowers in a small loose panicle<sup>y</sup>.—Native of the shores of the Mediterranean.

25. Native of the Canary islands, where it was found by Masson, and introduced in 1780. It flowers in september and october<sup>z</sup>.

26. Native of Siberia, where it was found by Gmelin<sup>a</sup>.—Introduced in 1781, by Messrs. Lee and Kennedy. It flowers most part of the summer<sup>b</sup>.]

27. Stalk shrubby, about two feet high, dividing into several woody branches, which spread out on every side; the lower part of these are closely furnished with gray leaves, like those of the Sea Purslain, and of a thick consistence. The branches are terminated by panicles of blue flowers, coming out singly at a distance from each other, having one funnel-shaped petal, with a long tube, and dividing into five spreading segments at top. It flowers from june till autumn, but never produces seeds in England.

Native of Sicily, where there is a variety which bears galls like those upon the Oak; but the plants in England have no appearance of these.

[Leaves alternate, glaucous, rigid, rough, twisted, perennial; with sheathing petioles. Flowers axillary, solitary. Corolla one-petalled, five-cleft: tube in-

closed in an obliquely truncate sheath. The branches frequently bear galls.

Native of Barbary in wet sand and salts near Kerwan<sup>c</sup>. Cultivated in 1732, by Mr. Miller<sup>d</sup>.

28. Stem upright, round, covered with scales at bottom, branched. Leaves alternate, clustered, quite entire, obtuse, smooth, thick, gradually lessening to the base, an inch long, of the same form with those of *St. monopetala*. Common peduncle round, longer than the leaves: pedicels flexuose, flattish on one side. Flowers minute. Glume four-valved: valves oblong, smooth, membranaceous and blunt at the edge. It has quite the same structure as the preceding, but with an axillary inflorescence.—Native of Arabia.

29. Stem upright, round, the thickness of a goose quill, covered all over with imbricate, ovate, obtuse, dry scales. Leaves towards the ends of the branches, clustered, cylindrical, sometimes a little curved in, placed on brown sheathing scales, even, coriaceous and solid, very blunt, mucronate, unequal, often an inch long. Spikes paniced. Flowers clustered. Common peduncle from the uppermost axils, two or three inches long, flexuose. Glume three valved, involving the calyx: valves unequal, concave, membranous at the edge, shorter than the calyx: the inner ones oblong, the outer one roundish. Calyx smooth, whitish, with five brown rays<sup>e</sup>.—Native of Arabia and northern Africa.

30. Found by Thunberg at the Cape of Good Hope.

31. Native of Dauria in mountainous pastures.

32. Stems round, somewhat woody, naked with alternate chaffs, paniced. Branchlets very much subdivided, in bundles, filiform, imbricate with very minute chaffs, terminated by a little brittle. Flowers subimbricate, ascending, directed one way, yellow<sup>f</sup>.—Native of Spain, Portugal and Barbary.

33. Branches alternate, shorter than the stem. Under each branch a lanceolate-subulate, smoother stipule. Branches like the stem, with two obtuse jointed branchlets. Linneus had not seen the radical leaves, nor the fructification<sup>g</sup>.

The stem and branches are jointed: the joints under the branches end in an oblong, brown, smooth scale, membranous at the edge. Branchlets from the axils of the branches, having a similar scale at the base. Spikes paniced from the end of the branches<sup>h</sup>. Native of Palestine.]

34. This is a biennial plant. The lower leaves, which spread on the ground, are indented almost to the midrib; these indentures are alternate and blunt. The stalks rise a foot and half high, dividing upwards into several branches, having at each joint three narrow leaves fitting close to the stalks, from whose base proceeds a leafy membrane or wing which runs along on both sides the stalk; these are rough and a little hairy. The stalks are terminated by panicles of flowers, which sit upon winged peduncles, each sustaining three or four flowers of a light blue colour, which continue long without fading. It flowers in july and august, but unless the summer is warm and dry, the seeds do not ripen in England.

[Root-leaves decumbent, hirsute, running down into the petiole, widening gradually from the base upwards, obtuse, lyrate-sinuate; with the lobe obtuse, often reversed: stem-leaves in threes, narrow-lanceolate. Stem upright, dichotomous, with four or five leafy, stiffish, subhirsute, and sometimes toothed wings. Flowers glomerate, corymbed, terminating, sessile, fenced with membranous, concave bractes, mucronate at the tip. Calyx funnel-form, with a blue, tooth-letted, widened border, resembling a corolla. Petals five, pale yellow, shorter than the calyx, with an oblong blunt border<sup>i</sup>.

This is one of those few plants whose calyx is of a more beautiful colour than the corolla, which it does not lose in drying. The flowers therefore, in a dried state, are an ornament to the house in winter<sup>k</sup>.

<sup>p</sup> Hort. kew.

<sup>q</sup> Idem.

<sup>x</sup> Idem.

<sup>r</sup> Ray hist.

<sup>t</sup> Linn. spec.

<sup>y</sup> Desfontaines.

<sup>a</sup> Linn. spec.

<sup>b</sup> Hort. kew.

<sup>s</sup> Hort. kew.

<sup>u</sup> Linn. mant.

<sup>z</sup> Hort. kew.

<sup>c</sup> Desfontaines.

<sup>d</sup> Linn. spec.

<sup>i</sup> Desfontaines.

<sup>e</sup> Hort. kew.

<sup>g</sup> Linn. mant.

<sup>k</sup> Curtis.

<sup>f</sup> Vahl.

<sup>h</sup> Vahl.



Native of Sicily and the Levant. Cultivated by Mr. Miller in 1731<sup>1</sup>.—But this singular species of *Statice* was long since an inhabitant of our gardens, for Parkinson, in his *Paradisus* says, “it hath been sent us out of Italy many years before either Guillaume Boel found it in Cales, or Clusius in Malacca.”

Since his time it appears to have been confined to few gardens: the nurserymen have lately considered it as a newly-introduced species, and sold it accordingly<sup>m</sup>.

By what is said above, it appears to be a native of Spain; and Desfontaines found it in Barbary, on sandy coasts.

β. Mr. Miller makes a distinct species of the same plant, or a variety of it, which comes from Africa. He describes it as] a biennial plant, with the lower leaves few, spear-shaped, hairy, slightly serrate, about two inches long, and half an inch broad. The stalk rises about fifteen inches high, and at each joint has three narrow leaves, ending in acute points; from the base of these leaves is continued a leafy membrane, running along the stalk on each side; these stalks branch out but little, and are terminated by short panicles of flowers, the peduncles of which are not winged: each peduncle sustains two or three flowers of a bright blue colour, out of the middle of which arises another small flower of a pale yellow colour. It flowered in July and August 1757, but did not ripen seeds. It was raised by Mr. Miller in Chelsea garden, from seeds which were brought him from Africa.

[γ. Another variety was found by Dr. Shaw in Africa, with the wings of the stems membranaceous entire, and the bractes obtuse and smooth, not sharp and hispid. In β the leaves are less sinuate.—In α the stem and branches are round below and not winged<sup>n</sup>.

35. The plant is smaller than the *sinuata*, but the stems and branches are round. The bractes are like those of the *sinuata*. The calyxes are white, and the corollas blue.—Native of Africa<sup>o</sup>.

36. Root tuberous. Calyx and petals whitish.—Native of Persia<sup>p</sup>.

37. Root perennial, branched, fibrous, fragrant. Stems a cubit high, branched, diffused, winged with leafy triple decurrent margins, interrupted at each joint, waved, curled, the same colour and substance with the leaf, triangular at the lower base, green. Branches axillary, alternate, solitary or many, spreading. Leaves alternate, spreading: the radical ones ovate-lanceolate acute larger: the stem-leaves spatulate or obovate, sharply acuminate narrowed at the base into the petiole, entire or scarcely toothletted, waved, one-nerved, veinless, squalid with white atoms, glaucous-green, permanent, from twelve to fifteen lines in length, and from six to nine in breadth. Petioles widish, half-embracing, channelled on one side, angular on the other, the length of the leaf. Panicle terminating, composed of spikes, distich, diffused, with leaves sometimes intermixed, four or five inches long. Spikes alternate, peduncled, the lower ones at the apex of the extreme branchlets from the axil of the upper leaf, bracted, directed the same way, halved, reflexed. Flowers sessile, two from each glume, directed one way, ascending, very close, purple. Bractes double to each flower, imbricate, erect: outer alternate, sessile, ovate, acute, concave, obscurely coloured, with membranous edges: inner or proper glume two-flowered, larger, two-leaved; the outermost roundish, emarginate, compressed, with a green disk and membranous sides; the innermost opposite, minute, linear, membranaceous, pellucid. It differs from *sinuata* in having entire leaves, frondescant and very curled stems.

Native of Morocco.—In the time of Guy de la Brosse, the first prefect of the Paris garden, it was cultivated there; and a beautiful figure of this very elegant plant is extant among his inedited plates. It has since been introduced again by Professor Louis

Guillaume Le Monnier from African seeds<sup>q</sup>.—It was introduced at Kew in 1784, by Mr. Francis Maffon<sup>r</sup>.

38. Leaves radical spatulate or spatulate-lanceolate, quite entire, narrowed to both ends, running into the petiole. Scape erect, with spreading branches; and a small ovate acute scalelet pressed close to the base of the branches. Flowers racemed, directed one way, from the apexes of the branchlets. Border of the calyx and petals white. The leaves vary in shape.—Native of Barbary, by hot springs near Bone.

39. Leaves radical, glaucous, hoary, spatulate, obtuse, rigid, quite entire, erect, running into a long petiole. Scape erect, round, firm, panicle-branched at top. Flowers in racemes, directed one way, from the top of the branches.—Native of Barbary, on rocks near La Calle<sup>s</sup>.]

#### PROPAGATION AND CULTURE.

1. Thrift may be propagated by parting the roots in autumn, that the plants may take good root before frost comes on, and that they may flower stronger than if they were planted in the spring. If they are permitted to stand long unremoved, they are subject to rot and decay, especially in good ground.

6. The common Sea Lavender, and most of the other sorts, are abiding plants, and will thrive in the open air. The English sorts may be easily procured from the places where they grow. They may all be transplanted at almost any time of the year, provided they are carefully taken up, preserving some earth to their roots, and in hot weather shaded till they have taken new root; after which time they will require no other culture but to keep the ground clean from weeds, and in the spring to stir up the ground between them to loosen it. As these plants do not require much culture, or take up much room, a few of each sort may be allowed to have a place in gardens, where there is room, for the sake of variety. These plants do not propagate very fast in gardens, so the roots need not be removed oftener than every third or fourth year, at which time they may be slipped to increase them; the best time for this is in the autumn, that the plants may be well rooted before the spring, otherwise they will not flower very strong the following summer. They should be planted in a loamy soil, on an east aspected border, where they may enjoy the morning sun, but screened from the great heat in the middle of the day; in such a situation the roots will continue several years, and flower as well as in their native soil.

These plants may also be propagated by seeds, so that such of them as do not grow naturally in England, may be obtained by procuring their seeds from abroad. These should be sown upon a border exposed to the morning sun, and on a soft loamy soil, early in the spring, for the seeds lie a considerable time in the ground before the plants come up; therefore the ground must be kept entirely clean from weeds, and if the season should prove very dry, the border should be watered two or three times a week, otherwise the seeds will lie a whole year before they vegetate; when the plants come up, they must be kept clean from weeds, and in very dry weather watered, and in the autumn they may be transplanted where they are designed to remain.

34. This and another species or two (17. 18.) are biennial plants, and rarely perfect their seeds in England, so that unless fresh seeds can be procured from warm countries, where they ripen well, it will be very difficult to continue the sorts. If the seeds of these can be obtained time enough to sow them in the autumn, the plants will come up the following spring; but when they are sown in the spring, they seldom grow the same year. These seeds should be sown on a border of loamy earth, not stiff or moist, and exposed to the south; but when the sun is warm, the border should be shaded with mats, to prevent the earth from drying too fast. When the plants come up, they must be kept clean from weeds; and if they are too close, some of them should be carefully taken out as soon

<sup>1</sup> Hort. kew.

<sup>m</sup> Curtis.

<sup>n</sup> Linn. spec.

<sup>o</sup> Linn. suppl.

<sup>p</sup> Gmelin.

<sup>q</sup> L'Heritier.

<sup>r</sup> Hort. kew.

<sup>s</sup> Desfontaines.



as they are fit to remove, and planted in small pots, placing them in the shade till they have taken new root; then they may be placed where they may enjoy the morning sun till autumn, when they should be put into a hot-bed frame, where they may be screened from hard frost, but enjoy the free air in mild weather; and those plants which are left in the border where they were sown, must be covered with mats in hard frost; for though they will often live through the winter in mild seasons, yet hard frost will always destroy them. The following summer the plants will flower, and if the season proves warm and dry, they will ripen seeds, and the roots soon after decay.

[The common practice in treating *Statice Limonium*, is to consider it as a greenhouse plant; and indeed it appears to the greatest advantage in a pot; it is much disposed to throw up new flowering-stems; hence by having several pots of it, some plants will be in flower throughout the summer. On this account, and for the singularity of its large blue calyx, it is a plant that merits attention. Though in a manner a biennial, it may be often increased by parting its roots. It sometimes produces seeds in England, but sparingly. The *echioides* (n. 17.) is also a greenhouse plant: but the *speciosa* is sufficiently hardy.]

25. 26. 27. *Statice pectinata*, suffruticosa, and monopetala are shrubby plants, which are too tender to live through the winter in the open air in England, so the plants must be removed into shelter in the autumn, but they only require protection from hard frost: these plants may be placed with Myrtles, Oleanders, and other hardy green-house plants, where they often continue to flower great part of winter, and make a pretty variety. These sorts are easily propagated by cuttings, which, if planted in July on a shady border, and duly watered, will take root in six or seven weeks, when they should be taken up and planted into pots filled with light loamy earth, placing them in the shade till they have taken root; then they may be exposed till October, at which time they must be removed into shelter.

[STAVE'SACRE. See *Delphinium Staphisagria*.

STELIS. See *Loranthus*.

STELLA. See *Astragalus Stella*.

STELLARIA. (From the star-like form of the flowers.)

Lin. gen. n. 568. Reich. n. 617. Schreb. n. 773.

Juss. 301. Gært. t. 130. Alfine. Tournef. t. 126.

Class. 10. 3. Decandria Trigynia.

Nat. order of *Caryophyllei*. *Caryophyllee*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate-lanceolate, concave, acute, spreading, permanent.

COR. Petals five, two-parted, flat, oblong, shrivelling.

STAM. Filaments ten, filiform, shorter than the corolla: alternately longer and shorter. Anthers roundish.

PIST. Germ roundish. Styles three, capillary, spreading. Stigmas obtuse.

PER. Capsule ovate, covered, one-celled, six-valved.

SEEDS very many, roundish, compressed.

Obs. *St. radians* has the petals five-parted.

#### ESSENTIAL CHARACTER.

Cal. five-leaved, spreading. Pet. five, two-parted.

Caps. superior, one-celled, many-seeded, six-toothed at top.

#### SPECIES.

1. *Stellaria nemorum*. Wood Stitchwort.

Lin. spec. 603. Juss. 422. Reich. 2. 356. Willd.

2. 710. fl. suec. n. 391. Hudf. angl. 190.

Wither. arr. ed. 3. 417. Smith brit. 473. engl.

bot. t. 92. Lightf. scot. 228. Fl. dan. t. 271.

Hoffm. germ. 152. Roth. germ. 1. 190. 2. 485.

Scop. carn. n. 532. Krock. files. n. 668. Leers

herborn. n. 328. Neck. gallob. 196. Villars

dauph. 3. 617. Allion. pedem. n. 1719. Kniph.

cent. 10. n. 86.

Myosotis. Hall. belv. n. 886. a.

Alfine nemorum. Schreb. spicil. 30.

A. altissima nemorum. Baub. pin. 250.

\* Curtis magaz.

A. hederacea montana maxima. Col. ecphr. 290. f. 2. Park. theat. 762. 1.

A. nemorosa maxima montana. Raii hist. 1029.

A. montana, folio Smilacis instar, flore laciniato. Mor. hist. f. 5. t. 23. f. 2. Raii syn. 347.

β. A. montana latifolia, flore laciniato. Baub. pin. 250. Rupp. jen. 109.

Lower leaves cordate petioled, upper ovate sessile, panicle dichotomous.

2. *Stellaria dichotoma*. Dichotomous Stitchwort.

Lin. spec. 603. Reich. 2. 356. Willd. 3. 710.

Pall. it. 1. 72. ic. 3. 343. Smith ic. ined. 1. t. 14.

Alfine petalis emarginatis, foliis ex cordato-ovatis acutis. Gmel. fib. 4. 149.

Leaves ovate sessile, stem dichotomous, flowers solitary, fruiting peduncles reflexed.

3. *Stellaria radians*. Ray-flowered Stitchwort.

Lin. spec. 603. Juss. 422. Reich. 2. 356. Willd.

2. 710.

Alfine foliis salignis margine scabris, petalis semiquinquefidis. Gmel. fib. 4. 146.

A. laxatilis, angusto & oblongo foliis, flore albo tenuissime laciniato. Ann. ruth. 83. t. 10.

Leaves lanceolate serrulate, petals five-parted.

4. *Stellaria bulbosa*. Bulbous Stitchwort.

Lin. spec. ed. Willd. 2. 711. Jacqu. collect. 3. 21.

ic. rar. 3. t. 468. Hoffm. germ. 153.

Leaves ovate-lanceolate veinless beneath, stem somewhat branched, peduncle one-flowered, root filiform creeping bulbiferous.

5. *Stellaria Holosteia*. Greater Stitchwort.

Lin. spec. 603. Juss. 422. Reich. 2. 357. Willd.

2. 711. Gært. fruct. 2. 228. Hudf. angl. 190.

Wither. arr. ed. 3. 417. Smith brit. 474. engl.

bot. t. 511. Curt. lond. 2. t. 30. Lightf. scot.

229. Relb. cant. ed. 2. n. 369. Sibth. oxon.

n. 408. Dicks. hort. succ. 7. 6. Fl. dan. t. 698.

Hoffm. germ. 152. Roth. germ. 1. 191. 2. 486.

Pollich pal. n. 420. Neck. gallob. 196. Scop.

carn. n. 534. Krock. files. n. 670. Villars dauph.

3. 618. Allion. pedem. n. 1721. Gmel. fib. 4.

145. Kniph. cent. 10. n. 85. Mill. illustr.

Alfine foliis lanceolatis. Lin. hort. cliff. 172. fl. suec. n. 392. Hall. belv. n. 884. Scop. carn. ed. 1. 497.

n. 4.

*Caryophyllus holosteus arvensis glaber flore majore.*

Baub. pin. 210. Raii hist. 1027. syn. 346. Petiv.

brit. t. 58. f. 1.

Gramen. Fuchs. hist. 136.—leucanthemum. Ger. 43. emac. 47. Park. theat. 1325. ic. Dod. pempt. 563.

Baub. hist. 3. 361.

Leaves lanceolate serrulate, petals bifid, calyx nerveless.

6. *Stellaria graminea*. Lesser Stitchwort.

Lin. spec. 604. Juss. 422. Reich. 2. 357. Willd.

2. 711. Hudf. angl. 190. Wither. arr. ed. 3.

419. Smith brit. 475. engl. bot. t. 803. Relb.

cant. ed. 2. n. 370. Sibth. oxon. n. 409. Fl.

dan. t. 698. Roth. germ. 1. 191. 2. 487. Pollich

pal. n. 421. Leers herborn. n. 330. Krock. files.

n. 671. Neck. gallob. 195. Scop. carn. n. 535.

Villars dauph. 3. 619. Allion. pedem. n. 1722.

Kniph. cent. 10. n. 84.

S. arvensis. Hoffm. germ. 152. Ebrh. herb. 126.

Alfine foliis linearibus. Lin. lapp. n. 187. suec.

n. 372. hort. cliff. 172.

A. pratensis gramineo folio angustiore. Tournef. inst.

243.

*Caryophyllus holosteus arvensis glaber flore minore.*

Baub. pin. 210. Raii hist. 1027. syn. 346. Pet.

brit. t. 58. f. 3.

Gramen leucanthemum alterum. Ger. 43. 2.

Gr. leuc. minus. Park. theat. 1325. n. 2.

Gr. floridum minus. Tabern. ic. 232.

Gramini Fuchsi leucanthemo affinis & similis herba.

Baub. hist. 3. 361. 3.

β. *St. dilleniana*. Moench. haff. n. 364. t. 6. Flor. dan.

t. 414. Hoffm. germ. 152. Roth. germ. 1. 191.

2. 489.

Leaves linear-lanceolate quite entire, panicle terminating divaricating, calyx three-nerved equal, or nearly so, to the petal.

7. *Stellaria*



# S T E

7. *Stellaria glauca*. *Glaucous Marsh Stitchwort*.  
*Wither. arr. ed. 3. 420. Smith brit. 475. Relb. cant. ed. 2. n. 371.*  
*Stellaria media*. *Sibth. oxon. n. 410. Abbot bedf. n. 323.*  
*St. palustris*. *Hoffm. germ. 152. Willd. spec. 2. 710.*  
*St. graminea* β. *Lin. spec. 604. Reich. 2. 357. Hudf. angl. 190.*  
*Alfne folio gramineo angustiore palustris*. *Dill. app. 69.*  
*A fol. gramineis, petalis bipartitis*. *Gmel. fib. 4. 145. t. 61. f. 2.*  
*Caryophyllus holosteus arvensis medius*. *Raii syn. 347.*  
*Leaves linear-lanceolate quite entire glaucous, peduncles erect, calyx three-nerved shorter than the petals.*  
8. *Stellaria crassifolia*. *Thick-leaved Stitchwort*.  
*Lin. spec. ed. Willd. 2. 712. Ehrh. Beitr. 3. 60. Timm. prodr. n. 299. Hoffm. germ. 153.*  
*Leaves oblong-lanceolate thickish glaucous, peduncles one-flowered solitary axillary, petals bigger than the calyx, stem upright.*  
9. *Stellaria uliginosa*. *Bog Stitchwort*.  
*Curt. lond. 6. t. 28. Wither. arr. ed. 3. 420. Smith brit. 476. engl. bot. 1074. Relb. cant. ed. 2. n. 372. Sibth. oxon. n. 411. Roth. germ. 1. 191. 2. 489. Villars dauph. 3. 616.*  
*St. Alfne*. *Lin. spec. ed. Willd. 2. 713. Hoffm. germ. 153. t. 5.*  
*St. fontana*. *Jacqu. collect. 1. 327.*  
*St. aquatica*. *Pollich pal. n. 422.*  
*St. dilleniana*. *Leers herb. n. 331.*  
*St. hypericifolia*. *Wiggers holsat. 34. Allion. pedem. n. 1720.*  
*St. graminea* γ. *Lin. spec. 604. Reich. 2. 357. Fl. suec. n. 393. Hudf. angl. 190. Fl. dan. t. 415.*  
*St. lateriflora*. *Krock. files. n. 673. t. 4.*  
*Alfne*. *Hall. belv. n. 881. Ger. prov. 403. 2.*  
*A. aquatica media*. *Bauh. pin. 251. Tournef. inst. 243. Mor. hist. f. 5. t. 23. f. 8.*  
*A. longifolia, uliginosis proveniens locis*. *Bauh. hist. 3. 365. 2. Raii hist. 1030. syn. 347. Petiv. brit. t. 58. f. 4.*  
*A. fontana*. *Ger. 490. 9. emac. 613. 8.*  
*Leaves elliptic-lanceolate quite entire callous at the tip, flowers subpanicked lateral, petals shorter than the calyx.*  
10. *Stellaria undulata*. *Wave-leaved Stitchwort*.  
*Lin. syst. 422. spec. ed. Willd. 2. 713. Thunb. jap. 185.*  
*Leaves oblong waved, stem angular, flowers axillary.*  
11. *Stellaria cerastoides*. *Alpine Stitchwort*.  
*Lin. spec. 604. Reich. 2. 358. Willd. 2. 714. fl. suec. n. 394. Smith brit. 477. engl. bot. t. 911. ic. ined. 1. t. 15. Wither. arr. ed. 3. 421. Hull 97. Dicks. in Linn. trans. 2. 290. hort. sicc. 2. 11. Retz. obs. 1. 18. Fl. dan. t. 92. Gunn. norv. n. 951. t. 6. f. 2. Aët. hafn. 10. t. 3. f. 12. Vahl symb. 3. 59.*  
*Cerastium refractum*. *Allion. pedem. n. 1728.*  
*C. trigynum*. *Villars dauph. 3. 645. t. 46.*  
*Myofotis*. *Hall. belv. n. 890.*  
*Leaves elliptic-oblong obtuse, stem subbiflorous, calyxes one-nerved pubescent.*  
12. *Stellaria multicaulis*. *Many-stalked Stitchwort*.  
*Lin. spec. ed. Willd. 2. 714.*  
*St. cerastoides*. *Jacqu. collect. 1. 254. t. 19.*  
*Leaves lanceolate smooth, branches upright quite simple, peduncles subsolitary terminating, petals bigger than the calyx.*  
13. *Stellaria humifusa*. *Procumbent Stitchwort*.  
*Lin. spec. ed. Willd. 2. 714. Swartz nov. aët. holm. 1789. p. 111. t. 4. f. 1. Rottb. aët. hafn. 10. 447. t. 4. Fl. dan. t. 978. Retz. prodr. scand. ed. 2. n. 550.*  
*Leaves ovate mostly on one side sessile, stems procumbent four-cornered, peduncles solitary abbreviated.*  
14. *Stellaria biflora*. *Two-flowered Stitchwort*.  
*Lin. spec. 604. syst. 422. Reich. 2. 358. Willd. 2. 715. fl. suec. n. 395. Swartz nov. aët. holm. 1788. p. 36. t. 1. f. 1.*  
*Sagina ramis erectis bifloris*. *Lin. lapp. n. 158. Fl. dan. t. 12. Rottb. aët. hafn. 10. t. 3. f. 11.*

# S T E

- Leaves oval-shaped, branches two-parted, petals emarginate, calyxes striated.*  
15. *Stellaria groenlandica*. *Groenland Stitchwort*.  
*Lin. spec. ed. Willd. 2. 715. Retz. prodr. scand. ed. 2. n. 552.*  
*Stems decumbent subbiflorous, leaves linear subciliate at the base, petals emarginate, fruits globular.*  
16. *Stellaria Arenaria*. *Sandwort Stitchwort*.  
*Lin. spec. 604. Reich. 2. 358. Willd. 2. 716.*  
*Leaves spatulate, stem erect bifid, branches alternate, petals emarginate.*  
17. *Stellaria scapigera*. *Scape-bearing Stitchwort*.  
*Lin. spec. ed. Willd. 2. 716.*  
*Stemless, leaves linear-lanceolate three-nerved, peduncles radical one-flowered.*

## DESCRIPTIONS, &c.

1. Root perennial, small, creeping. Stems several, weak and lax, three feet high, branched, hollow, round, leafy, with hairs scattered here and there on it, chiefly in the upper part. Leaves opposite, pale green, brittle and somewhat succulent, quite entire, a little hairy. The numerous star-like flowers are visible at a distance, and of a delicate structure when closely examined. They are white and upright, in a terminating, dichotomous, many-flowered, divaricating, pubescent panicle, having a pair of small leaves at each of the forkings. Calyx hairy at the base, the leaflets scarious-white at the edge. Petals spreading very much, cloven almost to the base, the segments linear-elliptic and divaricating. Styles constantly three. Fruiting calyxes turned downwards. Capsule elliptic, with a six-toothed mouth.

According to Dr. Withering, it is from five to twelve inches high; the stems very brittle; the whole plant hairy; the leaves rather stiff, underneath hairy only on the veins and midrib; the lateral fruitstalks solitary, the terminating ones forming a kind of leafy panicle, widely straddling, and rather turned down after flowering.

Linneus, in his *Flora Lapponica* (n. 186.) confounded this plant with *Alfne media* and *Cerastium aquaticum*. The former may be known in all its numerous varieties, from this and every other plant of its natural order, by the hairy line on one side of its stem, first pointed out by Mr. Curtis. The latter is distinguished from this *Stellaria* by being viscid, and much more hairy; its flowers much less conspicuous; calyx more oval and less membranous; panicle more leafy; and especially by all the stem-leaves being sessile, neither are they lengthened out into so long a point; not to mention its five styles, which are constant<sup>2</sup>, as are the three styles of this.

Native of Europe, in woods. In Britain, it is confined to moist woods and borders of clear shaded springs, in the northern counties of England, and the low-lands of Scotland; flowering in May. Found by Casterton mill near Kirkby Lonsdale, &c. in Westmoreland, by Dr. Smith, near Kendal by Mr. Gough, near Darlington by Mr. Robson<sup>1</sup>; formerly by Dr. Richardson in Bingley parish<sup>2</sup>. In Scotland, about Broomholm and Langholm in Eskdale, and at Springkeld and Hoddam-Castle, in Annandale abundantly: observed also by Dr. Parsons, at Meavis-Bank<sup>3</sup>.

2. Root annual. Stem round, pubescent, very much branched, spreading every way, many times dichotomous, leafy, many-flowered. At each division of the stem is a pair of leaves, which are acute and pubescent. The flowers come out singly from the divisions of the stem, on round pubescent peduncles, an inch long, upright when in flower, but bent back as if broken when in fruit. Calyx pubescent, with acute leaflets, scarcely striated, a nerve running along the middle, the margin white and scarious. Corolla white: petals length of the calyx, obovate, two-lobed at the end but not deeply divided; lobes obtuse. Filaments nearly equal, a little shorter than the petals. Germ globular. Styles divaricating a little, length of the stamens. Stigmas obtuse, recurved. Capsule ovate,

<sup>1</sup> Smith brit. & engl. bot.

<sup>2</sup> Engl. bot.

<sup>3</sup> Engl. bot. and With.

<sup>4</sup> Ray syn.

<sup>5</sup> Lightfoot.

smooth,



smooth, five-valved, opening at top. Seeds angular, rugged, collected into a ball.

Linneus had it from Gmelin, and it is a native of the mountains of Siberia. It has been confounded with a variety of the preceding. Haller describes such an one as the *dichotoma*, and then says that the two species do not differ. The true *dichotoma* is not known to be a native of Switzerland<sup>b</sup>.

Introduced about 1774 at Kew. It flowers in July<sup>c</sup>.

3. Native of Siberia, in bogs.

4. This plant at first sight very much resembles *Trientalis europæa*. The stem sometimes has a branch or two. The leaves are veined above, but veinless beneath. Peduncles one-flowered, long, mostly terminating, but sometimes there is an axillary one or two.—Native of the mountains of Carinthia, in moist shady places<sup>d</sup>.

5. Root perennial, creeping, weak, slender, jointed, sending down fibres to a considerable distance. Stems several, growing thick together, about a foot high, decumbent at the base, slender and very delicate, then upright, supporting themselves among bushes or grass, otherwise the least breath of wind would lay them prostrate; they are square, jointed, rugged at the angles immediately under the joints, leafy, brittle, but with a strong woody structure in their inner part, as is the case with most of this tribe. Leaves in pairs at each joint, sessile, long, acuminate, a little revolute and finely serrulate at the edge, or rather set with bristles or fine prickles, the midrib sharp and also set with small prickles; above smooth, slightly glaucous, with a groove running along the middle. Flowers on very long, erect, rugged peduncles, from the axils of the upper pair of leaves, forming a sort of dichotomous panicle. Calyx-leaves lanceolate, nerveless, a little membranous at the edges. Corolla white; petals obcordate, cloven about half way down. Filaments shorter than the corolla; five alternate ones furnished at bottom with a yellowish gland. Capsule globular, containing six or seven, kidney-shaped brown seeds<sup>e</sup>.—According to Curtis, it is six-valved, and for the most part has five or six largish seeds, of a deep orange-colour and beautifully notched, like that of Chickweed (*Alfina media*) but larger. Gærtner describes the capsule as globular, thin, subdiaphanous, six-valved, opening down to the base. Seeds about twelve, biggish, globular-reniform, beautifully mucicated with pointed tubercles in distinct parallel rows, of a yellow-rufescent colour. Receptacle short, free, in the bottom of the capsule, composed of small fungous tubercles, among which filiform umbilical chords go to the upper seeds.

Native of Europe. Very frequent in woods, among bushes, and about dry hedge bottoms in England; flowering in May and June. Its large brilliant white starry blossoms render it conspicuous in the spring.

6. Root perennial creeping. The whole habit much like that of the preceding, but smaller and of a grass-green not glaucous colour. Stem and flower-stalks perfectly smooth. Leaves entire, and scarcely even rugged at the edge. Panicle divaricated. Calyx-leaves pale, with three acute green ribs, which, as Dr. Stokes observes, are not to be found in *S. holostea*. Petals about as long as the calyx or longer, very deeply divided. Anthers of a pale reddish hue.

Native of Europe. The white starry blossoms of this delicate plant prettily bespangle furze-bushes, heath, and low broom, on a gravelly or sandy soil; and its herbage being concealed by the bushes or grass, and the stalks of the panicle very slender, the flowers seem suspended in air. They are principally observable in June and July<sup>f</sup>.

7. Very nearly allied to the preceding, but the leaves glaucous, and quite smooth about the edge. The stem also is smooth. Peduncles erect, axillary and terminating, alternate, sometimes panicled. Flowers almost twice as large as in the preceding. Calyx acuminate, less acutely three-nerved. Petals obcordate, almost twice as long as the calyx. Anthers pale red<sup>g</sup>.

Native of Germany and England. Flowering in June and July.—Mr. Stonestreet found it in the Isle of Ely. Dr. William Sherard near Oxford, and Dr. James Sherard in Peckham fields. Ray found it abundantly on the fen banks of the Isle of Ely<sup>h</sup>. Mr. Relhan, between Ely and Stuntney, on Bottisham Load, Gamlingay bogs, and Bardolph fen near Wisbeach. Dr. Sibthorp on Otmore, in Oxfordshire. Dr. Abbot on Ampthill bogs, and in Ford-end ditches, Bedfordshire. Dr. Withering, about Falmouth.

8. Leaves sessile, quite entire, smooth. Peduncles from the forks, upright when in flower, reflexed when in fruit. Calyx-leaves ovate-lanceolate, much shorter than the petals. Annual.—Native of Germany, in moist meadows<sup>i</sup>.

9. Root annual, small and fibrous. Herb weak and slender, smooth, of a pale and somewhat glaucous green. Stems branched, quadrangular, leafy. Leaves rather elliptical, furnished with many parallel veins, entire but waved on the margin, tipped with a small callous point. Flower-stalks axillary and terminating, spreading, generally three together, of which two are three-cleft and three-flowered, the remaining one single-flowered, all furnished with membranous lanceolate bractes. Flowers smaller than in any other British species. Calyx-leaves three-nerved, the outermost fringed. Petals greenish-white, shorter than the calyx. Dr. Stokes has observed that the styles vary from three, the natural number, to four or five. The peculiar inflorescence, the short petals, the form and structure of the leaves, mark this species with sufficient precision<sup>k</sup>.

Mr. Curtis remarks, that the leaves are united at the bottom, above half an inch in length, and two or three lines in breadth, frequently growing to one side of the stalk, and bending towards each other so as almost to touch at the points, and that the tips are conspicuously brown and callous: also, that the flowers would be terminating, did not a new shoot, rather than a continuation of the stem, proceed from the panicle. Seeds numerous, minute, roundish, flattened, wrinkled, of a reddish brown colour.

Native of Europe, on the sides of springs, rivulets, ditches and wet springy meadows. In England not uncommon. It flowers in June and July.

10. Stem decumbent, herbaceous, tender. Branches angular, erect, a little subdivided, weak, smooth, a hand in length. Leaves opposite, sessile, acute, smooth, length of the internodes. Flowers axillary and terminating, two or three together, on capillary one-flowered peduncles, longer than the leaves. Calyx smooth.—Native of Japan, by way sides; flowering there in April<sup>l</sup>.

11. Root perennial, creeping. Stems diffuse, branched at the bottom, leafy, marked with a slender alternate hairy line, as in the common Chickweed. The flower-stalks, which grow about two together at the extremity of the stem, are downy in every part. Leaves opposite, lanceolate or somewhat spatulate, blunt, entire, smooth, often leaning to one side. Flowers erect, white. Calyx-leaves obtuse, single-ribbed, downy and viscid at the base, membranous in the margin. Petals about twice as long as the calyx, cloven half way down, narrow. Styles sometimes four or five; teeth of the capsule double their number. Seeds rough, pale brown. Linneus, after publishing an excellent description in his *Flora Suecica*, confounded other plants with it.

Native of the mountains of Lapland, Norway, Switzerland, France, Piedmont and Scotland. Mr. Dickson first made it known as a British native. He found it on Ben Nevis in 1789. Mr. Mackay also gathered it there and on the mountains to the north of Invercauld. It flowers in June<sup>m</sup>.

12. This is very different from the preceding. Root creeping, filiform. Branches or stems quite simple erect numerous from the root. Leaves smooth. Peduncles terminating, one, two or three together, erect. It differs from the next above chiefly in the smoothness of the leaves, and its peduncles being terminating,

<sup>b</sup> Smith ined.

<sup>c</sup> Hort. kew.

<sup>d</sup> Willdenow.

<sup>e</sup> Smith brit. and engl. bot. Curt. lond. and With.

<sup>f</sup> Engl. bot.

<sup>g</sup> Smith brit.

<sup>h</sup> Ray syn.

<sup>i</sup> Ehrhart and Willdenow.

<sup>k</sup> Engl. bot.

<sup>l</sup> Thunberg.

<sup>m</sup> Engl. bot.



whereas that produces two peduncles which are upright below the top of a procumbent stem: the habit also is very different.—Native of the mountains of Carinthia.

13. This is an annual plant, with the petals a little larger than the calyx.—Native of Sweden and Norway.

14. This is a small plant, with the appearance of a *Sagina*. Leaves radical, awl-shaped, collected into a tuft. Stem a finger's length, filiform, for the most part naked; cloven at top into two peduncles, with a pair of leaves under each, and another peduncle in the middle, with two leaflets°. The petals are only slightly emarginate, and therefore very near those of *Arenaria*; of the same size with the calyx.—Native of the mountains of Lapland. Perennial.

15. This also is a small plant, with the leaves somewhat fleshy, and some of those on the stem ciliate at the edge with long hairs. Flowers large in proportion to the plant. Calyxes naked: leaflets ovate, obtuse. Petals by no means bifid; scarcely emarginate.—Native of Groenland.

16. Root annual, fibrous. Stem round, a span high, pubescent and somewhat clammy with spreading hairs. Branches alternate, almost the length of the stem. Leaves sessile, ovate at the top, linear and narrower towards the base, hairy beneath and along the edge, but scarce apparently so above. The first flower comes from the forking of the stem; the rest alternately from the axils of the branches: all of them biggish. Peduncles straight, longer than the leaves. Calyx clammy, like the whole plant, purplish at the tip, as are also the floral leaves. Corolla bell-shaped, longer than the calyx, white, very blunt, with the petals scarce manifestly emarginate. Stamens white, the same length with the calyx. Anthers blueish. Germ globular. Styles three, the length of the stamens.—Native of Spain.

17. Leaves clustered at the root, half an inch long, acuminate, very slightly three-nerved, rugged at the edge. Peduncles radical, upright, an inch and half long, filiform, one-flowered. Calyx-leaves lanceolate, somewhat membranous at the edge, acute, three-nerved. Petals linear, cloven to the very base, of the same length with the calyx. Stamens shorter than the petals. Germ globular. Styles three, filiform. Flower of the same size as in *St. graminea*. Perennial. Native country unknown.

#### PROPAGATION AND CULTURE.

See *ARENARIA*.

*STELLARIA*. See *Alchemilla*, *Alfina*, *Arenaria*, *Callitriche*, *Cerastium*, *Spergula*.

*STELLARIS*. See *Ornithogalum*.

*STELLERA*. (So named by Gmelin, in memory of Georg. Wilb. Steller, adjunct of the Academy at Petersburg, who died in Siberia in 1746. For plants collected by him in Kamtschatka, see Amoen. acad. 2. 337.)

Lin. gen. n. 488. Reich. n. 529. Schreb. n. 667.

Gertn. t. 39. Juss. 77. Chamæjasme. Amm.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Vepracula*. *Thymelææ*, Juss.

#### GENERIC CHARACTER.

CAL. none.

COR. one-petalled, funnel-form, permanent: tube filiform, long: border four or five-cleft, with the lobes ovate.

STAM. Filaments eight or ten, very short. Anthers oblong, alternately in the middle of the tube, and within the throat.

PIST. Germ subovate. Style very short, permanent. Stigma headed.

PER. none.

SEED one, shining, beaked. Nut.

Obs. *S. Passerina* has eight, and *Chamæjasme* ten stamens.

#### ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft. Stam. very short. Nut one, beaked.

<sup>a</sup> Willdenow.

<sup>o</sup> Linn. spec.

<sup>p</sup> Willdenow.

<sup>q</sup> Idem.

<sup>r</sup> Linn. spec.

<sup>s</sup> Willdenow.

#### SPECIES.

1. *Stellera Passerina*. *Flax-leaved Stellera*.

Lin. spec. 512. Juss. 373. Reich. 2. 197. Willd.

2. 429. Amoen. 1. 400. Hall. herb. n. 1028.

Hoffm. germ. 137. Roth. germ. 1. 171. 2. 446.

Pollich pal. n. 381. Krock. fles. n. 601. Saur.

monsp. 69. Villars dauph. 3. 519. Allion. pedem.

n. 1997. Jacqu. collect. 1. 65. Gertn. fruct. 1.

186.

*Passerina*. Baub. hist. 3. 456. Fuchs. hist. 535.

Guett. stamp. 25.

*Lithospermum linariæ folio germanicum*. Baub. pin.

259.

*Linaria altera botryoides montana*. Col. ecphr. 1. 82.

t. 80.

*Lingua passerina*. Tabern. 828. Trag. 535.

Leaves linear, flowers axillary sessile four-cleft.

2. *Stellera Chamæjasme*. *Siberian Stellera*.

Lin. spec. 513. Reich. 2. 197. Willd. 2. 429.

Amoen. 1. 400. Gmel. fib. 3. 27.

*Chamæjasme radice mandragoræ*. Amm. ruth. 16.

t. 2.

Leaves lanceolate, flowers terminating racemed naked five-cleft.

#### DESCRIPTIONS, &c.

1. This is an annual plant, resembling *Thesium alpinum*. Root slender, fusiform, scarcely branched, yellow on the outside, white within. Stem upright, from a hand or half a foot to a foot in height, very much branched from the very bottom. Leaves alternate, sessile, acute, quite entire, smooth, spreading and bending down, shaped like a sparrow's tongue, whence its old name, which Linneus has adopted as a trivial. The stem and branches are terminated by long loose interrupted leafy spikes. The flowers are sessile, three, four or five together, in the axils of two or rather three leaves, of which the two side ones are shorter, and may be considered as bractes. Corollas small, greenish with yellow tips; permanent, distended into a ball by the growing seed, and involved in wool at the base. Seed a small superior nut, ovate-beaked, with a membranous coat, and wrapped up in the corolla. Rind or epidermis very thin, pale, easily separating. Shell thin, brittle, dark, smooth, shining, ending in a beak which is slightly curved inwards, and marked on one side with a raised line; one-celled, valveless. Seed adapted to the cavity of the shell, whitish.

Native of Germany, Switzerland, France and Italy. It flowers in July and August.

This plant is acrid, bitter and purgative. Gmelin says, that the Russians require half a drachm or two scruples for a purge; whereas twelve grains are sufficient for other people. This difference he thinks to be occasioned by the free use of spirits among the Russians, which destroys the tone of the stomach.

2. Perennial. Native of Siberia.

#### STEMODIA.

Lin. gen. n. 777. Reich. n. 839. Schreb. n. 1043.

Gertn. t. 52. Juss. 118. Stemodiaca. Brown.

jam. t. 22. f. 2. Jacqu. amer. 181.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personata*. *Scrophulariæ*, Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, erect, equal, permanent.

COR. one-petalled, irregular: tube length of the calyx: border subbilabiate, almost upright; upper lip ovate, entire; lower three-parted, with the parts rounded and equal.

STAM. Filaments four, almost equal, length of the tube, all bifid. Anthers eight, each placed on an arm of the filaments.

PIST. Germ bluntish. Style simple, length of the stamens. Stigma bluntish.

PER. Capsule oblong, ovate, two-celled, two-valved: partition contrary.

SEEDS numerous, globular. Receptacle subcylindrical.

<sup>t</sup> Pollich, Krock.

<sup>u</sup> Gertner.

<sup>x</sup> Villars.

<sup>y</sup> Gmelin.



# S T E

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. two-lipped. Stam. four, each filament bifid, two-anthered. Caps. two-celled.

## SPECIES.

1. *Stemodia maritima*.  
*Lin. spec.* 881. *syn.* 573. *Reich.* 3. 182. *amoen.* 5. 399. *Jacqu. amer.* 181. *t.* 174. *f.* 66. *piet.* 90. *t.* 261. *f.* 48. *Swartz obs.* 242.  
*Stemodiaca.* *Brown. jam.* 261. *t.* 22. *f.* 2.  
*Scordium maritimum fruticosum procumbens.* *Sloan. jam.* 1. 175. *t.* 110. *f.* 2.  
*Leaves opposite half embracing, flowers sessile solitary.*
2. *Stemodia durantifolia*.  
*Swartz obs.* 240.  
*Capraria durantifolia.* *Lin. spec. & Dict. nostr.*  
*Leaves ternate and connate, flowers subtern subsessile.*
3. *Stemodia viscosa*.  
*Roxb. corom.* 2. 33. *t.* 163.  
*Leaves opposite embracing, flowers peduncled solitary.*
4. *Stemodia ruderalis*.  
*Retz. obs.* 5. 25. *n.* 66.  
*Leaves ovate serrate petioled.*

## DESCRIPTIONS, &c.

1. Root long, round, with lateral horizontal fibres. Stem from one to three feet high, erect, four-cornered, hirsute, sometimes in hedges near the sea-coast in a manner scandent. Branches numerous, shorter, scattered, alternate, opposite, three or four together, quadrangular, leafy, hirsute. Leaves small, sessile, ovate-lanceolate, obtuse, serrate, thickish, hirsute: with smaller leaves in the axils of the larger. Flowers few, axillary, among the terminating leaves, small, white or blue. Border of the corolla almost equal, four-cleft: upper segment a little wider, almost upright, spreading, emarginate; the two side ones and the lower segment equal, roundish, entire, convex. Capsule oblong, acuminate. Seeds roundish, minute.

Jacquin says it is perhaps a biennial plant, two or three feet high: the stems hirsute, mostly hexagonal, but sometimes pentagonal. Leaves acute, viscid. Stipules ovate, entire, length of the calyx, two under each flower. Corolla blue and soon falling.

Native of Jamaica, and very common by the seaside, in all the southern parts of the island: it has a pleasant aromatic smell, with a bitterish taste, and will probably prove an excellent stomachic and aperitive.

2. Stem herbaceous, a foot high, erect, branched, leafy, quadrangular at bottom, but the angles are rounded towards the top, hirsute, viscid. Branches simple. Leaves sessile, ternate, wider at the base and connate, toothlet-serrate, spreading, nerved, pubescent. Flowers on very short peduncles, axillary, in threes, solitary. Corollas blue, small. Calyx almost five-leaved: segments awl-shaped, permanent, shorter than the corolla, hirsute. There are two leaflets, very like the segments of the calyx, at the base among the others; so that the calyx is as it were seven-leaved. Corolla almost equal, a little bellying at the base, more contracted in the middle: border four-cleft; upper lip erect wider, obtusely bifid, shorter; the three lower spreading, flat, blunt at the top; throat square, marked with lines, on the outside below the segments yellow, compressed. Stigma a little curved in, widened, funnel-form, equal. Capsule oblong-conical, five-cornered, compressed at the top, two-celled, with a large, ovate, acute, contrary partition, four-valved.—Native of Jamaica<sup>b</sup>.

3. This is a small annual herbaceous plant, with a pleasant aromatic smell. Stem generally bent to one side, with many spreading branches from its base, four-sided, hairy, viscid, from six to twenty-four inches high. Leaves linear, below oblong, above cordate, serrate, hairy, viscid. Flowers axillary, small, violet-coloured. Two lanceolate bractes press on the calyx. Tube of the corolla compressed, longitudinally wrinkled, twice the length of the calyx: upper lip broad, emarginate; under lip three-parted. Stamens within the tube.

<sup>a</sup> Swartz.

<sup>b</sup> Browne.

<sup>c</sup> Swartz.

# S T E

Native of Coromandel: found on dry paddy fields, after the crop has been cut. The Telingas call it Boda-farum<sup>c</sup>.

4. Native of the East Indies. Found by Koenig.

STEMODIACRA. See *Stemodia*.

STEMONITIS. See *Clathrus*.

STERBECKIA. (So named in memory of Francis van Sterbeek, author of *Theatrum Fungorum*, Antv. 1675. 4°. and *Citricultura*, Antv. 1682 & 1712. 4°.)

*Lin. gen. Schreb. n.* 909. *Singana. Aubl.* 230. *Juss.* 275.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Guttiferae*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* three or five-leaved: leaflets roundish, concave, acute.

COR. *Petals* three or five, roundish, crenate, clawed, longer than the calyx.

STAM. *Filaments* very many, capillary, inserted into the receptacle. *Anthers* roundish.

PIST. *Germ* ovate, superior. *Style* long, curved in at the top. *Stigma* headed, concave.

PER. *Capsule*? cylindrical, long, corticose, one-celled, not opening.

SEEDS many, large, angular, incumbent on each other, nestling in the pulp.

## ESSENTIAL CHARACTER.

Cal. three or five-leaved. Cor. three or five-petalled.

Caps. corticose, not opening, legume-shaped, many-seeded. Seeds imbricate, nestling in pulp.

## SPECIES.

1. *Sterbeckia lateriflora*.

*Lin. spec. ed. Willd.* 2. 1177.

*Singana guianensis. Aubl. guian.* 1. 574. *t.* 230.

## DESCRIPTION, &c.

This is a scandent shrub. Leaves subopposite, petioled, elliptic, acuminate, quite entire, veined, smooth. Peduncles many-flowered, very short, lateral. Flowers white, small.

Native of Guiana, in woods<sup>d</sup>.

STERCULIA. (From *Stercus*. So named on account of its fetid smell.)

*Lin. gen. n.* 1086. *Reich. n.* 1185. *Schreb. n.* 828.

*Cavan.* 284. *t.* 141—145. *Juss.* 278. *Ivira.*

*Aubl.* 279.

Class. 11. 1. Dodecandria Monogynia.

Nat. order of *Tricoccae*. *Malvaceae*, Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, very large, coriaceous, flat, coloured, deciduous, five-parted: parts lanceolate, acute.

COR. none: but a *Nectary* placed on a cylindric column, bell-shaped, small, five-toothed: teeth subtrifid.

STAM. *Filaments* ten or about fifteen, very short, two or three on each tooth of the nectary. *Anthers* ovate.

PIST. *Germ* globular, five-grooved, in the bottom of the nectary. *Style* filiform, curved in. *Stigma* club-shaped, bifid or five-lobed.

PER. *Capsules* five, ovate-reniform, from spreading reflexed, one-celled, opening by the interior angle.

SEEDS many, oval, fastened to the suture.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. none. Nect. bell-shaped, five-toothed, stamiferous, fastened to the column of the germ. Germ pedicelled. Caps. five, one-celled, opening by the inner side, many-seeded.

## SPECIES.

1. *Sterculia lanceolata*. *Lance-leaved Sterculia*.

*Lin. spec. ed. Willd.* 2. 872. *Cavan. diff.* 5. 287. *t.* 144. *f.* 1.

*Leaves lanceolate, capsules oblong.*

2. *Sterculia Balanhas*.

*Lin. spec.* 1430. *Reich.* 4. 195. *Willd.* 2. 872.

*Fl. zeyl. n.* 350. *Forst. prodr. n.* 358. *escul.* 55.

*n.* 22. *Cavan. diff.* 5. 286. *t.* 143.

*Clompanus minor. Rumph. amb.* 3. 169. *t.* 107.

*Cavalam. Rheed. mal.* 1. 89. *t.* 49. *Raii hist.* 1754.

*Leaves ovate-lanceolate, capsules obovate.*

<sup>c</sup> Roxburgh.

<sup>d</sup> Willdenow.



3. *Sterculia crinita*.

*Lin. spec. ed. Willd. 2. 872. Cavan. diff. 5. 285. t. 142.*

*S. Ivira. Swartz prodr. 98.*

*Ivira pruriens. Aubl. guian. 2. 694. t. 279.*

*Leaves ovate or three-lobed, capsules crinite at the base.*

4. *Sterculia cordifolia*. Heart-leaved *Sterculia*.

*Lin. spec. ed. Willd. 2. 873. Cavan. diff. 5. 286. t. 144. f. 2.*

*Leaves cordate obsoletely three-lobed, capsules acuminate tomentose.*

5. *Sterculia colorata*. Coral *Sterculia*.

*Lin. spec. ed. Willd. 2. 873. Roxb. corom. 1. 26. t. 25.*

*Leaves five-lobed, lobes acuminate, calyxes cylindric-club-shaped, capsules oblong smooth coloured.*

6. *Sterculia urens*.

*Lin. spec. ed. Willd. 2. 873. Roxb. corom. 1. 25. t. 24.*

*Leaves five-lobed, lobes acuminate, calyxes bell-shaped, capsules ovate hispid.*

7. *Sterculia platanifolia*. Maple-leaved *Sterculia*.

*Lin. syst. 866. Willd. 2. 873. suppl. 423. Cavan.*

*diff. 5. 288. t. 145. & diff. 6. 352. Vahl symb. 1.*

*80. L'Herit. stirp. nov. 2. t. 43. Ait. kew. 3. 378.*

*Firmiana. Marsil. in act. patav. 1. 106. t. 1, 2.*

*Culhamia. Forsk. descr. 96.*

*Hibiscus simplex. Lin. spec. 977.*

*Outoin-chu. Le Comte mem. de la Chine. 1. 241. ic.*

*Ou tong chu. Du Halde chin. 2. 149. ic. ad. t. 154.*

*Leaves palmate-five-lobed, calyxes wheel-shaped reflexed.*

8. *Sterculia foetida*. Fetid *Sterculia*.

*Lin. spec. 1431. Reich. 4. 195. Willd. 2. 874.*

*f. zeyl. n. 349. Cavan. diff. 5. 284. t. 141.*

*Forsk. prodr. n. 359. escul. 23. Lour. cochinch.*

*586. ed. Willd. 719. Sonnerat itin.*

*Nux zeylanica folio multifido digitato. Pluk. phyt.*

*t. 208. f. 3. Burm. zeyl. 169.*

*Clompanus major. Rumph. amb. 3. 168. t. 107.*

*Karil. Rheed. mal. 4. 75. t. 36. Raii hist. 1564.*

*Leaves digitate.*

## DESCRIPTIONS, &amp;c.

1. This, from the figure given by Cavanilles, seems to be a tree of moderate size, with smooth, veined, lanceolate leaves; the fruit appears to consist of five rather large ovate capsules disposed in a stellated direction on the footstalk; they are of a red colour and contain three or four large black round seeds in each. Native of China.

Cavanilles appears to doubt whether it be truly distinct from the following species or not: the figure he gives is from a Chinese drawing, in which it is uncertain whether the painter intended it for a diminished representation or of the natural size.

2. This is a tall tree, with a stem of two feet in diameter, thick branches, covered with a thick ash-coloured bark, and furnished with alternate, smooth, veined, lanceolate leaves: the leaves however are only produced at the upper part of the shoots; and are in general about nine inches long and three broad: the flowers are produced in sparse fascicles at the tips of the shoots: the capsules are rather large, smooth, ovate, and stand by fives in a stellated direction; each capsule containing six, seven, or eight moderately large round seeds.—Native of Malabar, Amboina, &c.

According to Rumphius the seeds are considered as esculent by the inhabitants of Amboina, who roast them for this purpose, while the capsules are burned for the preparation of the pigment called *Cassomba*.

3. A tree of sixty feet high, branching in a spreading manner at the top: leaves alternately scattered, and on long footstalks: they are smooth above, downy beneath, where they are also of a reddish cast; the flowers are borne on panicles, the footstalks of which have each a stipule at the base: the capsules are reniform, with pointed tips, and are disposed in a circular direction: their interior surface is covered with a pungent villus: the down of the germ gradually lengthens as the fruit advances, and at length runs into innumerable long bristly hairs surrounding the footstalks of

the capsules. Some of the capsules are apt to fail: The general number of seeds is five in each. Native of Guiana, in the woods of Sinemare, and near the river Galibien:

4. Stem arboresecent: leaves alternate, approximate, and towards the tip obscurely trilobate: capsules oblong, subreniform, with pointed tips; they are downy on the outside, and covered within by a white membrane beset with innumerable short rufescent hairs: seeds several, hanging from the internal edges of the capsules, and covered with bristly hairs.—Native of Senegal.

5. Trunk erect; growing to a very great size. Bark ash-coloured, and a little scabrous. Branches numerous, spreading irregularly; bark as on the trunk, but smoother. Leaves alternate, about the extremities of the branchlets, petioled, considerably broader than long, five-nerved, soft and a little downy; generally, when full grown, from nine to twelve inches broad; and from six to nine inches long. Petiole round, a little downy, about nine inches long. Stipules two, erect, lanceolate, inserted into the petiole near its base. Panicles terminating, small, numerous, red like coral, covered with many red stellated hairs. Flowers numerous, about an inch long. Calyx inferior, funnel-form, five-toothed at the mouth, covered on the outside with red stellated hairs, withering. Filaments scarcely any. Anthers about thirty, kidney-form, sessile round the border of the extremity of the receptacle. Receptacle of the pistil cylindric, bent a little, length of the calyx, round, smooth, bearing five oval germs on its top. Styles short, recurved. Stigmas acute. Capsules from one to five coming to maturity, leguminous, pedicelled, pendulous, leathery, one-celled, one-valved, opening on the outside long before the seeds are ripe. Seeds two, one adhering to each margin of the gaping capsule alternate, about the size and shape of a Kidney bean.

This tree casts its leaves during the cold season. It flowers in april, and then appears as if entirely covered with fine ramifications of red coral. Soon after the leaves make their appearance.

Native of the mountainous parts of the Rajahmundry Circar. Called by the Telingas Caraka.

6. Trunk erect, very straight, with the top large and shady. Bark ash-coloured, very smooth; its outer coat thin, transparent, covered with a farinaceous substance, and peeling off like the pellicle of the birch-bark; inwardly it is fibrous and netted. Leaves about the extremities of the branches, alternate, petioled, five-nerved; very downy, from nine to twelve inches each way. Petiole nearly as long as the leaf, round, downy. Panicles terminating, pretty large; every part covered with a glutinous, farinaceous, yellow down. Bractes lanceolate. Flowers small, numerous, yellow, male and hermaphrodite mixed, but with a small proportion of the latter. The hermaphrodite flowers have an inferior calyx, bell-shaped, five-toothed, the divisions acute; on the inside of each division near the base is an inverse-hearted hairy gland. Filaments ten, short, alternately longer, united below into a thin sheath, which girds the base of the germs. Anthers large, two-lobed, alternately larger. Germs five, placed on a thick short pedicel. Style short, thick. Stigma five-lobed. Capsules five, leguminous, united in form of a star, one-celled, one-valved, opening lengthwise, on the outside covered with yellow down, and many stiff stinging hairs. Seeds from three to five, oblong, chestnut-coloured, inserted alternately into the margins of the capsules. The calyx, stamens, and columnar receptacle, are the same in the male flowers: but the pistil has the rudiments of germs only, without any appearance of a style.

This is a very large tree, chiefly a native of the mountainous countries of the coast of Coromandel; it casts the leaves about the end of the wet season, and flowers during the cold season; the leaves come out with the fruit about the beginning of the hot season. The wood is soft and spongy; towards the centre of large trees it is reddish. It seems to be applied to



little use, except to make Hindoo guitars. The water in which green branches were kept for examination became thick like a clear glutinous jelly. The bark is exceedingly astringent, and tinges the saliva reddish. The seeds are roasted to be eaten by the natives, and taste very like parched Peas. The Telingas call the tree Cavallie<sup>f</sup>.

7. This is a very lofty tree. Leaves large, alternate, clustered at the end of the branches, on long petioles, cordate, quite entire, three-lobed or five-lobed, with the sinuses rounded and bluntish; quite smooth, five-nerved. Panicle large, woody, somewhat mealy. Flowers hermaphrodite, the same size as in the *fatida*. Segments of the calyx hoary without, smooth within, yellowish. Column of stamens shorter than the calyx, terminated by numerous ovate anthers, which cover the base, although they are placed upon the column. Germ angular, hoary. Style filiform, hoary. Stigma emarginate<sup>g</sup>. The pericarp is singular. When ripe it parts longitudinally into five cells, which become so many horizontal capsules, like the follicles of the *Asclepias*, and open longitudinally by the upper future; the seeds are fastened to the sides of the future in a single row.

Native of Japan and China. Linneus had the leaves in his herbarium, under the name of *Hibiscus simplex*. He referred them to that genus, never having seen the flowers. Chevalier Murray communicated it to the younger Linneus, from the Padua garden, where it flowered every year in the open air.—It was cultivated in 1757, by Hugh Duke of Northumberland<sup>h</sup>.

*Hibiscus simplex* of *Lin. spec.* and of our Dictionary, n. 13. must therefore be expunged, being the same with this.

8. This is a tree above the middle size, with spreading unarmed branches. Leaves on a very long petiole: leaflets lanceolate, quite entire, seven or nine, smooth, glaucous, placed in a ring, and sessile. Flowers monoecous, fetid, in subterminating racemes. Calyx five-parted, smooth, large, spreading, of a cinereous-glaucous colour. Stamens about fifteen, connected. Style one. Germ peduncled. Capsule roundish-ventricose, subcompressed; corticose, smooth, five-celled, two-valved. Seeds numerous, oblong-ovate, each on its proper pedicel hanging from each valve, as in a legume.

Native of the East Indies, Cochinchina, &c. The wood is pale, lasting and does not split; it is therefore very proper for the turner, and being well varnished makes handsome vases, &c. It has nothing of the ill smell which the flowers have. The leaves and especially the bark are aperient, repellent, diuretic and diaphoretic. The seeds are oily, and are not eaten in Cochinchina; on the contrary if they are swallowed incautiously, they bring on nausea and vertigo<sup>i</sup>. This happens probably when eaten raw.

It was cultivated in 1690, in the royal garden at Hampton-court<sup>k</sup>.

These plants were originally placed in the class Monocia; from thence they were removed into the class Monadelphia, and finally they are placed in that of Dodecandria.

#### PROPAGATION AND CULTURE.

Propagated by seed; and treated in the same way as *Sida*.

STERIS. See *Hydrolea*.

STEWARTIA. See *Stuartia*.

STICHWORT. See *Stellaria*.

STICKADORE. See *Stoechas*.

STILAGO.

*Lin. gen. Reich. n. 1106. Schreb. n. 1381.*

Class. 20. 2. Gynandria Triandria—*potius* Dioecia di-triandria.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, hemispherical, almost entire three-lobed.

COR. none.

STAM. *Filaments* three, placed on the germ, spreading, longer than the calyx.

<sup>f</sup> Roxburgh. <sup>g</sup> Linn. suppl. <sup>h</sup> Hort. kew.  
<sup>i</sup> Loureiro. <sup>k</sup> Hort. kew.

PIST. *Germ* superior, roundish. *Style* cylindrical, permanent, shorter than the stamens. *Stigma* warted.

PER. *Drupe* globular.

SEED. *Nut* globular.

OBS. *Male and Female on separate trees.*

#### ESSENTIAL CHARACTER.

CAL. one-leaved, pitcher-shaped. COR. none.

FEM. *Stigmas* sessile. *Drupe* with a two-celled nut.

#### SPECIES.

1. *Stilago Bunius*.

*Lin. syst. 820. Reich. 4. 44. mant. 122.*

*Bunius fativus. Rumph. amb. 3. 204. t. 151. Burm. ind. 16.*

*Noeli-tali. Rheed. mal. 4. 115. t. 56.*

2. *Stilago diandra*.

*Roxb. corom. 2. 35. t. 166.*

#### DESCRIPTIONS, &c.

1. This is a tree, with the leaves alternate, petioled, simple, ovate-oblong, quite entire, smooth. Spikes alternate, naked, very long. Flowers small, scattered, sessile<sup>l</sup>.—Native of the East Indies. Dr. Smith refers it to the genus *Antidesma*<sup>m</sup>: which see. It was introduced here about 1757, by Hugh Duke of Northumberland; and flowers in august<sup>n</sup>.

2. Leaves alternate, on short petioles, nearly bifarious or two-faced, oval, entire, smooth, from two to four inches long, and from one to two broad. Stipules lanceolate. Spikes filiform, terminating, many-flowered. Bractes minute, one-flowered. Flowers very small, approximated.—In the Male tree; perianth inferior, cup-form, obtusely four-toothed. Corolla none. Filaments two, four times longer than the calyx. Anthers thin, singly oval.—In the Female; calyx inferior, closely embracing three fourths of the germ, four or five-toothed. Corolla none. Nectary, a yellow fleshy ring, surrounding the base of the germ. Germ obliquely ovate. Styles two, spreading; one of them always two-cleft. Stigmas simple. Drupe minute, succulent, one-celled. Nut one-celled, very small.

It is a large tree, native of mountainous parts of the Circars, and flowers in June.

The fruit, when ripe, is eaten by the natives. The wood serves for various uses<sup>o</sup>.

STILBE. (Στίλβη, *nitor, splendor: from the shining appearance of the seeds.*)

*Lin. gen. Reich. n. 1277. Schreb. n. 1600. Juss.*

418. *D. Bergii.*

Class. 23. 2. Polygamia Dioecia.

#### GENERIC CHARACTER.

\* *Hermaphrodite.*

CAL. exterior: *Perianth* three-leaved (setting aside the four exterior ones:) leaflets lanceolate, spreading and mucronate.—Interior: *Perianth* one-leaved, five-toothed, cartilaginous, to be hardened.

COR. one-petalled, funnel-form: tube length of the calyx: border five-parted: parts linear.

STAM. *Filaments* four, awl-shaped, placed on the throat, longer. *Anthers* cordate, obtuse.

PIST. *Germ* superior, ovate. *Style* filiform, length of the stamens. *Stigma* acute.

PER. none: but the interior calyx inclosing, hardened, deciduous.

SEED one.

\* *Male, on a distinct individual.*

CAL. exterior as in the Hermaphrodite. Interior none.

COR. as in the Hermaphrodite; but the tube membranaceous.

STAM. as in the Hermaphrodite.

PER. and SEED none.

HERM. CAL. exterior three-leaved. Interior five-toothed, cartilaginous. COR. funnel-form, five-cleft. STAM. four. SEED one, calyptred with the interior calyx.

MALE similar. CAL. interior none. Fruit none: (*The sex on a distinct plant.*)

#### SPECIES.

1. *Stilbe pinastra*.

*Lin. syst. 919. Reich. 4. 359.*

*S. vestita. Berg. cap. 30. t. 4. f. 6.*

<sup>l</sup> Linn. mant.

<sup>m</sup> Juss. gen.

<sup>n</sup> Hort. kew.

<sup>o</sup> Roxburgh.



*Selago pinastra*. *Lin. spec.* 876.

*Valeriana africana* fruticans, foliis longis & angustissimis. *Comm. hort.* 2. 219. t. 110.

*Spikes hirsute, leaves in sixes linear.*

2. *Stilbe ericoides*.

*Lin. syst.* 919. *Reich.* 4. 360. *mant.* 305.

*Selago ericoides*. *Lin. mant.* 87. *Burm. prodr.* 15.

*Spikes smooth, leaves in fours lanceolate.*

3. *Stilbe cernua*.

*Lin. syst.* 919. *suppl.* 441.

*Spikes drooping, leaves in fours.*

DESCRIPTIONS, &c.

Jussieu describes these as shrubs resembling a *Phyllis* or a very small *Fir*. Leaves linear, clustered, in whorls or spirally imbricate; flowers in close spikes, either along a tomentose terminating axis, or in the forkings of the branches. Allied to *Protea*, but having a corolla; to *Phyllis*, but one-petalled and one-seeded; perhaps more nearly allied to *Globularia* or *Selago*<sup>p</sup>: with which last Linneus formerly united it.

1. Branches alternate, stiff, rugged with the remaining bases of the leaves. Leaves whorled in clusters, acute, smooth. Spikes oblong, terminating, sessile, imbricate; with bractes the length of the flowers. Glumes two-valved, sessile, compressed, acute, one-flowered. Perianth cartilaginous, very short, with a five-toothed mouth, deciduous with the seed, so smooth that it can scarcely be held. Corollas woolly on both sides; tube filiform; border with five, almost equal, linear, hirsute segments. Filaments filiform, almost equal, length of the corolla, with incumbent anthers.—Native of the Cape of Good Hope, by rivulets<sup>q</sup>.

2. Stature of an *Erica* or Heath. Leaves lanceolate, acute, even, more convex beneath, as it were two-keeled, with the keels remote and blunt. Spike terminating, sessile, growing out. Corollas even.—Native of the Cape of Good Hope<sup>r</sup>.

3. This is very like the first species, but the branchlets with the head hang down.—Native of the Cape of Good Hope, where it was found by Thunberg<sup>r</sup>.

**STILLINGIA.** (So named by Alexander Garden, (see Walter carol. 239.) in honour of Benjamin Stillingfleet, Esq. author of The Calendar of Flora, and Observations on Grasses, published, with several Treatises translated from the Amoenitates Academicæ, under the title of Miscellaneous Tracts relating to Natural History, &c. ed. 1. 1759.—2, 1762.—3, 1775. Lond. 8°.)

*Lin. gen.* *Reich.* n. 1187. *Schreb.* n. 1470. *Juss.* 390.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Tricocceæ*. *Euphorbiæ*, Juss.

GENERIC CHARACTER.

\* Male flowers digested in an amentaceous spike.

**CAL.** Perianth many-flowered (seven-flowered), coriaceous, hemispherical, pitcher-shaped, quite entire; with two goblet-shaped glands.

**COR.** one-petalled, fistular-funnelform, widening gradually, much narrower than the calyx: mouth undivided, torn, ciliate.

**STAM.** Filaments two, filiform, twice as long as the corolla, divaricating at the top, very slightly united at the base. Anthers twin-reniform.

\* Female flowers few, at the base of the same spike.

**CAL.** Perianth one-flowered: the rest as in the Males.

**COR.** superior.

**PIST.** Germ roundish, between the calyx and corolla. Style filiform. Stigmas three, distinct, recurved.

**PER.** Capsule tricoccos, subturbinate, subtrigonal, three-celled, surrounded at the base by the widened calyx.

**SEEDS** solitary, oblong, subtrigonal, with a transverse scar on the inner side.

ESSENTIAL CHARACTER.

**MALE.** Cal. hemispherical, many-flowered. Cor. tubular, erose.

**FEM.** Cal. one-flowered, inferior. Cor. superior. Style trifid. Caps. tricoccos.

SPECIES.

1. *Stillingia sylvatica*.

*Lin. syst.* 866. *Reich.* 4. 197. *mant.* 126.

<sup>p</sup> Juss. gen.

<sup>q</sup> Linn. spec.

<sup>r</sup> Linn. mant.

<sup>s</sup> Linn. suppl.

DESCRIPTION, &c.

This is a shrub, with many upright, round, milky stems, three feet high, terminated by a spike. Two branches commonly spring out at the base of the spike. Leaves alternate, petioled, remote, elliptic, ferrulate, shining, spreading. Spike or ament terminating, sessile. Flowers small, yellow. It is accounted a specific in Syphilis<sup>t</sup>.

Native of Carolina in pine woods. Found there by Dr. Garden. Introduced in 1787, by Thomas Walter, Esq.<sup>u</sup>

STIPA.

*Lin. gen.* n. 90. *Reich.* n. 96. *Schreb.* n. 121.

*Juss.* 30.

Class. 3. 2. Triandria Digynia.

Nat. order of *Gramina*, *Gramineæ* or *Grasses*.

GENERIC CHARACTER.

**CAL.** Glume one-flowered, two-valved, lax, acuminate.

**COR.** two-valved: outer valve terminated at the tip by a very long twisted awn, jointed at the base and straight: inner valve length of the outer, awnless, linear.

Necessary two-leaved: leaflets linear-lanceolate, membranaceous, gibbous at the base.

**STAM.** Filaments three, capillary. Anthers linear.

**PIST.** Germ oblong. Styles two, hirsute, united at the base. Stigmas pubescent.

**PER.** none. Glume adnate.

**SEED** one, oblong, covered.

ESSENTIAL CHARACTER.

Cal. two-valved, one-flowered. Cor. outer valve with a terminating awn, jointed at the base.

SPECIES.

1. *Stipa pennata*. Soft Feather-grass.

*Lin. spec.* 115. *Reich.* 1. 218. *Willd.* 1. 440.

*Huds. angl.* 29. *Witber. arr. ed.* 3. 163. *Smith*

*brit.* 138. *Hall. helv.* n. 1514. *Hoffm. germ.* 38.

*Roth. germ.* 1. 34. 2. 94. *Pollich pal.* n. 120.

*Jacqu. vind.* 15. *Krock. files.* n. 173. *Scop. carn.*

n. 122. *Villars dauph.* 2. 138. *Allion. pedem.*

n. 2172. *Desfont. atlant.* 97. *Lamarck illustr.*

n. 783. t. 41. f. 1. *Gmel. fib.* 1. 114. n. 50.

(*Festuca*.)

*Gramen sparteum pennatum*. *Baub. pin.* 5. theat. 70.

*Barrel. n.* 46. *Raii syn.* 393. *Mont. prodr.* 57.

t. 68.

*Gr. pennatum*, aliis *Spartum*. *Baub. hist.* 2. 512. 2.

*Raii hist.* 1260.

*Gr. spicatum aristis pennatis*. *Tournef. inst.* 518.

*Scheuch. gram.* 153. t. 3. f. 13. b.

*Gr. plumeum*. *Munting. t.* 173.

*Spartum austriacum*. *Ger. emac.* 42. 6.—*pennatum*.

*Clus. hist.* 2. 221. 3.

*Avena capillacea austriaca*, aristis longissimis pennatis.

*Mor. hist. f.* 8. t. 7. f. 9. opt.

*Awns woolly.*

2. *Stipa juncea*. Rush-leaved Feathergrass.

*Lin. spec.* 116. *syst.* 121. *Reich.* 1. 218. *Willd.* 1.

440. *Scop. carn.* n. 123. *Krock. files.* n. 174.

*Villars dauph.* 2. 138. *Desfont. atlant.* 98. t. 28.

*Reliqu. Rudb. t.* 19. f. 3.

*Festuca juncea folio*. *Baub. pin.* 9. prodr. 19. theat.

145. *Scheuch. gram.* 151. *Raii hist.* 1291. 15.

*Awns naked straight, calyxes longer than the seed, leaves smooth within.*

3. *Stipa capillata*. Capillary Feather-grass.

*Lin. spec.* 116. *Reich.* 1. 219. *Willd.* 1. 441.

*Hall. helv.* n. 1513. *Hoffm. germ.* 38. *Roth.*

*germ.* 1. 34. 2. 95. *Pollich pal.* n. 121. *Krock.*

*files.* n. 175. *Villars dauph.* 2. 139. *Allion.*

*pedem.* n. 2173. *Pallas it.* 1. 267.

*Festuca longissimis aristis*. *Baub. pin.* 10. theat. 153.

*Raii hist.* 1290.

*Awns naked curved, calyxes longer than the seed, leaves pubescent within.*

4. *Stipa Aristella*. Short-awned Feather-grass.

*Lin. syst.* 121. *Reich.* 1. 219. *Willd.* 1. 441.

*Gouan illustr.* 4.

*Awns naked straight scarcely twice as long as the calyx, germs woolly.*

<sup>t</sup> Linn. mant.

<sup>u</sup> Hort. kew.



5. *Stipa paleacea*. Chaffy Feather-grass.  
*Lin. spec. ed. Willd.* 2. 441. *Vahl symb.* 2. 24.  
*Poiret. itin.* 2. 101.  
*Awns half naked, panicle simple, leaves convoluted awl-shaped pubescent within.*
6. *Stipa tenacissima*. Tough Feather-grass.  
*Lin. spec.* 116. *Reich.* 1. 219. *Willd.* 1. 442.  
*amoen.* 4. 266. *Læfl. it.* 118. *Desfont. atlant.* 99.  
*t.* 30. *Lamarck illustr. n.* 788. *t.* 41. *f.* 2.  
*Gramen sparteum panicula comosa. Bauh. pin.* 5.  
*Spartum herba Plinii. Clus. hist.* 2. 219. *t.* 220.  
*Awns hairy at the base, panicle spiked, leaves filiform.*
7. *Stipa capensis*. Cape Feather-grass.  
*Lin. spec. ed. Willd.* 1. 442. *Thunb. prodr.* 19.  
*Awns hairy at the base, panicle spiked, leaves ensiform.*
8. *Stipa spicata*. Spiked Feather-grass.  
*Lin. syst.* 121. *Willd.* 1. 442. *suppl.* 111. *Thunb. prodr.* 20.  
*Awns hairy at the base, raceme spiked directed to one side.*
9. *Stipa bicolor*. Two-coloured Feather-grass.  
*Lin. spec. ed. Willd.* 1. 442. *Vahl symb.* 2. 24.  
*Awns naked, seeds obovate bearded at the base.*
10. *Stipa avenacea*. Oat Feather-grass.  
*Lin. spec.* 116. *Reich.* 1. 219. *Willd.* 1. 442.  
*Gron. virg.* 133. (*Andropogon.*)  
*Awns naked, calyxes equalling the seed.*
11. *Stipa membranacea*. Membranaceous Feather-grass.  
*Lin. spec.* 116. *syst.* 121. *Reich.* 1. 220. *Willd.* 1. 443. *mant.* 326.  
*Pedicels dilated membranaceous.*
12. *Stipa barbata*. Bearded Feather-grass.  
*Desfont. atlant.* 97. *t.* 27.  
*Leaves rigid striated on one side, panicle lax elongated, awns very long bearded from the base to the tip.*
13. *Stipa parviflora*. Small-flowered Feather-grass.  
*Desfont. atlant.* 98. *t.* 29.  
*Leaves radical stiffish filiform, panicle diffused, awns naked capillaceous.*
14. *Stipa tortilis*. Twisted-awned Feather-grass.  
*Desfont. atlant.* 99. *t.* 31. *f.* 1.  
*Panicle spiked rolled in at the base, inner calyx villose, awns twisted villose at bottom.*

## DESCRIPTIONS, &amp;c.

1. Root perennial, fibrous, tufted. Culms simple, a foot high, upright, slender, round, very smooth, without knots, clothed entirely with the sheaths of the leaves. Leaves rolled in and bristle-shaped, mucronate, glaucous, somewhat rugged on the edges: sheaths very long and much widened, embracing, striated, smooth, shining within. Stipule lanceolate, growing to the leaf. Panicle simple, few-flowered, lying within the sheath of the upper leaf. Flowers very large, from four to six. Calyx-glumes nearly equal, lanceolate, scariose, concave, nerved, smooth, narrowed into a membranaceous very tender awn, longer than the valves. Floret awl-shaped, round, nerveless, shorter than the calyx, silky-bristly at the base. Awn from a joint at the tip of the outer glume, the longest of any, being from six to twelve inches in length, or even more, nodding and curved in, acute, angular, twisted at the base, clothed almost the whole length with very fine white soft pellucid silky diverging hairs, and at length falling together with the permanent hardened corolla, investing the ripe seed, and scattered round the fields and rocks, to produce a new progeny<sup>x</sup>.

The feathered awns are a beautiful and remarkable feature, at once distinguishing this from all our other grasses<sup>y</sup>.

Clusius first observed this elegant grass near Baden, and in several parts of Austria and Hungary. It has since been found in several places in Germany, France, Italy, Spain, Barbary and Siberia. In Dillenius's edition of Ray's synopsis it is said, that Dr. Richardson found it, in company with Thomas Lawson, on the lime-stone rocks hanging over a little valley, called Long Sleadale, about six miles north of Kendal in Westmoreland.—Hudson gives no other place of

growth; but in the second edition of Dr. Withering's botanical arrangements, Mr. Alderson is mentioned as having found it near Kendal: but Mr. Gough, who lives there, has never found it, nor has he heard of any person who found it, except those above mentioned: there is therefore reason to fear that it has been exterminated<sup>z</sup>.

Johnson, the editor of Gerard's herbal, says it was nourished for the beauty in sundry of our English gardens; and that it was worn by sundry ladies and gentlewomen instead of a feather, which it exquisitely resembles.

2. Root perennial, (or biennial.) Leaves convoluted, even, rigid, round, almost filiform. A torn acute white little membrane (stipule) crowns the sheath. Culm erect, slender, jointed at bottom. Panicle lax, elongated. Peduncles capillary, long, angular, rough, few-flowered: flowers pedicelled. Calyx-glumes membranaceous, lax, awl-shaped, twice as long as the corolla; which is round, coriaceous, truncate, slender, with the glumes close rolled in, villose at the base. Awn terminating, twisted at bottom, pubescent. Seed slender, elongated<sup>a</sup>.

Native of France, Switzerland, Silesia, Carniola, Barbary. Haller and Scheuchzer unite it with the next species. It was introduced in 1772, by Mons. Richard; and flowers in July<sup>b</sup>.

3. This resembles the preceding species very much, but the leaves are not round with a longitudinal groove; but stiffer, shorter, less rugged, more unfolded and somewhat pubescent on the upper side. Calyx not whitish but bay-coloured. Awns shorter, and when more advanced variously curved<sup>c</sup>.

Culms many, about two feet high, hard and solid, surrounded with stiff straight leaves like a rush at their base; they are villose on the upper surface, principally at their base. Stem-leaves one or two, forming a sheath round the stem, contrary to the sun's apparent motion, and rendering it thick at that place. The panicle remains compressed near the sheath, from which issue brown membranous flowers, composed of a two-valved calyx, terminated by two awns half an inch long or more; and a two-valved corolla, as short again as the calyx, the outer valve lengthened into an awn which is straight at first, but afterwards bends back as if it were broken in the middle: this awn is simple and not feathered.—The synonym from Ray and Vailant, in Reichard's and Willdenow's editions of Species Plantarum, belongs to *Avena pratensis*<sup>d</sup>.

Native of France, Germany, Switzerland and Italy. Perennial.

4. Root perennial. Culms two feet high. Leaves narrow. Panicle subspiked, with two or three-flowered peduncles. Calyx length of the seed. Seed round, pubescent with few villose hairs. Awn length of the calyx.—Native of the country about Montpellier<sup>e</sup>.

5. This has the appearance of the *juncea*. Culms many, a foot and half high, quite simple, erect, sheathed with leaves. Root-leaves abundant, awl-shaped, rigid, two inches long: on the culm three, longer, the uppermost sheathing, higher than the culm. Sheaths striated, bearded at the mouth, ciliate at the edge. Panicle a span long. Spikelets many at each tooth of the common peduncle. Calyx very much attenuated, three times as long as the seed, smooth. Outer valve of the corolla hairy, ciliate. Awn a hand length, beyond the middle twisted very much and hairy.

Forskahl's plant differs only in having the sheaths and radical leaves pubescent even on the outside.—*Stipa tenacissima* differs in having the panicle contracted, with the awns three times shorter, less twisted; the leaves more rigid, longer, quite smooth on both sides; the sheaths very finely striated, the uppermost not spathaceous, the mouth of the sheaths woolly<sup>f</sup>.

Found by Vahl every where about Tunis, and by Forskahl in Egypt.

6. Habit of *Avena*. Culm erect, jointed. Leaves hard, smooth, convoluted. Flowers panicked, approximating, numerous. Panicle erect, contracted, yel-

<sup>x</sup> Smith brit.<sup>y</sup> Withering.<sup>z</sup> Idem.<sup>a</sup> Desfontaines.<sup>b</sup> Hort. kew.<sup>c</sup> Linn. spec.<sup>d</sup> Villars.<sup>e</sup> Linn.<sup>f</sup> Vahl.



lowish. Calyx-glumes concave, elongated, acute, almost equal, membranaceous at the edge and tip. Corolla shorter, elongated, round, coriaceous, with white villose hairs; the outer glume closely involving the other. Awn jointed, below twisted and villose, above naked. Seed slender, elongated. It grows in a close tuft. The inhabitants make ropes, baskets and mats of it<sup>e</sup>.—Native of Spain and Barbary, on sandy hills.

7. Native of the Cape of Good Hope.

8. Root perennial, creeping, producing many culms. Leaves even, on the upper part of the culm short. Culm even, a foot and half high. Spike narrow, scarcely the length of a finger. Flowers sessile, scarcely pubescent, villose at the base. Awn terminating, scarcely a finger's length, twisted, somewhat hairy, beyond where it is twisted even.—Native of the Cape of Good Hope<sup>h</sup>.

9. Culm a foot and half high, erect, striated, sheathed, smooth: ligule or stipule membranaceous. Panicle branched, spreading. Pedicels capillary, several to each tooth. Calyx-valves a little longer than the seed, ending in a point, sharp at both ends, dusky purple at the base, from the middle to the tip membranaceous. Outer valve of the corollas obovate, bearded at the base, with fulvous hairs, mucronate at the tip. Awn two inches long, variously bent, bearded at the base, below slightly pubescent, somewhat rugged backwards, pale yellow. Inner valve rigid, awl-shaped, inclosed by the outer.—Native of Brasil, on monte Video. Found by Thouin<sup>i</sup>.

10. Culms slender. Upper leaf ventricose, length of the panicle, which is composed of conjugate one-flowered peduncles. Calyx-glume one-flowered, pale, two-valved, equal. Awn of the corolla terminating, twisted, jointed at the base, naked, length of the peduncles. This grass is smaller than *Avena sativa*.—Native of Virginia<sup>k</sup>.

11. This grass is scarcely a foot high, with the appearance of an *Avena*. Culm even, the thickness of a small thread. Panicle simple scarcely subdivided, lax, weak. Pedicels membranaceous, ancipital, bluntish. Awn of the calyx and corolla of the same length.—In the mantissa it is said to be a raceme, with the peduncles one-flowered, depressed, margined so as to be in a manner membranaceous. One valve of the calyx the length of the seed, the other very short, both acuminate. Awn of the seed terminating, flexuose, a little longer than the seed. The last flower but one sessile. Native of Spain, where it was observed by Loeffling<sup>l</sup>.

12. This differs from the first species in having rigid, glaucous, flattish leaves, striated on one side, wider, ferrate, with a very long awn hirsute on every side from the base to the tip.—Native of Barbary about Mascara and Tlemcen.

13. Roots perennial, fibrous, flexuose, long. Culms many from the same head, slender, erect. Leaves smooth, convoluted, short. Panicle elongated, bowed. Peduncles long, many from the same knot, capillary, unequal, many-flowered: flowers pedicelled, thin, elongated. Calyx one-flowered: glumes unequal, membranaceous, channelled, narrow, acute. Corolla shorter, slender, smooth, round: glumes coriaceous, closely involuted. Awn capillary, naked, twisted at the base. Seed thin, elongated, smooth.

Native of dry hills near Mascara, and in the kingdom of Tunis.

14. Culms erect, many from the same head. Leaves smooth, convoluted; the radical ones almost capillary. Panicle yellowish, wrapped at the base in a sheathing leaf. Branchlets pressed close. Flowers deciduous. Calyx-glumes awl-shaped, membranaceous, white, shining, acute, almost equal, lax. Corolla deciduous, round, villose on the outside; with the glumes closely convoluted. Awn villose at the base, twisted, smooth above, when the seed is ripe, knee-jointed and terminating. Seed elongated, thin, with a longitudinal groove on one side.

The flowers are deciduous and very numerous, stick to the clothes of passengers, and incommode them by

tickling and pricking them.—It is an annual grass, native of Barbary in fields<sup>m</sup>.

STIPHELIA. See *Epacris*.

STITCHWORT. See *Stellaria*.

STOCK GILLIFLOWER. See *Cheiranthus*.]

STOEBE. (Στοβή of Dioscorides. Stoebe of Pliny. *Herba qua in extruendis, stibadiis & toris utebantur, quaque tomenti loco culcitras farciebant. Used formerly in stuffing cushions and pillows.*)

Lin. gen. n. 1001. Reich. n. 1086. Schreb. n. 1357.

Gartn. t. 167. Juss. 180.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Nucamentaceæ*. *Corymbiferae*, Juss.

#### GENERIC CHARACTER.

CAL. Common roundish, imbricate: scales awl-shaped, covering the universal receptacle on every side.

Perianth partial one-flowered, five-leaved, solitary within each scale of the common calyx, consisting of linear, acute, equal, erect leaflets.

COR. proper one-petalled, funnel-form: border five-cleft, patulous.

STAM. Filaments five, capillary, short. Anther cylindrical, five-toothed.

PIST. Germ oblong. Style filiform, length of the stamens. Stigma acute, bifid.

PER. none. Calyx unchanged.

SEEDS solitary, oblong. Down feathered, long.

REC. proper, naked.

#### ESSENTIAL CHARACTER.

Cal. one-flowered. Cor. tubular, hermaphrodite.

Recept. naked. Down feathered.

#### SPECIES.

1. Stoebe æthiopica.

Lin. spec. 1315. Juss. 1001. Reich. 3. 948. mant. 481. hort. cliff. 390. Gartn. fruct. 2. 416.

*Conyza africana frutescens, foliis ericæ hamatis & incanis. Tournef. inst. 455.*

*Helichrysoides juniperi creberrimis aduncis foliis, floribus in ramulorum cymis. Vaill. art. 1719. 393.*

*Leaves recurve-hooked naked.*

[2. Stoebe ericoides.

Lin. Juss. 798. Reich. 3. 948. mant. 574. Berg. cap. 339.

*Eupatorium ericoides cap. b. spei. Breyn. cent. 140. t. 9. Mor. hist. 3. 97. f. 7. t. 18. f. 10.*

*Leaves recurved hoary, corollas two-flowered difform.*

3. Stoebe prostrata.

Lin. Juss. 798. Reich. 3. 948. mant. 291.

*Leaves resupine tomentose on one side, stems prostrate.*

4. Stoebe gnaphaloides.

Lin. Juss. 798. Reich. 3. 949.

*S. gomphrenoides. Berg. cap. 336.*

*Seriphium corymbiferum. Lin. mant. 119.*

*Gnaphalium niveum. Lin. spec. 1192.*

*G. incanum, folio lineari, caule accumbente. Burm. afr. 215. t. 77. f. 1.*

*Elichrysum æthiopicum, tenuissimis stoechadis citrinæ foliis confertis, ramosissimum, comis argenteis. Pluk. mant. 67. Raii suppl. 171.*

*Leaves imbricate pressed close.*

5. Stoebe gomphrenoides.

Lin. Juss. 798. suppl. 391. Berg. cap. 336.

*Leaves lanceolate imbricate pressed close, head terminating sessile.*

6. Stoebe scabra.

Lin. Juss. 798. suppl. 391.

*Leaves twisted pressed close linear rugged with tubercles on the outside tomentose within, flowers in racemes.*

7. Stoebe reflexa.

Lin. Juss. 798. suppl. 391.

*Procumbent, leaves linear, spikes ovate, branches ascending.*

8. Stoebe Rhinocerotis.

Lin. Juss. 798. suppl. 391.

*Leaves three-sided pressed close, branchlets tomentose drooping, racemes proliferous.*

9. Stoebe disticha.

Lin. Juss. 798. suppl. 391.

*Leaves in bundles recurved, spikes bifarious.*

<sup>e</sup> Desfontaines. <sup>h</sup> Linn. suppl. <sup>i</sup> Vahl. <sup>k</sup> Linn. spec.

<sup>l</sup> Linn. spec. & mant.

<sup>m</sup> Desfontaines.



## DESCRIPTIONS, &amp;c.

1. This, like all the rest, is a shrubby plant. Leaves awl-shaped, rolled in, bowed backwards, rigid, pungent, like those of Juniper, even except at the base. In strictness, according to Gærtner, the partial calyx is not such, but the chaffs nearest to the florets are instead of one.

The stem rises two or three feet high, sending out slender branches from the sides. Leaves short, linear, for the most part hooked, of a grayish colour, and placed irregularly round the branches. The flowers are produced in single heads at the end of the branches, and are of a pale yellow colour. The florets are single, and peep out between the scales of the calyx. It flowers in august, but seldom produces good seeds in England.

[2. This is a distorted little shrub, like Heath. Leaves clustered, linear, sharp. Flowers terminating, sessile. Common calyx subsquarrose:—partial imbricate (ten), cylindric, two-flowered; one floret tubular, hermaphrodite, the other ligular, neuter. Corolla hemispherical. Germ inferior: two stigmas. Down sessile, feathered. Receptacle tomentose.

3. Stems filiform, somewhat woody, decumbent, determinately branched, ash-coloured at the end, the size of wild Thyme. Leaves alternate, sessile, elliptic, very sharp, the size of Herniaria, white-tomentose above, naked beneath, recurved, and turned upside down so that the tomentose surface is the lower. Heads simple, terminating, sessile, the size of peas.

4. Stems shrubby, proliferous, rod-like, a foot and half high; with filiform branches, covered with pressed-close leaves. Leaves ovate-lanceolate, sessile, ciliate, naked without, tomentose within, erect, and pressed close to the branches. Heads terminating, hemispherical, white, composed of many calyxes. Flowers sessile, in bundles. Calyxes smooth, white, with lanceolate-subulate scales without a ray. Corollet single, white. Stamens white. Seed crowned with six feathered bristles. It has the habit of *Xeranthemum capense*.

In *Systema Vegetabilium* it is remarked, that the common calyx is subpentaphyllous and many-flowered, bell-shaped, and collected into a ball.

5. This resembles the preceding very much, but differs in having the leaves unarmed not cusped; and the flowers in heads, not umbelled. Both are singular for their lanceolate leaves pressed close, without convex and smooth, within channelled and white-tomentose.

6. This has the habit of a Heath in the herb.

7. This and the preceding were first observed at the Cape by Thunberg.

8. This forms the principal food of the Rhinoceros, whence it bears the same name among the inhabitants of the Cape.

9. This, with all the preceding species, is a native of the Cape of Good Hope<sup>p</sup>.]

## PROPAGATION AND CULTURE.

These shrubby plants may be propagated by cuttings or slips, planted in july upon a bed of soft loam, and covered close down with a bell or hand-glass, shading them from the sun till they have taken root; then gradually inure them to the open air, and afterwards take them up, and plant them in pots, placing them in the shade till they have taken new root: then place them in a sheltered situation with other tender exotic plants, and in autumn remove them into the dry stove.

[STOEBE. See *Catananche*, *Centaurea*, *Poterium*, *Seriphium*, *Serratula*, *Stabelina*.

STOECHADI AFFINIS. See *Stabelina*.

STOECHAS. See *Gnaphalium*, *Lavandula*, and *Stabelina*.

STOERCKIA. See *Dracæna*.

STOKESIA. (So named by Mons. L'Heritier, in honour of Jonathan Stokes, M.D. who very ably assisted Dr. Withering, in his *Botanical Arrangements of British Plants*.)

L'Herit. fert. angl. 27. t. 38. Juss. 450.

Class. 19. 1. Syngenesia Polygamia Æqualis.

\* Linn. mant.

° Idem.

° Linn. suppl.

## GENERIC CHARACTER.

CAL. Common leafy, subimbricate.

COR. Floscular, two-formed: corollets hermaphrodite regular in the disk; in the outer circumference irregular, constituting a ray.

STAM. Filaments five in each. Anther cylindric.

PIST. Germ (in the regular florets) four-cornered: (in the irregular) three-cornered. Style filiform. Stigma two-parted, awl-shaped.

PER. none.

SEED down filamentose, deciduous, equal to the corollet, four in the regular, three in the irregular florets.

REC. naked.

## ESSENTIAL CHARACTER.

Corollets in the ray funnel-form, longer, irregular. Down four-bristled. Recept. naked.

## SPECIES.

1. *Stokesia cyanea*. Blue-flowered *Stokesia*.

L'Herit. fert. angl. 28. t. 38. Ait. kew. 3. 149.

*Carthamus lævis*. Hill kew. 57. t. 5.

## DESCRIPTION, &amp;c.

This plant has a corolla resembling that of the common Blue-bottle (*Centaurea Cyanus*), with almost the calyx of *Carthamus*, to which genus it is allied\*.

Native of South Carolina. Introduced about 1766, by Mr. James Gordon. It flowers in august †.]

STONE-CROP. See *Sedum*.

TREE. See *Chenopodium*.

[STONE FERN. See *Osmunda crispa*.

STONEWORT. See *Chara*.

STORAX. See *Styrax*.]

STOVES or Hot-houses are buildings erected for preserving such tender exotic plants, as will not live in the respective countries where they are introduced, without artificial warmth in winter.

Though there is a great variety of these Stoves, yet they are reducible to two, the dry Stove and the bark Stove. [They are both comparatively of modern invention; the first not having been in use above one hundred and twenty years, and the latter being much posterior to that.

Gerarde and Parkinson, who wrote in the times of Queen Elisabeth and King James the first, frequently uttered complaints that they were not able to retain many of the plants which they have taken the pains to introduce, during the severity of our winters.

The former, under the article Cucumbers, in his Herbal printed in 1597, gives full directions for making a hot-bed, or as he calls it, "a bed or bank of hot and new horse dung, taken forth of the stable, and not from the dunghill, wherein to set or sow Cucumbers, Muske melons, and other cold seedes, as also whatsoever strange seedes are brought unto us from the Indies or any other hot regions. The which bancke you shall cover with hoopes and poles, that you may the more conveniently cover the whole bed or bancke with mats, old painted cloth, strawe or such like," &c. p. 764.

One cannot but smile to read in Parkinson's *Paradisus Terrestris* or Garden of pleasant Flowers, published in 1629, that the Laurel, which was then a curiosity, and called the Bay Cherry, was "defended from the bitterness of the weather in winter, by casting a blanket over the toppe thereof." P. 401.

It was customary at that time to place tender plants during winter in a cellar, to protect them from frost. Of the *Canna indica*, or Indian flowering Reed, the same author says, it "doth not abide the extremities of our winters, eyther abroad or under covert, unlesse it meete with a stove or hot-house, such as are used in Germany, or such other like place: for neyther house nor cellar will preserve it, for want of heate." p. 376. We are not to conclude from hence that what we now call Stoves or Hot-houses, were at that time known in England; but only that German stoves were sometimes introduced into rooms, to warm them.

The use of bell-glasses for covering Melons came in between the times of Gerarde and Parkinson. The latter recommends a hot-bed to be made in the same

\* L'Heritier

† Hort. kew.



manner as directed by Gerarde for raising the seeds, and also ridges whereon to transplant them, "at the least two yards in sunder, every one as it were in a hole, with a circle of dung about them, which upon the setting, being watered with water that hath stood in the sunne a day or two, cover them with strawe—some use great hollow glasses like unto bell heads," &c. p. 466.

"If any be desirous," says Parkinson, "to keepe the Orange tree, he must so provide for it, that it be preserved from any cold, either in the winter or spring, and exposed to the comfort of the sunne in summer. And for that purpose some keepe them in great square boxes, and lift them to and fro by iron hooks on the sides, or cause them to be rowled by trundels, or small wheeles under them, to place them in an house, or close gallerie for the winter time: others plant them against a bricke wall in the ground, and defend them by a shed of boardes, covered over with seare-cloth in the winter, and by the warmth of a stove, or other such thing, give them some comfort in the colder times: but no tent or meane provision will preserve them." p. 584.—See the account of Sir Francis Carew's Orange trees under *Citrus*.

In this state, the means of protecting exotic plants continued during the greater part of the seventeenth century. Little or nothing seems to have been done in the time of the Commonwealth, when a general attention was paid to subjects of more immediate utility, such as the introduction of Turneps and Clover, and the improvement of our husbandry on the Flemish model.

More care was bestowed upon the luxury of plants, as it may be called, after the Restoration; but I do not know that any Stove or Hot-house, properly so called, was erected before the year 1684.

Sir Hans Sloane, in a letter to Mr. Ray, dated November 11, that year, informs him that Mr. Watts (gardener at the Apothecaries garden at Chelsea) had a new contrivance, at least in this country; viz. he makes under the floor of his greenhouse a great fire-plate, with grate, ash-hole, &c. and conveys the warmth through the whole house, by tunnels; so that he hopes, by the help of weather-glasses within, to bring or keep the air at what degree of warmth he pleases, letting in upon occasion the outward air by the windows. He thinks to make, by this means, an artificial spring, summer and winter.

In a second letter, dated Dec. 20, he says, that he was yesterday at Chelsea garden to see how the plants were preserved there in the cold weather, and found, that in the day-time they put no fire into their furnaces, and that in the night they not only put in some fire, but cover the windows where they stand with pitch'd canvass, taking this off, and opening them as much as the air or wind permits.

In a third letter dated march 7, 1684-5, Sir Hans again says, that he was the other day at Chelsea, and found that the artifices used by Mr. Watts had been very effectual for the preservation of his plants, inasmuch that the winter, which was severe enough, had killed scarce any of his fine plants<sup>1</sup>.

This conversion however of the Greenhouse into a Stove does not seem to have become common. Mr. Evelyn, in his *Kalendarium Hortense* or Gard'ner's Almanac recommends, "if the season proves exceeding piercing, to kindle some charcoals, and when they have done smoaking, to put them in a hole sunk a little into the floor of your Greenhouse, about the middle of it: unless it have a *subterranean Stove*, which moderately, and with judgment tempered, is much to be preferr'd." In the mean time he wishes that some curious person would make trial of a greenhouse and furnace, with earthen pipes to introduce warm fresh air, of which he gives a detailed description accompanied with figures<sup>2</sup>.

Mr. Bradley, in his *New Improvements of Planting and Gardening*, says that "Greenhouses, as they are commonly built, serve more for ornament than use;

their situation to receive the south sun being the only thing that seems to be regarded towards the health of the plants they are to shelter. It is rare to find one that will keep a plant well in the winter, either by reason of their situation in moist places, their want of glasses enough in the front, the disproportion of the room within them: and sometimes where it happens that a Greenhouse has been well considered in these points, all is confounded by the flues under it, which convey the heat from the Stoves."

He then proceeds to inform us, that "beside a Greenhouse, it has been customary to provide Glass-cases of several kinds, and Stoves for the preservation of plants brought from different countries." But he condemns these as unnecessary expenses; and affirms that "a good Greenhouse, well contrived, will do all that is required for the welfare of any plant in the winter." He describes such a Greenhouse, and thinks that it may protect plants from all climates, by disposing them judiciously, those from the parts near the line in the warmer, and the others in the cooler parts of the house, introducing charcoal fires occasionally in severe weather; or one of the new invented chimnies so judiciously improved by Mr. Desaguliers, and described by him in his book called *Fires Improved*<sup>3</sup>.

This idea of having one house for sheltering plants of all climates, may serve to shew how imperfectly the subject was understood at this time.

At the end of this book, Bradley gives the description of a Greenhouse, accompanied with plan, elevation and sections, contrived by Galilei, with a cupola in the middle, and a room at each end, having chimneys, to warm the rooms, and to convey warm air to the plants.

The same author, in his general treatise of Husbandry and Gardening for the month of July 1724, p. 178. describes a Stove or Conservatory lately built (1721) by Mr. Fairchild at Hoxton, with flues and every thing in the modern form of a Dry Stove. It was ten or twelve feet in depth, and about forty feet in length: and had frames covered with glass in front, for tender bulbs and flowers.

Having thus brought down the history of dry Stoves to a period within the recollection of some persons now living, we may proceed to Mr. Miller's account of their structure and use.]

The Dry Stove may be either built with upright and sloping glasses at the top; or else the front glasses, which should run from the floor to the ceiling, may be laid sloping at an angle of 45°, the better to admit the rays of the sun in spring and autumn, when the sun declines. The latter method was formerly followed by many; but where I have had the contrivance of Stoves of this kind, I have always built them, after the model of the Bark Stove, with upright glasses in front, and sloping glasses over them, because this will more readily admit the sun at all the different seasons; for in summer, when the sun is high, the top glasses will admit the rays to shine almost all over the house; and in winter, when the sun is low, the front glasses will admit its rays; whereas when the glasses are laid to any declivity in one direction, the rays of the sun will not fall directly on them above a fortnight in autumn, and about the same time in spring, and during the other parts of the year they will fall obliquely; and in summer, when the sun is high, the rays will not reach above five or six feet from the glasses. Besides, the plants placed towards the back part of the house, will not thrive in the summer season for want of air; whereas when there are sloping glasses at the top, which run within four feet of the back of the house, these, by being drawn down in hot weather, will let in air perpendicularly to all the plants; and of how much service this is, every one who has had an opportunity of observing the growth of plants in a Stove, will easily judge; for when plants are placed under cover of a ceiling, they always turn themselves towards the air and light, and thereby grow crooked; and if, in order to preserve them straight, they should be turned

<sup>1</sup> Ray's letters, 172, 173, 176.

<sup>2</sup> Edit. 9. 1699. pp. 136, 153.

<sup>3</sup> P. 197. ed. 3. 1719.



every week, they will still be feeble, and look pale and sickly.

If the situation be dry, the floor of the Stove need not be raised more than four feet above the level of the ground; but if it be wet, it will be proper to raise it three feet; especially if the flues are to be carried under the floor. For if these be placed upon the surface, they will not draw so well as when they are more raised. The furnace must be placed at one end of the house; and the size of it must be directed by the kind of fuel intended to be burnt: if for coals or wood, it may be made according to the common method for coppers, only much larger, because as the fire is to be continued chiefly during the night, if there be not room to contain a considerable quantity of fuel, it will want frequent attendance, and consequently there will be great hazard of its being neglected. But if the fuel intended be turf, then the furnace may be the same as will be directed for the bark stove.

The flues are either carried under the pavement of the floor, or along the back of the house, over each other, and are returned six or eight times the whole length of the Stove, according to the height. If they are under the pavement, they may be carried straight, or in a waving line; which latter, some think, will draw better, and they may be so much turned, as to reach almost from the back to the front of the house.

The depth of them should not be less than eighteen inches, and the width nearly equal, which will prevent their being choaked up with soot, as is often the case when the flues are made too small. The spaces between the flues should be filled up either with dry brick rubbish, lime or sand, from which little moisture will arise; and the flues should be closely plastered with loam both within and without, and the upper part covered with a coarse cloth under the floor, to prevent the smoke from getting into the house. When the flue is carried from the furnace to the end of the house, it may be returned in the back above the floor twice in straight lines, which may be contrived to appear like a step or two, by which means the smoke will be continued in the house until all its heat is spent, which will consequently warm the air of the house better: and the chimneys through which the smoke is to pass off, may be either at both ends, or in the middle, carried up in the thickness of the brick work of the flues, so as not to appear in sight within the house. The flues should be first covered with broad tiles sixteen inches long, and then a bed of sand laid over them about two inches thick, upon which the other tiles should be laid to correspond with the rest of the floor. This thickness of cover will be full enough to prevent the too sudden rise of the heat from the flues.

But if the furnace be placed under the floor, the thickness of sand between the brick arch which covers it and the floor, should not be less than four or six inches, so that the bottom of the furnace should be sunk the lower; and if from the fire-place to the end of the house the flues be laid a little rising, it will cause them to draw the better; but this rise must be allowed in the placing them lower under the floor next the fire, because the floor must be laid perfectly level, otherwise it will appear unsightly.

In this Stove there should be a stand or scaffold erected for placing shelves above each other, that the plants may be disposed so as to make a handsome appearance in the house: but these shelves should be made moveable, so as to be raised or sunk, according to the various heights of the plants, otherwise it will be very troublesome to raise or sink every particular plant according to their heights, or every year as they advance in their growth. In placing the feet of this stand you must be careful not to set them too near the fire, nor directly upon the top of the flue, especially that end next the fire; lest by the constant heat of the tiles the wood should take fire. The stand should be in the middle of the house, leaving a passage about two feet and a half in the front, and another of the same width in the back, the more conveniently to pass round the plants in order to water them, and that the air may freely circulate about them. In disposing

the plants, the tallest should be placed behind, and the shortest in front, so that there will not be occasion for more than five or six shelves in height at most; but the scaffold should be so contrived, that there may be two shelves in breadth laid upon every rise, whenever there may be occasion for it, which will save much trouble in disposing the plants.

[Bark Stoves were of later introduction, as was observed above, than these Dry Stoves, which were only an improvement upon the old Greenhouse, by adding more glass, and a furnace with flues. It seems probable that the culture of Ananas first gave rise to the introduction of the Bark Stove. See TAN, or TANNER'S BARK.]

Mr. Bradley, in his general treatise of Husbandry and Gardening, for June 1724, p. 161, says, that "besides the hot-bed commonly made of horse-litter, there is another sort frequently used in Holland, made of Tanner's bark; and that one of the best examples in England of this sort is that of Mr. Henry Telende, gardener to Sir Matthew Decker at Richmond, for the propagating of the Ananas or Pine Apple, which has never been brought to perfection in Europe, till of late years Mr. Le Cour of Leyden found out their way of management with so much judgment, that he has seldom fewer than six or seven hundred plants in a summer, which bring perfect ripe fruit. To this gentleman's curious discovery we are at present obliged; for by imitating his method of cultivating this delicious fruit, we find there are like to ripen forty fruit-trees, this autumn in the garden at Richmond, which I have mentioned above; and I doubt not but in a few years we shall find them in like perfection in many of our English gardens."

In the same volume, for the month of July, p. 206, &c. Mr. Bradley gives a description of the Pine Apple, the introduction of it into Holland by Mr. Le Cour, and its culture at Sir Matthew Decker's. He says that there were, in the Amsterdam gardens about two hundred plants, chiefly from Surinam and Curaçao, but some from the Dutch factories in the East Indies, which were in good health; but the art of bringing them to fruit was not known till Mr. Le Cour took them in hand. He thus describes the hot-bed and frame, "for the education and ripening this fruit. His frame is made of whole deal, closely jointed: the length eleven feet, divided equally into four lights; the width seven feet and a half; three feet high at the back, and about ten inches in the front. The pit is somewhat more than five feet deep in the ground; the sides are lined with brick, and the bottom is covered with pebbles. About the middle of February, he puts in as much hot dung or horse-litter, as will raise the bed about a foot high, and then lays on the tanners bark as equally as possible, till the case of brick-work is filled, beating down the tan gently with a prong, or pressing it down easily with a board. A bed of this kind will take up three hundred bushels of tan, and if it be well made, will heat in about fifteen days, provided the frame and glasses are set over it. When the bed breaths a right heat, which we are to judge of by a thermometer, the plants are brought from the stove to it, either to have their pots quite plunged into the bark; or, if upon opening the holes for them, the bark be found too hot, then to be set in only half way, laying a few pebbles under the bottom of each pot, that the water may pass freely through them. Care must be taken not to remove the pots in frost or snow; and to examine the bed from time to time, whether the bark grows mouldy, musty, or dry, which it will often do in the summer: in such case, it must be watered to recover its heat. A bed thus prepared and managed will maintain a constant degree of heat, sufficient to give these plants the utmost vigour they require, from the end of February to the end of October; and then the plants must be again removed into the stove or conservatory. In excessive heats the glasses are tilted up at the back of the frame; and when the evenings are cool, the bed must be carefully covered with substantial mattresses of straw. A bed of this kind sinks about a foot, which is convenient, for otherwise the plants would



would be too tall for the frame, before the time of housing them."

"By the same method of culture, all such plants as are natives of climates as hot as Jamaica, the Caribbee islands, and two or three degrees more south, would prosper here as well as the Pine Apple. The Guava for instance, the Banana, Plantains, and even the Mango, with all the Spices." Experience has not justified this assertion of Professor Bradley's.

"The Stove used was that with iron plates over the flues; which, for greater warmth, was covered thick with thatch, and the glassess were well guarded with shutters; and that the fire might be constant, he burnt only such turf as is commonly used in Holland; agreeable to Mr. Le Cour's method."

"The thermometer used by Mr. Telende, had a tube twenty-four inches long, and one-eighth of an inch in diameter. When the spirit rose only to fifteen inches, he accounted the air cold for his plants; at sixteen and a half temperate; at eighteen warm, which was his standard for Pine Apple heat; at twenty inches, hot air; and at twenty-one inches, sultry."

In vol. 3 of the same work, for the month of July 1722, p. 51. Mr. Bradley says, that "the late instance of bringing the Ananas or Pine Apple to perfection in England, by the ingenuity of Mr. Telende at Sir Matthew Decker's, has so far gained upon the curious, that already many of our nobility have undertaken the same improvement; and 'tis not to be doubted but a year or two more will make this undertaking much more general."

In the same volume, for August, &c. p. 133. it is said, that "Mr. Telende's extraordinary success has encouraged many to undertake the culture of the Anana.—And that the new frame at the Physick Garden at Chelsea, wherein only the use of the Tanners Bark has been try'd this summer, 1723, by Mr. Miller the curious gardener there, is an instance, that it is not impossible to bring plants of the latitude of 18 or 20 degrees to the utmost perfection. About the beginning of August he observed the Sensitive plants there, about seven feet high, in blossom, and the Humble plants preparing to put forth their flowers." The Flower-Fence (*Poinciana*), so much esteemed in Jamaica, and some other plants of the same country, were said to be in greater strength than in Jamaica itself, considering the time of their growth from seed."

"As for Pine Apples, we have instances of their being brought to extraordinary perfection at the garden of the right honourable Spencer Compton, Speaker of the House of Commons, at Chiswick; and at that curious gentleman's Mr. John Warner, at Rotherhith. There are several Stoves now built by curious gentlemen on this account; but as they have not yet been proved, I shall forbear to mention them particularly, only to take notice, that that which was erected this summer in the gardens of William Parker, Esq. near Croydon in Surrey, commands the admiration of all the judges that have seen it, for just architecture, and good contrivance; the design of it, besides the keeping of tender plants during the rigour of our winters, and the restoring of sick plants, which is common to most stoves, is likewise to ripen some fruits, which have been ripened in other stoves here, as well as in Holland, and to make new experiments on others that have not been try'd; 'tis therefore endeavoured to make this stove capable of being heated differently in different parts of it, in order to imitate in some sort different climates, which may be regulated according to different heights of the thermometer. For these purposes it is so contrived, that in the summer time it may be useful by means of tanners bark only, and in the winter, both bark and fire may be used together, or fire alone."

"I observe," says he, "in a Stove, which Mr. Fairchild has built this year in his garden at Hoxton, for Pine Apples and the most tender plants, that he has raised his fire-flues above the surface of the floor of the stove: by which means he avoids all danger from damps."

The above account is accompanied with a plan and elevation of a Stove, with a pit for tanners bark, from

a draught by Mr. Rogers of Shoe-lane, a very ingenious architect.

John Cowell, in his *Curious and Profitable Gardener*, Lond. 1730, oct. p. 27, gives the same account with Mr. Bradley of the cultivation of the Ananas or Pine Apple in Holland, and by Sir Matthew Decker in England; "where," says he, "they were so extremely well managed, that all gentlemen who had eat of them abroad, allowed them to be as good and as large as they found in the West Indies. This soon encouraged many of our nobility and gentry to build stoves and glass-cases for the culture of the Pine Apple, and they are now (1730) found in almost every curious garden."

"When I say," adds Mr. Cowell, "the first that were cultivated in England, were in Sir Matthew Decker's gardens at Richmond, I mean the first that were cultivated with success, were in those gardens; for long before we had plants of them brought to us, but had not before that time conveniences for bringing them to fruit, or even of keeping the plants alive."

Having thus ascertained the introduction of Bark Stoves, and established their use, let us proceed to Mr. Miller's account of their structure and management.]

The other sort of Stoves are commonly called bark Stoves, to distinguish them from the dry Stoves already mentioned. These have a large pit, nearly the length of the house, three feet deep, and six or seven feet wide, according to the breadth of the house, which pit is filled with fresh tanners bark to make a hot-bed, and in this bed the pots of the most tender exotic trees and herbaceous plants are plunged. The heat of this bed being moderate, the roots of the plants are always kept in action, and the moisture detained by the bark, keeps the fibres of their roots in a ductile state, which in the dry Stove, where they are placed on shelves, are subject to dry too fast, to the great injury of the plants. In these Stoves, if they are rightly contrived, may be preserved the most tender exotic trees and plants, which, before the use of the bark was introduced, were thought impossible to be kept in England; but, as there is some skill required in the structure of both these Stoves, I shall not only describe them as intelligibly as possible, but also annex plans of both Stoves hereto, by which it is hoped every curious person will be capable of directing his workmen in their structure.

The dimension of these Stoves should be proportioned to the number of plants intended to be preserved, or the particular fancy of the owner, but their length should not exceed forty feet for one fire-place; but where there are two fires it will be proper to make a partition of glass in the middle, and to have two tan-pits, that there may be two different degrees of heat for plants from different countries (for the reasons before given in the account of dry Stoves;) and were I to erect a range of Stoves, they should be all built in one, and only divided with glass partitions, at least the half way toward the front, which will be of great advantage to the plants, because they may have the air in each division shifted by sliding the glassess of the partitions, or by opening the glass door which should be made between each division, for the more easy passage from one to the other.

These Stoves should be raised above the level of the ground, in proportion to the dryness of the place, for if they are built on a moist situation, the whole should be placed upon the top of the ground, so that the brick-work in front must be raised three feet above the surface, which is the depth of the bark-bed, whereby none of the bark will be in danger of lying in water; but if the soil be dry, the brick-work in front need not be more than one foot above ground, and the pit may be sunk two feet below the surface. Upon the top of this brick-work in front must be laid the plate of timber, into which the wood-work of the frame is to be mortised; this should be of sound Oak felled in winter, without sap, the dimension one foot wide, and six inches deep, and the upright timbers in front must be placed four feet asunder, or somewhat more, which



which is the proportion of the width of the glass doors or sashes; these should be about six feet, and a half, or seven feet long, and placed upright; their dimension should be nine inches by six, of yellow Fir; but from the top of these should be sloping glasses, which should reach within three feet of the back of the Stove, where there should be a strong crown-piece of timber placed, in which there should be a groove made for the glasses to slide into; the dimension of the sloping timbers should be ten inches by nine of yellow Fir, and the crown-plate one foot by nine or ten inches of the same timber. The wall in the back part of the Stove should be at least thirteen inches thick, but eighteen or twenty-two inches, which is two bricks and a half, will be better, for the greater thickness there is in the back wall, the more heat will be thrown to the front, whereby the air of the Stove will be better warmed, and the building will be so much stronger; for to this back wall the flues, through which the smoke is to pass, must be joined. This back wall should be carried up about sixteen or twenty feet high, or more for tall Stoves, that they may be of a proper height to support the timbers of the back roof, which covers the shed behind the Stove. The roof is fastened into the crown-piece before-mentioned, which in tall Stoves should be about thirty feet above the surface of the tan-bed, which will give a sufficient declivity to the sloping glasses to carry off the wet, and be of a reasonable height for containing many tall plants. The back roof may be slated, covered with lead, or tiled, according to the fancy of the owner; but the manner of the outside building is better expressed by the annexed plan, than is possible to be described in words.

In the front of the house, before the tan-bed, there should be a walk, about two feet wide, for the convenience of walking; next to which the bark-pit must be placed, which should be in width proportionable to the breadth of the house. If the house is fourteen feet wide, which is a due proportion; the pit may be eight feet wide, and behind the pit should be a walk two feet wide, to pass, in order to water the plants, &c. then there will be two feet left next the back wall to erect the flues, which must be all raised above the level of the bark-bed. These flues ought to be one foot wide in the clear, that they may not be too soon stopped with the soot, as also for the more conveniently cleaning them; the lower flue, into which the smoke first enters from the fire, should be two feet deep in the clear; this should be covered with broad tiles, which should be a foot and a half square, or one foot by a foot and a half long, that they may be wide enough to extend over the wall in front of the flues, and to take sufficient hold of the back wall; over this the second flue must be returned back again, which may be twenty inches deep, and covered on the top as before; and so in like manner the flues may be returned over each other six or eight times, that the heat may be spent before the smoke passes off. The thickness of the wall in front of these flues need not be more than four inches, or three will do very well if they are carefully carried up, but it must be well jointed with mortar, and pargeted within side to prevent the smoke from getting into the house: the outside should be faced with mortar, and covered with a coarse cloth, to keep the mortar from cracking, as is practised in setting up coppers. If this be carefully done, there will be no danger of the smoke entering the house, which cannot be too carefully guarded against, for there is nothing more injurious to plants than smoke, which will cause them to drop their leaves, and, if it continue long in the house, will entirely destroy them.

The fire-place must be made at one end, where there is but one; but, if the Stove is so long as to require two, they should be placed at each end of the shed, which must be made the length of the Stove, that the fires and the back of the flues may not suffer from the outer air; for it will be impossible to make the fires burn equally, where the wind has full ingress to it, and it will be troublesome to attend the fire in wet weather, where it is exposed to the rain.

The contrivance of the furnace must be according

to the fuel which is designed to burn, but as turf is the best firing for Stoves, where it can be had cheap, many prefer it, because it lasts longer than any other sort of fuel, and so requires less attendance. I shall describe a proper sort of furnace for that purpose.

The whole of this furnace should be erected within the house, which will be a great addition to the heat, and the front-wall on the outside of the fire-place, next the shed, should be three bricks thick, the better to prevent the heat from coming out that way. The door of the furnace, at which the fuel is put in, must be as small as conveniently may be to admit of the fuel; and this door should be placed near the upper part of the furnace, and made to shut as close as possible, so that there may be but little of the heat pass off through it. This furnace should be about twenty inches deep, and sixteen inches square at bottom, but may be sloped off on every side, so as to be two feet square at the top, and under this furnace should be a place for the ashes to fall into, which should be about a foot deep, and as wide at the bottom of the furnace; this should also have an iron door, to shut as close as possible, but just over the ash hole, above the bars which support the fuel, should be a square hole about four or six inches wide to let in air to make the fire burn: this must also have an iron frame, and a door to shut close when the fire is perfectly lighted, which will make the fuel last longer, and the heat will be more moderate.

The top of this furnace should be nearly equal to the top of the bark-bed, that the lowest flue may be above the fire, so that there may be a greater draught for the smoke, and the furnace should be arched over with bricks. The best materials for this purpose are what the bricklayers call Windfor bricks, which should be laid in loam of the same kind as the bricks are made with, which, when burnt by the fire, will cement the whole together, and become like one brick; but you should be very careful, wherever the fire is placed, that it be not too near the bark-bed, for the heat of the fire will, by its long continuance, dry the bark, so that it will lose its virtue, and be in danger of taking fire; to prevent which, it will be the best method to continue a hollow, between the brick-work of the fire and that of the pit, about four or five inches wide, which will effectually prevent any damage arising from the heat of the fire; nor should there be any wood-work placed near the flues, or the fire-place, because the continual heat of the Stove may in time dry it so much as to cause it to take fire, which should be very carefully guarded against.

The entrance into this Stove should be either from a green-house, the dry Stove, or else through the shed where the fire is made, because in cold weather the front-glasses must not be opened. The inside of the house should be clean and white-washed, because the whiter the back part of the house is, the better it will reflect the light, which is of great consequence to plants, especially in winter, when the Stove is obliged to be shut up close.

Over the top sliding-glasses there should be either wooden shutters, or tarpaulins fixed in frames to cover them in bad weather, to prevent the wet from getting through the glasses, and to secure them from being broken by storms of hail, and these outer coverings will be very serviceable to keep out the frost; and if in very severe cold there is a tarpaulin hung before the upright glasses in the front, it will be of great service to the Stove, for then much less fire will preserve a heat in the house.

In the warmest of these houses or divisions should be placed the most tender exotic trees and plants. These, being natives of very warm countries, should be plunged in the bark-bed, and over the flues may be a convenience made to set the Melon Thistle, the tender sorts of Cereuses, and Euphorbiums, with other very tender succulent plants, which require to be kept dry in winter.

As in this Stove are placed the plants of the hottest parts of the East and West Indies, the heat should be kept up equal to that marked Anana upon the botanical thermometers, and should never be suffered to



be above eight or ten degrees cooler at most; nor should the spirit be raised above ten degrees higher in the thermometer during the winter season, both which extremes will be equally injurious to the plants.

But in order to judge more exactly of the temper of the air in the Stove, the thermometer should be hung at a good distance from the fire; nor should the tube be exposed to the sun, but, on the contrary, as much in shade as possible; because, whenever the sun shines upon the ball of the thermometer but one single hour, it will raise the liquor in the tube considerably, when perhaps the air of the house is not near so warm, which many times deceives those who are not aware of this.

In the management of the plants placed in the bark-bed, there must be a particular regard had to the temper of the bark, and the air of the house, that neither be too violent; as also to water them frequently, but sparingly in cold weather, because when they are in continual warmth, which will cause them to perspire freely, if they have not a proper supply to answer their discharge, their leaves will decay, and soon fall off. As to the farther directions concerning the culture of the particular plants, the reader is desired to turn to their several articles, where they are distinctly treated of.

In the erection of these Stoves, it will be of great service to join them all together with only glass partitions between them, as was before observed: and where several of these Stoves and green-houses are required in one garden, then it will be very proper to have the green-house in the middle, and the Stoves at each end, either placed obliquely or carried on in one straight front. See the plan and elevation of the Conservatory and Stoves, under *Conservatory*, in the article GREENHOUSE.

By this contrivance in the structure of these houses, a person may pass from one to the other of them, without going into the open air; which, besides the pleasure to the owner, is also of great use, because there will be no occasion to make a back-way into each of them, which otherwise must be, since the front glasses of the Stove should not be opened in cold weather, if it can possibly be avoided on any account, otherwise the cold air rushing in, will greatly prejudice the very tender plants.

But besides the Stoves here described, and the green-house, it will be very necessary to have a glass-case or two, wherever there are great collections of plants. These may be built exactly in the manner already described for the Stoves, with upright glasses in front, and sloping glasses over the top of them, which should run within four feet of the back of the house. The height, depth, and other dimensions, should be conformable to that of the Stoves, which will make a regularity in the building. These may be placed at the end of the range on each hand beyond the Stoves; and if there be a flue carried along round each of these, with an oven to make a fire in very cold weather, it will save a great deal of labour, and prevent the frost from ever entering the house, be the winter ever so severe; but the upper glasses of these houses should have either shutters of wood, or tarpaulins in frames to cover them in frosty weather; and if there is a contrivance to cover the upright glasses in frost, either with mats, shutters, or tarpaulins, it will be of great use in winter, otherwise the flue must be used when the frost comes on, which should only be done upon extraordinary occasions; because the design of these houses is, to keep such plants as require only to be preserved from frost, and need no additional warmth; but at the same time, require more air than can conveniently be given them in a greenhouse. In one of these houses may be placed all the sorts of Aloes, Mesembryanthemums, African Sedums, Cotyledons, and other succulent plants from the Cape of Good Hope. In the other the several kinds of Arctotis, Osteospermum, Royena, Lotus, and other woody or herbaceous plants from the same country, or any other in the same latitude.

Thus by contriving the greenhouse in the middle, and one Stove and a glass-case at each end, there will

be a conveniency to keep plants from all the different parts of the world, which can be no otherwise maintained but by placing them in different degrees of heat, according to the places of their native growth.

The Stoves before described are such as are usually built to maintain exotic plants, which will not live in England; unless they enjoy a temperature of air, approaching to that of the several countries from whence they are brought; and whoever is inclinable to preserve a large collection of plants from different countries, must contrive to have two or three of these Stoves, each of which should be kept in a different temperature of warmth; and the plants should be adapted to the several degrees of heat required to preserve them; but as the far greater number of Stoves which have been erected in England, are designed for the culture of the Ananas only, I shall add a description of two sorts of Stoves, of the least expense in building for this purpose; so that whoever is inclinable to erect a Stove for ripening Ananas, may, by attending to the plans and descriptions, direct the building and contriving such Stoves as they are desirous to have, or according to the number of fruit proposed to be ripened annually.

The first sort of Stove is that which is designed for the plants, which produce the fruit the same year; for as the plants do not generally fruit until the second year from their being taken from the old plants, whether they are suckers from the side of the plants or crowns taken from the fruit, if they fruit the succeeding year, the fruit will be small; therefore when they are properly managed, they will not produce their fruit until the second year, by which time they will have obtained strength to produce large fruit, in which their greatest value consists; for although there are several varieties of this fruit, which differ in degrees of goodness, as in most other fruits, yet they may all of them be improved in their size, without diminishing their excellence in taste; though I know there are some persons of a contrary opinion, and who believe that the small fruit are always better flavoured than the large; but from long experience I can assert, that the larger and better nourished this fruit is, the higher will be its flavour, supposing the sorts are the same; therefore every person who cultivates this fruit, should endeavour to have it improved to the greatest perfection; in order to which it will be proper to have a small Stove, in which the young plants may be placed to bring them forward for fruiting, and the following autumn they should be removed into the larger Stove for ripening: but I shall return to the description of the larger Stove. The length of this must be proportionable to the quantity of fruit desired in one season, for as to the width, that should not be much varied; the tan-bed should never be narrower than six, nor should it be more than seven feet wide; for when it is more, there will be difficulty in reaching those plants which are in the middle of the bed; to water or clean them; and if there is room enough on each side of the bed for a walk a foot and half broad, it will be sufficient for persons to water and do every thing which is necessary to the plants; and as these places are not designed for walking in, it is to no purpose to have broad walks; and the fires must be larger, in proportion to the space of the house, otherwise the air cannot be kept in a proper temperature of warmth. If the Stove is made thirty-six feet long in the clear, then the tan-bed may be thirty-three feet long, and a walk left at each end a foot and half wide, which will be sufficient to walk round the bed to water and attend the plants; and such a tan-bed will contain eighty fruiting plants very well if the bed is seven feet wide, and this Stove may be very well warmed with one fire; but if the Stove is built much larger, there must be two fire-places contrived, one at each end, otherwise the air of the house cannot be kept in a proper temperature of heat. The quantity of fuel which will be wanting for a Stove of thirty-six feet long in the clear, is about three chaldron and a half of coals, or in such proportion for any other sort of fuel; when coals can be had reasonable, it is the best kind of fuel; and the pit or Scotch coal is preferable to the Newcastle coal,



coal, because the latter is very subject to melt or run into clinkers when the oven is very hot, which the pit coal never does, but always burns away with a white ash, making but little foot; so that the flues will not require to be so often cleaned, as when the other coal is used. The next best fuel for Stoves is peat, where it can be procured good, but the scent of this fuel is disagreeable to many people. There are some persons who burn wood in their Stoves, but this fuel requires much greater attendance than any other, therefore is not very proper for this purpose; but in the building of the Stoves, the ovens must be contrived for the sort of fuel which is to be used in them.

The Stoves designed for ripening the fruit of the Ananas should have upright glasses in their front, which should be high enough to admit a person to walk upright under them on the walk in the front of the house; or where this cannot be admitted, the front walk may be sunk one foot lower than that on the back of the tan-bed, so that the surface of the bed will be a foot above the walk, which will be rather an advantage, as the plants will be so much nearer the glass; and a person may with great ease water and attend the plants when they are thus raised above the walk; therefore, when a Stove is so situated, as that the raising of it high above ground might be attended with inconvenience, the walks quite round the tan-bed may be sunk a foot or eighteen inches below the top of the bed, which will admit of the Stove being built so much lower; for if there is height for a person to walk under the glasses, it will be as much as is required; but as the flues, when returned four times against the back wall will rise near seven feet, so the bottom of the lower flue should be on the same level with the walk, to admit room enough for the whole under the roof. Over the upright glasses there must be a range of sloping glasses, which must run to join the roof, which should come so far from the back wall as to cover the flues, and the walk behind the tan-pit; for if the sloping glasses are of length sufficient to reach nearly over the bed, the plants will require no more light; therefore these glasses should not be longer than is absolutely necessary, that they may be the more manageable.

The other Stove (commonly called the Succession House), which is designed for raising young plants until they are of a proper size to produce fruit, need not be built so high as the former, the frames therefore may be made in one slope, without any upright glasses in front: many persons have formerly made tan-beds, with two flues running through the back wall, and covered with glasses, made in the same manner as those for common hot-beds, only larger. But those, having no passage into them, the glasses must be taken off when the plants want water, &c. The damps also often rise in winter, when the glasses are closely shut. And there is danger of the tan taking fire, where great care is not taken that it does not lie near the flues. So that although the small Stove (or succession house) here proposed, is more expensive in building, yet being greatly preferable to those pits, and the after expense being the same, it has become more general wherever this fruit has been cultivated.

Where there is no danger of the wet settling in winter about the tan, the bark-pit may be sunk two feet deep in the ground, and raised one foot above the surface. The only walk which is necessary in these Stoves, is at the back of the bed, and that may be on a level with the surface of the ground, so that the tan-bed will be more than a foot above the walk; and the flues beginning from the level of the walk, there will be room to return them three times, which will warm the air much more with the same fire than when they are carried but twice the length of the Stove.

But in wet land the tan-bed should be wholly raised above the level of the ground, in order to preserve the tan from being chilled by moisture; and in such places the walk at the back should be raised near two feet above the level of the ground, because the tan-bed should not rise much more than one foot above

the walk; for if it is higher, it will be more difficult to reach the plants when they require water. The brick wall of the pit, on the side next the walk, need not be more than four inches thick, so far as rises above the walk, but below that it should be nine inches thick: the reason for reducing the wall above, is to gain room for the walk, which would otherwise be too much contracted; and if there is a kirb of Oak laid on the top of the four inch wall, it will secure the bricks from being displaced, and sufficiently strengthen the wall, which being but one foot above the walk, will not be in any danger of falling; and on this kirb there may be two or three upright iron bars fixed with claws, to support the crown-piece of timber, which will secure it from hanging in the middle. There may be more or fewer of these bars according to the length of the Stove; but if they are about ten feet asunder, it will be near enough. If these iron bars are one inch square, they will be strong enough to answer the design.

[Hot-houses and Pine-Stoves are frequently infested with red spiders, ants and other insects. A kind of bellows has been invented, and is sold in the shops, by which the fumes of burning tobacco are applied to the plants; or when the house is deeply infested, it may be filled entirely by means of a hole made in the door big enough to admit the pipe of the bellows; the smoke being kept in for several hours. This must be repeated two or three times, according to the condition the plants are in; but if some few only are infested, they may be removed into a small room and fumigated there. This operation is found to answer well in forcing-frames, hot-beds, on Melon-plants, &c. The inventor Mr. Green, at the royal garden at Kew, received a premium from the Society for the encouragement of Arts, &c. for this invention.

Matches also, moistened with a tincture of *Assa-fœtida*, and then rolled in a powder of brimstone and Scotch snuff in equal quantities, have been recommended to be burnt in the houses close shut up. The walls also, with the frames, &c. to be well washed with four ounces of sublimate dissolved in two gallons of water. This wash may be used on old garden walls, and to the roots of trees infested with ants, if made weaker.

Forcing Stoves are a modern invention for bringing forward before the natural season all sorts of elegant flowers and delicate fruits. They differ in no wise from those which are described above in their structure and manner of being heated, but only in their application.

The bark forcing Stove has a tan-pit, in which pots of Roses, Pinks, Narcissuses and other bulbs, and various choice flowers are plunged, in order to have them early in the spring. Tender annual flowers may also be raised in this pit. And pots of Strawberries, dwarf Cherries, Kidney Beans, &c. may either be set in the pit, on the sides of it, or on shelves nearer to the glasses. If the Stove be big enough, there may be a border of earth next the back wall, and a small one in front, in which fruit-trees, such as Cherries, Peaches, Nectarines, and Apricots, may be planted in the full ground. Vines also, planted on the outside in front, may be trained in, along the frames of the upper sashes. This Stove has a furnace with flues, and gentle fires must be made in this when the nights are cold, and even in the day time occasionally, when the weather is very severe, to keep a uniform heat.

The dry forcing Stove has no pit, but furnace and fire-flues only; and is intended chiefly for forcing fruit-trees, as Peaches, Nectarines, Vines, Figs, early Cherries, and the best sorts of Apricots and Plums, together with Gooseberries, Currants, Raspberries, Strawberries, &c.—The whole area is filled with rich earth two feet deep, in which the trees are planted to remain, having been first trained in the open ground, till they are in a state for bearing. They are planted



in straight or oblique lines from the back to the front, the tallest behind; and are trained against the back wall and front to a trellis, and in the area as espaliers. Pots of Strawberries and Kidney-Beans are placed upon shelves near the glasses, and Vines are trained in from without along the frames, or on trellis-work over the upper glasses.

These Stoves begin to be worked in January or early in February. When the fruiting season is past, the upper glasses are removed, to admit air and showers, to strengthen the annual shoots of the trees; and so continue till winter.

It is obvious, that in such a Stove, crowded with fruit-trees of different kinds, that require different management, and some more warmth to force them than others, all the trees will not succeed equally well; and the Vines trained along the upper glasses will be apt to shade the trees in the area below too much. Curious and opulent noblemen and gentlemen therefore have a distinct Stove constructed for each sort of fruit; taking its name from the species of fruit which it is designed to bring forward: as the Peach-house, Vinery, &c. But since there is nothing peculiar in the structure of these Stoves, and they differ chiefly in the use to which they are applied, it is not necessary to describe them.

Stoves upon various plans, according to the fancy of the owner or the builder, have been constructed; but as in general there is little to recommend them, and the common ones are the best for use, it would be losing time to enter farther upon the subject.

Forcing-Frames are much used by the nursery-men near London for bringing forward or forcing early flowers, tender annuals, dwarf fruit-trees, Strawberries, Kidney-beans, &c. These are from five to fifteen feet wide, from five to ten feet high, and of any length at pleasure; a wall of brick behind, and a front of glass, either in one slope, or with upright glasses before, and sloping ones above. Dung, bark, or fire may be applied to heat these forcing-frames. If the first, it is placed chiefly against the back wall and ends, which are then mostly formed of thick planks. If bark or fire be used, the structure and application are much the same as in the Bark and Dry Stoves described above.

Hot-walls are forcing-frames worked by fire, and intended to bring forward choice fruits. If it is proposed to have only a single row of trained trees, a border of from four to six feet in width will be sufficient. The back wall must be eight or ten feet high, with flues running the whole length. In front is a wall a foot high, with a plate on it; upon which are sloping glass-frames, to the top of the back wall; these are most convenient in two ranges, the upper range made to slide. The trees are trained on a trellis, within five or six inches of the wall. Along the bottom may be set in the border Strawberries, dwarf Kidney-beans, frame Peas, Roses, or any flowers or fruits, that do not grow so high as to shade the trees. Such a frame may be worked with one furnace, if it be not more than forty or fifty feet long.

Larger forcing-frames differ in nothing from the Forcing Dry Stove described above.

For Hotbeds, see the article in its proper place, and under CUCUMIS.]

Frames covered with oiled paper instead of glass, are sometimes used for protecting Melons, &c. They may be made either like the cover of a waggon, or like the roof a house. They have a frame of wood at the base, to which, in the former, broad hoops are fastened bent over circularly. The width of the frame should be from five to six feet. The distance between the hoops should not be more than a foot; and there should be two rows of strong packthread or rope yarn on each side of the arch, running from hoop to hoop, to keep the oiled paper from sinking down with wet. The length of each frame should not be much more than ten feet, that being about the size of a three-light frame; and if they are longer, they will be so heavy as to be troublesome to move.

The other sort of frame may be made of pantile laths, or slips of deal of those dimensions, fastened into

a ridge-tree at the top; and the base-frame at the bottom. The lights may have hinges alternately on each side, that they may be raised to give air occasionally, on the side from the wind, or on both sides when the weather is warm.

When the frames are quite dry, the paper is pasted on. The best paper for this purpose, is what they call Dutch wrapper; for it is strong, and when oiled over becomes pellucid. After the paste is well dried, the paper should be oiled over on the outside, which if well done with lintseed oil will be sufficient. The oil should be dry before the frames are exposed to the wet, otherwise the paper will tear. In pasting the paper on the frames care should be taken to stretch it out very smooth; and to paste it to all the ribs of the frames, and also to the packthreads, to prevent the wind from raising the paper.

If the frames are well painted over with the following composition, they will last a long time.—To every six pounds of melted pitch, add half a pint of lintseed oil, and a pound of brickdust; mix them well together, and use them warm. This is the best pigment for all timber exposed to the weather, for no moisture can penetrate through it.

The covers here described must not be kept too close down over the plants, lest they be drawn up too weak: but air should always be admitted, when it can be done with safety.

These covers of oiled paper are useful not only for Melons, but for covering cuttings of exotic plants, and for many other purposes. The paper will seldom last longer than one season; but if the frames be well made, and when out of use, carefully laid up under shelter, they will last several years; especially if a band of straw be laid round the bed, for the frames to rest upon, during the time they are in use.

STRAMONIODES and STRAMONIUM. See *Datura*.

STRATIOTES. (*Στρατιώτης* of *Dioscorides*. From *στρατός*, an army.)

*Lin. gen. n.* 687. *Reich. n.* 744. *Schreb. n.* 1541. *Gertn. t.* 14. *Juss. 67. v.* *Bergen diff.* *Zinn. comm. gotting. 4.* 426. *t. 9. 10.* *Aloides. Boerb. lugdb. 2.* 172.

*Class.* 22. 10. *Dioecia* Dodecandria. — *Polyandria* Hexagynia. *Lin. gen.*

*Nat. order of* *Palmae. Hydrocharides, Juss.*

#### GENERIC CHARACTER.

##### \* Male.

*CAL. Spathe* common two-leaved, three or five-flowered: *leaflets* boat-shaped, compressed, obtuse, converging, keeled, almost equal, permanent. Proper (of the lateral flowers one-leaved, membranaceous, channelled at the back, opposite to the leaflets of the common spathe, and hidden by them.

*COR. Petals* three, obcordate, from erect spreading, twice as large as the perianth.

*Nectaries* twenty, anther-shaped, linear-lanceolate, acute, in a ring, inserted into the receptacle.

*STAM. Filaments* twelve, filiform, shorter than the nectaries, inserted into the receptacle. *Anthens* linear, erect.

##### \* Female.

*CAL. Spathe* two-leaved, one-flowered: *leaflets* boat-shaped, compressed, obtuse, converging, unequal, permanent.

*Perianth* as in the Male, superior.

*COR.* as in the Male.

*Nectaries* as in the Male, a little larger.

*PIST. Germ* inferior, ovate-hexangular, compressed. *Styles* six, two-parted. *Stigmas* simple, recurved.

*PER. Berry* ovate, narrowed to both ends, six-sided, six-celled: with a pellucid pulp.

*SEEDS* very many, oblong, cylindrical.

*Obs. Nectaries* commonly twenty-one or twenty-two. *Stamens* eleven or twelve. Willdenow.—According to Roth, *Nectaries* thirty-one. *Stamens* commonly thirteen.

#### ESSENTIAL CHARACTER.

*Spathe* two-leaved. *Perianth* superior, trifid. *Pet.* three. *Berry* six-celled.



1. *Stratiotes aloides*.

*Lin. spec.* 754. *syn.* 506. *Reich.* 2. 623. *fl. lapp.* n. 222. *succ.* n. 479. *hort. cliff.* 221. *Gartn. fruct.* 1. 48. *Huds. angl.* 236. *Wither. arr. ed.* 3. 496. *Smith brit.* 579. *engl. bot. t.* 379. *Relb. cant. ed.* 2. n. 449. *Dicks. hort. succ.* 17. 11. *Fl. dan. t.* 337. *Krock. filif. n.* 844. *Gmel. fib.* 1. 2. *Bergen in nov. act. nat. cur.* 1. 150. *Mill. illustr.*

*S. foliis aloes, femine longo.* *Gundelsb. ap. Jobren. Raii syn.* 290. *Petiv. brit. t.* 71. f. 5.

*S. f. Militaris aizoides.* *Lob. hist.* 904. *Park. theat.* 1249. 1.

*Militaris aizoides.* *Lob. ic.* 1. 375. 2. *Ger.* 677. *emac.* 825. *Raii hist.* 1324.

*Aloe palustris.* *Bauh. pin.* 286.—f. *Aizoon palustre.* *Bauh. hist.* 3. 787. 1.

*Sedum aquatile.* *Dod. pempt.* 589. 1.

*Leaves ensiform-triangular aculeate-serrate.*

[2. *Stratiotes acoroides*.

*Lin. syst.* 506. *suppl.* 268.

*Acorus marinus.* *Rumph. amb.* 6. 191. t. 75. f. 2.

*Leaves ensiform flat very smooth, spathe bearded at the point.*

3. *Stratiotes alismoides*.

*Lin. spec.* 754. *syst.* 506. *Reich.* 2. 623. *mant.* 405. *fl. zeyl. n.* 223. *Forsk. ægypt.* 4. 101.

*Ottel-ambel.* *Rheed. mal.* 11. 95. t. 46.

*Leaves cordate.*

## DESCRIPTIONS, &amp;c.

1. Leaves all radical, forming a star-like tuft, as in the Aloes and Sedums: their substance is rigid, brittle, vascular and pellucid; their teeth and points very sharp; the keel also sharp. Peduncles several, shorter than the leaves, upright, somewhat compressed, smooth; each bearing one upright white flower, arising from a two-leaved sheath. Stamens short, with awl-shaped anthers. Germ above the sheath, but much below the calyx. Styles six, cloven, rising a little above the stamens<sup>a</sup>. Berry ovate, beaked, drooping, fleshy: cells with a double membrane, very thin, separate lengthwise, full of a crystalline pulp. Seeds from ten to twelve in each cell, ovate, somewhat angular, of a pale, brownish red, nestling in the pulp, and fastened to the rind of the berry, near the external angles of the cells. The pulp in its natural state is clear, like the vitreous humour of the eye; in spirits of wine it becomes opaque and white, like the white of an egg when boiled; plunged into water it becomes clear again<sup>x</sup>.

The *Stratiotes*, Water Aloe or Water Soldier, is a stoloniferous plant, and truly perennial, though each root flowers but once, as in some species of *Saxifraga*, *Sempervivum*, &c. The parent plant, rooted in the mud at the bottom of the ditch after flowering, sends out buds of leaves at the end of long runners, which rise to the surface, form roots, flower, and then sink to the bottom, where they take hold of the mud, sometimes ripen their seeds, and always become in their turn the parents of another race of young offsets.

Linneus quotes Bergen, Zinn and Fabricius, as having found the flowers dioicous; (he says also that Schreber sent him a male flower, and observed that in the hermaphrodite flower the anthers were barren: accordingly he has placed this plant in the class Dioecia.) Linneus however always observed them to be hermaphrodite. The stamens are apparently imperfect in some flowers, and the styles in others. The genus is very near akin to *Hydrocharis*, and perhaps ought to be united with it<sup>y</sup>.

Native of some parts of Europe, and of Siberia. In England, it occurs plentifully in the fen ditches of the Isle of Ely. In Lincolnshire and Norfolk very frequent. In Cheshire and Yorkshire. Flowering in July. In spring the offsets rise and float on the surface, sometimes eight or ten in a circle, and so thick, as entirely to fill up the surface of the ditches, and prevent all other plants from growing in it. A great va-

riety of insects are nourished by this plant; some of them pursue it down to the bottom of the water, and devour the leaves<sup>z</sup>.

2. Root creeping, little branched, jointed as in *Acorus*. Leaves radical, clustered, linear, margined, rounded at the point, quite entire, subferrate towards the point, somewhat coriaceous, four feet long: margin raised, blunt, very smooth: sheaths membranaceous, very tender, growing to the leaves. Scape among the leaves, quite simple, solitary, erect, filiform, thickened towards the flower, smooth, naked, three or four feet high, one-flowered. Spathe linear, compressed, brownish green, two-leaved: leaflets membranaceous, spreading, folded together, blunt, with the keel bearded with fibrils towards the point. Flower superior. Perianth three-leaved, shorter than the corolla: leaflets concave, membranaceous, dusky green with blood-red spots. Petals three, linear, acute, waved with transverse plaits, flaccid, white stained with red, especially at the points. Filaments scarcely any. Anthers twelve, linear, acuminate, compressed, alternately shorter, without dotted blood-red, on the inner side green, hirsute. Germ inferior, linear, compressed, imbricate on all sides with fringed scales, green yellowish at the base. Fruit an ovate drupe, compressed, hirsute with fibres, the size of a hen's egg, four or six-celled. Seeds fourteen or more.—Native of the Ceylonese islands. Found by Koenig<sup>a</sup>.

3. Spathe one-leaved, with five, membranaceous, longitudinal angles<sup>b</sup>. According to Forskahl, the flowers have only six stamens; styles six, bifid.—Native of the East Indies and Egypt.]

## PROPAGATION AND CULTURE.

1. Young plants must be procured in spring, when they first rise on the surface of the water, and placed in canals, ponds or large tubs or cisterns, where they will strike down their roots, and increase without farther care.

[*STRATIOTES*. See *Achillea*, *Hottonia*, *Hydrocharis*, *Pistia*.

—— *alifinoides*. See *Damaconium*.

*STRAWBERRY*. See *Fragaria*.

—— *BLITE* and *STRAWBERRY SPINACH*. See *Blitum*.

—— *TREE*. See *Arbutus*.

*STRELITZIA*. (So named by Sir Joseph Banks in honour of Charlotte Queen of Great Britain, of the family of Mecklenburgh Strelitz, an illustrious patroness of the science of Botany.)

*Ait. kew.* 3. 508. *Lin. gen. ed. Schreb. n.* 1737. 2. p. 796.

Class. 5. 1. Pentandria Monogynia.

Nat order of *Scitamineæ*. *Musæ*, Juss.

## GENERIC CHARACTER.

CAL. *Spathe universal* terminating, one-leaved, channelled, acuminate, from spreading declining, many-flowered, involving the base of the flowers. *Partial Spathea* lanceolate, shorter than the flowers. *Perianth* none.

COR. irregular. *Petals* three, lanceolate, acute: the lowest boat-shaped; the two upper bluntly keeled.

*Nectary* three-leaved. *The two lower leaflets* a little shorter than the petals, from a broad base awl-shaped, waved at the edge, folded together, including the genitals, towards the tip behind augmented with a thick appendix, in form of half an arrow head. *The lowest leaflet* short, ovate; compressed, keeled.

STAM. *Filaments* five, filiform, placed on the receptacle: three in one leaflet of the nectary; two with the style inclosed in the other leaflet. *Anthers* linear, erect, commonly longer than the filaments, included.

PIST. *Germ* inferior, oblong, obtusely three-cornered. *Style* filiform, length of the stamens. *Stigmas* three, awl-shaped, higher than the petals, erect, at the beginning of flowering time glued together.

PER. *Capsule* subcoriaceous, oblong, obtuse, indistinctly three-cornered, three-celled, three-valved.

SEEDS numerous, adhering in a double row to the central conceptacle.

<sup>x</sup> Engl. 20

Gartner.

<sup>y</sup> Engl. bot.<sup>z</sup> Withering.<sup>a</sup> Linn. suppl.<sup>b</sup> Linn. mant.



## ESSENTIAL CHARACTER.

*Spathes* universal and partial. *Cal.* none. *Cor.* three-petalled. *Nect.* three-leaved, involving the genitals. *Caps.* three-celled: cells many-seeded.

## SPECIES.

1. *Strelitzia Reginae*. *Canna-leaved Strelitzia*.  
*Ait. kew.* 1. 285. *t.* 2. *Lin. spec. ed. Willd.* 1. 1190.  
*Thunb. prodr.* 45. *Curt. magaz.* *t.* 119. 120.  
*Meen exot. pl.* *t.* 1.  
*Heliconia Bihai*. *Job. Mill. ic. t.* 5. 6.  
*Leaves parallel-ribbed.*
2. *Strelitzia augusta*.  
*Lin. spec. ed. Willd.* 1. 1190. *Thunb. prodr.* 45.  
*Leaves ribbed netted-veined.*

## DESCRIPTIONS, &amp;c.

1. All the leaves radical, petioled, oblong, quite entire, with the margin at bottom waved and curled, very smooth, glaucous beneath, coriaceous, a foot long, permanent. Petioles somewhat compressed, three feet long and more, the thickness of the thumb, sheathing, erect, smooth. Scape the length and thickness of the petioles, erect, round, covered with alternate, remote, acuminate sheaths, green with a purple margin. General spathe a span long, green on the outside, purple at the edge; partial spathes whitish. Petals yellow, four inches long. Nectary blue<sup>c</sup>.

The spathe, says Mr. Curtis, contains about six or eight flowers, which becoming vertical as they spring forth, form a kind of crest, which the glowing orange of the corolla, and fine azure of the nectary, render truly superb.

The specific character of *Heliconia alba* in Linneus's Supplement (p. 157.) belongs to that plant, but the trivial name, to another African species, not yet to be met with in the gardens of Europe<sup>d</sup>.

The name of Thunberg's prodromus (p. 45) belongs to this species; but not the specific character. It is described in the Supplement under the name of *Heliconia Bihai*<sup>e</sup>.

Native of the Cape of Good Hope. Introduced in 1773, by the Right Hon. Sir Joseph Banks. It flowers here in April and May. John Miller's figure was drawn from a plant that flowered in the Pine-stove of Bamber Gascoyne, Esq. Mr. Curtis's figure was taken from another plant which flowered in the bark stove of the garden at Chelsea, belonging to the Apothecaries Company<sup>f</sup>.

2. The specific character in Thunberg's prodromus, of his *Strelitzia augusta*; and of *Heliconia alba* in Linneus's Supplement, do not belong to this plant. But the diagnosis of *Heliconia Bihai* in the latter work does.

The leaves of *Strelitzia*, *Heliconia*, *Musa*, and the plants of the Scitamineæ order are not properly nerved, but have parallel ribs.

Native of the Cape of Good Hope<sup>g</sup>.

## PROPAGATION AND CULTURE.

It may be propagated by seeds or by the roots; but seeds do not ripen readily in England, and it increases very slowly here by the roots. It has been usually plunged in the tan-pit in a stove: but when the roots are thus confined, the plant rarely or never flowers. When the roots have by accident extended into the rotten tan, it has readily thrown up flowering stems; the best practice therefore is to let the roots have plenty of earth to strike into. Being a Cape plant, it may probably be found to succeed best in the dry stove or conservatory<sup>h</sup>.

**STREPTIUM.** (From *στρεπτός*, *verto*, *flecto*, *torqueo*: whence *στρεπτός*, *versatilis*, *flexilis*, *tortilis*: flexible or twisting.)

*Roxb. corom. t.* 146.

Class. 14. 2. *Didynamia Angiospermia*.

## GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, oblong, bellied, five-angled, five-grooved, five-toothed, covered with stiff white hairs, permanent, closing and enlarging with the fruit, which it entirely covers.

<sup>c</sup> Hort. kew. <sup>d</sup> Idem. <sup>e</sup> Willdenow. <sup>f</sup> Curt. magaz.  
<sup>g</sup> Willdenow. <sup>h</sup> Curtis.

**COR.** one-petalled: tube cylindric, rather longer than the calyx, twisted near the apex, a little curved: border five-parted; divisions obovate, equal.

**STAM.** *Filaments* four, in the upper bent part of the tube: two longer and two shorter. *Anthems* round, two-lobed, approaching by pairs.

**PIST.** *Germ* superior, four-lobed. *Style* length of the tube. *Stigma* large, two-lipped: the upper very short; the under long, broad, recurved.

**PER.** *Drupe* dry, two-lobed, hid in the withered inflated closed calyx, nut-like, laterally echinate: each lobe bipartite.

**SEEDS** one in each division of the nut, oblong, tapering towards the end, a little bent.

## ESSENTIAL CHARACTER.

*Cal.* five-toothed. *Stigma* two-lipped. *Drupe* two-lobed, each lobe bipartite.

## SPECIES.

1. *Streptium asperum*.

*Roxb. corom. 2. 25. t. 146.*

## DESCRIPTION, &amp;c.

Stem woody perennial, short, irregular. Branches opposite, exactly four-sided, rough. The height of the whole plant is from two to four feet. Leaves opposite, petioled, cordate, serrate, covered with stiff-hooked hairs, from one to three inches long, and from one to two broad. Petiole channelled, rough. Raceme terminating, or in the cleft of the exterior branchlets, erect, very long, rachis four-sided, rough. Bractes solitary, one-flowered. Flowers towards the bottom of the raceme, remote; above approximated, small, white.

Found by Dr. Roxburgh only in the vicinity of Samulcottah, on the terraces of old walls of pagodas. It flowers during the wet and cold seasons, and while young it is a fair looking plant. The Telingas call it Obeera<sup>i</sup>.

**STRIZOBIUM.** See *Dolichos*.

**STROBUS.** See *Pinus*.

**STRUMPFIA.** (So named by Jacquin, in memory of Christoph. Car. Strumppf, Professor of Chemistry and Botany at Hall in Magdeburgh; editor of Linneus's genera in 1752. He died young.)

*Lin. gen. n.* 1002. *Reich. n.* 1088. *Schreb. n.* 1360.

*Jacqu. amer.* 218. *Juss.* 436.

Class. 19. 6. Syngenesia Monogamia.

Nat. order of *Compositæ Nucamentaceæ*.

## GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, five-toothed, superior, very small, permanent.

**COR.** *Petals* five, oblong, obtuse, spreading.

**STAM.** *Filaments* none. *Anthems* five, united into an ovate body.

**PIST.** *Germ* inferior, roundish. *Style* awl-shaped, erect, commonly longer than the stamens. *Stigma* simple, obtuse.

**PER.** *Berry* crowned with the calyx, roundish, one-celled.

**SEED** one, roundish.

## ESSENTIAL CHARACTER.

*Cal.* five-toothed, superior. *Cor.* five-petalled. *Berry* one-seeded.

## SPECIES.

1. *Strumpfia maritima*.

*Lin. spec.* 1316. *Juss.* 799. *Reich.* 3. 952. *Willd.*

1. 1152. *Jacqu. amer.* 218. *piet.* 107.]

*Daphne americana.* *Mill. dict. n.* 9.

*Thymelæa frutescens*, *rosmarini folio*, *flore albo.* *Plum. spec.* 17. *t.* 251. *f.* 1.

## DESCRIPTION, &amp;c.

[This is an upright shrub, three feet high. Branches round, somewhat ash-coloured, appearing to be composed of short joints from the fallen leaves, because the leaves together with the stipules take their rise from a common sheath, which furrounds the branch and is permanent. The leaves are in threes, and very much resemble those of Rosemary. Stipules small, acute and blackish, alternate with the leaves. Common peduncles axillary and only half the length of

<sup>i</sup> Roxburgh.



the leaves, sustaining about five small flowers, with white petals, and on short peduncles. Berries soft and white, the size of a pea. The whole plant has an unpleasant smell.—Native of Curaçao, on rocks by the coast<sup>k</sup>.]

Mr. Miller says that he had it from Antigua, and that it grows naturally in many islands of the West Indies. According to him it rises to the height of four or five feet. He cultivated it before 1759.

## PROPAGATION AND CULTURE.

It must be preserved in the bark stove, and will not bear transplanting; several plants that were raised from seeds, thriving very well while they continued in the pot where they were sown, but decaying when they were transplanted.

[*Thymelæa humilior*, foliis acutis atrovirentibus. *Sloan. jam.* 2. 93. *t.* 189. *f.* 1, 2. which Linneus and Jacquin refer to this shrub, belongs to *Ernodea littoralis* of Swartz<sup>l</sup>, which see.

STRUTHIA. See *Gnidia*.

STRUTHIOLA. (*Dimin. from Στρούδιον, a sparrow.*)

*Lin. gen.* Reich. n. 170. *Schreb. n.* 216. *Juss.* 77.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Vepracula*. *Thymelæa*, Juss.

## GENERIC CHARACTER.

CAL. none, unless the corolla be taken for it.

COR. one-petalled, shrivelling. Tube filiform, elongated. Border four-parted, flat, shorter than the tube: segments ovate.

Nectary eight glands, ovate, placed round the throat, surrounded with their proper pencil.

STAM. Filaments four, very short, concealed within the tube. Anthers linear.

PIST. Germ ovate. Style filiform, length of the tube. Stigma capitate.

PER. coriaceous, ovate, one-celled.

SEED one sharpish.

OBS. Allied to *Passerina*.

## ESSENTIAL CHARACTER.

Cor. none. Cal. tubular, with eight glands at the mouth. Berry juiceless, one-seeded.

## SPECIES.

1. *Struthiola virgata*.

*Lin. syst.* 164. *Reich.* 1. 344. *Willd.* 1. 691. *Thunb. prodr.* 76.

*S. pubescens.* *Lin. mant.* 41. *Retz. obs.* 3. 26. *Burm. afr.* 127. *t.* 47. *f.* 1. (*Thymelæa*.)

β. Flowers yellow.

Leaves lanceolate striated, the upper ones ciliate, branches pubescent.

2. *Struthiola nana*.

*Lin. syst.* 164. *Willd.* 1. 692. *suppl.* 128. *Thunb. prodr.* 76.

Leaves linear obtuse hairy, flowers terminating in bundles tomentose.

3. *Struthiola juniperina*.

*Lin. spec. ed. Willd.* 1. 692. *Retz. obs.* 3. 26.

Leaves linear acute spreading, corollas and calyxes naked.]

4. *Struthiola erecta*.

*Lin. syst.* 164. *Reich.* 1. 344. *Willd.* 1. 692. *Thunb. prodr.* 76. *Ait. kew.* 1. 165. *Curt. magaz.* 222.

*S. glabra.* *Lin. mant.* 41.

*S. tetragona.* *Retz. obs.* 3. 25.

*Passerina dodecandra.* *Lin. spec.* 513. *amoen.* 4. 271. *Burm. afr. t.* 47. *f.* 1.

*P. filiformis.* *Mill. dict.*

*Nectandra tetrandra.* *Berg. cap.* 133.

Leaves linear smooth, branches smooth four-cornered.

[5. *Struthiola ovata*.

*Lin. spec. ed. Willd.* 1. 693. *Thunb. prodr.* 76.

*S. lanceolata.* *Retz. obs.* 3. 26.

Leaves ovate smooth, branches smooth wrinkled.

## DESCRIPTIONS, &amp;c.

1. This is a shrub with long rod-like branches, and four-cornered branchlets. Leaves opposite, naked, ciliate at the edge, a little patulous. Bractes similar, but narrower. Flowers sessile, solitary, long, coria-

ceous, red, silky-tomentose without. Calyx ciliate-bearded, coloured, length of the third part of the tube. Anthers white with brown tips in the throat<sup>m</sup>.

According to Linneus, the stem is proliferous, with simple subvillose branches. Leaves acuminate, smooth, channelled. Flowers axillary, the length of the leaf, purplish on the outside.

β. It varies with yellow flowers, in whitish membranaceous calyxes, and yellowish anthers dark yellow at the tips<sup>n</sup>. Also with longer and shorter leaves<sup>o</sup>.

It is remarked by Mr. Dryander, that *Passerina ciliata*, as it stands in Reichard's edition of the *Systema Plantarum*, contains at least three different plants. As there is no specimen in Linneus's herbarium with this name, the plant which he meant can only be ascertained by Clifford's herbarium, from which he originally described it. The paper there which represents *Passerina* 2. Hort. Cliff. has four Cape plants pasted on it; but that to which the description in Hort. Cliff. applies, is *Struthiola virgata*. Linneus adds, that the synonyms which he has given are doubtful, on account of the imperfection in the figures and descriptions.—Among these doubtful synonyms is *Sanamunda* 1. Clusii, on the authority of which Spain is given as the native place of this plant: this wrong synonym and false *locus natalis* have no doubt led the Spanish botanists to look for *Passerina ciliata* in their country. The specimen in Sir Joseph Banks's herbarium sent from Spain by Professor Ortega, under this name, has not properly ciliated leaves, but they are thinly covered with hairs. Whether Rauwolf's plant in Gronovii *Flora Orientalis* be the same as the Spanish plant, can only be determined by those who have an opportunity of examining Rauwolf's herbarium at Leyden. Bergius's plant, from the description is evidently different from either of those above mentioned<sup>p</sup>. See *Passerina ciliata*.

2. The bractes in this are blue<sup>q</sup>.

3. This is a small shrub, smooth all over: branches slender, round; with four-cornered branchlets. Leaves like those of Juniper and spreading. Flowers from the middle of the branchlets almost to the top, between the bractes, which are like the leaves, opposite and sessile. Calyx smooth, length of the tube of the corolla. Corolla a little longer than the bracte, smooth and white, with sharp segments. Stamens placed below the widened throat, so that the tips of the blackish-brown anthers do not reach the aperture of the throat.

4. This also is a small shrub, smooth all over, with round branches, and four-cornered branchlets. Leaves opposite, imbricate as it were four ways, with the tips only spreading, somewhat wider than those of Juniper. Flowers at the top of the branchlets, lateral, sessile, solitary, within bractes similar to the leaves but narrower. Calyx smooth, half the length of the tube. Corollas smooth, red on the outside. Anthers in the throat, almost sessile, closing the aperture with their apexes, brown, yellow on their inner surface where they pour out the pollen<sup>r</sup>.

According to Linneus, the leaves are lanceolate-fubulate, and smooth, as are also the stem and flowers. Cultivated by Mr. Miller in 1758. It flowers from June to August<sup>s</sup>.

5. Branches stiff, round, naked, with four-cornered branches. Leaves quite entire, acute, somewhat fleshy or rather coriaceous, patulous. Flowers oppositely heaped at the tops of the branches, each sessile within a bracte narrower than the leaves. Calyx pubescent, one-fourth of the length of the tube. Tube of the corolla long; border linear, both naked, rufescent. Colour and situation of the anthers as in the preceding species<sup>t</sup>.

This and all the preceding are natives of that inextinguishable magazine of shrubby plants, the southern promontory of Africa. They may be increased by cuttings.

STRUTHIOPTERIS. See *Osmunda*.

STRUTHIUM. See *Gypsophila*.

<sup>m</sup> Retzius.

<sup>n</sup> Idem.

<sup>o</sup> Willdenow.

<sup>p</sup> Linn. trans. 2. 234.

<sup>q</sup> Linn. suppl.

<sup>r</sup> Retzius.

<sup>s</sup> Hort. kew.

<sup>t</sup> Retzius.

<sup>k</sup> Jacquin.

<sup>l</sup> Swartz obs. 316.



**STRYCHNOS.** (Strychnon of Pliny. *Στρυχνος* of Dioscorides.)

Lin. gen. n. 253. Reich. n. 270. Schreb. n. 339. Gærtn. t. 179. Juss. 149.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*. *Apocineæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, very small, deciduous.

COR. one-petalled: *tube* cylindric; *border* spreading, five-cleft, acute.

STAM. *Filaments* five, length of the corolla. *Anthers* simple.

PIST. *Germ* roundish. *Style* simple, longer than the stamens. *Stigma* thickish.

PER. *Berry* brittle, globular, smooth, very large, one-celled, full of pulp.

SEEDS orbicular, depressed, villose, radiant with villose hairs towards the periphery.

ESSENTIAL CHARACTER.

Cor. five-parted. *Berry* one-celled, with a woody rind.

SPECIES.

1. *Strychnos Nux vomica*. *Poison-nut*.

Lin. spec. 271. Reich. 1. 522. Willd. 1. 1052.

fl. zeyl. n. 91. mat. med. 67. Woodv. med. bot.

2. 29. t. 223. Roxb. corom. 1. 8. t. 4. Wach.

ultraj. 32. Lour. cochinch. 125. ed. Willd. 154.

Gærtn. fruct. 2. 476. Plenck, ic. 117.

*Nux vomica officinarum*. Baub. pin. 511. Raii hist.

1814. Burm. zeyl. 171. Blackw. t. 395. Ger.

emac. 1546. 1. Park. theat. 1601.

*Colubrina ligni tertium genus in malabar*. Baub. pin. 301.

*Caniram*. Rheed. mal. 1. 67. t. 37. Raii hist. 1661.

*Leaves ovate, stem unarmed*.

2. *Strychnos colubrina*.

Lin. spec. 271. syst. 227. Reich. 1. 523. suppl. 149.

mat. med. 67. amoen. 2. 119. Wach. ultraj. 32.

Retz. obs. 2. 12. n. 22. Plenck, ic. 118.

*Clematis indica spinosa, foliis luteis*. Baub. pin. 301.

*Fructus orbicularis major fuscus striatus*. Baub. pin. 405.

*Modira-caniram*. Rheed. mal. 7. 10. t. 5. Burm. ind. 58.

*Lignum colubrinum*. Raii hist. 1807. Blackw. t. 403.

*Arbor ligni colubrini*. Rumph. amb. 2. 46. t. 37.

*Leaves ovate acute, tendrils simple*.

3. *Strychnos potatorum*.

Lin. syst. 227. Willd. 1. 1053. suppl. 148. Roxb.

corom. 1. 9. t. 5?

*S. Tetankotta*. Retz. obs. 2. 12.

*S. Titou-cote*. Gærtn. fruct. 2. 1053.

*Leaves opposite ovate acute quintuple-nerved veined, cymes axillary*.

DESCRIPTIONS, &c.

1. This is a middling sized tree, with the trunk short and crooked, but pretty thick, and the branches irregular: both are covered with a smooth ash-coloured bark. Leaves opposite, on short petioles, round-oval, shining, smooth on both sides, entire, three-five-nerved, differing in size, from one and a half to four inches long, and from an inch to three inches broad. Stipules none. Flowers small, greenish white, collected in small terminating umbels. Calyx permanent. Filaments scarcely any or very short, inserted into the divisions of the corolla. Anthers half within the tube and half out. Style length of the tube. Berry the size of a pretty large Apple, covered with a smooth somewhat hard shell, of a rich beautiful orange-colour when ripe, filled with a soft jelly-like pulp. Seeds from two to five, immersed in the pulp.—They are thus described by Gærtner: orbicular, compressed-flat, or very slightly concavo-convex, but always swelling a little about the edge, and surrounded in the periphery itself with a narrow edge or a filiform annular streak; in the middle on both sides is a small hole; they are of a whitish straw-colour with a silky brightness intermixed: the umbilicus is a tubercle in the margin of the seed.

Native of the East Indies. Common in almost every part of the coast of Coromandel; flowering

<sup>u</sup> Roxburgh.

during the cold season. The wood is hard and durable, and is used for many purposes by the natives. It is exceeding bitter, particularly that of the root, which is used to cure intermitting fevers, and the bites of venomous snakes, when that of *Naga-musadie* cannot be had. The seeds are employed in the distillation of country spirits, to render them more intoxicating. The pulp of the fruit seems perfectly innocent, being eaten greedily by many sorts of birds<sup>x</sup>.

The seed of the fruit is the officinal *nux vomica*: it is about an inch broad, and near a quarter of an inch thick, gray, covered with a kind of woolly matter, and internally tough and hard like horn; to the taste extremely bitter, but having no remarkable smell. It consists chiefly of a gummy matter, which is moderately bitter; the resinous part is very inconsiderable in quantity, but intensely bitter; hence rectified spirit has been considered as its best menstruum.

*Nux vomica* is reckoned amongst the most powerful poisons of the narcotic kind. It proves fatal to dogs in a very short time. It has been found to poison hares, wolves, foxes, cats, rabbits, rats, and even some birds, as crows and ducks; and Loureiro relates that a horse died within a quarter of an hour after taking an infusion in wine of the seeds in an half roasted state. The effects appear to be rather uncertain, and not always in proportion to the quantity given. With some animals it produces the effects almost instantaneously; with others not till after several hours, when laborious respiration, followed by torpor, tremblings, coma, and convulsions, usually precede the fatal spasms or tetanus, with which this drug commonly extinguishes life.

From four cases related of its mortal effects upon human subjects, we find that the symptoms corresponded nearly with those which have been mentioned above of brutes; and dissections both of the human subject and of dogs, not showing any injury done to the stomach or intestines, prove that the *Nux vomica* acts upon the nervous system, and destroys life by the virulence of its narcotic influence.

The quantity necessary to produce this effect upon a strong dog, need not be more than a scruple. A rabbit has been killed by five, and a cat by four grains. Of the four persons before alluded, one was a girl ten years of age, to whom fifteen grains were given in two doses for the cure of an ague. Lofs however tells us, that he took one or two grains of it in substance, without discovering any bad effect; and that a friend of his swallowed a whole seed without injury.

In Britain, where physicians seem to observe the rule *saltem non nocere*, more strictly than in many other countries, the *Nux vomica* has been rarely if ever employed as a medicine. On the Continent, and especially in Germany, they have been guided more by the axiom, "what is incapable of doing much harm, is equally unable to do much good." The truth of this remark was fully exemplified by the practice of Baron Stoerck; and is farther illustrated by the medicinal character given of *Nux vomica*, which from the time of Gesner till that of a modern date, has been recommended by a succession of authors, as an antidote to the plague, as a febrifuge, as a vermifuge, and as a remedy in mania, hypochondriasis, hysteria, rheumatism, gout, and canine madness.

In Sweden it has of late years been successfully used in dysentery; but Bergius, who tried its effects in this disease, says that it suppressed the flux for twelve hours, but that afterwards it returned again. A woman, who took a scruple of this drug night and morning, two successive days, is said to have been seized with convulsions and vertigo, notwithstanding which the dysenteric symptoms returned, and the disorder was cured by other medicines; but a pain in the stomach, the effect of the *Nux vomica*, continued afterwards for a long time. Bergius therefore thinks it should only be administered in the character of a tonic and anodyne in small doses (from five to ten grains) and not till after proper laxatives have been employed.

Loureiro recommends it as a valuable internal me-

<sup>x</sup> Idem.



dicine in fluor albus, for which purpose he roasts it till it becomes perfectly black and friable, which renders its medicinal use safe without impairing its efficacy<sup>y</sup>.

This plant was introduced in 1773, by Patrick Ruffel, M. D.<sup>z</sup>

There is a tree, but exceeding rare on the coast of Coromandel, which the Telingas call Naga Musadie. The leaves are opposite, short-petioled, obtuse, lanceolate, three-nerved, about two or two and a half inches long, by three quarters broad; the petioles connected at their insertions by a membrane, as in the natural order of Rubiaceæ. Hence it is probable that there is a species different from the Nux vomica tree, which yields the real Lignum Colubrinum. The wood of the root of this sort is esteemed by the Telinga physicians an infallible remedy for the bite of the Naga, (Cobra de Capella or Coluber Naja) as well as for that of every other venomous snake: it is applied externally, and at the same time given internally: it is also given in substance for the cure of intermitting fevers<sup>a</sup>.

2. The Indian botanists contend that this is not a different species from the preceding<sup>b</sup>. The specimens sent by Koenig had ovate, three-nerved shining leaves: flowers in peduncled cymes at the end of the branches, even within, with a large peltate stigma<sup>c</sup>.

Many different woods are sent to Europe under the name of Lignum colubrinum. Native of the East Indies.

3. This is a tree with opposite branches. Leaves very short, petioled, quite entire, smooth. Panicles at the upper joints of the branches, from four to six, in whorls, small, few-flowered, peduncled, simple. Pedicels interspersed with small awl-shaped bracts. Flowers small, nodding. Perianth five-toothed. Corolla funnel-form: border flat, five-parted, with the throat closed by long white villose hairs. Berry the size of a Cherry, dark red, one-seeded. Seed smooth. The flowers are very white, fragrant, pleasant and aromatic. The fruit at first tastes sweet, but afterwards bitter and astringent<sup>d</sup>.

According to Retzius, the leaves are ovate-lanceolate, veined and darker. Flowers in sessile umbels by the sides of the branches, very hirsute within, extremely sweet when fresh, with a simple stigma<sup>e</sup>.

Dr. Roxburgh remarks, that the leaves cannot be said to be five-nerved; that the stipules are entire and connecting; the panicles from the extremities of the last year's shoots, round the base of this year's, bearing a few small, erect, fragrant, greenish yellow flowers; the filaments rather longer than in Nux vomica; the berry shining, black when ripe.

From the circumstance of Roxburgh's plant not being five-nerved, Willdenow conjectures that it may be a new species; for the specimen sent him by Koenig had certainly five-nerved leaves, with the middle, and the two lateral ones on each side horizontally veined.

This grows to be a larger tree than the first species, and is much scarcer, being only found among mountains, and in woods of great extent. It flowers during the hot season. The wood is hard and durable, and used for various economical purposes. The pulp of the fruit, when ripe, is eaten by the natives, but the taste is rather disagreeable.

The ripe seeds are dried and sold in every market, to clear muddy water. Hence the English name of Clearing-nuts. The natives never drink clear well water, if they can get pond or river water, which is always more or less impure. One of the seeds is rubbed very hard for a minute or two round the inside of the vessel containing the water, which is generally an unglazed earthen one, and the water left to settle: in a very short time the impurities fall to the bottom, leaving the water clear, and perfectly wholesome. These nuts are constantly carried about by the more provident part of our officers and soldiers, in time of war, to enable them to purify their water:

<sup>y</sup> Woodville.  
<sup>b</sup> Linn. suppl.

<sup>z</sup> Hort. kew.  
<sup>c</sup> Retzius.  
<sup>e</sup> Retzius.

<sup>a</sup> Roxburgh.  
<sup>d</sup> Linn. suppl.

they are easier to be had than alum, and are probably less hurtful to the constitution<sup>f</sup>.

STRYCHNOS. See *Ignatia*.]

STUARTIA. (If. Lawson, Ehret. tab. *This genus was named by Linneus in honour of the late Lord Bute, and a figure was published by Dr. If. Lawson from a drawing by Ehret.*—"Icon planta manu Ehretii confecta est ab Ifaco Lawfsono Medico Londinensi secundum arborem florentem in horto Comitum Stewartii juxta Londinum; dicta etiam fuit ab eodem illustrissimo D. Stewart plantarum exoticarum amatore & cultore summo." Linn. *Act. upf.* 1741.)

*Lin. gen. n.* 847. *Reich. n.* 912. *Schreb. n.* 1142.

*Cavan. diff.* 5. 303. *t.* 159. *Juss.* 292.

*Class.* 16. 6. Monadelphia Polyandria.

*Nat. order of Columnifera. Tiliaceæ, Juss.*

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, half-five-cleft, spreading; segments ovate, concave, permanent.

COR. *Petals* five, obovate, spreading, equal, large.

STAM. *Filaments* numerous, filiform, united into a cylinder below, shorter than the corolla, connecting the petals at the base. *Anthems* roundish, incumbent.

PIST. *Germ* roundish, hirsute. *Style* simple, filiform, length of the stamens. *Stigma* five-cleft.

PER. *Pome* juiceless, five-lobed, five-celled, soluble into five closed parts.

SEEDS solitary, ovate, compressed.

#### ESSENTIAL CHARACTER.

*Cal.* simple. *Style* simple, with a five-cleft stigma. *Pome* juiceless, five-lobed, one-seeded, opening five ways.

#### SPECIES.

1. *Stuartia Malacodendron*.

*Lin. spec.* 982. *Willd.* 2. 840. *L'Herit. stirp.* 1. 153. *t.* 73. *Act. upf.* 1741.

*Stewartia Virginica.* *Cavan. diff.* 5. p. 303. *t.* 159. f. 2.

*Flowers* lateral subbinate, calyxes ovate obtuse, styles conjoined.

[2. *Stuartia pentagyna*.

*Willd. spec.* 840. *L'Herit. stirp.* 1. 155. *t.* 74.

*Malachodendron ovatum.* *Cavan. diff.* 5. p. 302. *t.* 158. f. 2.

*Malachodendron.* *Mitch. gen.* 16.

*Flowers* solitary, axillary, calyxes calyculate and lanceolate; styles distinct.]

#### DESCRIPTIONS, &c.

1. This shrub grows naturally in Virginia, where it rises with strong ligneous stalks, to the height of ten or twelve feet, sending out branches on every side covered with a brown bark, and garnished with oval spear-shaped leaves, about two inches and a half broad: they are sawed on the edges, are pretty much veined, and stand alternately: the flowers are produced from the wings of the stalk: they are white, with one of the segments of a yellowish tinge: it flowers in the latter end of may.

[2. This is described by Heritier as an elegant shrub rising to the height of about a fathom and half: the root is woody and branching: the stem erect, branched, and covered with a chinky ash-coloured bark: the branches are alternate, spreading, and not much bent; the young shoots of a reddish colour: the leaves are alternate, petioled, acuminate, laxly serrate, often revolute on the margin, slightly wrinkled, paler, and somewhat villose beneath. The flowers are axillary, solitary, scarcely peduncled, of a snow-white colour, tinged on the outside with a reddish and greenish cast: they are very sweet-scented, and consist of seven or eight unequal petals.

Native of Virginia: appears to have been formerly confounded by Linneus with the preceding species.]

#### PROPAGATION AND CULTURE.

Sow the seeds, which frequently fail when brought to England, either from not being properly impregnated, or duly ripened. When the plants come up, they are very difficult to maintain while young; for if they are exposed to too much sun, they will soon be

<sup>f</sup> Roxburgh.



destroyed, nor do they thrive when exposed to the open air. The seeds therefore should be sown under glasses, and the surface of the ground between the plants should be covered with moss to keep it moist, and the glasses should be constantly shaded when the sun is bright. With this management the plants will grow, but not make any great progress.

[STYLOSANTHES. See *Hedysarum*.]

STYRAX. (*Στυράξ* of Theophrastus and Dioscorides.)

Lin. gen. n. 595. Reich. n. 599. Schreb. n. 753.

Tournef. t. 369. Juss. 156. Gært. t. 59.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Bicornes*. *Guaiacaneæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, cylindric, erect, short, five-toothed.

COR. one-petalled, funnel-form: tube short, cylindric, length of the calyx: border five-parted, large, spreading; segments lanceolate, obtuse.

STAM. Filaments ten, erect, in a ring, scarcely united at the base, awl-shaped, inserted into the corolla. Anthers oblong, straight.

PIST. Germ superior, three-celled, many-seeded. Style simple, length of the stamens. Stigma truncate.

PER. Drupe roundish, one-celled.

SEEDS. Nuts one or two, roundish, acuminate, convex on one side, flat on the other.

OBS. Number of stamens varies, but the natural number is ten.

ESSENTIAL CHARACTER.

Cal. inferior. Cor. funnel-form. Drupe two-seeded.

SPECIES.

1. *Styrax officinale*. Official Storax.

Lin. spec. 635. Syst. 409. Reich. 2. 301. Willd.

2. 623. Ait. kew. 2. 75. Cavan. diff. 6. 338.

t. 188. f. 2. Gært. fruct. 1. 284. Woodv. med.

bot. 197. t. 71. Plenck, ic. t. 341. Allion. pedem.

n. 497.

Styrax. Lin. hort. cliff. 187. upf. 122. mat. med. 116.

Sauv. monsp. 306. Gron. orient. 147. Mill. fig.

t. 260. Regnault bot.

Styrax. Camer. epit. 48. Matth. 89. Lob. ic. 151.

Tournef. inst. 598.

S. arbor. Ger. 1342. emac. 1526. Raii hist. 1680.—

vulgaris. Park. theat. 1530.

S. folio Mali cotonei. Baub. pin. 452.

Leaves ovate villose beneath, racemes simple shorter than the leaf.

[2. *Styrax grandifolium*. Large-leaved Storax.

Ait. kew. 2. 75. Lin. spec. ed. Willd. 1. 623.

S. officinale. Walt. carol. 140.

Leaves obovate villose beneath, lower peduncles axillary solitary one-flowered.

3. *Styrax Benzoin*. Benzoin Storax, or Benjamin-tree.

Dryand. in aët. angl. vol. 77. 2. 307. t. 12. Woodv.

med. bot. 200. t. 72. Lin. spec. ed. Willd. 1. 623.

Plenck, ic. t. 342.

Benjui. Garc. ab Horto in Clus. exot. 155.

Arbor Benzoini. Grim in ephem. acad. nat. cur.

dec. 2. ann. 1. p. 370. f. 31. Sylvius in Valentini

hist. simpl. 487.

Benjuin. Radermacher in aët. soc. Bataviae. vol. 3.

p. 44.

Benjamin or Benzoin. Marsden Sumatra, p. 123.

Laurus Benzoin. Houttuyn in aët. Harlem. vol. 21.

p. 265. t. 7.

Leaves oblong acuminate tomentose beneath, racemes compound length of the leaves.

4. *Styrax laevigatum*. Smooth Storax.

Ait. kew. 2. 75. Lin. spec. ed. Willd. 1. 624.

S. octandrum. L'Herit. stirp. nov. 2. t. 17.

S. glabrum. Cavan. diff. 6. 340. t. 188. f. 1.

S. laeve. Walt. carol. 140.

S. americana. Lamarck encycl. 1. 81.

Leaves oblong smooth on both sides, peduncles axillary one-flowered solitary or two together.]

DESCRIPTIONS, &c.

1. The officinal Storax-tree rises twelve or fourteen feet high: the trunk is covered with a smooth grayish bark, and sends out many slender branches on every side. Leaves about two inches long, and an inch and half broad, of a bright green on their upper side, but

hoary on their under; they are entire, and placed alternately on short footstalks. The flowers come out from the side of the branches, upon peduncles sustaining five or six flowers in a bunch; they are white, and appear in June.

[In the *Systema Vegetabilium* it is remarked, that the germ is altogether superior; that the natural number of stamens is ten; and that it is different from *Halesia*.

The fruit is a juiceless drupe, of an ovate-globular form, terminated by the permanent style, pubescent with a hoary nap: rind thin, coriaceous: shell bony, brittle, box-coloured, before it is ripe constantly three-celled, but afterwards one-celled and valveless. Receptacle columnar, fungous, length of half the shell; accompanied by four or five egglets in each cell, but it is mostly quite obliterated when ripe. Ripe seeds, three, two, or most frequently one only; those variously angular, this ovate-globular, like an Almond, pale or rufescent.

Native of Italy and the Levant: Cultivated in 1597, by Gerarde<sup>b</sup>; who says, I have two small trees, of it in my garden, the which I have recovered of seed.

Although the Storax-tree is indigenous to many of the southern parts of Europe, yet the resinous drug which it produces is only to be obtained in perfection from Asiatic Turkey. The Storax issues in a liquid state from incisions made in the bark of the trunk or branches; and as it was formerly the custom to collect this gum-resin in reeds, it obtained the name of *Styrax calamita*. But the only kinds now to be found in the shops are the pure and the common Storax: the first is usually in irregular compact masses, free from impurities, of a yellowish or reddish brown appearance, and interspersed with whitish tears, somewhat like Gum Ammoniac or Benzoin; it is extremely fragrant, and upon the application of heat, readily melts. This has been called Storax in the lump, red Storax, and the separate tears, Storax in the tear.

The common Storax is in large masses, very light, and bears no external resemblance whatever to the former; but seems almost wholly composed of dirty sawdust merely caked together by the resinous matter; and though much less esteemed than the purer kind, yet we are told that when it is freed from the woody part it possesses more fragrance, and is superior to the other. Rectified spirit, the common menstruum of resins, readily dissolves the Storax, which may be inspissated to a solid consistence, as directed for the *Styracis purificatio* in the London Pharmacopœia, without sustaining any considerable loss of its sensible qualities.

Common Storax, infused in water, imparts to the menstruum a gold yellow colour, some share of its smell, and a slight balsamic taste. It impregnates water considerably in distillation, and strongly diffuses its fragrance when heated, though it scarcely yields any essential oil. The spirituous solution, gently distilled off from the filtered reddish liquor, brings over with it very little of the fragrance, and the remaining resin is more fragrant than the finest Storax in the tear. The pure resin distilled without addition, yields along with an empyreumatic oil, a portion of saline matter, similar to the flowers of Benzoin: sometimes also a substance of the same nature may be extracted by boiling it in water.

Storax, with some of the ancients, was a familiar remedy as a resolvent, and particularly used in catarrhal complaints, coughs, asthmas, menstrual obstructions, &c. and from its affinity to the balsams it was also prescribed in ulcerations of the lungs, and other states of pulmonary consumption. Our pharmacopœias formerly directed the *pilule e styrace*; but this odoriferous drug has now no place in any of the officinal compounds; and though a medicine which might seem to promise some efficacy in nervous debilities, yet by modern practitioners it is almost totally disregarded<sup>1</sup>.

Old Gerarde says, of this gum there are made sundry excellent perfumes, pomanders, sweet waters, sweet

<sup>a</sup> Gartner.

<sup>b</sup> Hort. kew.

<sup>1</sup> Woodville and Lewis.



bags, sweet washing balls, and divers others sweet chains and bracelets.

2. Native of South Carolina, where it was observed by Mr. John Cree. Introduced in 1765. It flowers in june and july<sup>k</sup>.

3. The Benzoin, or as it is corruptly called, the Benjamin tree, is of quick growth, and rises to a considerable height: it sends off many strong round branches, which are covered with a tomentose or whitish downy bark. Leaves alternate, acuminate, veined, smooth above, tomentose beneath, a hand in length. Petioles round, striated, channelled, tomentose, very short. Flowers in axillary compound racemes or bunches, nearly the length of the leaves, and hanging mostly to one side. The common peduncles are tomentose; the partial ones are alternate, spreading and tomentose; the pedicels are very short. Calyx bell-shaped, very obscurely five-toothed, tomentose on the outside, more than a line in length. Petals five, perhaps connate at the base, linear, obtuse, ash-coloured on the outside with a very fine nap, four times as long as the calyx. Filaments ten inserted into the receptacle, a little shorter than the petals, united below into a cylinder the length of the calyx, above under the anthers ciliate. Anthers linear, fastened longitudinally to the filaments, and shorter by half than them. Germ superior, ovate, tomentose. Style filiform, longer than the stamens. Stigma simple.

The above description was made from dried specimens procured from Sumatra by Mr. Marsden, at the request of Sir Joseph Banks.

Though Garcias, Grim and Sylvius were acquainted with the real tree from which Benzoin is collected, their descriptions are so imperfect, that succeeding botanists have fallen into many errors concerning it; and it is remarkable that although this drug was always imported from the East Indies, most of the later writers on the Materia Medica have conceived it to be collected from a species of *Laurus*, native of Virginia, to which from this erroneous supposition, they have given the trivial name of Benzoin.

This error was first detected by Linneus, but he substituted another in its place; for in his second Mantissa (p. 297.) he seems to think that the drug is furnished by a shrub which he there describes under the name of *Croton Bentzoe*; and afterwards in the Supplementum Plantarum (p. 434.), he describes the same plant again by the name of *Terminalia Benzoin*. Jacquin, who had been informed that this shrub was called by the French *Bienjoint*, supposes, with reason, that the similar sound of that word to *Benjoin*, which is the French name for Benzoin, or what we corruptly call Benjamin, may have occasioned this mistake.

Since that period Dr. Houttuyn has described the Benzoin Tree of Sumatra; but for want of good specimens, has mistaken the genus to which it belongs<sup>l</sup>. And thus it remained, till the year 1787, when Mr. Dryander first fully and publicly ascertained it to be a *Styrax*.

This tree is deemed in Sumatra, which is its native country, to be of sufficient age in six years, or when the trunk is about seven or eight inches in diameter, to afford the Benzoin: the bark is then cut through longitudinally, or somewhat obliquely, at the origin of the principal lower branches, from which the drug exudes in a liquid state, and by exposure to the sun and air soon concretes, when it is scraped off from the bark with a knife or chisel. The quantity which one tree affords never exceeds three pounds; nor are the trees found to sustain the effects of these annual incisions longer than ten or twelve years. The Benzoin which issues first from the wounded bark is the purest, being soft, extremely fragrant, and very white; that which is less esteemed, is of a brownish colour, very hard, and mixed with various impurities. In Arabia, Persia, and other parts of the East the coarser sort is consumed in fumigating and perfuming the temples, and in destroying insects.

The Benzoin which we find here in the shops is in large brittle masses, composed partly of white, partly

of yellowish or light brown, and often also of darker coloured pieces: that which is clearest, and contains the most white matter, is accounted the best. This resin has very little taste, impressing on the palate only a slight sweetness: its smell, especially when rubbed or heated, is extremely fragrant and agreeable. It totally dissolves in rectified spirit, the impurities excepted, into a deep yellowish-red liquor, and in this state discovers a degree of warmth and pungency, as well as sweetness. It imparts, by digestion, to water also a considerable share of its fragrance, and a slight pungency: the filtered liquor, gently exhaled, leaves, not a resinous or mucilaginous extract, but a crystalline matter, seemingly of a saline nature, amounting to one tenth, or one eighth, of the weight of the Benzoin. Exposed to the fire in proper vessels, it yields a quantity of a white saline concrete, called *flores benzoës*, of an acidulous taste, and grateful odour, soluble in rectified spirit, and in water by the assistance of heat.

As the trees which afford Benzoin and Storax are congeners, and as their resinous products are very similar in their external appearances, and not widely different in their sensible qualities, it is reasonable to suppose that they are analagous in their medicinal effects. Benzoin however, though rarely employed in a simple state, has been frequently prescribed as a pectoral, and is recommended for inveterate coughs, asthmas, obstructions of the lungs, and phthisical complaints, unattended with much fever: it has also been used as a cosmetic, and in the way of fumigation for the resolution of indolent tumours. Dr. Cullen, who classes Benzoin with the stimulants, says, that the flowers, which is the only preparation employed, are manifestly a saline substance of the acid kind, of considerable acrimony and stimulant power; it has been recommended as a pectoral; I have employed it in some asthmatic cases without finding it of use, and in a dose of half a dram it appeared to be heating and hurtful. In the pharmacopœias the flowers are directed in the *tinctura opii camphorata*, and it is ordered in substance in the *tinctura benzoës composita*<sup>m</sup>.

4. The leaves of this are toothed, in all the other species they are quite entire.—Native of South Carolina. Found by Mr. John Cree. Introduced in 1765. It flowers in june and july<sup>n</sup>.]

#### PROPAGATION AND CULTURE.

1. It may be propagated by sowing the seeds in pots filled with fresh light earth, and plunged into a moderate hot-bed. This should be done as soon as possible when the seeds are procured, for if they are sown the latter end of summer, and the pots kept in a moderate hot-bed of tanners bark all the winter, the plants will come up the succeeding spring; whereas those sown in the spring, often remain in the ground a whole year before the plants come up.

When the plants are come up, they should be hardened gradually to the open air, into which they should be removed in june, placing them in a sheltered situation, observing to keep them clean from weeds, as also to supply them with water duly in dry weather. In this place they may remain till autumn, when they should be placed under a common hot-bed frame, where they may be screened from hard frost in winter, but in mild weather enjoy the free air as much as possible, for if they are kept too close their tops are very subject to grow mouldy. The leaves of these plants fall off in autumn, and in the spring, before they begin to shoot, they should be shaken out of the pots, and their roots carefully parted, and each transplanted into a separate small pot filled with light fresh earth, and plunged into a very moderate hot-bed, observing to water and shade them until they have taken root; after which they should be inured to the open air by degrees, into which they must be removed in june, placing them in a warm situation; where they may remain till the end of october, when they should be removed into shelter for the winter season. These plants are tolerably hardy, and only require to be sheltered from severe frost while they are young; for in

<sup>k</sup> Hort. kew.

<sup>l</sup> Dryander in Philos. transf.

<sup>m</sup> Woodville.

<sup>n</sup> Hort. kew.



## S U C

Italy they grow extremely well in the open air, and produce fruit in great plenty. When the plants have grown three or four years in pots, and are become strong, some of them may be turned out, and planted in the full ground, against a south wall, to which their branches should be trained in the same manner as fruit trees; and in this situation they will bear the cold of our ordinary winters very well; but in severe frost, it will be proper to cover the branches with mats, straw, or other light materials.

STYRAX. See *Liquidambar*.

SUBER. See *Quercus*.

[SUBULARIA. (So named from its awl-shaped leaves.)  
Lin. gen. n. 799. Reich. n. 863. Schreb. n. 1075.  
Juss. 240.

Class. 15. 1. Tetradynamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*. *Cruciferae*, Juss.

### GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* ovate, concave, spreading a little, deciduous.

COR. four-petalled, cruciform. *Petals* obovate, entire, a little bigger than the calyx.

STAM. *Filaments* six, shorter than the corolla; two of which are opposite and still shorter. *Anthers* simple.

PIST. *Germ* ovate. *Style* shorter than the filicle. *Stigma* obtuse.

PER. *Silicle* ovate, subcompressed, entire, with a very short style, two-celled: *partition* contrary to the valves: *valves* ovate, concave.

SEEDS some, very minute, roundish.

### ESSENTIAL CHARACTER.

*Silicle* entire, ovate: valves ovate, concave, contrary to the partition. *Style* shorter than the filicle.

### SPECIES.

1. *Subularia aquatica*. *Awl-wort*.

Lin. spec. 896. Juss. 585. Reich. 3. 212. fl. lapp. n. 253. Juss. n. 566. Hudf. angl. 277. Wither. arr. ed. 3. 564. Smith brit. 676. engl. bot. t. 732. Lightf. scot. 337. Dicks. hort. succ. 5. 9. Fl. dan. t. 35. Gort. ingr. 101. Pallas it. 2. 100.

*S. erecta junci foliis acutis mollibus*. Raii syn. 307. Petiv. brit. t. 48. f. 8.

*Alyssum palustre, folio junci*. Buxb. act. 2. 369. t. 23. f. 1.

*Graminifolia aquatica, &c.* Pluk. phyt. t. 188. f. 5.

*Gramen junceum hibernicum, thlaspeos capitulis* Sherardi. Mor. hist. f. 8. t. 10. f. 29.

### DESCRIPTION, &c.

The root is annual, and consists of many long simple white fibres. Leaves all radical, smooth, awl-shaped with a recurved point. Stalk seldom more than two inches high, simple, smooth, bearing a simple spike of small white flowers, always immersed in the water, and so closed that the impregnation is accomplished in safety under the protection of the calyx and petals. Seeds ovate, compressed, about three on each side. By the first appearance of the flower and seed-vessel this little plant might be taken for a *Draba*, but on examination an essential difference is found in the partition being contrary to the valves, not parallel with them, and yet those valves are not keeled as in *Lepidium*, only concave; neither is the filicle notched, as in that genus. It is no less remarkable for its situation and mode of flowering under water, than for the peculiarity of its generic character.

Native of the northern parts of Europe. In the British dominions, Sherard first discovered it in the gravelly bottom of Lough Neagh, in Ireland. Since that, Dr. Hope found it in Lough Carran, and Mr. Stuart in Loch Tay, Scotland: and it has been seen in several lakes of North Wales; as near Llanberys, Llyn y Cwn and Ffynnon frêch near Snowdon and Llyn Aled in Denbighshire. Dr. Dillenius and Mr. Brewer found it in most of the lakes under Snowdon. It flowers in July.

SUBULARIA. See *Isôetes*.]

SUCCISA. See *Scabiosa*.

SUCCORY. See *Cichorium*.

## S U R

[SUCCORY HAWKWEED. See *Crepis*.

SUGAR CANE. See *Saccharum*.

——— MAPLE. See *Acer*.

SUILLUS. See *Boletus*.

SULPHUR-WORT. See *Peucedanum*.

SULTAN, SWEET. See *Centaurea*.]

SUMACH. See *Conarus*, *Coriaria* and *Rhus*.

[SUMMER CYPRESS. See *Chenopodium Scoparia*.

SUN-DEW. See *Drosera*.

SUN-FLOWER. See *Helianthus*.

SUN-SPURGE. See *Euphorbia*.

SUPPLE JACK. See *Paullinia*.]

SURIANA. (So named by Plumier, in honour of Joseph Donat Surian, physician at Marseilles, who accompanied him in his travels.)

Lin. gen. n. 581. Reich. n. 632. Schreb. n. 792.

Plum. 40. Jacq. amer. 140. Juss. 339.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Succulentæ*. *Rosaceæ*. Juss.

### GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* lanceolate, acuminate, permanent.

COR. *Petals* five, obovate, length of the calyx, spreading.

STAM. *Filaments* ten, filiform, shorter than the corolla. *Anthers* simple.

PIST. *Germ* five, roundish. *Styles* solitary, filiform, erect, length of the stamens, inserted into the middle and inner side of the germ. *Stigmas* obtuse.

PER. none.

SEEDS five, roundish.

### ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Styles inserted into the inner side of the germs. Seeds five, naked.

### SPECIES.

1. *Suriana maritima*.

Lin. spec. 624. Juss. 431. Reich. 2. 387. Willd. 2. 771. hort. cliff. 592. Jacq. amer. 140. pict. 70. Swartz obs. 185. Forst. prodr. n. 199. Lamarck illustr. gen. t. 389. Plum. gen. 37. ic. 249. f. 1. Brown. jam. 190. Pluk. phyt. t. 241. f. 5.

*Thymelææ facie frutex maritimus tetraspermus*. Sloan. jam. 2. 29. t. 162. f. 4.

### DESCRIPTION, &c.

[Stem shrubby, a fathom high, unarmed. Branches erect, subdivided, round, rugged, cicatrised with the fallen leaves, glaucous, pubescent. Leaves clustered, in bundles towards the ends of the branchlets, erect, wedged, bluntish, short, nerveless, veinless, thickish, villose-pubescent, pale green; on very short petioles. Peduncles terminating and axillary, shorter than the leaves, from three to five-flowered. Flowers small, yellow. Number of stamens always five<sup>p</sup>. According to Jacquin ten, but some of them often deficient, especially the anthers; and both of them caducous, together with the corolla. He describes it as an upright, elegant shrub, three feet high: the wood red and very hard; the flowers void of scent.—Swartz remarks, that in the specimens from New Caledonia, some of the flowers had ten stamens.

Native of the sea-coast of South America and the islands of the West Indies. Browne says, that this little shrub is frequent by the sea-side in the parish of St. James in Jamaica, that it seldom rises above three or four feet, that the branches are pretty slender and flexible, and the leaves disposed more thickly towards the tops.—Forster marks it as found in Botany island.]

Mr. Miller describes it as rising, in the West Indies, with a thick shrubby stalk eight or nine feet high, covered with a dark-brown bark: the leaves are about an inch long, and one eighth of an inch broad at the point, growing narrower to their base, of a dirty green colour. Peduncles about an inch long, each sustaining two, three or four yellow flowers. Petals four or five. Seeds two, three, four or five. These were brought from the Havanna by Dr. Houftoun. Mr. Miller therefore must have cultivated it before the year 1733.



## PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed early in the spring; when the plants come up, weed them and refresh them frequently with water. In warm weather raise the glasses to admit fresh air. When the plants are fit to remove, take them up carefully, and set each in a small pot filled with fresh light earth, plunge them into the tan-pit, shading them until they have taken new root: after which water them duly every evening in hot weather, and admit fresh air in proportion to the warmth of the season. In the winter these plants must be kept very warm, especially whilst they are young. They must also be frequently refreshed with water, but it must not be given them in large quantities in cold weather. These plants make slow progress the first year, but afterwards will grow pretty freely.

[SUZYGIUM. See *Calyptanthus*.

SWALLOW-WORT. See *Asclepias*.

SWARTZIA. (So named by Schreber, in honour of Olof Swartz, M.D. Prof. instit. Berg. Acad. Cesar. Nat. Cur. Reg. Holm, &c. Sodalit. Author of Nova Genera & Species Plantarum, f. Prodrum, &c. 1788. Observationes Botanicae, 1791.—Flora Indiae Occidentalis, f. Descriptiones Plantarum in Prodromo recensitarum. 1797. &c.)

Lin. gen. Schreb. n. 1227. Tounatea. Aubl. 218? Juss. 440.

Class. 18. 4. Polyadelphia Polyandria.

## GENERIC CHARACTER.

CAL. Perianth one-leaved, inferior, coriaceous, coloured internally, four or five-parted, permanent; segments ovate, sharpish, reflexed, almost equal.

COR. none.

STAM. Filaments numerous, capillary, flexuose, longer than the calyx, ascending, united at the base; inserted into a semicircular receptacle furrounding the base of the pedicel of the germ, and two longer and thicker, by the side of the pedicel on each part, before the other filaments, adnate, free, declined. Anthers roundish, flat, emarginate above and below, fastened by the back; on the longer filaments larger and oval.

PIST. Germ oblong, compressed, villose, placed on a thickish, declining pedicel. Style none. Stigma oblique, acute.

PER. Capsule coriaceous, obliquely ovate, pedicelled, one-celled, two-valved.

SEED single, ovate, covered at the base with a pulpy pitcher-shaped oblique aril, and pedicelled.

## ESSENTIAL CHARACTER.

Cal. four-leaved. Petals single, lateral, flat. Legume one-celled, bivalve. Seeds arillated.

## SPECIES.

1. Swartzia simplicifolia.

Willd. sp. pl. p. 1219.

Rittera simplex. Vahl symb. 2. p. 60.

Possira simplex. Swartz prodr. 82.

With simple leaves, and roundish ovate petal larger than the calyx, and polyandrous flowers.

2. Swartzia grandiflora.

Willd. sp. pl. p. 1220.

Rittera grandiflora. Vahl eclog. 2. p. 37.

With simple oblong-ovate leaves, subtriflorous foot-stalks, round reniform very large petal, and oblong legumes.

3. Swartzia dodecandra.

Willd. sp. pl. p. 1220.

Rittera dodecandra. Vahl symb. 2. p. 60. t. 34.

With simple leaves, dodecandrous flowers, and oblong petal of the length of the cup.

4. Swartzia triphylla.

Willd. sp. pl. p. 1220.

Possira triphylla. Swartz prodr. 82.

Possira arborefcens. Aubl. guj. 2. p. 934. t. 355.

With ternate leaves, and margined footstalks.

5. Swartzia pinnata.

Willd. sp. pl. p. 1220.

Rittera pinnata. Vahl eclog. 3. p. 38.

With pinnate leaves and round common footstalk.

6. Swartzia alata.

Willd. sp. pl. p. 1220. Schreb. gen. pl. n. 1227.

Tounatea gujanensis. Aubl. guj. 1. p. 550. t. 218.

With pinnate leaves and winged common footstalk.

## DESCRIPTIONS, &amp;c.

1. A shrub, with smooth branches, and ovate alternate leaves; clustered flowers, growing four, five, or six from each footstalk.—Native of Trinidad.

2. This, says Willdenow, is so like the simplicifolia, that it is not easy to give an infallible criterion of the difference; except that the leaves are rather narrower.—Native of Trinidad.

3. A shrub of a smaller kind than the simplicifolia, with round and subpubescent branches: ovate-lanceolate, alternate leaves, and axillary flowers of four, five, or six, from each footstalk.—Native of South America.

4. This is a middle-sized tree, rising to the height of eight feet or more, and branching towards the top: leaves alternate, and digitated, with three of the leaflets sessile and annexed to the flat midrib: flowers corymbose and axillary.—Native of the Caribbee islands.

5. Sufficiently distinguished from the rest by its pinnated leaves and round footstalks.—Native of Trinidad.

6. This, according to Aublet, is a tree of twenty-five feet high or more, with a branchy top, and scattered ramulets: leaves alternate and unequally pinnate; of a bright green: flowers very small.—Native of Guiana.

SWARTZIA Ehrh. Didymodon Hedw.

SWEET APPLE. See *Annona*.

SWEET BRIER. See *Rosa*.

SWEET FERN. See *Scandix*.

SWEET FLAG. See *Acorus*.

SWEET GUM. See *Liquidambar*.

SWEET JOHNS. See *Dianthus*.

SWEET MAUDLIN. See *Achillea*.

SWEET PEA. See *Lathyrus*.

SWEET RUSH. See *Acorus*.

SWEET SOP. See *Annona*.

SWEET SULTAN. See *Centaurea*.

SWEET WEED. See *Capraria* and *Scoparia*.

SWEET WILLIAM. See *Dianthus*.

SWEET WILLOW. See *Myrica*.

SWERTIA. (So named by Linneus, in honour of Eman. Sweert, a cultivator of bulbs and flowers in Holland. He published Florilegium, 1612. Francof. fol.)

Lin. gen. n. 321. Reich. n. 351. Schreb. n. 449.

Juss. 142. Gært. t. 114.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Rotacea*. *Gentiane* Juss.

## GENERIC CHARACTER.

CAL. Perianth five-parted, flat, permanent: segments lanceolate.

COR. one-petalled, wheel-shaped: border flat, five-parted; segments lanceolate, bigger than the calyx, with the claws connected.

Nectaries ten, as it were two dots in the base of each segment of the corolla within, excavated, girt with small erect bristles.

STAM. Filaments five, awl-shaped, from erect spreading, shorter than the corolla. Anthers incumbent.

PIST. Germ ovate-oblong. Style none. Stigmas two, simple.

PER. Capsule round, acuminate at both ends, one-celled, two-valved.

SEEDS numerous, small, fastened to the future of the capsule.

OBS. There are species (n. 4. 5. 6.) with four-cleft flowers. The nectaries in one species (4.) project beneath in horns.

## ESSENTIAL CHARACTER.

Cor. wheel-shaped. Nectariferous pores at the base of the segments of the corolla. Caps. one-celled, two-valved.

## SPECIES.

1. Swertia perennis. Marsh Swertia or Felwort.

Lin. spec. 328. syst. 266. Reich. 1. 635. Willd.

1. 1329. hort. cliff. 53. Gært. fruct. 2. 160.

Hudf. angl. 102. Wither. arr. ed. 3. 280.

Smith brit. 284. Hoffm. germ. 86. Roth. germ.

2. 284. Jacqu. austr. t. 243. Villars dauph. 2.

520. Pallas ross. 2. 98. Gmel. sib. 4. 111. n.

77. Kniph. cent. 7. n. 91.



- Gentiana palustris*. *Allion. pedem. n.* 367. *Hall. belv. n.* 636. *Barrel. ic.* 91. *Monnier obs.* 154. —*latifolia*. *Bauh. pin.* 188.—*punctata*. *Turnef. inst.* 81.
- G. 12. punctato flore.* *Clus. hist.* 1. 316.
- G. major, flore cæruleo punctato.* *Mor. hist. f.* 12. *t. 5. f.* 11.
- G. Pennei minor.* *Ger.* 351. *emac.* 433.
- G. Pennei cærulea punctata.* *Park. theat.* 404. *Raii hist.* 721.
- Corollas five-cleft, peduncles four-cornered awl-shaped, stem undivided, root-leaves oval.*
2. *Swertia difformis.*  
*Lin. spec.* 328. *syft.* 266. *Reich.* 2. 636. *Willd.* 2. 1330. *Gron. virg.* 30.  
*Corollas five-cleft, the terminating one six-cleft, peduncles very long, leaves linear.*
3. *Swertia decumbens.*  
*Lin. spec. ed. Willd.* 2. 1330. *Vahl symb.* 1. 24.  
*Parnassia polynectaria.* *Forsk. descr.* 207. *ic. t.* 5. *f.* 6.  
*Corollas five-parted, leaves linear-lanceolate, nectaries ten bristly.*
4. *Swertia corniculata.*  
*Lin. spec.* 328. *syft.* 266. *Reich.* 1. 636. *Willd.* 1. 1330. *amoen.* 2. 344. *Gmel. fib.* 4. 114. *t.* 53. *f.* 4. *Pallas roff.* 2. 99. *t.* 90. *f.* 1.  
*Corollas four-cleft four-horned.*
5. *Swertia dichotoma.*  
*Lin. spec.* 329. *syft.* 266. *Reich.* 1. 636. *Willd.* 1. 1330. *amoen.* 2. 345. *Gmel. fib.* 4. 113. *t.* 53. *f.* 3. *Pallas roff.* 2. 100. *t.* 91.  
*Corollas four-cleft hornless, peduncles nodding, leaves elliptic, stem branched.*
6. *Swertia tetrapetala.*  
*Lin. spec. ed. Willd.* 1. 1331. *Pallas roff.* 2. 99. *t.* 90. *f.* 2.  
*Corollas four-cleft hornless, peduncles erect, leaves lanceolate, stem simple.*

## DESCRIPTIONS, &amp;c.

1. This is a handsome plant, with a perennial root composed of long whitish fibres. Stem upright, simple, a foot high, slightly four-cornered, smooth, little leafy. Almost all the leaves radical, petioled, ovate or elliptic, quite entire, obscurely nerved, smooth. Spike terminating, erect; with the peduncles opposite, erect, angular, one-flowered, bracted at the base. Bractes sessile, elliptic-oblong, quite entire. Flowers cinereous-purple, of a dull colour, and void of scent. Segments of the calyx awl-shaped, spreading. Corolla spreading, with the segments elliptic, acute, dotted with black, and having nectariferous pores bristly at the edge. Stamens awl-shaped. Anthers versatile. Germ ovate, compressed. Style very short, two-parted. The herb is very bitter<sup>a</sup>.—Capsule surrounded with the permanent calyx and corolla, ovate-oblong, acuminate at both ends, and very shortly two-beaked above with the divaricating stigmas, compressed like a lens. Seeds numerous, suborbicular, leafy-compressed, with a wide membranaceous margin, rust-coloured, fastened to the thickened edges of the valves in a double row: the radicle of the embryo is centripetal<sup>r</sup>.

The old authors considered it as a *Gentiana*, and some more modern authors are of the same opinion: but Gærtner remarks, that whatsoever affinity there may be between these two genera, they cannot be united on account of the very different situation of the seeds and embryo.

Native of Germany, Austria, Switzerland, France and Siberia, in alpine bogs. It is a doubtful native of Britain. According to Hudson, Richardson found it in Wales. It flowers in august.]

2. This has narrow linear leaves which come from the root, about three inches long, and half a quarter of an inch broad; the flower-stalks arise immediately from the root, are about six or seven inches high, and support one blue flower.—Native of Virginia.  
The flowers are white<sup>s</sup>.

3. Stems filiform, branched at top, obscurely angular, very smooth, as is the whole plant: Leaves sessile, opposite, remote, a little united at the base, spreading very much, half an inch long. Peduncles in pairs from the top of the branches, filiform, having a linear leaflet at the base<sup>t</sup>.—Native of Arabia Felix.

4. Root annual, short, attenuated, cruciate with four lateral fibres, sometimes branched a little with more, stiffish, white. The plant varies in size from a long span and almost simple, to two feet, many-stemmed and more branched. Stem-leaves many, broad-lanceolate, withering as the stem grows up. Stem obscurely four-cornered, single or many, five or more, these last oppositely branched, stiffish, elongated, subfastigate. Stem-leaves opposite, ovate-lanceolate, three-nerved. Peduncles axillary and terminating, filiform, naked, one-flowered. Flower nodding a little, for the most part four-cleft, but often five-cleft, of a pale greenish colour, somewhat four-cornered, bell-shaped, with the segments acute and converging, produced at the base into as many awl-shaped, spreading, straightish horns as there are segments in the petal, of a greener colour; in alpine specimens more elongated. Leaflets of the calyx linear, slender, of the same number as in the corolla. Anthers small, within the corolla. Germ cylindric-conical. Capsule within the permanent corolla, closed, shaped like a silicle, two-valved. Seeds fewer, a little larger than those of the poppy, brownish gray.

Native of Siberia, where for its grateful bitterness, it is received among the domestic remedies of the inhabitants. It is common on both sides the river Jenisea, in sandy moistish pine woods. It occurs in some parts of a lower stature, with larger seeds, and more turgid flowers. In Kamtschatka it is scarcely more than two inches high, with a simple one-flowered stem, and two or three pairs of leaves only.—It is also found in Canada.

5. Root simple, drawing to a point, stouter than in the preceding, and seeming to be biennial. Plant very tender; soft, bright green, as in *corniculata*. Root-leaves ovate, five-nerved, elongated into the petiole. Stems from the root many, slender, red, often decumbent, in the adult plant very much branched, here and there in a manner dichotomous, producing abundance of flowers from all the axils on long and very slender pedicels. Stem-leaves subsessile, ovate-lanceolate, five-nerved. Flowers much smaller than those of the preceding, greener but sometimes a little reddish, four-cleft, subglobular bell-shaped, with the segments divided almost to the base, ovate, having two nectariferous yellow dots on the inside of each. Calyx-leaves ovate-lanceolate. The plant is very smooth, as in the rest of this genus.

Native of eastern Siberia: scarcely bitter. It flowers in august: the preceding in july.

6. This is an annual plant, scarcely a span high, with a simple, slender, attenuated root. Stem quite simple, erect, filiform, round, with four or five pairs of lanceolate, nerved leaves; the lower leaves are ovate-lanceolate. Petioles axillary, and some terminating, leafed, subfastigate. Flowers small, all four-cleft. Calyx-leaves linear. Segments of the corolla scarcely cohering at the base, spreading, deep blue with an orange-coloured scar in the middle notched at the edge, and visible at the back. Stamens rufescent, shorter than the corolla.—Native of Kamtschatka<sup>u</sup>.]

## PROPAGATION AND CULTURE.

These plants growing naturally in swamps, are with difficulty preserved in gardens, and as they do not produce seeds in England, are only propagated by parting the roots; the best time for which is in september, that they may have time to be rooted before the frosts come on. They should be planted in the shade, and have a loose moist soil. In summer they must be frequently watered.

[*SWERTIA carinthiaca*, rotata, fulcata. See *Gentiana*.]  
[*SWIETENIA*. (So named by Jacquin, in honour of the illustrious Gerard, L.B. a Swieten, Archiater to

<sup>a</sup> Smith.<sup>r</sup> Gærtner.<sup>s</sup> Linn. syft.<sup>t</sup> Vahl.<sup>u</sup> Pallas.



*Maria Teresa, Empress of Germany, who at his persuasion founded the botanic garden at Vienna.)*

*Lin. gen. n. 521. Reich. n. 575. Schreb. n. 723.*

*Jacqu. amer. 127. Gärtn. t. 96. Juss. 266.*

*Cavan. diff. 7. 209.*

Class. 10. 1. Decandria Monogynia.

Nat. order of Tribilatae. Melie Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, obtuse, very small, deciduous.

COR. Petals five, obovate, obtuse, concave, spreading.

Nectary one-leaved, cylindric, length of the petals: mouth ten-toothed.

STAM. Filaments ten, very small, inserted below the teeth of the nectary. Anthers oblong, erect.

PIST. Germ ovate. Style awl-shaped, erect, length of the nectary. Stigma headed, flat.

PER. Capsule ovate, large, woody, one-celled, at the top five-celled, five-valved, valves opening at the base.

SEEDS very many, imbricate, compressed, oblong, obtuse, having a leafy wing. Receptacle large, five-cornered.

OBS. It is allied to Cedrela by the fruit.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Nect. cylindric bearing the anthers at the mouth. Caps. five-celled, woody, opening at the base. Seeds imbricate, winged.

#### SPECIES.

1. Swietenia Mahagoni. Mahogany Tree.

*Lin. spec. 548. Syst. 399. Reich. 2. 271. Willd.*

*2. 557. Jacqu. amer. 127. Cavan. diff. 7. 365.*

*t. 209. Catesb. car. 2. t. 81. Gärtn. fruct. 2. 89. Plenck. ic. t. 336.*

*Cedrus Mahagoni. Mill. dict.*

*Cedrela foliis pinnatis, floribus sparsis, ligno odorato. Brown. jam. 158.*

*Leaves pinnate about four-paired, leaflets ovate-lanceolate equal at the base, panicles axillary.*

- [2. Swietenia febrifuga.

*Lin. spec. ed. Willd. 2. 557. Roxb. corom. 1. 18. t. 17. & monogr.*

*S. Soymida. Duncan tent. inaug. Edinb. 1794.*

*Leaves pinnate about four-paired, leaflets elliptic-roundish emarginate unequal at the base, panicle terminating divaricate.*

3. Swietenia Chloroxylon.

*Lin. spec. ed. Willd. 2. 557. Roxb. corom. 1. 46. t. 64.*

*Leaves pinnate many-paired, leaflets halved-cordate obtuse, panicle terminating spreading.*

#### DESCRIPTIONS, &c.

1. The Mahogany is a lofty and very branching tree, with a wide handsome head. Leaves reclining, alternate, shining, eight inches long, numerous on the younger branches: leaflets for the most part four pairs, but often three, seldom five, without any odd one, falcate-lanceolate, quite entire, acuminate, bent in backwards, petioled, opposite, an inch and half long. Racemes subcorymbed, with about eight flowers in each, axillary, solitary, two inches long. Flowers small, whitish\*. Capsule large, (sometimes attaining the size of a child's head,) woody, ovate, of a smoky-rufescent colour (or ferruginous,) towards the top five-celled, but in other parts widely one-celled, five-valved. Valves thick, opening from the base, caducous, covered within by a thick flexile coriaceous lamina, exactly equal to them in size. Receptacle central, free, woody, five-cornered, from a narrower base widening much and thickening upwards, but narrowing again at the point, and on each side of the pyramid having a double row of very small scars, into which the seeds are inserted. Seeds numerous, collected into five bundles, imbricate downwards, compressed, yellowish-rufescent or cinnamon-coloured, having a nucleus below, but ending above in a long membranaceous wing†.

Linneus remarks that this tree has a great affinity

\* Jacquin.

† Gartner.

with Cedrela (Barbadoes Cedar). They were joined by Miller and others under the name of Cedrus. Jacquin first separated them: the Mahogany tree, according to him, having the flower of Melia, and the fruit of Cedrela opening from the base.]

The Mahogany tree is a native of the warmest parts of America, and grows plentifully in the islands of Cuba, Jamaica and Hispaniola; there are also many of the trees on the Bahama islands. In Cuba and Jamaica there are (or rather were) trees of a very large size, so as to cut into planks of six feet breadth. Those on the Bahama islands are not so large; though these are frequently four feet diameter, and rise to a great height, notwithstanding they are generally found on the solid rock, where there seems to be scarcely any earth for their nourishment.

The wood which has been brought from the Bahama islands has usually passed under the name of Madeira wood. The Spaniards make great use of this wood for building ships, and it is better adapted to this purpose than most sorts of wood yet known, being very durable, resisting gun shots, and burying the shot without splintering: nor is the worm so apt to eat this wood as that of the oak; so that for the West Indies, ships built of Mahogany are preferable to any other.

The excellency of this wood for all domestic purposes has been long known in England: and it is a matter of surprize that for a long time the only author who had noticed this tree was Mr. Catesby.

Dr. Browne informs us that the Mahogany was formerly very common in Jamaica, and while it could be had in the low lands, and brought to market at an easy rate, furnished a very considerable branch of the exports from that island; that it thrives in most soils, and varies both in grain and texture with each; that which grows among rocks being smaller but very hard and weighty, of a close grain and beautifully shaded; while the produce of the low and richer lands is observed to be more light and porous, of a paler colour and open grain. The tree grows very tall and straight, and generally bears a great number of capsules; the flowers are of a reddish or saffron colour; and the fruit is about the size of a turkey's egg. The wood is a very strong timber, and answers very well in beams, joists, plank, boards and shingles; and has been frequently put to those uses in Jamaica in former times.

2. This is a very large tree, with a straight trunk, rising to a great height and thickness, and covered with a gray, scabrous, cracked bark. Branches numerous; the lower spreading, the higher ascending, forming a very large shady head. Leaves alternate, about the extremities of the branchlets, abruptly pinnate, about twelve inches long: leaflets opposite, very short, petioled, three or four pairs, oval, obtuse or emarginate, the lower side extending a little farther down on the petiole than the upper side, smooth, shining, from three to five inches long, and from two to three broad, the lower smallest. Petiole round, smooth, about nine or ten inches long. Stipules none. Panicle very large, terminating, diffuse, bearing great numbers of middle-sized, white, inodorous flowers. Peduncles and pedicels round and smooth. Bractes very minute. Calyx inferior, five-leaved. Nectary not quite half the length of the petals, a little bellied; teeth at the mouth bifid. Filaments very short, inserted just within the mouth of the nectary. Germ conical: style thick, tapering: stigma large, targetted, shutting up the mouth of the nectary. Capsule ovate, large, five-celled, five-valved: valves gaping from the top. Receptacle in the centre, large, spongy, five-angled: angles sharp, and connected with the futures of the capsule, between them deeply sulcated. Seeds obliquely wedge-shaped, enlarged by a long membranaceous wing, inserted at the upper point of the wing into a long brown speck, on the upper part of the excavations of the receptacle: all the rest of the receptacle is white.

Native of the mountainous parts of the Rajahmundry Circar, north of Samulcotah and Peddapore. It flowers about the end of the cold, or beginning of the



the hot season; and the seeds ripen in three or four months after.

The wood is of a dull red colour, remarkably hard and heavy; it is reckoned by the natives the most durable wood they know, and on that account is used for all the wood-work in their temples; it is also very serviceable for various other purposes.

The bark is internally of a light red colour: a decoction of it dyes brown of various shades, according as the cloth has been prepared. Its taste is a bitter and astringent united, and very strong, particularly the bitter, at the same time not any way nauseous or otherwise disagreeable. Soymida is its name among the Telingas.

3. This is a middle-sized tree, with the trunk tolerably erect; supporting a large spreading, evergreen, shady head: bark pretty smooth, of a dark rust-colour. Leaves about the extremities of the branches, abruptly pinnate, six or seven inches long: leaflets alternate, on short petioles, from ten to twenty pairs, obliquely oval, obtuse, upper half twice the breadth of the lower, smooth, entire, an inch long and three eighths of an inch broad. Petioles round, smooth. Stipules none. Panicles pretty large, terminating. Flowers numerous, small, yellow. Bracte small, below each subdivision of the panicle. Nectary a fleshy notched ring surrounding the base of the germ. Germ superior; style short: stigma simple. Capsule about an inch long, and half an inch in diameter, oblong, three-celled, three-valved, opening from the apex. Seeds four in each cell, membrane-winged, placed alternately with four oblong, compressed, spongy bodies, resembling the seeds themselves.

Native of the mountainous parts of the Circars: flowering at the beginning of the hot season.

The wood of this tree is of a deep yellow colour, remarkably close-grained, heavy and durable: it is used for various economical purposes, and comes nearer to box-wood than any other in that country. It is the Billoo of the Telingas<sup>2</sup>.

#### PROPAGATION AND CULTURE.

1. In the West Indies this tree grows to a large size in a few years. The manner of their propagation in the Bahama islands, as described by Mr. Catesby, is as follows. When the fruit is ripe, the outer hard shell, separates next the foot-stalk, and thereby exposes the seeds; which being broad and light, are dispersed on the surface of the rocks. Such of them as happen to fall into the fissures, very soon send forth roots, and if these tender fibres meet with resistance from the hardness of the rock, they creep along the surface, and seek another fissure, into which they creep, and swell so as to break the rock, and thereby make way for the root to penetrate deeper.

It is propagated here by seeds, which may be easily procured from the Bahama islands, whence most of the good seeds which have come to England have been brought. Most of those that have been sent from Jamaica have not succeeded.

Sow the seeds in small pots filled with light sandy earth, and plunge them into a hot-bed of tanner's bark, giving them a gentle watering once a week; if the seeds are good, the plants will appear in a month or five weeks, and when they are two inches high, fill a sufficient number of small pots with light earth, and plunge them into the tan-bed a day or two, that the earth may be warmed before the plants are put into the pots; then shake out the young plants, carefully separating them so as not to tear their roots, and plant each singly in the pots, shading them till they have taken fresh root: after which treat them in the same manner as directed for other plants from the West Indies; being careful not to give them much water, especially in winter; as also when they are shifted, to preserve the earth about their roots.

Mahogany being now so generally used in England, it would surely be worth the attention of the planters in America, many of whom are possessed of barren

rocky lands, which produce them no profit, but might turn to great advantage, if the seeds of this tree were to be sown in them.

[SWINE'S CRESS. See *Cochlearia Coronopus*.

SYALITA. See *Dillenia*.

SYCOMORE and SYCOMORUS. See *Acer* and *Ficus*.

SYENA.

Lin. gen. Schreb. n. 88. Mayaca Aubl. t. 15:

Juss. 45.

Class. 3. 1. Triandria Monogynia.

#### GENERIC CHARACTER.

CAL. *Perianth* three-leaved: *leaflets* linear-lanceolate; acute, spreading, permanent.

COR. *Petals* three, roundish, concave, spreading; length of the calyx.

STAM. *Filaments* three, capillary. *Anthers* oblong.

PIST. *Germ* superior, roundish. *Style* filiform. *Stigma* trifid.

PER. *Capsule* globular, crowned with the style, one-celled, three-valved.

SEEDS six, globular, striated: two fastened to each valve; one above the other.

OBS. It is allied to *Commelina*.

#### ESSENTIAL CHARACTER.

Cal: three-leaved. Pet. three. Anthers oblong:

Caps. one-celled; three-valved.

#### SPECIES:

1. Syena fluviatilis.

Lin. spec. ed. Willd. 1. 254.

Mayaca fluviatilis. Aubl. guian. 1: 42: t. 15:

#### DESCRIPTION, &c.

This is a minute mossy plant. Stem somewhat branched decumbent. Leaves capillaceous, in whorls. Flowers axillary, white, peduncled, solitary.—Native of Guiana, in rivulets<sup>2</sup>.

SYMPHONIA.

Lin. gen. Schreb. n. 1106. suppl. 49. Juss. 263:

Moronobea. Aubl. 788. t. 313. Juss. 257.

Class. 16. 2. Monadelphia Pentandria.

#### GENERIC CHARACTER.

CAL. *Perianth* five-leaved, permanent: *leaflets* roundish, very small, spreading.

COR. *Petals* five, roundish, subcoriaceous, concave, converging into a depressed globe.

STAM. *Filament* cylindric, sheathing the style. *Anthers* five, ovate, acute, alternate with the stigmas.

PIST. *Germ* ovate. *Style* cylindric, a little longer than the corolla. *Stigmas* five, oblong, acute, spreading.

PER. *Berry* five-celled, globular.

SEEDS solitary, subglobular, smooth; flatter internally.

#### ESSENTIAL CHARACTER.

One-styled. Cor. globular. Berry five-celled:

#### SPECIES:

1. Symphonia globulifera.

Lin. syst. 610. suppl. 302.

#### DESCRIPTION, &c.

This is a tree with a thick lofty trunk. Branchlets shorter, smooth, marked with scars from the fallen leaves. Leaves at the end of the branchlets, approximating, oblong, lanceolate, quite entire, very smooth, glaucous, keeled underneath with a blunt rachis: veins very fine, transverse; consistence of Bay leaves, a hand in length. Petioles very short, half round. Umbel terminating, simple, few-flowered, sessile. Peduncles erect, angular, one-flowered. Flowers the size of those of Thea, red. Calyx short, with blunt scales. Petals five, converging, like those of Trollius, into an oblate spheroidal globe; each petal lying over the next with the right margin. Sheath of the stamens undivided, closely covering the pistil, and standing out beyond the flower, like a superior calyx in the fruit. This undivided sheath is terminated at the top by five sessile Anthers, alternating with five stigmas, forming a sort of star. The coriaceous rind of the fruit covers the painted seeds, which have a deep-yellow mucous substance interposed between them. These seeds are very grateful to Parrots.—Native of Surinam<sup>2</sup>.

SYMPHORICARPOS. See *Lonicera*.]



# S Y M

SYMPHYTUM (of Pliny. Συμφυτον of Dioscorides : απο του συμφυειν, from its conglutinating quality.)

Lin. gen. n. 185. Reich. n. 197. Schreb. n. 245.

Tournef. t. 56. Juss. 131. Gertn. t. 67.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Asperifoliae. Borragineae Juss.

## GENERIC CHARACTER.

CAL. Perianth five-parted, erect, five-cornered, acute, permanent.

COR. one-petalled, bell-shaped: tube very short: border tubular-bellied, a little thicker than the tube: mouth five-toothed, obtuse, reflexed: throat fenced by five lanceolate rays, spinulose at the edge, shorter than the border, converging into a cone.

STAM. Filaments five, awl-shaped, alternate with the rays of the throat. Anthers acute, erect, covered.

PIST. Germs four. Style filiform, length of the corolla. Stigma simple.

PER. none. Calyx larger, widened.

SEEDS four, gibbous, acuminate, converging at the tips.

## ESSENTIAL CHARACTER.

Cor. border tubular-ventricose: throat closed by lanceolate rays.

## SPECIES.

1. Symphytum officinale. Common Comfrey.

Lin. spec. 195. Syst. 187. Reich. 1. 394. Willd.

1. 770. hort. cliff. 47. fl. succ. n. 165. mat. med.

56. Woodv. med. bot. suppl. 10. t. 215. Gertn.

fruct. 1. 325. Hudf. angl. 181. Wither. arr.

ed. 3. 230. Smith brit. 218. engl. bot. t. 817.

Lightf. scot. 134. Curt. lond. 4. t. 18. Relb.

cant. ed. 2. n. 168. Sibth. oxon. n. 219. Fl.

dan. t. 664. Hall. belv. n. 600. Hoffm. germ.

64. Roth. germ. 1. 84. 2. 215. Krock. files. n.

282. Neck. gallob. 101. Scop. carn. n. 195.

Villars dauph. 2. 452. Allion. pedem. n. 161.

Gmel. fib. 4. 76. Kniph. cent. 1. n. 85. Ludw.

est. t. 80. Sabb. hort. 2. t. 30. Blackw. t.

252.

S. magnum. Baub. hist. 3. 593. Dod. pempt.

134. 1. Raii syn. 230. Petiv. brit. t. 29. f. 5.

S. majus. Camer. epit. 700.—vulgare. Park.

theat. 523. 1.—f. Consolida major. Matth. 961.

S. Consolida major. Baub. pin. 259. Mor. hist.

3. f. 11. t. 29. f. 1.

Consolida major. Ger. 660. emac. 906. Raii hist.

505.

β. Symphytum patens. Sibth. oxon. n. 220.

S. majus flore purpureo. Tabern. 559. Kniph.

cent. 1. n. 86. Plenck ic. 76.

γ. S. bohemicum. Schmidt bohem. n. 211.

Leaves ovate-lanceolate decurrent.

2. Symphytum tuberosum. Tuberous-rooted Comfrey.

Lin. spec. 195. Syst. 187. Reich. 1. 395. Willd.

1. 771. Hudf. angl. 648. Wither. arr. ed. 3.

230. Smith brit. 219. Lightf. scot. 1091.

Jacqu. obs. 3. 12. t. 63. austr. t. 225. Scop.

carn. n. 196. Hoffm. germ. 64. Schmidt bohem.

n. 213. Krock. files. n. 283. Villars dauph. 2.

452. Allion. pedem. n. 162. Kniph. cent. 1. n.

87. Sabb. hort. 2. t. 31. Baub. hist. 3. 594.

Dod. pempt. 134. 2. Ger. emac. 806. 3. Park.

theat. 523. 3. Raii hist. 505. Clus. hist. 2.

166. 2.

S. majus tuberosa radice. Baub. pin. 259. Tournef.

inst. 138. Mor. hist. f. 11. t. 29. f. 2.

Leaves ovate semidecurrent: the uppermost opposite.

3. Symphytum orientale.

Lin. spec. 195. Reich. 1. 395. Willd. 1. 771.

S. orientale, folio subrotundo aspero, flore cæruleo.

Tournef. cor. 7.

S. constantinopolitanum, boraginis folio & facie, flore

albo. Tournef. cor. 7. Buxb. cent. 5. 36. t. 68.

Leaves ovate subpetioled.

## DESCRIPTIONS, &c.

1. Root perennial, fleshy, externally black. Stem two or three feet high, upright, leafy, winged, branched at the top, clothed with short bristly hairs that point rather downward. Leaves waved, pointed, veiny, rough; the radical ones on footstalks, and broader than the rest. Clusters of flowers in pairs on a common stalk, with an odd flower between them,

# S Y M

recurved, dense, hairy. Corolla yellowish-white, sometimes purple, the rays downy at each edge<sup>b</sup>.

Native of Europe and Siberia: frequent in watery places, on the banks of rivers and ditches; flowering from the end of may to september.

The root abounds in a pure tasteless mucilage, like that of Marsh-Mallow, but, according to Lewis, somewhat stronger bodied, or more tenacious, and in rather larger quantity. Being easily obtained, it may therefore be conveniently substituted for that of Althæa or Marsh-Mallow, in all cases where emollients or demulcents are in use: as, in irritations of the throat, intestines, and above all the bladder<sup>c</sup>.

β. The variety with a red or purple flower is more common on many parts of the continent than in England. In Holland I seldom observed any other. Dr. Sibthorpe made a new species of it, distinguishing it by a shorter and more spreading calyx; but he does not seem to be warranted in this remark<sup>d</sup>.]

Mr. Miller asserts that the difference in colour is permanent in the plants raised from seeds, and that the purple and whitish yellow flowers are never found mixed, where the plant grows wild; but as he found no specific differences between them, he has not separated them.

2. Roots composed of many thick fleshy knobs or tubers, which are joined by fleshy fibres; the stalks rise a foot and half high, and incline on one side; the leaves on the lower part are six inches long, and two inches and a half broad in the middle, ending in acute points, and not so rough and hairy as the preceding species; they are alternate and sessile. The two upper leaves on every branch stand opposite, and just above them, are loose bunches of pale yellow flowers, the corolla of which is stretched out farther beyond the calyx than in the common sort.

[It is perhaps a variety of that, but the root is white on the outside, not black as in the preceding<sup>e</sup>. It is also a lower plant. The stem-leaves are ovate, and the petioles winged, but they are scarcely decurrent. The rays of the corolla are toothletted, as in the officinale<sup>f</sup>.

Native of Germany, Austria, France, Spain and Italy.—It has been observed in several places in Scotland. Mr. Yalden found it growing sparingly opposite the new well at the water of Leith, but more plentifully in Dr. Robertson's walks at North Marchiston, near Edinburgh<sup>g</sup>. It was cultivated in 1596 by Gerarde, and flowers from may to october<sup>h</sup>.]

3. Root perennial. Stalks two feet high. Leaves rounder, and armed with rough prickly hairs. Flowers in bunches like the first sort, but blue. They appear in march, but seldom produce seeds in England. By the side of rivulets near Constantinople.

## PROPAGATION AND CULTURE.

These plants may be cultivated, either by sowing their seeds in the spring, or by parting their roots; the latter being the more expeditious is chiefly practised. The best season for parting the roots is the autumn, at which time almost every piece of a root will grow. They should be planted about two feet and a half asunder, that they may have room to spread, and will require no farther care but to keep them clear from weeds; for they are extremely hardy, and will grow upon almost any soil, or in any situation.

[SYMPHYTUM. See Coris, Cynoglossum, Gypsophila, Onosma, Pulmonaria.

SYMPLOCOS. (Απο του συμπλεκεσθαι, on account of the rare connection of the petals. Jacquin.)

Lin. gen. n. 677. Retz. n. 980. Schreb. n. 1223.

Jacqu. amer. 166. Swartz prodr. 109. obs. t. 7.

f. 1. Juss. 157. L'Herit. in Linn. trans. 1.

174. Siponima Aubl. 226. Cavanill. diff. 7.

370. t. 217?

Class. 18. 4. Polyadelphia Polyandria.

Nat. order of Guaiacaneae Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, five-cleft, small: segments roundish, erect.

<sup>b</sup> Engl. bot.

<sup>c</sup> Linn.

<sup>e</sup> Woody. & Engl. bot.

<sup>f</sup> Engl. bot.

<sup>g</sup> Lightfoot.

<sup>d</sup> Engl. bot.

<sup>h</sup> Hort. kew.



COR. *Petals* five or eight, oblong, obtuse, erect, spreading very much above.

STAM. *Filaments* very many, awl-shaped, flat, shorter than the petals, growing in four rows to the tube of the corolla: the lower ones shorter. *Anthems* roundish.

PIST. *Germ* superior, roundish. *Style* filiform, length of the stamens. *Stigma* headed, subtrifid.

PER. *Drupe*? five-celled.

SEEDS many.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. five-petalled, (five to eight) erect at the base. Stam. in four rows growing to the tube of the corolla. Fruit five-celled.

#### SPECIES.

##### 1. *Symplocos martinicensis*.

*Lin. spec.* 747. *yst.* 699. *Reich.* 3. 588. *Jacqu. amer.* 166. t. 175. f. 68. *piet.* 81. t. 261. f. 41. *Swartz prodr.* 109. *obs.* t. 7. f. 1. *L'Herit. in Linn. transf.* 1. 174.

*Peduncles* subracemed, leaves very smooth crenulate.

##### 2. *Symplocos Cipunima*.

*L'Herit. in Linn. transf.* 1. 175.

*Cipunima guianensis.* *Aubl. guian.* 567. t. 226.

*Peduncles* many-flowered, leaves entire villose beneath.

##### 3. *Symplocos Arechea*.

*L'Herit. in Linn. transf.* 1. 176.

*Peduncles* about five-flowered, leaves ferrate almost naked.

##### 4. *Symplocos octopetala*.

*Swartz prodr.* 109.

*Flowers* eight-petalled.

#### DESCRIPTIONS, &c.

1. This is a branching tree, twenty-five feet high. Leaves ovate, acute, shining, subcoriaceous, petioled, placed indeterminately. Flowers white, smelling like those of Hawthorn (*Cratægus Oxyacantha*.) Filaments inserted into a pentapetalous corolla, so as to render it internally monopetalous, by connecting the edges of the petals with their flat bases<sup>1</sup>.

Swartz remarks, that the fruit, which he had seen only in an unripe state, seems to be a drupe; that the calyx in the flower seems to be inferior, but becomes superior, crowning the fruit.

Native of Martinico, in woods; flowering there in november.

2. The shoots of this species are very villose. The leaves are more or less villose beneath, for the most part entire or sometimes but seldom very loosely toothletted. Nuts five-celled.—Native of Guiana.

3. This is intermediate between the first and second. Perhaps they may be all varieties of the same species.—Native of the woods of Peru, where it was found by Dombey<sup>2</sup>.

##### 4. Native of Jamaica<sup>1</sup>.

Swartz observes, that this genus is very nearly allied to *Hopea*, but is certainly different; and that it has still more resemblance to *Alstonia*. L'Heritier unites them all, and remarks, that the imbricate calyx of *Alstonia* resembles the bractes of *Symplocos*, which might be considered as an exterior calyx. The younger Linneus called the corolla in *Alstonia* one-petalled, because it appears to be really such in *Symplocos*. The border is from eight to ten-parted in *Alstonia*: the *Symplocos* of Swartz is eight-petalled. The filaments of *Alstonia* inserted into the tube, imbricate, the outer longer, resemble the stamens of *Symplocos*, disposed in several imbricate rows, the interior of which are shorter. The younger Linneus adds, that the germ is superior in *Alstonia*, because it seems to be so in *Symplocos*: and both Jacquin and the elder Linneus considered it as such. Aublet has nothing about the position of the germ in *Cipunima*<sup>m</sup>. Linneus, following Jacquin, placed the genus *Symplocos* in the class Polyandria.

SYMPLOCOS ALSTONIA. See *Alstonia*.

SYMPLOCOS TINCTORIA. See *Ilopea*.

SYNEIRELLA. See *Verbesina*.

SYRIAN RUE. See *Peganum*.

<sup>1</sup> Jacquin.

<sup>2</sup> L'Heritier.  
<sup>m</sup> L'Heritier.

<sup>1</sup> Swartz.

SYRINGA. (From *Συριγγή*, a Pipe: a *virgarum rectarum* longitudine, & fungosæ interioris medullæ copia, quæ exempta ramuli fistulosi fiunt. Clusius. Hence the old English name of Pipe Tree, now lost.—Casp. Bauhin regards it as an African word.—Linneus places it among his poetical names, but with a mark of doubt. The story of the nymph Syrinx in Ovid is well known.—Lilac or Lilag is a Persian word signifying a flower.)

*Lin. gen.* n. 22. *Reich.* n. 22. *Schreb.* n. 28.

*Gertn.* t. 49. *Lilac.* *Tournef.* t. 372. *Juss.*

105.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariæ*. *Jasmineæ* Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, small: mouth four-toothed, erect; permanent.

COR. one-petalled, funnel-form: tube cylindric, very long: border four-parted, spreading and rolled back; segments linear, obtuse.

STAM. *Filaments* two, very short. *Anthems* small, within the tube of the corolla.

PIST. *Germ* oblong. *Style* filiform, length of the stamens. *Stigma* bifid, thickish.

PER. *Capsule* oblong, compressed, acuminate, two-celled; two-valved; valves contrary to the partition.

SEEDS solitary, oblong, compressed, acuminate at both ends, with a membranaceous edge.

#### ESSENTIAL CHARACTER.

Cor. four-cleft. Caps. two-celled.

#### SPECIES.

##### 1. *Syringa vulgaris*. Common Lilac.

*Lin. spec.* 11. *Reich.* 1. 20. *Willd.* 1. 48. *hort. cliff.* 6. *ups.* 6. *Hall. belv.* n. 531. *Roth. germ.* 1. 4. 2. 4. *Hoffm. germ.* 3. *Krock. fles.* n. 7. *Villars dauph.* 2. 6. *Gertn. fruct.* 1. 224. *Du Roi barbecc.* 2. 443. *Knor. del. hort.* 2. t. S. 11. *Berg. phyt.* 223. *Dubam. arb.* 2. t. 138.

##### α. *S. cærulea*. Common blue Lilac.

*Baub. pin.* 398. *Ger.* 1213. f. 2. *emac.* 1399. f. 2. *Raii hist.* 1763.

*S. flore cæruleo.* *Clus. hist.* 1. 56. 1. *Best. eyf.* *vern. frut.* t. 1. f. 2.—f. *Lilac.* *Baub. hist.* 1. 204.

*Lilac.* *Matth.* 1237.—f. *Syringa flore cæruleo.* *Park. parad.* 407. t. 409. f. 4. *theat.* 1467. f. 1. —vulgare. *Allion. pedem.* n. 307.

##### β. *S. violaceo*. Common purple Lilac.

*Curt. magaz.* t. 183. *Mill. fig.* t. 163.

##### γ. *S. alba*. Common white Lilac.

*Leaves* ovate-cordate.

##### [2. *Syringa chinensis*. Chinese Lilac.

*Willd. arb. Berol.* 378. *spec.* 1. 48.

*Leaves* ovate-lanceolate.]

##### 3. *Syringa persica*. Persian Lilac.

*Lin. spec.* 11. *Reich.* 1. 21. *Willd.* 1. 48. *hort. cliff.* 6. *ups.* 6. *Mill. fig.* t. 164. f. 1. *Munting.* t. 57. *Du Roi barbecc.* 2. 446. *Kniph. orig.* 6. n. 89. *Berg. phyt.* 225. *Pluk. phyt.* t. 227. f. 8.

##### α. *S. persica cærulea*. Blue Persian Lilac.—fol. integris. *Raii hist.* 1763. *Curt. magaz.* t. 486.

*Lilac ligustri folio.* *Tournef. inst.* 602. & *Dubam. arb.* 6.

*Agem Lilac Persarum.* *Corn. canad.* 190.

##### β. *S. persica alba*. White Persian Lilac.

##### γ. *S. laciniata*. Cut-leaved or pinnatifid-leaved Persian Lilac.

*Mill. dict.* n. 3. *fig.* t. 164. f. 2. *Lin. hort. cliff.* 6. *ups.* 6. *Munting.* t. 56. *Du Roi barbecc.* 2. 447. *Gmel. it.* 3. 304.

*Lilac laciniato folio.* *Tournef. inst.* 602.

*Ligustrum foliis laciniatis.* *Baub. pin.* 476.

*Syringa Persica f. Lilac foliis incis.* *Park. theat.* 1467. 3. *Raii hist.* 1763.

*Leaves* lanceolate.

##### [4. *Syringa suspensa*.

*Lin. spec. ed. Willd.* 1. 49. *Thunb. jap.* 19. t. 3.

*Rengio. Kämpf. amoen.* 5. 907.

*Leaves* ovate serrate and ternate.]

#### DESCRIPTIONS, &c.

1. This shrub grows to the height of eighteen or twenty feet in good ground, and divides into many branches



branches; those of the white sort grow more erect than the blue; and the purple or Scotch Lilac has its branches yet more diffused. The branches of the white are covered with a smooth bark of a gray colour; in the other two it is darker. The leaves of the white are of a brighter green: they are heart-shaped in all, almost five inches long, and three inches and a half broad near the base; placed opposite, on foot-stalks an inch and half in length. The buds of the future shoots, which are very turgid before the leaves fall, are of a very bright green in the white sort, but those of the other two are dark green. The flowers are always produced at the ends of the shoots of the former year, and below the flowers other shoots come out to succeed them; for that part upon which the flowers stand decays down to the shoots below every winter. There are generally two bunches or panicles of flowers joined at the end of each shoot; those of the blue are the smallest, the flowers also are smaller, and placed thinner than either of the others: the bunches on the white are larger, but those of the Scotch are larger still, and the flowers fairer; this therefore makes the best appearance. The panicles of flowers grow erect, and being intermixed with the bright green leaves, have a fine effect; and if we add to this, the fragrant of the flowers, it may be ranged among the most beautiful shrubs which decorate the English gardens. The flowers appear early in May, or towards the end of April, and when the season is cool, will continue three weeks; but in hot seasons they soon fade. The seeds are ripe in September. [They are of an ovate-oblong form, compressed, membranous at the edge, yellow or brownish, two in each cell, of an ovate-lanceolate, coriaceous, compressed, deep-chestnut-coloured capsule; the two valves are boat-shaped, and the partition is thick, splitting into two parts, the seeds are fastened to the upper part of it on each side<sup>a</sup>.]

The Lilac is very common in the English gardens, where it has been long cultivated as a flowering shrub. It is supposed to grow naturally in some parts of Persia, but is so hardy as to resist the greatest cold of this country. There are three varieties of this shrub, which not only differ in the colour of their flowers, but also in that of their shoots and leaves; one of these has white flowers, one blue, and the third has purple flowers; the latter is commonly known by the title of Scotch Lilac. This is the most beautiful of the three, and is probably called the Scotch Lilac, because it was first mentioned in the catalogue of the Edinburgh Garden. Whether this was raised from seeds, or which other way it was obtained I could never learn; but I take it to be a distinct species from the others, because I have raised many of the plants from seeds, which have always retained their difference, as have also the white, when they were propagated by seeds; so that they may be rather esteemed as distinct sorts, although by the rules now admitted for determining specific differences, they may not have sufficient marks whereby to distinguish them; and as they have been by many of the modern botanists joined together, I shall not separate them.

[Gerarde and Parkinson cultivated the blue and white Lilac, under the name of Pipe Tree or Pipe Privets. The former says, "I have them growing in my garden in very great plenty." 1597.—Matthioli's figure is engraved from a drawing, which was taken from a plant brought over from Constantinople by Augerius de Busbeke, who during seven years was Ambassador to the Sultan Soliman from the Emperor Ferdinand I<sup>o</sup>.—The Lilac, now so common in every plantation of shrubs, was then a great rarity.

2. Leaves ovate-lanceolate, not cordate, yet very like those of the preceding, but smaller. Flowers as in *S. persica*. May it not be a mule plant?—Supposed to be a native of China<sup>b</sup>.]

3. The Persian Lilac is a shrub of much lower growth than the common sort, seldom rising more

than five or six feet high. The stems are covered with a smooth brown bark: the branches are slender, pliable, extend wide on every side, and frequently bend down where they are not supported. Leaves two inches and a half long, and three fourths of an inch broad, of a deep green colour. Flowers in large panicles at the end of the former year's shoots, as in the former; of a pale blue colour, and having a very agreeable odour. They appear at the end of May, soon after those of the common sort, and continue longer in beauty, but do not perfect their seeds in England.

β. There is a variety of this with almost white flowers, but whether it came from seeds, or was accidentally produced from suckers of the purple sort, I cannot say.

γ. This (which Mr. Miller makes a distinct species) differs in having two sorts of leaves; those on the lower part of the branches are for the most part entire, but broader and shorter than in the common Persian Lilac, and not ending in such sharp points. The leaves on the younger branches are cut into three or five segments like winged leaves (pinnatifid) almost to the midrib. The branches are slenderer and weaker; their bark is of a darker brown, and the flowers of a brighter purple colour.

This was brought into Europe, before that which is now the common Persian Lilac, under the Persian name of *Agem*.

This shrub was formerly known among the nurserymen by the name of *Persian Jasmin*.

[It appears from the catalogue of the Oxford garden, that it was cultivated here in 1658.—Parkinson (1640) says it is now to be seen with Master Tradescant, at South Lambeth. He speaks of the variety with cut or pinnatifid leaves.

4. Stem flexuose, ascending and then hanging down, little branched, four-cornered with the corners acute, muricated with small scattered tubercles. Branches opposite, remote, divaricated, resembling the stem. Leaves many from a bud; the first simple, petioled, ovate, acute, serrate, smooth, thin, coming out in flowering time; the next ternate. Petioles the length of the leaves. Flowers from opposite buds solitary, two or three, yellow, on a wrinkled peduncle. Calyx three times shorter than the corolla, four-parted almost to the base: segments lanceolate. Corolla bell-shaped, four-parted to the middle: segments ovate, obtuse. Anthers oblong, grooved, length of the calyx. Germ superior, ovate, smooth: style length of the calyx: stigma headed, two-lobed. It differs from the other species, in having the calyx more deeply divided, and the corolla bell-shaped, not funnel-shaped.

Native of Japan, in Miaco, &c. often cultivated for the elegance of the flowers. It begins to flower in April<sup>c</sup>.

Willdenow remarks, that it is totally different from the other species, and might well be considered as a distinct genus.]

#### PROPAGATION AND CULTURE.

1. The common Lilac may be increased by seeds or suckers. If the seeds be sown soon after they are ripe, the plants will come up the following spring; but as the roots send out great plenty of suckers annually, few persons take the trouble of raising this shrub from seeds. The plants generally flower the third year from seed, and when so raised, are not so apt to send out suckers.

The common Lilac thrives best upon a rich light soil, such as the gardens near London are for the most part composed of; and there they grow to a much larger size, when they are permitted to stand unmoved, than in any other part of England. In strong loam or chalk they make no progress. If the suckers be small when they are taken from the old plants, they should be planted in a nursery, in rows three feet asunder, and one foot distance in the rows, where they may stand a year or two to get strength, and then they should be removed to the places where they are

<sup>a</sup> Gærtner.

<sup>b</sup> Matth. comm. in Diosc. Ven. 1565.

<sup>c</sup> Willdenow.

<sup>d</sup> Thunberg.



to remain. The best time to transplant these shrubs is in autumn. There is a variety or two with blotched leaves; but these variegations being the effect of weakness, whenever the shrubs become healthy, their verdure returns again.

3. The Persian Lilac is usually propagated by suckers, which the roots send out in great plenty; these should be carefully taken off from the old plant in the autumn, and planted in a nursery, in the same manner as directed for the first, where they may grow two years to get strength, and then be transplanted to the places where they are designed to remain. A better way of raising them, is by laying down the young branches, which in one year will be sufficiently rooted to transplant, and may then be treated in the same way as the suckers.

[SYRINGA. See *Bignonia*, *Cestrum*, *Jasminum*, *Mitchella*, *Nyctanthes*, *Philadelphus*.

SYZYGIIUM. See *Calyptanthus* & *Myrtus*.

SYZYGIIUM Gærtn. is *Eugenia* Linn. See Linn. trans. 3. 280.

## T.

TABACUM & TABACCUM. See *Nicotiana*.

TABAXIR. See *Arundo Bambos*.]

TABERNÆMONTANA. (So named by Plumier, in memory of James Theodore surnamed Tabernæmontanus from Berg-Zabern, the place where he was born. He published Kraeuterbuch, 1589, and figures of plants, 1590, in an oblong quarto form. He was physician to the Elector Palatine, and died in 1590.)

Lin. gen. n. 301. Reich. n. 327. Schreb. n. 424.

Plum. 30. Juss. 145.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Contortæ. Apocineæ Juss.

## GENERIC CHARACTER.

CAL. Perianth five-cleft, acute, converging, very small.

COR. one-petalled, funnel-form: tube cylindric, long: border five-parted, flat; segments obtuse, oblique.

Nectary glands five, bifid, standing round the germ.

STAM. Filaments five, very small, from the middle of the tube. Anthers converging.

PIST. Germs two, simple. Style awl-shaped. Stigma oblong, headed.

PER. Follicles two, horizontally reflexed, ventricose, acuminate, one-celled, one-valved.

SEEDS numerous, ovate-oblong, obtuse, wrinkled, immersed in pulp, imbricate.

## ESSENTIAL CHARACTER.

Contorted. Follicles two, horizontal. Seeds immersed in pulp.

## SPECIES.

1. Tabernæmontana citrifolia. Citron-leaved Tabernæmontana.

Lin. spec. 308. syst. 255. Reich. 1. 600. Willd. 1. 1244. hort. cliff. 76. Jacqu. amer. 38. t. 175. f. 13. pict. 25. t. 40.

T. citri foliis undulatis. Plum. gen. 18. ic. 248. f. 2. Leaves opposite ovate, flowers lateral glomerate-umbelled.

2. Tabernæmontana laurifolia. Laurel-leaved Tabernæmontana.

Lin. spec. 308. syst. 255. Reich. 1. 600. Willd. 1. 1244. Jacqu. amer. 39. pict. 25. Brown. jam. 182. Amm. herb. 212.

Nerium arboreum, folio latiore obtuso, flore luteo minore. Sloan. jam. 2. 62. t. 186. f. 2.

Leaves opposite oval bluntish.

[3. Tabernæmontana echinata. Rough-fruited Tabernæmontana.

Lin. spec. ed. Willd. 1. 1245. Aubl. guian. 263. t. 103.

Leaves opposite ovate-oblong acuminate, flowers glomerate-umbelled, fruits echinate.

4. Tabernæmontana heterophylla. Various-leaved Tabernæmontana.

Vahl. ecl. 2. 22.

Leaves elliptic-lanceolate and subcordate somewhat waved acuminate smooth on both sides, branches dichotomous, flowers racemed.

5. Tabernæmontana grandiflora. Great-flowered Tabernæmontana.

Lin. syst. 255. Reich. 1. 600. Willd. 1. 1245. mant. 53. Jacqu. amer. 40. t. 31. pict. 25. t. 41.

Leaves opposite, stem dichotomous, calyxes unequal very loose.

6. Tabernæmontana cymosa. Cyme-flowered Tabernæmontana.

Lin. syst. 255. Reich. 1. 600. Willd. 1. 1245. mant. 53. Jacqu. amer. 39. t. 181. f. 14. pict. 25. t. 259. f. 10.

Leaves opposite ovate-lanceolate, flowers cymed.

7. Tabernæmontana amygdalifolia. Almond-leaved Tabernæmontana.

Lin. syst. 255. Willd. 1. 1245. Jacqu. amer. 39. t. 181. f. 15. pict. 25. t. 259. f. 11.

Stamens extending beyond the tube of the corolla.

8. Tabernæmontana discolor.

Lin. spec. ed. Willd. 1. 1245. Swartz prodr. 52. descr. 1. 535.

Leaves opposite ovate lanceolate, peduncles axillary two-flowered.

9. Tabernæmontana undulata. Wave-leaved Tabernæmontana.

Vahl. ecl. 2. 20.

Leaves lanceolate-elliptic acuminate-waved, branches dichotomous, flowers subcymed, follicles smooth.

10. Tabernæmontana persicariæfolia.

Lin. spec. ed. Willd. 1. 1246. Jacqu. collect. 4. 159. ic. rar. 2. t. 320.

Leaves opposite lanceolate-acuminate, flowers racemed.

11. Tabernæmontana neriifolia. Oleander-leaved Tabernæmontana.

Vahl. ecl. 2. 21.

Leaves lanceolate opposite, flowers subracemed axillary.

12. Tabernæmontana elliptica. Elliptic-leaved Tabernæmontana.

Lin. spec. ed. Willd. 1. 1246. Thunb. jap. 111.

Herbaceous, leaves subtern lanceolate.

13. Tabernæmontana alternifolia. Alternate-leaved Tabernæmontana.

Lin. spec. 308. syst. 255. Reich. 1. 601. Willd. 1. 1246.

Curutu-pala. Rheed. mal. 1. 83. t. 43. Raii hist. 1754.

Leaves alternate, stem arborecent.]

14. Tabernæmontana Amsonia. Virginian Tabernæmontana.

Lin. spec. 308. syst. 255. Reich. 1. 601. Willd. 1. 1246. Ait. kew. 1. 300. Pluk. phyt. t. 115. f. 3. (Apocynum.)

Amsonia Tabernæmontana. Walt. carol. 98.

Anonymus suffrutex. Gron. virg. 26.

Leaves alternate ovate-lanceolate, stems herbaceous very smooth.

[15. Tabernæmontana angustifolia. Narrow-leaved Tabernæmontana.

Lin. spec. ed. Willd. 1. 1247. Ait. kew. 1. 300.

Amsonia ciliata. Walt. carol. 98.

Leaves linear scattered, stem hairy herbaceous.

16. Tabernæmontana odorata. Sweet Tabernæmontana.

Vahl. ecl. 2. 22.

Cameraria Tanaquarina. Aubl. guian. 260. t. 102.

Leaves lanceolate-elliptic acuminate smooth, umbels axillary subsessile three or four-flowered.]

17. Tabernæmontana alba. White-flowered Tabernæmontana.

Mill. dict. n. 2.

T. lactescens



*T. lactescens*, lauri folio, flore albo, filiquis rotundioribus. *Houft. MSS.*

*Leaves oblong-ovate acuminate opposite, flowers corymbed terminating.*

[18. *Tabernæmontana bufalina.*

*Lour. cochinch. 117. ed. Willd. 145.*

*Leaves lanceolate opposite, peduncles in pairs one-flowered pendulous.*

19. *Tabernæmontana bovina.*

*Lour. cochinch. 118. ed. Willd. 145.*

*Leaves lanceolate opposite, peduncles solitary many-flowered.]*

#### DESCRIPTIONS, &c.

1. This rises with an upright woody stalk to the height of fifteen or sixteen feet, covered with a smooth gray bark, abounding with a milky juice, and sending out several branches from the side, which grow erect, and have many joints. Leaves thick, milky, from five to six inches long, and two inches broad in the middle, drawing to a point at each end; they are of a lucid green, have many transverse veins, and stand opposite on footstalks an inch long. The flowers come out in roundish axillary bunches; they are small, of a bright yellow colour, and have an agreeable odour. The tube of the corolla is half an inch long, and the brim is cut into five acute points, which spread open like those of common *Jasmin*.

[According to *Jacquin*, it is a small tree eight feet high. Leaves very shining, waved by the contraction of the veins, green but so as that the milk in which they abound appears through. Flowers few, white. Stamens within the tube of the corolla. Follicles always green. Seeds brown, lodged in a soft orange pulp. The French call it *Bois laiteux*.

Native of Jamaica, Martinico, &c. and the island of Namoka in the South Seas.—Cultivated in 1739, by Mr. Miller<sup>1</sup>.]

2. This rises with a shrubby stalk twelve or fourteen feet high, sending out a few branches towards the top which grow erect. Leaves four inches long and two broad, of a lucid green colour. The flowers are produced in a sort of umbel from the side of the branches; they are small, yellow, and have an agreeable odour.

[*Jacquin* remarks, that it is an upright little tree, five feet high, branched, milky, having the habit of the preceding. Flowers yellow, smelling very sweet, few. Stamens concealed within the corolla. Fruits green.

Native of Jamaica, St. Domingo, and other islands of the West Indies.—Cultivated in 1768 by Mr. Miller<sup>2</sup>.

3. A shrub, sending out from its root several stems of the length of five or six feet: they are woody and branched; with the branches opposite, as well as the leaves, which are ovate-oblong, acuminate, undulated at the margin, smooth and green above, and submentose and whitish beneath: flowers corymbose and terminal, situated between the forkings of the branches; they are of a yellow colour and of an agreeable smell.—Native of Guiana<sup>3</sup>.

4. Branches round, smooth, dichotomous, even. Leaves opposite at each division, and another pair between them; one three or four inches long, shortly petioled, elliptic-lanceolate, the other opposite under the division several times shorter, sessile, subcordate, or as between the division, only a little shorter, the same structure with the other, sessile, one side of the base shorter than the other: all acuminate, with the point half an inch long and sharp; the margin is a little reflexed, waved and obscurely crenate; the surface veinless, remotely nerved, paler beneath. Peduncles at the divisions and tops of the branches, five to seven-flowered; solitary, filiform, an inch long, smooth. Pedicels alternate, approximating, a little shorter than the common peduncle, one-flowered. Bractes minute, in pairs, at the base of the pedicels. Calyx smooth, with linear-lanceolate segments. Corolla half an inch in diameter, with a linear narrow tube, a little wider at the base; segments of the bor-

der lanceolate, three times shorter than the tube; the throat has a few silky/villose hairs. This species was sent by von Rohr under the name of *T. echinata*; probably he was led to suppose that it was the same with the *echinata* of Aublet, by the roughness of the follicles; but it does not correspond either with the description or figure of Aublet.—Native of Cayenne<sup>4</sup>.

5. This is an upright little tree or shrub, eight feet high, milky, branched; the branchlets dichotomous. Leaves oval, attenuated to each end, acute, quite-entire, shining, petioled, very unequal in size. Common peduncles irregular, two-flowered or three-flowered, solitary by the sides of the last forking of the branchlets: the pedicels supported by a stipule. Flowers void of scent, very large when compared with those of the other species. Calyx-leaves flat, whitish, very loose, unequal in length, the two outer cordate and very wide, the three others oblong and narrow. Tube of the corolla above the calyx twisted, and twice as long as the calyx; the border very wide. Glands roundish, obtuse, small, grooved externally, united into one at the sides. Stamens in the middle of the tube. Stigma large with a cloven top. Follicles roundish-ovate, acuminate, smooth, green. The flower has something in common with *Echites* and *Cerbera*, but the fruit is that of a *Tabernæmontana*.

According to *Linneus*, the leaves are lanceolate-ovate; the peduncles subtriflorous; the calyx-leaves scarious and white; the two outer cordate, the rest narrow.

Native of Carthage in Spanish America; flowering there from July to September.

6. This is an elegant upright little tree or shrub, with the trunk six feet high, but sometimes double that height. Leaves acute, quite entire, scarcely waved, half a foot long. Cymes ample, handsome, convex, dense, axillary. Flowers without scent, dirty white or reddish brown, about forty in a cyme, the size of those in *laurifolia* and *citrifolia*. Calyx-leaves flat, lanceolate-oblong. Tube of the corolla, quinquangular-ventricose at the base. Stamens in the enlarged base of the tube. Stigma margined at the base. Follicles oblong, very blunt, curved in, very large, reddish with rust-coloured spots. One of each pair is commonly abortive. The pulp is orange-coloured.

Frequent in the woods and coppices about Carthage in New Spain; flowering in July and August.

7. This is an upright little tree or shrub, six feet high, branched and milky. Leaves oval-lanceolate, acute, flat, shining very much, opposite. Peduncles few-flowered. Flowers white, smelling very sweet. Tube of the corolla slightly widening at the top and bottom. Filaments in the upper part of the tube, with the anthers stretched beyond it. Follicles subovate or oblong, always acuminate, green, shining, approaching to those of *citrifolia*, but commonly twice or three times smaller. Pulp orange-coloured. When it begins to flower, it is generally without leaves. Frequent about Carthage in woods and coppices<sup>5</sup>.

8. This is a shrub, a fathom in height, with a smooth, ash-coloured bark. Branches subdichotomous, spreading, round, with four-cornered smooth branchlets. Leaves entire, very slightly nerved, smooth on both sides, deep green above, pale beneath. Petioles middling, angular, smooth. Peduncles terminating, filiform, half an inch long: pedicels longer than the peduncles, one-flowered. Flowers whitish or yellowish, small. Calycine segments erect, acute. Tube of the corolla half an inch long, swelling at the base and in the middle: segments at the border roundish, waved, twisted. Filaments inserted into the middle of the tube. Anthers ovate, within the tube. Stigma headed.—Native of Jamaica<sup>6</sup>.

9. Branches smooth, roundish, under the leaves obscurely four-cornered, at top pale green. Leaves opposite, five inches long, one a little smaller than the other, produced into a point an inch in length, acute at the base, smooth on both sides, above bright

<sup>1</sup> Hort. kew.

<sup>2</sup> Idem.

<sup>3</sup> Aublet.

<sup>4</sup> Vahl.

<sup>5</sup> Jacquin.

<sup>6</sup> Swartz.



green, obscurely nerved, with a longitudinal groove in the middle of the leaf; beneath pale, veinless but transversely nerved: nerves numerous, distant, yellowish, as is also the midrib. Petiole very short. Stipule a short rim, surrounding the branch, and at length evanescent. Peduncles at first terminating, then axillary, solitary, very short, bifid: each branchlet three or four-flowered. Flowers on very short pedicels, an inch and half long, smooth. Calycine segments rounded, equal, thick. Tube of the corolla an inch long, round, thickened above the middle, then narrowed, somewhat fleshy, segments of the border linear, obtuse, erect, curved in, twisted a little, doubled together from the sides being bent back. Throat smooth. Nectary a fleshy undivided gland surrounding the germs. Filaments scarcely any. Anthers subsessile a little above the middle of the tube, linear, very narrow, acute, shorter than the throat. Germs ovate, small. Style length of the stamens. Stigma headed, mucronate, surrounded at the base by a minute membrane. Follicles an inch and half long, reflexed, curved in a little on each side, oblong-three-sided, with the back convex, having a groove along the middle, and margined with a raised line on each side; the sides flat, the belly rounded and straight; blunt at the base, and sharpish at the tip. Seeds in four rows, horizontal, striated, brown, with one extremity of the suture obverse gradually narrowed, acute, the other declining towards the tip, wider, obliquely transverse at the tip itself, the margin acute. Navel ventral, towards the sharper tip, turning towards the pedicel. Aril incomplete, fleshy, irregular, compressed, thicker towards the navel.—It differs from *T. discolor*, in having many-flowered peduncles, very short pedicels, the calycine segments obtuse, the flowers large, and the anthers linear; from *grandiflora* by the calycine segments being equal: from *cymosa* in having the cymes few-flowered, the calycine segments rounded, and the tube of the corolla equal at the base: from *echinata* of Aublet, by the follicles not being echinate.—Native of the island of Trinidad: where it was found by Ryan<sup>z</sup>.

10. This grows in the island of St. Mauritius; and flowers in the Austrian stoves in the month of July and August. It is a shrub of ten feet high, branchy, with an upright stem of an arm's thickness: the whole shrub is smooth, and abounds with a milky juice: the leaves are opposite, on short footstalks, and are of a narrow linear-lanceolate shape, entire, glossy, and of a bright green colour: the flowers are of a pale yellowish colour<sup>a</sup>.

11. Branches dichotomous, thickly warted at top from the fallen leaves, smooth, round. Leaves on short petioles, from two to three inches in length, nearly equal, sharp at both ends, very smooth and even, veinless, transversely remotely very finely and indistinctly nerved, quite entire, scarcely waved, paler beneath. Peduncles axillary, solitary, twice as long as the petiole, three or four-flowered: pedicels alternate, very short: at the base of each a minute linear bracte, which is deciduous. Calyx smooth, with oblong acute segments. Corolla half an inch in diameter: segments longer than the tube, somewhat wedge-shaped, smooth, scarcely pubescent at the base within. Anthers prominent beyond the tube of the corolla, beaked. The *persicariaefolia* of Jacquin is allied to this, but differs in having the leaves a little veined beneath; the peduncles bifid with the branches three or five-flowered; and the tube of the corolla twice as thick.—Native of Porto Ricco, where it was found by von Rohr<sup>b</sup>.

12. Stem herbaceous, round, gradually attenuated, simple, smooth, a foot high or a little more. Leaves scattered, two, three or four together, elliptic or lanceolate-acuminate, entire, nerved, smooth, beneath a little pale, even, spreading, an inch and half long, the upper ones smaller. Petioles very short, gradually widening into the leaf, in a sort of whorl, four, three or two together, approximating, not opposite. Flowers terminating in racemes. Peduncles capillary, al-

ternate, one-flowered, a line in length. Under each peduncle a bristle-shaped bracte, shorter than the peduncle. Calyx five-parted, many times shorter than the corolla, with bristle-shaped segments. Corolla blue, small. Very nearly allied to *T. Amsonia*, but has narrower leaves, attenuated to both ends, scarcely netted beneath, not opposite but two, three or four near together in a sort of whorl; the stem also is round, not angular.—Native of Japan<sup>c</sup>.

13. This is a small tree or shrub from one to two fathoms in height, with a trunk a foot thick, covered with a brown milky bark, ash-coloured on the branches. Leaves on short thick petioles, rounded-oblong, contracted next the petiole, and ending in a long point, of a solid texture, milky, of a dark shining green above, beneath paler: the midrib is white, and many parallel nerves issue from it obliquely. The flowers come out at the end of the twigs on round slender weak peduncles; the corolla is white; the calyx-leaves are pale green and pointed. Follicles rounded-oblong, pointed at the end, when ripe of a golden yellow without, and paler yellow within. Seeds five, six or seven oblong, irregular.

Native of Malabar, where it flowers great part of the year, particularly in the rainy season<sup>d</sup>.]

14. This is a perennial plant, sending up in the spring two or three herbaceous stalks near a foot high. The flowers are produced in small terminating bunches, white and void of scent. It had the name of *Amsonia* given it by Mr. Clayton, who first discovered it in Virginia. [It is allied both to *Cameraria* and this genus. Leaves wide lanceolate, subsessile, even. Branches alternate. Raceme compound, terminating. Follicles reflexed, round, long, acuminate. Seeds cylindrical, rugged. Anthers within the throat of the corolla. Stigma headed above a membranaceous ring<sup>e</sup>.

Native of North America. Cultivated in 1759, by Mr. Miller. It flowers in May and June.

15. It is a perennial plant, native of North America; and was introduced in 1774 by Mr. James Gordon. It flowers in May and June<sup>f</sup>.

16. Branches dichotomous, round, smooth, purplish brown: branchlets compressed, with the two opposite sides grooved. Leaves on short petioles, opposite, four or five inches long, one smaller than the other; they are sharp at both ends, indistinctly veined, somewhat shining on the upper surface, the uppermost often rust-coloured beneath, very smooth on both sides, flat at the edge, quite entire. Instead of a stipule there is a rim on both sides between the petioles. Peduncles from every other axil, very short, solitary. Pedicels four, sometimes three, an inch long, filiform, purplish, smooth, without bractes, one-flowered. Segments of the calyx awl-shaped. Segments of the corolla linear-lanceolate, longer than the tube, hoary within, at the base: tube gradually narrowing upwards.—Native of Surinam<sup>g</sup>.]

17. This rises with a woody stalk ten or twelve feet high, covered with a wrinkled gray bark, and sending out many branches towards the top. Leaves of a lucid green, and a thick consistence, five inches long and two inches and a half broad, rounded at both ends, but terminating with an acute point, and placed on short footstalks. The flowers come out in pretty large roundish bunches at the ends of the branches; they are smaller than those of *citrifolia*, white, and have an agreeable odour. The follicles are shorter and rounder. It was discovered by William Houstoun, M.D. in the year 1730, growing naturally at La Vera Cruz.

[18. This is a shrub five feet high, almost upright, branched. Leaves quite entire, shining. Peduncles lateral, long. Corolla salver-shaped, white; tube cylindrical, long, slender, swelling at the base. Stamens above the middle of the tube. Style shorter than the stamens, with an ovate bifid stigma. Follicles longish, subventricose, acuminate, torulose, smooth. Seeds oblong, angular, in a red pulp.—Native of Cochinchina.

<sup>c</sup> Thunberg.<sup>d</sup> Hort. malab.<sup>e</sup> Linn. spec.<sup>f</sup> Hort. kew.<sup>g</sup> Vahl.<sup>z</sup> Vahl. ecl.<sup>a</sup> Jacquin.<sup>b</sup> Vahl.



## T A C

19. This is an upright shrub four feet high, with the branches reclining. Leaves quite entire, smooth. Peduncles axillary, almost upright, bearing about five flowers. Corolla white, salver-shaped. Follicles divaricating, recurved, short, swelling, acuminate, not torulose. Seeds roundish, angular, in a red pulp.

Native of Cochinchina; where it is esteemed emollient; the milky viscid juice is reputed excellent for assisting in the extraction of darts or thorns<sup>b</sup>.

Loureiro has named these two species from the similitude of the follicles to the horns of the Buffalo and Ox.]

## PROPAGATION AND CULTURE.

These plants, being mostly natives of the West Indies, are very impatient of cold, and will not live in this country, unless they are placed in a warm stove; they may be propagated by seeds, which must be procured from the countries where the plants grow naturally; these should be sown early in the spring on a hot-bed, and when the plants are come up, and are fit to remove, they must be carefully transplanted into small pots filled with light rich earth, and then plunged into a hot-bed of tanners bark, being careful to shade them in the heat of the day until they have taken new root; after which time, they must have free air admitted to them every day when the weather is warm; but if the nights should prove cold, the glasses of the hot-bed should be covered with mats every evening, soon after the sun goes off from the bed. These plants must be often refreshed with water, but it must not be given to them in large quantities, especially while they are young, for as they are full of a milky juice, they are very subject to rot with much moisture.

The plants may remain during the summer season in the hot-bed, provided the tan is stirred up to renew the heat when it wants, and a little new tan added; but at Michaelmas, when the nights begin to be cold, the plants should be removed, and plunged into the bark-bed in the stove; where, during the winter season, they must be kept in a moderate degree of warmth, and in cold weather they should have but little water given them, lest it should rot them. The plants should constantly remain in the stove, where, in warm weather, they may have free air admitted to them by opening the glasses, but in cold weather they must be kept warm. With this management the plants will thrive and produce their flowers, and as their leaves are always green, they will make a pleasant diversity amongst the tender exotic plants in the stove.

These plants may also be propagated by cuttings during the summer season, which should be cut off from the old plants, and laid to dry in the stove five or six days before they are planted, that the wounded parts may heal, otherwise they will rot. These cuttings should be planted in pots filled with fresh light earth, and plunged into the hot-bed of tanner's bark, and closely covered with a hand-glass, observing to shade them from the sun in the middle of the day in hot weather, as also to refresh them now and then with a little water. When the cuttings have taken root, they may be transplanted into separate pots, and treated in the same manner as those which are raised from seeds.

14. This species and the next will live in the open air here, provided they are planted in a warm situation. They love a light soil, rather moist than otherwise; but if they be planted in dry ground, they should be frequently watered in dry weather. Not producing seeds in England, they are increased by offsets, and as they do not send out many of these, they are at present rare in our gardens.

TACAMAHACA. See *Populus*.

[TACCA. (Adopted by Forster from Rumphius.)

*Lin. gen. Schreb. n. 583. Forst. gen. t. 35. Gært. t. 14. Juss. 56.*

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariae*. *Narcissi* Juss.

<sup>b</sup> Loureiro.

## T A C

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, superior, permanent, six-parted: *segments* oblong, converging.

COR. *Petals* six, inserted into the base of the calycine segments, helmet-arched: the lip of the helmet emarginate-two-lobed.

STAM. *Filaments* scarcely any. *Anthers* six, oblong, fastened within to the arch of the petals, tending downwards at the tip.

PIST. *Germ* inferior. *Style* short, straight, thick. *Stigma* orbicular, stellate: *rays* six bluntish, convex above.

PER. *Berry* dry, subglobular, six-ribbed, hexangular, one-celled, crowned with the calyx.

SEEDS very many, ovate, somewhat angular, striated, fastened all round to the stem of the berry.

OBS. *Are not the petals rather to be denominated Filaments? Solander thought they might. The Berry before it is ripe is three-celled, but when ripe, the pulp is so dried up that the cells cannot be at all distinguished.*

## ESSENTIAL CHARACTER.

Cal. six-parted. Cor. six-petalled, inserted into the calyx, anther-bearing. Stigma stellate. Berry dry, hexangular, many-seeded, inferior.

## SPECIES.

1. *Tacca pinnatifida*.

*Lin. syst. 455. Willd. 2. 200. suppl. 251. Forst. prodr. n. 209. escul. n. 28. Lour. cochinch. 300. ed. Willd. 368.*

*T. pinnatifolia. Gært. fruct. 1. 43.*

*T. littorea, & sativa. Rumph. amb. 5. 324. 328. t. 112. 114.*

*Leontice Leontopetaloides. Lin. spec. 448.*

*Leontopetaloides. Amm. in act. petrop. 8. 211. t. 113.*

## DESCRIPTION, &amp;c.

Root tuberous, composed of many tubers heaped together, here and there emitting fibres. Radical leaf subsolitary, petioled, ternate or biternate; leaflets lacinate-pinnatifid, acute, even, spreading, decurrent a little along the sides of the petioles, a long span or a foot in length. Petiole round, fistular, grooved (in the cultivated variety smooth, variegated with dirty spots) at the very bottom sheathing a scape, spreading, even. Scape half a fathom in height, herbaceous, fistular, grooved towards the top, erect. Umbel terminating, sessile, quite simple. Involucre about seven-leaved; leaflets two inches long, the two outer sessile, pinnatifid, the rest spatulate even, the lamina roundish, with a very short point at the end. Peduncles four to eight, almost the length of the involucre, quite simple, somewhat angular, one-flowered, spreading. Eight or twelve very long threads, many times longer than the involucre, spreading, hanging out beyond the umbel, twisted in, interposed between the peduncles, are instead of bractes. Anthers twelve, on very short filaments, or subsessile. Germs three, or one three-lobed. Styles three, very short. Stigmas obcordate, two lobed. Berry black, ovate, wrinkled, obscurely angular, crowned with the calyx, three-celled, many-seeded: when unripe hexangular, fleshy, two inches in diameter. Seeds brown<sup>i</sup>.

According to Gærtner, the calyx is six-cleft; the number of anthers uncertain, (six only seem to have been reckoned by Solander, who also regarded the petals as cowed filaments) style one, with an orbicular, six-rayed stigma. Berry membranaceous, crowned with the whole permanent flower, ribbed with six raised nerves, having a watery pulp in it. Seeds subovate, variously angular from their mutual pressure, longitudinally striated, of a pale russet colour.

Native of the East Indies, China, Cochinchina, Banda and the Society isles.

The root is red, the size of a man's fist, roundish<sup>k</sup>. In its natural state it is one of the most bitter and acrid, but loses something of these qualities by culture. The raw root is rasped, and washed frequently in water, when a white meal falls to the bottom like starch; this is again washed twice or thrice, till no more acrimony can be perceived in the water.

<sup>i</sup> Forst. escul.

<sup>k</sup> Loureiro.



# T A G

The meal is then dried in the sun. The first infusions are thrown away carefully, being looked upon as noxious and even deadly. In Otaheite and the other Society isles, they make of this meal a tasteful nourishing, gelatinous cake like Salep. In Banda, where Sago bread is not common, they use this as a succedaneum, and it is even preferable to the other. They also apply it as a plaster to deep wounds<sup>1</sup>. The petioles and stalk boiled a long time, lose their acrimony, and are rendered fit for food, as well as the roots in China and CöchinChina<sup>m</sup>.

TACHIA. See *Myrmecia*.

TACHIBOTA. See *Salmasia*.

TACHIGALIA. See *Cubæa*.

TÆDA. See *Pinus*.

TAGADI. See *Ischemum*.

TAGERA. See *Cassia*.]

TAGETES. (From Tages, grandson of Jupiter and son of Genius, who first taught the Etruscans the art of divination.—Apuleius who first used this name, applied it to the Tansey. Dillenius.)

Lin. gen. n. 964. Reich. n. 1044. Schreb. n. 1302.

Tournef. t. 278. Vaill. acf. gall. 1720. 43. 15.

Dill. elth. 280. 279. Juss. 182. Gärtn. t. 172.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Oppositifoliæ*. *Corymbiferae* Juss.

## GENERIC CHARACTER.

CAL. Common quite simple, one-leafed, tubular, oblong, five-cornered, five-toothed.

COR. Compound radiate: Corollets hermaphrodite, tubular, many, on an elevated disk. Females ligular, five, in the ray.

Proper in the Hermaphrodites, tubular, half-five-cleft, erect, longer than the calyx, segments linear, inwardly villose.—In the Females ligular, longer than in the hermaphrodites, almost equal in length and breadth, very blunt, narrower towards the tube, tomentose, permanent.

STAM. in the Hermaphrodites: Filaments five capillary, very short. Anther cylindrical, tubular.

PIST. in the Hermaphrodites: Germ oblong. Style filiform, length of the stamens. Stigma bifid, slender, reflexed.—In the Females Germ oblong. Style filiform, length of the hermaphrodite. Stigma bifid, slender, reflexed.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites solitary, linear, compressed, a little shorter than the calyx. Down with five, erect, acuminate, unequal chaffs.—In the Females like the others.

REC. naked, small flat.

## ESSENTIAL CHARACTER.

Cal. one-leafed, five-toothed, tubular. Florets of the ray five, permanent. Down with firm erect chaffs. Recept. naked.

## SPECIES.

1. *Tagetes patula*. French Marygold.

Lin. spec. 1249. Reich. 3. 840. hort. cliff. 418.

ups. 267. Thunb. jap. 320. Lour. cochinch. 504.

ed. Willd. 616. Kniph. cent. 10. n. 90. Knorr.

del. 1. t. S. 7. Curt. magaz. t. 150.

α. Flore simplici. Single-flowered French Marygold.

Tanacetum africanum f. Flos africanus minor.

Bauh. pin. 132.

Flos africanus. Dod. pempt. 255.—minor simplici

flore. Ger. 611. 5. emac. 750. 4. minor simplex.

Park. parad. 304. 5. t. 305. f. 8.

Tagetes indicus minor simplici flore, f. Caryophyl-

lus indicus, f. Flos africanus. Bauh. hist. Raii

hist. 343.

Chrysanthemum africanum Tanaceti folio procum-

bens, f. minus flore simplici. Mor. hist. 3. 16.

n. 13. f. 6. t. 5. f. 1. ord. 3.

β. Flore pleno. Double-flowered French Marygold.

Tagetes indicus minor, multiplicato flore. Tournef.

inst. 488. Knorr. del. 1. t. S. 8.

T. minor flore fulvo maculato. Dill. elth. 373. t.

279. f. 361.

Flos africanus minor multiplex. Park. parad. 304.

4. t. 305. f. 6, 7.

<sup>1</sup> Forst. escul.

<sup>m</sup> Loureiro.

# T A G

Chrysanthemum africanum, &c. multiplex. Mor. hist. f. 6. t. 5. f. 2. ord. 3.

Stem subdivided patulous.

2. *Tagetes erecta*. African Marygold.

Lin. spec. 1249. Reich. 3. 840. hort. cliff. 418.

ups. 267. Knorr. del. 1. t. S. 6. a.

T. major. Gärtn. fruct. 2. 437.

α. Flore simplici. Single-flowered African Marygold.

Tanacetum africanum majus simplici flore. Bauh.

pin. 133.

Flos africanus major simplici flore. Ger. 611. 4.

emac. 749. 3. Park. parad. 303. 2. t. 305. f. 3.

Caryophyllus indicus. Camer. epit. 406. Besl. exst.

est. 14. t. 2. f. 3.

β. Flore pleno. Double-flowered African Marygold.

Tagetes maximus rectus, flore maximo multipli-

catb. Bauh. hist. 3. 100. Knorr. del. 1. t.

S. 6.

Tanacetum f. Flos africanus flore pleno. Bauh.

pin. 133.

Flos africanus major polyanthus. Ger. 609. emac.

749. 1.—major f. maximus multiplex. Park.

parad. 303. 1. t. 305. f. 1; 2. Raii hist. 342.

γ. Flore fistuloso. Quill-flowered African Marygold.

Caryophyllus mexicanus fistuloso flore simplex.

Col. ecphr. 2. 47. t. 46. f. 1.—item, alter poly-

anthos fistuloso flore, 48. t. 46. f. 2.

Flos africanus fistuloso flore simplex & multiplex.

Park. parad. 303. t. 305. f. 4, 5.

Chrysanthemum africanum Tanaceti folio, flore sim-

plici & pleno fistuloso. Mor. hist. 3. 17. f. 6.

t. 5. f. 3, 4. ord. 3.

Stem simple upright, peduncles naked one-flowered.

3. *Tagetes minuta*.

Lin. spec. 1250. Reich. 3. 841. hort. cliff. 419.

T. multiflora, minuto flore albicante. Dill. elth. 374.

t. 280. f. 362.

Stem simple upright, peduncles scaly many-flowered.

4. *Tagetes rotundifolia*.

Mill. dict. n. 4.

T. americana, folio singulari subrotundo. Houst. MSS.

Stem simple upright, leaves cordate simple, peduncles

naked one-flowered.

## DESCRIPTIONS, &c.

1. [Stem a foot and half high, almost upright, smooth, diffused. Leaves deeply pinnatifid, (pinnate with a winged rachis) the segments lanceolate, serrate smooth, dark-green; paler at the back, and punched. Flowers solitary, terminating, gold-coloured, on a long upright peduncle. Calyx eight-grooved, eight-toothed, smooth and even. Corollets in the ray about thirty, grooved and plaited. Seeds blackish<sup>n</sup>. A flower that I have before me is eight-grooved and eight-toothed, as Loureiro describes it; but it has only five large ligular florets, or semiflorets, as Tournefort and Dillenius call them; but between these there are many fistular florets, which are imperfect as well as the radical ones, but have seeds. The colour is a deep reddish orange, bordered with yellow, and entirely yellow on the outside.] But there are several varieties of the French Marygold, differing in size, and greatly in colour, some beautifully variegated, and others quite plain. [Dillenius figures and describes one with oblong red spots dividing the orange. Curtis figures another, which is gold-coloured with red stripes. He remarks that the common small sort has a strong disagreeable smell, and is of more humble growth, with more spreading branches, and smaller flowers, that have usually a greater portion of yellow: the larger one, commonly called the sweet-scented, with the flowers bigger, and having a variety of rich tints; the smell of this is so modified as to be less disagreeable than the other, but it can scarcely be called sweet. From the seed of both varieties, some rise extremely double, and others single.

Dodonæus remarks the punches or perforation of the leaves; and adduces some instances, proving the plant to be of a poisonous nature; but it seems only to be warm and aromatic. He affirms that it grows spontaneously in Africa, and was first brought into

<sup>n</sup> Loureiro.



Europe by the Emperor Charles V. after his expedition against Tunis. But that was in the year 1535; and Fuchsius in 1542, figures the plant under the name of *Tagetes indica*; it has never been found in Africa. Hernandez mentions it in his history of Mexico: and the variety figured by Dillenius, which flowered in the Eltham garden in 1727, was produced from Mexican seeds°. Thunberg mentions it as cultivated in Japan; and Loureiro, in China, Cochinchina, and many parts of India; but not as indigenous of those countries.—It was common with us in Gerard's time, 1597, and appears in the catalogue of his garden, 1596<sup>p</sup>.]

It flowers from the beginning of July, till the frost puts a stop to it.

2. [Stem three or four feet high, straight, round, green, dividing from the middle into many branches, each bearing one large flower. Leaves long, pinnate, leaflets dark-green. Flowers yellow, from brimstone to orange colour.—Receptacle flat or somewhat convex, hollow-dotted, naked, smooth. Seeds linear-oblong, narrower downwards, compressed a little, angular, striated, smooth, black with the point of the base whitish. Down longer than half the seed, pale straw-coloured, five-leaved: rays chaffy-rigid, unequal, linear, smooth, shining, acuminate or obtuse<sup>q</sup>.]

Of this there are the following varieties:

1. Pale yellow or brimstone-colour.
2. Deep yellow.
3. Orange-coloured: all these with single, double and fistulous flowers.
4. Middling African, with orange-coloured flowers.
5. Sweet-scented African.

[Parkinson remarks, that the flower "is of the very smell of new wax, or of an honie combe, and not of that poisonfull sent of the smaller kindes."

It is a native of Mexico, and was cultivated by Gerard in 1596<sup>r</sup>.]

3. This is a plant of taller growth than either of the former. Stem about ten feet high, branching a little towards the top: the branches grow erect. Leaves narrower than either of the other. The peduncles stand erect, close to the stem, and sustain three or four small white flowers, which appear very late in autumn. This plant has very little beauty, and is preserved only for the sake of variety.

[Dillenius says that it grew to the height of ten or eleven feet in a pot, and still higher in the open ground, with stems as thick as the human arm, straight, rigid, round, smooth, red, leafy from top to bottom. The leaves are smaller, smooth, and have the same strong smell. the ends of the stems and branches run out into a spike which is a foot or more in length, and is composed of axillary umbels of flowers, having little bractes here and there on the pedicels. Calyxes entire, oblong, tubular, smooth, divided into three or four small segments, not striated but smooth and even, from round three-sided, variegated and as it were dotted with short brown lines. Corollas very small, yellowish white, having two, three or four florets in the ray, which are succeeded by oblong, slender, compressed blackish seeds, terminated by four or five dry whitish leafy threads, three shorter and two longer. Receptacle naked. This species is easily distinguished by its tallness, the smallness of the flowers, and their peculiar manner of growth.

It flowered in the Eltham garden, towards the end of autumn in 1728; and was raised from seeds taken from dried specimens brought over by Mylam a surgeon from Buones Ayres. It seems to be the same with the *Tagetes Chiliensis* exiguo flore, and flore minimo, of Feuillée, *obs. phys.* 3. *Hist. plant. med.* 64<sup>r</sup>.]

4. This rises with an upright stalk about two feet high, sending out a few branches towards the top. Leaves heart-shaped upon long slender footstalks; the lower ones two inches and a half long, and an inch and half broad towards the base, ending in very acute

points, in shape like those of the black Poplar, rough to the touch, and slightly crenate on the edges. The stalks and branches are each terminated by one large yellow flower, standing upon a long naked peduncle. Calyx short. Florets of the ray much longer than the calyx; those of the disk are of a deep yellow colour, and make a good appearance. This plant was discovered by Dr. Houstoun, growing naturally at La Vera Cruz in New Spain.

#### PROPAGATION AND CULTURE.

1. 2. These plants being annual, must be propagated from seeds every spring; they may be sown upon a moderate hot-bed the beginning of April; and when the plants are come up, they should have plenty of fresh air, for if they are drawn too much, they will not afterward become handsome, notwithstanding they have all possible care taken of them. When they are about three inches high, they should be transplanted on a very moderate hot-bed, which may be arched over with hoops, and covered with mats, for these plants are hardy enough to be brought up without glasses; in this bed they should be planted about six inches asunder each way, observing to water and shade them until they have taken root; but as the plants acquire strength, they should be inured to bear the open air by degrees, and about the beginning of May they should be taken up, with a ball of earth to the root of each plant, and planted into the borders of the parterre-garden, or into pots, for furnishing the courts, &c. shading them carefully from the sun till they have taken new root, and also supplying them duly with water. When their flowers appear, if any should prove single, the plants should be destroyed, and then those in pots may be removed to the court where the several varieties, being intermixed with other annual plants, afford an agreeable variety.

The varieties, especially of the African Marygold, are very subject to vary; so that unless the seeds are very carefully saved from the finest flowers, they are very apt to degenerate; nor should their seeds be too long sown in the same ground; but they who are desirous of having these flowers in perfection should exchange their seeds with some person of integrity, whose soil is of a different nature, at least every other year. If this be done, the varieties may be continued in perfection.

3, 4. These being not so hardy as the others, the seeds should be sown earlier in the spring upon a good hot-bed; and when the plants are fit to remove, they should be transplanted to a fresh hot-bed, at about three inches distance every way, observing to shade them from the sun till they have taken new root; then they should be treated in the same way as the *Amaranthus*, and other tender annual plants, being careful not to draw them up weak; when they have spread so as to meet each other, they should be taken up with balls of earth to their roots, and planted in pots with rich light earth, and plunged into a hot-bed under a deep frame, where the plants may have room to grow, being careful to shade them from the sun till they have taken new root, after which they must have air and water in proportion to the warmth of the season; and when the plants are grown up too tall to remain in the frame, they should be removed to an airy glass case, where they may stand to flower and ripen their seeds.

[TAGETES. See *Cacalia*, *Othonna*, *Pectis*.

TAGOLINA. See *Cacalia*.

TALA-NELI. See *Convolvulus Medium*.

TALIGALEA. See *Amasonia*.

TALINUM Adans. and Gærtn. See *Portulaca*.

TALI-PULLI. See *Tradescantia*.

TALLOW TREE. See *Croton*.

TALU-DAMA. See *Boerhaavia*.

TAMAJA. See *Myrsine retusa*.

TAMARA. See *Averrhoa* and *Nymphaea*.]

TAMARINDUS. (*Indian Date*. Tamar in Arabic being the name for the Date.)

Lin. gen. n. 46. Reich. n. 50. Schreb. n. 1100. Tournef. t. 445. Juss. 347. Jacq. amer. 10. Amoen. acad. 8. 252. Gærtn. t. 146.

° Hort. elth.

<sup>p</sup> Hort. kew.

<sup>q</sup> Gærtner.

<sup>r</sup> Hort. kew.

<sup>s</sup> Dillen. in hort. elth.



Class. 16. 1. Monadelphia Triandria—*olim*, Triandria Monogynia.  
Nat. order of *Lomentaceæ*. *Leguminosæ* Juss.

## GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed; *tube* turbinate, compressed, attenuated below, permanent; mouth oblique: *border* four-parted, deciduous: *segments* ovate, acute, flat-tish, reflexed, coloured; the upper and lower a little wider.

**COR.** *Petals* three, ovate, concave, acute, crenate, waved, reflexed, length of the calyx, inserted into the mouth of the tube; the two lateral ones a little larger.

**STAM.** *Filaments* three, inserted into the orifice of the calyx at the void sinus, length of the corolla, awl-shaped, united below up to the middle, bowed towards the corolla. *Anthers* ovate, incumbent, large.

*Threads* five (rudiments of stamens), alternate with the filaments, and united below but separate above, bristle-shaped, headed, very short: the two lateral ones lower than the others.

*Bristles* two, springing from the calyx below the filaments, and incumbent on them, very small.

**PIST.** *Germ* oblong, compressed, curved in, placed on a pedicel fastened to the bottom of the calyx and growing longitudinally to its tube under the back, beyond the tube with the upper margin villose. *Style* awl-shaped, ascending, pubescent on the lower margin, a little longer than the stamens. *Stigma* thickened, obtuse.

**PER.** *Legume* oblong, compressed, blunt with a point, swelling at the seeds, covered with a double rind, the outer dry and brittle, the inner membranaceous; a soft pulp between both; one-celled, not opening.

**SEEDS** few, angular-roundish, plano-compressed, shining, hard.

## ESSENTIAL CHARACTER.

*Cal.* four-parted. *Pet.* three. *Nect.* of two short bristles under the filaments. *Legume* pulpy.

## SPECIES.

1. *Tamarindus indica*. *Tamarind-tree*.

*Lin. spec.* 48. *synt.* 81. *Reich.* 1. 92. *hort. cliff.* 18. *upf.* 15. *fl. zeyl. n.* 14. *mat. med.* 43. *Woodv. med. bot.* 454. *t.* 166. *Rumph. amb.* 2. 90. *t.* 23. *Lour. cochinch.* 403. *ed. Willd.* 488. *Stewartz obs.* 25. *Loefl. it.* 210. *Jacqu. amer.* 10. *t.* 10. *pic.* 11. *t.* 13. *Brown. jam.* 125. *Sloan. jam.* 2. 45. *Long jam.* 3. 729. *Hughes barbad.* 189. *Burm. ind.* 15. *Tournef. art. gall.* 1699. *p.* 69. *Blackw. t.* 201. & 221. *Plenck. ic. t.* 31. *Pluk. phyt. t.* 64. *f.* 4.

*T. occidentalis*. *Gærtner. fruct.* 2. 310.

*Tamarindus*. *Ger. emac. app.* 1607. *Park. theat.* 217. *Raii hist.* 1748.

*Siliqua arabica*, quæ *Tamarindus*. *Baub. pin.* 403.

*Balam-pulli*. *Rheed. mal.* 1. 39. *t.* 23.

## DESCRIPTIONS, &amp;c.

This tree grows to a very large size in those countries where it is a native. The stem is very large, covered with a brown bark, and divides into many branches at the top, spreading wide every way. Leaves pinnate, composed of sixteen or eighteen pairs of leaflets, without a single one at the end: they are about half an inch long, and a sixth part of an inch broad, of a bright green, a little hairy, and sit close to the midrib. The flowers come out from the side of the branches, five, six or more together, in loose bunches. The pods are thick and compressed; those from the West Indies from two to five inches in length, with two, three or four seeds; those from the East Indies are almost twice as long, and contain five, six and even seven seeds. Plants raised from both these are so like as not to be distinguished; the difference in the size of the pods therefore is probably owing to soil or culture. [Gærtner seems to think them distinct, by his trivial name of *occidentalis*.

The calyx is straw-coloured, and the petals are yellowish beautifully variegated with red veins. Peduncles about half an inch long, each furnished with a joint, at which the flower turns inwards. Filaments commonly three, but in some flowers four, in others

only two; they are purple, and the anthers are brownish.

According to Loureiro, the leaves are not always without a terminating leaflet: the leaflets are ovate-oblong, quite entire, smooth, sessile, spreading during the day, but closing so as to lie over each other in the night. The flowers are in small lateral bunches on a long upright common peduncle. Corolla yellow with red veins: the three petals ovate-lanceolate, unequal, spreading, longer than the calyx. Filaments longer than the corolla. Legume half a foot long, thick, curved a little, one-celled.

Gærtner considers the pod as divided into three or four cells, each lined with a very thin membrane.

Swartz describes the calyx as four-leaved: the three petals unequal, spreading, deciduous, with a void left as it were for two others; the two upper ones the length of the calyx, ovate, acute, and channelled at the base, the middle one smaller and cowed: three fertile filaments, and seven very short barren ones; anthers oblong versatile: germ sabre-shaped, bowed, three-cornered: legume one-celled, containing from three to six seeds.

Linneus retained this tree to the last in the class Triandria, though he knew from Jacquin that the filaments are united at the base; but it is at length placed in the class Monadelphia by Schreber, Scopoli, Loureiro, and Woodville. Browne remarked, that it approaches near to the Diadelphia class.

It seems to be a native both of the East and West Indies, and of Egypt, if not Arabia. In the West Indies it flowers in October and November. It has not often flowered in Europe. Jacquin saw it once in the Vienna garden; and it has lately flowered in the royal garden at Kew, in June and July. Johnson, the editor of Gerarde's herbal, says that he has seen young plants of the Tamarind in the garden of his deceased friend Mr. Tugger, but that they still died at the approach of winter. It was therefore cultivated here before 1633; the year in which that edition of Gerarde's herbal was published.

The timber of the Tamarind tree is heavy, firm and hard: sawn into boards, it is converted to many useful purposes in building.

The fruit is used both in food and medicine. In many parts of America, particularly in Curaçao, they eat abundance of it raw, without any inconvenience, except gently relaxing the body. In Martinico also they eat the unripe fruit, even of the most austere kind.

The Tamarinds which are brought from the East Indies are darker and drier, but contain more pulp; being preserved without sugar they are fitter to be put into medicines than those from the West Indies, which are much redder, but being preserved with sugar, are more pleasant to the palate.

[We have the pods sometimes with the shells, from the West Indies; but most commonly the pulp with the seeds, connected together by numerous tough strings is brought over preserved in syrup. The pods are gathered in June, July and August, when full ripe. The fruit, taken out of the pod and cleared from the shelly fragments, is placed in layers in a cask, and boiling syrup, just before it begins to granulate, is poured in till the cask is filled. A more elegant method of preserving this fruit is, with sugar well clarified with eggs, till a clear transparent syrup is formed. But as a principal medicinal purpose of the pulp depends upon its acidity, it would be of more utility if it were sent over in the pods.

This fruit, the use of which was first learned from the Arabians, contains a larger proportion of acid with the saccharine matter, than is usually found in the acid-dulcet fruits, and is therefore not only employed as a laxative, but also for abating thirst and heat in various inflammatory complaints, and for correcting putrid disorders, especially those of a bilious kind; in which the cathartic, antiseptic and refrigerent qualities of the fruit have been found equally use-

\* Woodville.

n Long.

x Jacquin.

y Long.

z Cullen.



ful. When intended merely as a laxative, it may be of advantage to join it with manna, or purgatives of a sweet kind, by which its use is rendered safer and more effectual. Three drams of the pulp are usually sufficient to open the body; but to prove moderately cathartic, one or two ounces are required. It is an ingredient in Elect. e Cassia, and Elect. e Senna, or lenitive electuary<sup>a</sup>.

The leaves are sometimes used in subacid infusions; and Alpinus says, that a decoction of them kills the worms in children.

The fruit is frequently made an ingredient in punch, in the West Indies; and mixed with a decoction of Borage, is reputed excellent in allaying the heat of urine<sup>b</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed in the spring, and when the plants are come up, plant each in a separate small pot filled with light rich earth, and plunge them into a hot-bed of tanner's bark to bring them forward, observing to water and shade them until they have taken root; and as the earth in the pots appears dry, they must be watered from time to time, and should have air given to them in proportion to the warmth of the season, and the bed in which they are placed; when the pots in which they are planted are filled with their roots, the plants should be shifted into pots of a larger size, which must be filled up with rich light earth, and again plunged into the hot-bed, giving them air, as before, according to the warmth of the season; but in very hot weather the glasses should be shaded with mats in the heat of the day, otherwise the sun will be too violent for them through the glasses; nor will the plants thrive, if they are exposed to the open air, even in the warmest season; so that they must be constantly kept in the bark-stove both summer and winter, treating them as hath been directed for the Coffee-tree, with whose culture they will thrive exceeding well.

These plants, if rightly managed, will grow very fast; for I have had them upwards of three feet high in one summer from seed, and have had two plants which produced flowers the same season they were sown; but this was accidental, for none of the older plants have produced any flowers, although I have several plants of different ages, some of which are above twenty years old, and about fifteen feet high, with large spreading heads.

[TAMARISCUS. See *Brunia*, *Seriphium*, *Tamarix*.

TAMARISK. See *Tamarix*.]

TAMARIX (of Pliny. Supposed by some to be from the hebrew Tamaris, abstersio, on account of its abstergent qualities.)

Lin. gen. n. 375. Reich. n. 405. Schreb. n. 510.

Gartn. t. 61. Juss. 313. Tamariscus Tournef.

Class. 5. 3. Pentandria Trigynia.

Nat. order of Succulentæ. Portulacæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, obtuse, erect, permanent, shorter by half than the corolla.

COR. Petals five, ovate, concave, obtuse, spreading.

STAM. Filaments five, capillary. Anthers roundish.

PIST. Germ acuminate. Style none. Stigmas three, oblong, revolute, feathered.

PER. Capsule oblong, acuminate, three-sided, longer than the calyx, one-celled, three-valved.

SEEDS very many, very small, pappose.

Obs. T. germanica has ten stamens, of which the alternate outer ones are shorter; they are all connate at the base.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Caps. one-celled, three-valved. Seeds pappose.

#### SPECIES.

1. *Tamarix gallica*. French Tamarisk.

Lin. spec. 386. Juss. 296. Reich. 1. 739. Willd.

1. 1498. hort. cliff. 111. upf. 69. mat. med. 89.

Wither. arr. ed. 3. 318. Sym. syn. 77. Linn.

transf. 3. 333. Smith brit. 338. Sauv. monsp.

45. Villars dauph. 2. 546. Ger. prov. 429.

Affo aragon. n. 277. Gmel. sib. 4. 116. Pallas

<sup>a</sup> Woodville.

<sup>b</sup> Browne and Long.

roff. 2. 72. Desfont. atlant. 269. Medicus in obs. sec. ceccon. Lutr. 1774. p. 278. Willd. arb. 380. Blackw. t. 331. Mill. fig. t. 262. f. 1. Plenck ic. t. 240.

T. altera folio tenuiore f. gallica. Baub. pin. 485.

T. major f. arborea narbonensis. Baub. hist. 1. 2. 350. Raii hist. 1704.

Tamariscus gallicus. Allion. pedem. n. 1597.

T. narbonensis. Lob. ic. 2. 218. Dalech. hist. 180. Ger. 1194. f. 1. emac. 1378. 1. Tournef. inst. 661. Garid. 453.

T. folio tenuiore. Park. theat. 1479. n. 3.

Myrica. Camer. epit. 74. f. 1.—filvestris 1. Clus. hist. 1. 40.

β. T. gallica cana. Hoary French Tamarisk.

Pallas roff. 2. 72. t. 79.

γ. T. africana. African Tamarisk.

Poiret itin. 2. 139. ed. germ. 171. Desfont. atlant. 269.

Flowers five-stamened, spikes lateral, leaves lanceolate embracing imbricate.

[2. *Tamarix articulata*. Jointed Tamarisk.

Lin. spec. ed. Willd. 1. 1498. Vahl symb. 2. 48. t. 32.

T. orientalis. Forsk. descr. 206.

Thuja aphylla. Lin. spec. 1422. amoen. acad. 4. 295.

Flowers five-stamened, spikes lateral, leaves very short sheathed.

3. *Tamarix songarica*. Songarian Tamarisk.

Lin. spec. ed. Willd. 1. 1499. Pallas in nov. act. acad. Petrop. 10. 374. t. 10. f. 4.

Flowers eight or ten-stamened axillary subspiked, leaves fleshy obtuse three-sided.]

4. *Tamarix germanica*. German Tamarisk.

Lin. spec. 387. Juss. 296. Reich. 1. 740. Willd.

1. 1499. hort. cliff. 111. Gartn. fruct. 1. 291.

Gunn. norv. n. 152. Fl. dan. t. 234. Hoffm.

germ. 210. Pallas roff. 2. 73. t. 80. Villars

dauph. 2. 546. Affo aragon. n. 278. Mill. fig.

t. 262. f. 2. Blackw. t. 331. Du Roi barbecc.

2. 448. Willd. arb. 384.

T. fruticosa, folio crassiore f. germanica. Baub. pin. 485.

T. germanica, f. minor fruticosa. Baub. hist. 1. 2. 351.

Tamariscus spicis foliosis. Hall. belv. n. 948.

T. germanicus. Scop. carn. n. 375. Allion. pedem. n. 1598.

T. floribus decandris. Ger. prov. 430.

T. germanica. Ger. 1194. 2. emac. 1378. 2. Lob. ic. 218. Tournef. inst. 661.

T. folio latiore. Park. theat. 1479. n. 1. Raii hist. 1705.

Myrica. Camer. epit. 74.

M. pannonica. Clus. pann. 26. 27. 28.

β. Pallas roff. t. 80. f. B.—caule herbaceo anno, flore minore.

Flowers ten-stamened, spikes terminating, leaves sessile linear-lanceolate.

#### DESCRIPTIONS, &c.

1. The first sort is a native of the south of France, Spain, Italy, Russia, Tartary, Barbary and Japan; where it grows to a tree of middling size, but in England is seldom more than fourteen or sixteen feet high. The bark is rough, and of a dark brown colour; it sends out many slender branches, most of which spread out flat and hang downward at their ends; these are covered with a chestnut-coloured bark, and garnished with very narrow finely divided leaves, which are smooth, of a bright green colour, and have small leaves or indentures which lie over each other like scales of fish. The flowers are produced in taper spikes at the end of the branches, several of them growing on the same branch. The spikes are about an inch long, and as thick as a large earth-worm. The flowers are set very close all round the spike; they are very small, and have five concave petals of a pale flesh colour, with five slender stamina terminated by roundish red anthers. The flowers appear in July, and are succeeded by oblong, acute-pointed, three-cornered capsules, filled with small downy seeds, which seldom ripen in England.

[This



[This species is easily distinguished from the fourth, by the fineness of the leaves, and the flowers having only five stamens<sup>c</sup>.

It is a very elegant tree, shading the banks of rivers, and is very much branched. The younger branches are filiform, dense and paniced. Leaves glaucous, needle-shaped, very small, imbricate, flowers white, small in paniced spikes. Peduncles filiform. Calyx very small, five-leaved<sup>d</sup>.

Root branched, very hard. Trunk straight, frequently the thickness of the wrist, very much branched from the bottom, rod-like. Wood hard but spongy, brittle, with a yellowish sap, within gray banded with russet: bark testaceous, gray on the outside. Younger branches herbaceous, slender, bright green, loosely imbricate with very small, acute, alternate leaves. Spikes terminating the branchlets, copious, paniced, straight, filiform; with flowers in clusters, accompanied by a leaflet. Flowers subpeduncled, globulous, rosy-red, almost like those of Heath. Calyx bell-shaped, coloured at the tips, three times shorter than the corolla. Corolla globular-bell-shaped. Filaments twice as long as the corolla. Germ conical, length of the corolla. The plant and flowers have scarcely any smell; but a subaltringent taste.

The Russians and Tartars use a decoction of the twigs in the gout and rheumatism and contusions of the limbs, as a fomentation; they also drink it in case of internal injury. They make handles for whips, &c. of the wood.

β. The large figure in Pallas's seventy-ninth plate, represents a singular variety, which occurs in the saltiest and driest parts of the Caspian desert. It is shrubby and a fathom high, tomentose-hoary and scaly, with the branchlets herbaceous, thicker, tomentose, the leaflets longer and hoary, more closely imbricate, and in all parts closer and thicker: but in the spikes and flowers very like the common sort<sup>e</sup>.

γ. Poiret and Desfontaines have found another variety of this in Barbary, with shorter thicker spikes, and with the flowers closer together on very short peduncles: whereas in the true *gallica*, the spike is very long, thinner, and near the end of the branches: the flowers are a little separate from each other<sup>f</sup>.

Desfontaines's plant seems to be the same, though he does not refer to Poiret. He says that it differs from the *gallica*, in having the bark of the branches brown; the leaves more closely imbricate; the spike thicker; and the flowers twice or four times as large. He found it in Algiers on the coast.

Willdenow thinks that these may be distinct species.

Dr. Smith remarked the common sort in very great plenty in Italy about Sinigaglia, and all along the hedges near the sea, where the sheep preferred it to every other food, never touching any other vegetable while that remained<sup>g</sup>. It was gathered in a wild state on St. Michael's Mount, Cornwall, by Mr. Giddy; also by W. G. Maton, Esq. and a specimen of it presented to the Linnean Society by him, december 2, 1794. He also found it near Hurst-castle, Hants; and Dr. Goodenough near Hastings, Suffex.

2. This is a shrub, with round branches, squarrose with permanent scales and sheaths, subdivided and rod-like: branchlets filiform, scattered, jointed: joints margined at the top, and hollowed to receive the next joint. Scales in place of leaves from the margin of each joint, ovate acute alternate patulous. Spikes towards the ends of the branches, alternate, an inch and half long, imbricate, round. Bractes ovate, acute, spreading very much, permanent concave, length of the flowers. Calyx five-leaved, imbricate, with roundish leaflets. Corolla the same size as in *T. gallica*, with linear petals. Capsule four-cornered, pyramidal. Native of the East Indies and Arabia.—Linneus, not having seen the fructification, referred this shrub to the genus *Thuja*, from its habit<sup>h</sup>.

Retzius observes, that there are at least two species in India, different from the European ones, but that

the specimens he received were so much spoiled, that he could not ascertain them. This perhaps may be one<sup>i</sup>.

3. Found by Pallas in Siberia, in salt places of Songaria.]

4. This is rather a shrub than a tree, having several woody stalks arising from the same root, which grow quite erect, sending out many side branches which are also erect; they have a pale-green bark when young, afterwards changing to a yellowish colour. The leaves are shorter, and set closer together than those of the first sort, and are of a lighter green approaching to a gray. The flowers are produced in long loose spikes at the end of the branches, standing erect: they are larger than those of *gallica*, and have ten stamens standing alternately.

[Allione thus distinguishes the first species and this. In that the leaves are much smaller, more closely imbricate, green and sharper, in this they are glaucous-cinereous. In *germanica* the flowering-branches are straight; but in *gallica* they are horizontal, or perpendicular to the stem. The flowers in *germanica* are twice as large and more, but on shorter peduncles than in *gallica*. The stamens in *germanica* are ten; the stigma simple; the stamens shorter than the petals, with twin whitish anthers: *gallica* has only five stamens, much longer than the petals, with purple anthers. The calyx in *germanica* appears to be composed of five linear green leaflets, with a single leaf, not unlike the other leaves, supporting the peduncle; in *gallica* the leaf under each flower is whitish, pellucid, and awned; but the calyx seems to be composed of five very short green leaflets placed imbricately. In *germanica* the stigma is orbicular, not trifid: in *gallica* the germ is purple with a trifid stigma.

Gærtner describes the capsule as pyramidal; the seeds oblong or ovate, slightly compressed, of a pale rufescent colour, terminated by branched white stippled hairs; the receptacle a raised line, marked along the middle of the inside of the valves, towards the base ending in a spongy lamina, to which the seeds are fastened all round.

Native of Germany, by the banks of the Rhine and Danube, in Norway, Dauphiné, Spain, Piedmont, and the mountains of Dauria and Caucasus in the Russian empire.

Both species appear in the catalogue of Gerard's garden, 1596. But Camden, in his life of Elisabeth, says that the Tamarisk was introduced by Archbishop Grindall, as a specific in disorders of the spleen: and in the Remembrances for Master S. by R<sup>d</sup>. Hakluyt, 1582, we are told, that the Archbishop of Canterbury, Grindall, after he returned out of Germany, brought into this realm the plant of Tamariske from thence, and this plant he hath so increased, that there be here thousands of them; and many people have received great health by this plant<sup>k</sup>. Grindal was consecrated to the Bishoprick of London in december 1559, soon after his return from Germany.

Tamarisk, especially this species, is sometimes used abroad in obstructions of the lower viscera, and especially in diseases of the spleen. By combustion it yields no inconsiderable quantity of a fixed salt, which is diuretic and aperitive, and approaches to Glauber's salt. The bark of the root is the most efficacious part of the plant. A decoction of this is given in doses of two to six drams, or even an ounce: of the wood and leaves double that quantity may be taken<sup>l</sup>.

β. The variety figured by Pallas, is remarkable for having an herbaceous stem. It is found near the shore of the Caspian sea, on the Persian side.

Loureiro has a species, which he names *Tamarix chinensis*, from its being a native of China, which he says agrees with the *gallica* in having five stamens; but differs in having alternate leaflets, nodding branchlets, and erect terminating petals. It seems rather to agree with *T. orientalis*, *Tournef. cor.* 45. and *Forsk. arab.* 206. but it is not like that in all respects. Willdenow thinks it may possibly be the same with the *articulata* of Vahl.]

<sup>c</sup> Villars.  
<sup>f</sup> Poiret.

<sup>d</sup> Desfontaines.  
<sup>g</sup> Tour. 2. 321.

<sup>e</sup> Pallas ross.  
<sup>h</sup> Vahl.

<sup>i</sup> Obs. fasc. 6. 27. <sup>k</sup> Voy. v. 2. 161. edit. 1599. <sup>l</sup> Allione.



## PROPAGATION AND CULTURE.

The Tamarisks may easily be encreased either by laying down their tender shoots in autumn, or by planting cuttings in an east border, which will take root in a short time, if they are supplied with water in the spring before they begin to shoot in dry weather; but they should not be removed until the following autumn, at which time they may be either placed in a nursery to be trained up two or three years, or else where they are designed to remain, observing to mulch their roots, and water them according as the season may require, until they have taken root; after which, the only culture they will require, is to prune off the straggling shoots, and keep the ground clean about them.

[The increasing by layers is not only unnecessary trouble, since cuttings grow very readily; but it is also a bad way, because they very often will not strike at all. The cuttings should be of the last summer's shoot, and a moist border is most proper for them. In two years they will be good plants for the shrubbery, and may be planted out in almost any soil, though they like a light moist earth best, especially the German sort which grows naturally in low watery grounds<sup>m</sup>.

TAMBOURISSA. See *Mithridatea*.

TAME-POISON. See *Asclepias*.

TAMNUS. See *Tamus*.

TAMONEA. See *Ghinia*.]

TAMUS (of Pliny. Derivation unknown.)

*Lin. gen. n.* 1119. *Reich. n.* 1224. *Schreb. n.* 1527.

*Tamnus Tournef. t.* 28. *Juss.* 43.

*Class.* 22. 6. Dioecia Hexandria.

*Nat. order of Sarmetaceæ. Asparagi Juss.*

## GENERIC CHARACTER.

\* Male.

*CAL.* Perianth six-parted: leaflets ovate-lanceolate, spreading more at top.

*COR.* none.

*STAM.* Filaments six, simple, shorter than the calyx. Anthers erect.

\* Female.

*CAL.* Perianth one-leafed, six-parted, bell-shaped, spreading: segments lanceolate: superior, deciduous.

*COR.* Petals none.—Nectaries an oblong point, fastened internally to each calycine segment at the base.

*PIST.* Germ ovate-oblong, large, smooth, inferior. Style cylindrical, length of the calyx. Stigmas three, reflexed, emarginate, acute.

*PER.* Berry ovate, three-celled.

*SEEDS* two, globular.

## ESSENTIAL CHARACTER.

*Cal.* six-parted. *Cor.* none.

*FEM.* Style trifid. Berry three-celled, inferior. Seeds two.

## SPECIES.

1. *Tamus communis.* Common Black Bryony.

*Lin. spec.* 1458. *Juss.* 887. *Reich.* 4. 254. *hort. cliff.* 458. *Huds. angl.* 433. *Wither. arr.* 344. *Engl. bot. t.* 91. *Relb. cant. ed.* 2. n. 809. *Sibth. oxon. n.* 351. *Abbot bedf. n.* 704. *Gron. orient.* 317. *Hall. belv. n.* 1620. *Scop. carn. n.* 1220. *Neck. gallob.* 407. *Ger. prov.* 136. *Villars dauph.* 3. 273. *Allion. pedem. n.* 2116. *Desfont. atlant.* 366. *Mill. illustr. Regnault. bot. Giseck. ic. fasc.* 1. t. 22. male. *Sabb. hort.* 1. t. 59. male.

*Tamnus racemosa,* flore minore luteo-pallescente. *Tournef. inst.* 103. *Raii syn.* 262.

*Bryonia nigra.* *Ger. emac.* 871. *Blackw. t.* 457. *Mor. hist. f.* 1. t. 1. f. 6.

*B. sylvestris nigra.* *Park. theat.* 178. 6. *Raii hist.* 660.

*B. lævis f. nigra racemosa,* cujus baccæ rufescunt f. nigrescunt. *Baub. pin.* 297.

*B. sylvestris baccifera.* *Baub. prodr.* 135.

*B. lævis f. nigra racemosa.* *Baub. pin.* 297. *maf.*—*baccifera ibid. fem.*

*Vitis sylvestris f. Tamus.* *Dod. pempt.* 400.

<sup>m</sup> Hunter's Evelyn.

*V. nigra quibusdam,* f. *Tamnus Plinii,* folio *Cyclamini.* *Baub. hist.* 2. 148.

*V. nigra.* *Matth.* 1285. *Camer. epit.* 988. *Tabern. ic.* 892. *Dalech. hist.* 1412.

*Leaves cordate undivided.*

2. *Tamus cretica.* *Cretan Black Bryony.*

*Lin. spec.* 1458. *Juss.* 887. *Reich.* 4. 254.

*Tamnus cretica,* trifido folio. *Tournef. cor.* 3.

*Leaves three-lobed.*

## DESCRIPTIONS, &amp;c.

1. [Root very large, tuberous, blackish externally, whence its old latin and english names. Stems smooth, twining about every thing in their way, and thus ascending without the aid of tendrils, to the height of ten or twelve feet in hedges or among bushes, which their festoons of tawny leaves and red berries decorate in autumn. Leaves alternate, petioled, smooth and shining, quite entire, the nerves raised beneath, varying from kidney to heart-shaped, heart-spear-shaped, triangular spear-shaped, and even halbert-shaped. Flowers greenish, in long racemes or bunches from the side of the stalks, appearing in june, the barren and fertile ones on separate roots, which Mr. Goodyer (in *Ger. emac.*) seems first to have noted. The male flowers soon fall off; but the female flowers are succeeded by ovate smooth berries. These are insipid. The root is acrid, and its pulp scraped has been formerly used as a stimulating plaister. The young shoots are said to be good eating, when dressed like Asparagus. The Moors eat them boiled with oil and salt<sup>n</sup>.

Native of Europe, but not in the north, in shady thickets, hedges and woods; also of the Levant, and about Algiers, in hedges.—It is called, wild Vine, and our Ladies seal. The latter name is from the French, *le sceau de la Vierge*.]

2. This has a rounder root than the other; the stalks twine in the same manner; but the principal difference consists in the leaves being divided into three lobes. It was discovered in the island of Crete or Candia by Tournefort, who sent the seeds to the Royal Garden at Paris.

[Gerard (in *Flora Gallo-Provinc.*) observes, that the common sort in the shade acquires broader greener leaves, sinuate and even-three-lobed; and in this state appears to be the same with Tournefort's plant, upon a comparison of it with his specimens.]

## PROPAGATION AND CULTURE.

1. Sow the seeds soon after they are ripe under the shelter of bushes, where, in the spring, the plants will come up, and require no farther care. The roots will abide many years.

2. This also is an abiding plant, hardy enough to live in the full ground in England; and it may be increased like the other.

TAN. See *Tanner's Bark*.

TANACETUM. (Derivation uncertain.)

*Lin. gen. n.* 944. *Reich. n.* 1024. *Schreb. n.* 1280.

*Tournef. t.* 261. *Vaill. aët. gall.* 1719. *Juss.*

184. *Gært. t.* 165. *Balsamita.* *Vaill. aët. gall.* 1719.

*Class.* 19. 2. Syngenesia Polygamia Superflua.

*Nat. order of Compositæ Discoideæ. Corymbifera Juss.*

## GENERIC CHARACTER.

*CAL.* Common hemispherical, imbricate: scales acute, compact.

*COR.* Compound tubular, convex. Corollæ hermaphrodite numerous, tubular, in the disk. Females some in the ray.

Proper of the Hermaphrodite funnel-form: with a five-cleft reflexed border.

Female trifid, more deeply divided inwardly.

*STAM.* in the Hermaphrodites: Filaments five, capillary very short. Anther cylindric, tubular.

*PIST.* in the Hermaphrodites Germ oblong, small. Style filiform, length of the stamens. Stigma bifid, revolute.—In the Females Germ oblong. Style simple. Stigmas two, reflexed.

*PER.* none. Calyx unchanged.

*SEEDS* solitary, oblong. Down slightly margined.

<sup>n</sup> Engl. bot. Wither. Desfont.



REC. convex, naked.

OBS. Sometimes there are no radial corollets, but all are hermaphrodite.

Seed in some naked.

ESSENTIAL CHARACTER.

Cal. imbricate, hemispherical. Cor. rays obsolete, trifid (sometimes none, and all the florets hermaphrodite). Down submarginate. Recept. naked.

SPECIES.

1. *Tanacetum suffruticosum*. Shrubby Tanfy.  
Lin. spec. 1183. Reich. 3. 734. hort. cliff. 398.  
mant. 465. Berg. cap. 241. Rees. obs. 5. 6. n. 122.  
*Abrotanum africanum fruticans multiflorum foliis tanacetii decuplo minoribus*. Comm. hort. 2. 199. t. 100.  
Leaves pinnate-multifid, segments linear subdivided acute, stem suffruticose.
2. *Tanacetum sibiricum*. Siberian Tanfy.  
Lin. spec. 1183. Reich. 3. 735. Gmel. fib. 2. 134. t. 65. f. 2.  
Leaves pinnate, segments linear-filiform, corymbs smooth, stem herbaceous.
- [3. *Tanacetum incanum*. Hoary Tanfy.  
Lin. spec. 1183. Reich. 3. 735. hort. cliff. 404. (Artemisia.)  
*Abinthium orientale incanum tenuifolium, floribus luteis in capitulum congestis & sursum spectantibus*. Tournef. cor. 34.  
Leaves bipinnate tomentose, corymb ovate compound.
4. *Tanacetum cotuloides*. Chamomile-like Tanfy.  
Lin. syst. 742. Reich. 3. 735. mant. 282.  
Leaves tooth-pinnate acuminate, stem very much branched, flowers subpanicled.
5. *Tanacetum annuum*. Annual Tanfy.  
Lin. spec. 1184. Reich. 3. 735. Gouan illustr. 66.  
Vaill. art. 1716. p. 281. Allion. pedem. n. 601.  
Mill. fig. 152. t. 227. f. 1. (Santolina.)  
*Abinthium corymbiferum annuum*. Tournef. inst. 458.  
*Elichrysum foliis abrotani*. Bauh. pin. 264. Pluk. phyt. t. 160. f. 1.  
Elichryson. Clus. hist. 1. 325. t. 326.  
Leaves bipinnatifid linear acute, corymbs tomentose.
6. *Tanacetum monanthos*. One-flowered Tanfy.  
Lin. syst. 742. Reich. 3. 736. mant. 111. Vaill. art. 337. Vahl symb. 1. 70. Forsk. descr. 147. n. 72.  
Stem quite simple one-flowered length of the leaves.]
7. *Tanacetum vulgare*. Common Tanfy.  
Lin. spec. 1184. syst. 742. Reich. 3. 736. mant. 465. hort. cliff. 398. fl. lapp. n. 295. succ. n. 730. mat. med. 182. Woodv. med. bot. 314. t. 115. Gært. fruct. 2. 395. Hudf. angl. 357. Wither. arr. ed. 3. 708. Hull 182. Smith brit. 862. Lighf. scot. 465. Relb cant. ed. 2. n. 671. Sibth. oxon. n. 693. Abbot bedf. n. 587. Fl. dan. t. 871. Hall. belv. n. 132. Scop. carn. n. 1031. Pollich pal. n. 779. Krock. files. n. 1362. Villars dauph. 3. 187. Allion. pedem. n. 602. Gmel. fib. 2. 133. t. 65. f. 1. Ludw. est. t. 22. Knorr. del. 2. t. T. 2. Regnault. bot.  
*Tanacetum*. Brunf. herb. 1. 250. 2. 87. Matth. valgr. 2. 259. 908. Camer. epit. 650. Dod. pempt. 36. 1. Ger. 525. 1. emac. 650. 1. Raii hist. 365. syn. 188. Petiv. brit. t. 20. f. 9. Blackw. t. 464.  
T. vulgare. Park. theat. 81. Mor. hist. f. 6. t. 1. f. 1.  
T. vulg. luteum. Bauh. pin. 132.  
T. vulg. flore luteo. Bauh. hist. 3. 131. 2.  
Athanasia f. *Tanacetum*. Dalech. hist. 955.  
Artemisia monoclonos. Fuchs. hist. 46.
- β. *Tanacetum crispum*. Curled Tanfy.  
Dod. pempt. 36. 2. Park. theat. 81. Raii hist. 365.  
T. crispum anglicum. Ger. 525. 2. emac. 650. 2.  
T. foliis crispis. Bauh. pin. 132. Dill. in Raii syn. 188. Mor. f. 6. t. 1. f. 2.  
T. crispum flore luteo. Bauh. hist. 3. 132.  
Leaves bipinnatifid gasb-ferrate naked.

8. *Tanacetum Balsamita*. Cost-mary.

Lin. spec. 1184. Reich. 3. 737. hort. cliff. 398.  
upf. 255. mat. med. 192. Hall. belv. n. 133.  
Krock. files. n. 1363. Villars dauph. 3. 187.  
Kniph. cent. 2. n. 92. Regnault bot.

*Balsamita major*. Dod. pempt. 295. 1. Mor. hist. f. 6. t. 1. f. 1.

B. mas. Ger. 523. 1. emac. 648. 1. Blackw. t. 98.

*Costus hortorum major*. Park. theat. 78.

C. hortensis. Dalech. hist. 678.

*Mentha hortensis corymbifera*. Bauh. pin. 226.

M. corymbifera f. *Costus hortensis*. Bauh. hist. Raii hist. 363.

Leaves ovate entire ferrate.

- [9. *Tanacetum flabelliforme*. Fan-leaved Tanfy.

L'Herit. fert. angl. t. 27. Ait. kew. 3. 169.

Corymbs simple, leaves deltoid ferrate at the tip.]

DESCRIPTIONS, &c.

1. This rises with a branching shrubby stalk, three or four feet high. The segments of the leaves are very narrow, and frequently cut into acute segments. The flowers are produced in small roundish bunches, at the ends of the branches: they are of a bright yellow, and appear in august.

Native of the Cape of Good Hope. [Cultivated by Mr. Miller in 1759<sup>o</sup>.

2. Leaves linear, pinnate: pinnae linear, filiform, often bifid or trifid, quite entire. Corymb terminating and others axillary, few-flowered: flowers yellow<sup>p</sup>.] Root fibrous perennial. Stalks more than two feet high. It flowers in june and july, and the seeds ripen in autumn.—Native of Siberia. [Cultivated by Mr. Miller in 1759.

3. This is a perennial hoary fine-leaved plant, with yellow flowers turned upwards.—Native of the Levant<sup>q</sup>.

4. This is an annual plant, having the appearance of Chamomile. Stem half a foot high: branches the length of the stem ascending, spreading a little. Leaves small, pinnatifid; with seven or nine teeth, lanceolate, unarmed, acuminate, opposite. Flowers at the ends of all the branches, nine to twelve, unequally peduncled and pedicelled, subglobular, yellow. Calyx ten-leaved; leaflets elliptic, loose, almost equal; by no means imbricate. Corollas globular: corollets five-cleft.—Native of the Cape of Good Hope.

5. This is an annual plant, rising about two feet high. Stem stiff, but herbaceous, sending out many side branches their whole length; the lower ones four or five inches long, gradually shorter to the top. The leaves come out in small clusters from the joints: they are very narrow and short; some end in three points, others are single. The branches are terminated by clusters of flowers of a bright yellow; each corymb on a short peduncle. They appear in july or august, and continue till the frost destroys them, but the seeds do not ripen in England. The whole plant has a fine aromatic scent<sup>r</sup>.

Linneus remarks, that the branches are longer than the primary umbel, and divaricating; the leaves linear, pinnate-five-cleft and trifid: and that it differs from its congeners in the want of a female ray, from Athanasia in having no chaffs.—Native of Spain and Italy. Cultivated in 1758 by Mr. Miller<sup>t</sup>.

6. This also is an annual plant. Leaves bipinnate, radical, numerous, length of a finger, like those of Achillea Millefolium. Stems few, upright, stiffish, somewhat villose. Stem-leaves few, petioled, tooth-pinnate. Flower terminating, peduncled. Calyx oblong, imbricate, pubescent. Corolla yellow. Seeds and receptacle naked. Others decumbent, ascending, longer, diffused stems arise afterwards from the root, terminated by a one-flowered peduncle<sup>u</sup>.—Native of the Levant, where it was found by Forskahl.]

7. Common Tanfy has a fibrous creeping root, which will spread to a great distance. [The herb is bitter, and has a strong aromatic smell. Stems upright, two feet high,] in a garden from two to almost

<sup>p</sup> Hort. kew.  
<sup>r</sup> Linn. mant.

<sup>q</sup> Linn. spec.  
<sup>t</sup> Mill. fig.  
<sup>u</sup> Linn. mant.

<sup>s</sup> Tournef. cor.  
<sup>t</sup> Hort. kew.



four feet, [leafy, round, striated, scarcely hairy. Leaves alternate, deep green, acutely cut, smooth, or somewhat hairy beneath, eared at the base, embracing: pinnules lanceolate deeply and acutely serrate. The flowers are in terminating corymbs, of a golden colour and flattish. Calyx-leaves obtuse, scarious at the edge. Florets very numerous, mostly five-cleft, the marginal ones only female and trifid\*. Linneus remarks, that the ray (in Sweden) appears only in a hot summer.—Seeds small, uniform, inversely pyramidal, pentagonal, subcinerious, with a pale rib at the corners. Down margined, narrow, membranaceous, pentagonal, indistinctly five-toothed, of a pale whitish colour<sup>†</sup>.

Native of Europe and Siberia, in high meadows and pastures, on the banks of rivers and in swampy places; flowering from June to August.

According to Bergius, Tanfy is tonic, stomachic, anthelmintic, emmenagogue and resolvent: qualities usually attributed to bitters of the warm or aromatic kind, such as several of the genus *Artemisia*. Tanfy has been much used as a vermifuge, not only the leaves, but the seeds have been substituted with this intention for Santonicum. We are told by Dr. Clark, that in Scotland Tanfy was found to be of great service in various cases of gout; and Dr. Cullen says, "I have known several who have taken it without any advantage, and some others who reported that they had been relieved from the frequency of the fits."

Tanfy is also recommended in the hysteria, especially when this disease is supposed to proceed from menstrual obstructions.

This plant may be given in powder to the quantity of a dram or more, for a dose; but it has been more commonly taken in infusion, or drank as tea<sup>‡</sup>.

The tender leaves are sometimes used to give a colour and flavour to puddings. The Finlanders obtain a green dye from it. Cows and sheep eat it: horses, goats and swine refuse it. If a dead animal substance be rubbed with this plant, the flesh fly will not attack it<sup>§</sup>.

There are three varieties, one with a curled leaf, which is called double Tanfy by gardeners; another with variegated leaves; and a third with larger leaves, which have little scent. [Ray informs us, that the variety with curled leaves was first observed in England.]

8. Roots hardy, fleshy and creeping. Lower leaves near three inches long, and an inch and half broad, of a grayish colour, and on long foot-stalks. The stems rise from two to three feet high, and send out branches from the side: the leaves on these are like the lower ones, but smaller and sessile. The flowers are produced at the top of the stems in a loose corymb; they are naked, and of a deep yellow colour, appear in August, but are not succeeded by seeds in England. The whole plant has a soft pleasant odour. It is a native of the South of France, Spain and Italy; and was formerly pretty much used in the kitchen and in medicine. [It is more aromatic, and has a pleasanter smell than common Tanfy. It was called *Balsamita* from its balsamic quality. *Costus* from the Greek *Κοστός*, an aromatic shrub: hence, and from its being put into ale, our old English name *Ale-coast*. *Costmary* is the Virgin Mary's *Costus*.—It was cultivated here in 1568, as appears from Turner's herbal<sup>¶</sup>.

9. All the florets are hermaphrodite and five-cleft; but having a naked, not a chaffy receptacle it agrees rather with this genus than *Athanasia*<sup>¶</sup>.—Native of the Cape of Good Hope, where it was found by Mr. Francis Masson, and introduced in 1774. It flowers from May to August<sup>¶</sup>.]

#### PROPAGATION AND CULTURE.

1. This and the other sorts from the Cape must be kept in pots, and removed into shelter before hard frosts come on. They are easily increased by cuttings,

planted in a bed of loamy earth, during any of the summer months. Shade them until they have taken root, and frequently refresh them with water. When they have good roots, take them up with balls of earth, and plant them in pots, placing them among other hardy exotic plants, where they may remain till late in October, when they must be put into shelter. These plants are so hardy as only to require protection from hard frost, in mild weather therefore they should be as much exposed to the air as possible, to prevent their drawing up weak.

[5. Is propagated by seeds, and is hardy enough to bear the open air.]

7. Common Tanfy is easily propagated by the creeping roots, which, if permitted to remain undisturbed, will in a short time overspread the ground. The slips therefore should be placed at least a foot asunder, and in beds where the paths round them may be often dug, to keep their roots within bounds. They may be transplanted either in spring or autumn, and will thrive in almost any soil or situation.

If Tanfy should be wanted early in the spring, a gentle hot-bed should be made in December, and the old roots planted thereon without dividing them; arching the beds with hoops, and covering it with hoops in cold weather.—The second sort is propagated in the same way.

8. This also is propagated easily by parting the roots, in autumn. Where it is planted for use, the slips should be set in beds at two feet distance every way: in two years the roots will meet, every other year therefore they should be parted and transplanted, to keep them within compass. They will thrive in almost any soil or situation, but will continue longest in dry land.

[TANACETUM. See *Achillea*, *Athanasia*, *Chrysanthemum*, *Cotula*, *Tagetes*.

TANAECIUM. (From *ταναικος*, *protenjam* f. *longam* *aciem* habens: or *ταναικος* from *τανω* only—thus Homer *Il. π.—ταναικος* οζους.)

Lin. gen. Schreb. n. 1022. & p. 834. Swartz prodr. 91. Crescentia spec. Brown. 267. 266. e Brownio.

Class. 14. 2. *Didynamia Angiospermia*.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, truncate, quite entire.

COR. one-petalled, long: tube cylindrical, widened above: border from erect spreading, five-cleft, almost equal; the two upper segments approximating, less divided, nearly upright, the three lower spreading, a little reflexed.

STAM. *Filaments* four, almost equal, shorter than the corolla, bending in under the back of the tube; with the rudiment of a fifth. *Anthers* two-lobed.

PIST. *Germ* placed on a fleshy ring, roundish. *Style* simple. *Stigma* two-lobed.

PER. *Berry* large, subpedicelled, globular or oblong, two-celled.

SEEDS numerous, oblong, angular, nestling.

#### ESSENTIAL CHARACTER.

Cal. cylindrical, truncate. Cor. tubular, almost equal, five-cleft. Rudiment of a fifth filament. Berry corticose, very large.

#### SPECIES.

1. *Tanaecium Jaroba*.

Swartz prodr. 92.

Jaroba. Marcgr. bras. 25. Piso 173.

Crescentia? 6. Brown. jam. 267.

Cucurbitifera fruticosa trifolia. Sloan. jam. 2. 175.

Lower leaves ternate, upper geminate, tendrils interpetiolarly terminating, stem scandent.

2. *Tanaecium parasiticum*.

Swartz prodr. 92.

Crescentia? 5. Brown. jam. 266.

Leaves ovate coriaceous, stem scandent shrubby rooting.

#### DESCRIPTIONS, &c.

1. This rises with great ease to the top of the tallest trees in the woods, and then spreads a great way over the limbs of the neighbouring trees, or bends again towards the ground. It is generally more luxuriant towards the top, and as this part requires a greater support, nature has

\* Smith brit.

† Gærtner.

‡ Woodville.

§ Withering.

¶ part. 3. p. 42.

• Hort. kew.

• L'Heritier.

• Hort. kew.



has supplied it in a peculiar manner with tendrils: for the leaves, which are always three on every common footstalk towards the root, are never more than two at the top, but the extremity of the common stalk, which generally holds the third leaf in the lower branches, shoots here into a long winding tendril, by which it holds and sticks to every twig or branch it meets. This climbing plant is frequent in many parts of the island of Jamaica, but seems most common between St. Elizabeth's and Westmoreland.

2. This weakly plant sustains itself generally by the help of the neighbouring trees, or is found spreading upon the ground, where it does not meet with a support. Its stem is moderately thick, and stretches frequently about seven or eight feet from the root. The leaves are thick and shining; the fruit round and smooth. It is found, in Jamaica, about Port Antonio, near the cascade in St. Ann's, and in many parts of the mountains, especially those between Sixteen-mile-walk and Luidas<sup>f</sup>.

TANARIUS. See *Ricinus*.

TANDELA-COTTI. See *Crotalaria juncea*.]

TANNERS BARK is the Bark of the Oak-tree, chopped or ground into coarse powder, to be used in tanning or dressing of skins, after which it is of great use in gardening: first, by its fermentation (when laid in a proper quantity,) the heat being always moderate, and of a long duration, which renders it of great service for hot-beds; and secondly, after it is well rotted, it becomes excellent manure for all sorts of cold stiff land, upon which one load of Tan is better than two of rotten dung, and will continue longer in the ground.

The use of Tan for hot-beds has not been many years known in England. The first hot-beds of this sort, which were made in England, were at Blackheath in Kent, above fourscore years ago; these were designed for the raising of Orange-trees, but the use of these hot-beds being but little known at that time, they were made but by two or three persons, who had learned the use of them in Holland and Flanders, where the gardeners seldom make any other hot-beds; but in England there were very few hot-beds made of Tanners Bark before the Ananas plants were introduced into this country, which was in 1719, since which time the use of these hot-beds has been more general, and are now made in all those gardens where the Ananas plants are cultivated, or where there are collections of tender exotic plants preserved; and the gardeners here are now better skilled in the making and managing of these hot-beds than in most other countries, which might render it less necessary to give a full description of them here; but yet, as there may be some persons in the remote parts of England, who have not had an opportunity of informing themselves of the use of Tanners Bark for this purpose, I shall insert the shortest and plainest method of making and managing these hot-beds, as it is practised by the most knowing persons who have long made use of these hot-beds; and first, I shall begin with the choice of the Tan.

The tanners in some parts of England do not grind the Bark to reduce it into small pieces, as is commonly practised by the tanners near London, where there is great difference in the size of the bark, some being ground much smaller than the other, according to the different purposes for which it is intended; but in many places the Bark is only chopped into large pieces, which renders it very different for the use of hot-beds; for if the Tan is very coarse, it will require a longer time to ferment than the small Tan; but when it begins to heat, it will acquire a much greater degree, and will retain the heat a much longer time than the small; therefore where there is choice, the middling sized Tan should be preferred, for it is very difficult to manage a hot-bed when made of the largest Tan; the heat of which is often so great, as to scald the roots of plants, if the pots are fully plunged into the bed; and I have known this violent heat continue upward of two months, so that it has been unsafe to

<sup>f</sup> Browne.

plunge the pots more than half their depth into the Tan, till near three months after the beds have been made; therefore where the persons, who have the care of these beds, do not diligently observe their working, they may in a short time destroy the plants which are placed in the beds: on the other hand, if the Tan is very small, it will not retain the heat above a month or six weeks, and will be rotten and unfit for a hot-bed in a short time; so that where the middle-sized Tan can be procured, it should always be preferred to any other.

The Tan should be always such as has been newly taken out of the pits, for if it lies long in the tanners yard before it is used, the beds seldom acquire a proper degree of heat, nor do they continue their heat long; so that when it has been more than a fortnight or three weeks out of the pit, it is not so good for use as that which is new. If the Tan is very wet, it will be proper to spread it abroad for two or three days, to drain out the moisture, especially if it is in autumn or winter season, because then, as there will be little sun to draw a warmth into the Tan, the moisture will prevent the fermentation, and the beds will remain cold; but in the summer season, there is no great danger from the moisture of the Tan. The heat of the sun through the glasses will be then so great, as soon to cause a fermentation in the Tan.

These Tan-beds should be always made in pits having brick-walls round them, and a brick pavement at the bottom, to prevent the earth from mixing with the Tan, which will prevent the Tan from heating. These pits must not be less than three feet deep, and six feet in width, but seven is better; the length must be in proportion to the number of plants they are to contain, but if they are not ten feet in length, they will not retain their heat long; for where there is not a good body of Tan, the outside of the bed will soon lose its heat, so that the plants which are there plunged, will have no benefit of the warmth, nor will the middle of these beds retain their heat long, so that they will not answer the purpose for which they are intended.

When the Tan is put into the bed, it must not be beaten or trodden down too close, for that will cause it to adhere, and form one solid lump, so that it will not acquire a proper heat; nor should it be trodden down at the time when the pots are plunged into the beds, to avoid which there should be a board laid cross the bed, which should be supported at each end, to prevent its resting upon the Tan, upon which the person should stand who plunges the pots, so that the Tan will not be pressed down too close. When the Tan is quite fresh, and has not been out of the pits long enough to acquire a heat, the beds will require a fortnight, or sometimes three weeks, before they will be of a proper temperature of warmth to receive the plants; but in order to judge of this, there should be three or four sticks thrust down into the Tan, about eighteen inches deep, in different parts of the bed, so that by drawing out the sticks, and feeling them at different depths, it will be easy to judge of the temper of the bed; and it will be proper to let a few of these sticks remain in the bed after the plants are plunged, in order to know the warmth of the Tan, which may be better judged of by feeling these sticks, than by drawing out the pots, or plunging the hand into the Tan.

When the Tan is good, one of these beds will retain a proper degree of heat for near three months; and when the heat declines, if the Tan is forked up and turned over, and some new Tan added to it, the heat will renew again, and will continue two months longer; so that by turning over the Tan, and adding some new Tan every three months or thereabouts, as the bed is found to decline of its heat, they may be continued one year, but every autumn it will be proper to take out a good quantity of the old Tan, and to add as much new to the bed, that the heat of the bed may be kept up in winter; for if the heat is suffered to decline too much during the cold season, the plants will suffer greatly; to prevent this, there should always be some new Tan added to the bed in winter,

when



when the heat is found to decline; but the Tan should be laid in a dry place a week or ten days to dry, before it is put into the bed, otherwise the moisture will chill the old Tan in the bed, and prevent the fermentation; so that unless the Tan is turned over again, there will be little or no heat in the beds, which often proves fatal to the plants which are plunged in them; therefore whoever has the management of these beds, should be very careful to observe constantly the warmth of the Tan, since, upon keeping the beds in a due temperature of warmth, their whole success depends; and where this caution is not taken, it frequently happens that the Ananas plants run into fruit very small, or the plants are infected by insects, both which are occasioned by the growth of the plants being stopped by the decline of the heat of the Tan; therefore great regard must be had to that, especially in winter.

The great advantages which these Tan-beds have of those which are made of horse-dung, are the moderate degree of heat which they acquire, for their heat is never so violent as that of horse-dung, and they continue this heat much longer; and when the heat declines, it may be renewed, by turning the beds over, and mixing some new Tan with the old, which cannot be so well done with horse-dung; and likewise the beds will not produce so great steams, which are often injurious to tender plants, so that these Tan-beds are much preferable to those of horse-dung for most purposes.

Tan, when it is well rotted, is also an excellent manure for all cold and stiff lands; and if it is laid upon Grass ground in autumn, that the rains in winter may wash it into the ground, it will greatly improve the Grass; but when it is used new, or in the spring of the year, when dry weather comes soon after, it is apt to cause the Grass to burn, which has occasioned the disuse of Tan in many places; but if properly used, it will be found an excellent dressing for all stiff lands.

[It may be agreeable to those who live where there are plenty of Oaks, and yet perhaps at a distance from tanners, to be informed that Oak leaves answer very well the purpose of Tan in hot-houses.

Being raked into heaps, carry them to some place near the hot-house; fence them with hurdles, or any thing else, to keep them from being blown about; tread them well, and water them if they are brought in dry. Make the heap six or seven feet thick, and cover it with mats. In a few days the heap will come to a strong heat; in five or six weeks they will be properly prepared for the hot-house. In getting them into the Pine-pits, if they appear dry, water them again; and tread them well, till the pits are quite full. Then cover the whole with Tan two inches thick, and tread it till the surface becomes smooth and even. On this place the Pine-pots, beginning with the middle row first, and filling up the spaces between the pots with tan, as when tan only is used.

The leaves will retain a constant and regular heat for twelve-months without stirring or turning. After this the Pines will have no occasion to be moved, except when their pots are to be shifted, &c. when a little fresh Tan should be added. Without a covering of Tan, the leaves by their caking will be apt to shrink from the sides of the pots, and let the heat escape.

Oak leaves are ever preferable to Tanner's Bark; for they always heat regularly and constantly, never heating with violence, or turning cold after the furious heat is gone off: there is a saving in point of expence; and the decayed fermented leaves make good garden manure; whereas rotten Tan is of no value, for that purpose.

Leaves mixed with dung make excellent hot-beds, preserving their heat much longer than when made from dung only<sup>2</sup>.

TANNER'S SUMACH. See *Rhus Coriaria*.

TANSY. See *Tanacetum*.

—— Wild. See *Potentilla*.

TAGNABO. See *Ternstramia*.

<sup>2</sup> Hunter's Georgical Essays, 2. 63. ed. 1803. from Speechly.

TAPEINIA. See *Moræa*.]

TAPIA. See *Crateva*.

[TAPIOCA. See *Iatropa Manibot*.

It is properly the starch of the Cassada root, which it yields in considerable quantity. The Brasilians export it in little lumps, under this name.

TAPIRIRA. See *Jonquetia*.

TAPOGOMEA. See *Callicocca*.

TAPURA. See *Robria*.

TARALEA. See *Dipterix*.

TARATTI. See *Nymphaea Nelumbo*.

TARAXACONASTRUM. See *Hyoseris*.

TARAXACONOIDES. See *Apargia*.

TARAXACUM. See *Leontodon*.]

TARCHONANTHUS. (*Tarchon*, an Arabic name for *Artemisia Dracunculus*, or *Tarragon*, and *αρδω*, a flower. Having a flower like that of *Tarchon* or *Tarragon*.)

Lin. gen. n. 940. Reich. n. 1020. Schreb. n. 1276.

Gartn. t. 166.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Nucamentaceæ*. *Corymbifera* Juss.

#### GENERIC CHARACTER.

CAL. Common turbinate, one-leafed, commonly half-seven-cleft, coloured internally, shorter than the corolla, sharpish, permanent.

COR. Compound uniform: florets about twenty. Corollets hermaphrodite, numerous, equal.

Proper one-petalled, funnel-form, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindric, tubular, length of the corollet, tailed at the base.

PIST. Germ superior, oblong. Style twice as long as the flower. Stigmas two, gaping.

PER. none. Calyx unchanged.

SEEDS solitary, oblong. Down hairy, investing the seed all round.

REC. hairy, very small, hairs length of the calyx.

OBS. The down is singular in this, that it does not crown but invest the seed.

#### ESSENTIAL CHARACTER.

Cal. one-leafed, commonly half-seven-cleft, turbinate.

Seeds covered with down.

Recept. villose.

#### SPECIES.

1. *Tarchonanthus camphoratus*. *Skrubby African Fleabane*.

Lin. spec. 1179. syst. 740. Reich. 3. 727. suppl.

361. hort. cliff. 398. Gartn. fruct. 2. 392.

Berg. cap. 236. Kniph. cent. 2. n. 94.

*Elichryso affinis*, &c. Herm. lugdb. 227. t. 229.

Pluk. phyt. t. 174. f. 1. Mor. hist. 3. 90.

*Elichrysum*, *Arbor africana*. Boerb. lugdb. 1. 121.

*Conyza africana frutescens folio Salviae*, odore *Camphoræ*. Tournef. inst. 455.

Leaves oblong flat, calyx one-leafed five-cleft.

[2. *Tarchonanthus glaber*. *Smooth African Fleabane*.

Lin. syst. 740. suppl. 360.

Leaves smooth entire and toothed.

3. *Tarchonanthus ericoides*. *Heath-like African Fleabane*.

Lin. syst. 740. suppl. 360.

Leaves acrosc, calyxes four-leaved.]

#### DESCRIPTIONS, &c.

1. Stem strong, woody, rising to the height of twelve or fourteen feet, sending out many woody branches at the top, which may be trained to a regular head. Leaves in shape like those of the broad-leaved Sallow, having a downy surface like Sage, and their under sides white; in smell they resemble Rosemary leaves when bruised. The flowers are produced in spikes at the extremity of the shoots, and being of a dull purple colour, do not make any great appearance. They appear in autumn, and continue great part of the winter. It retains the leaves all the year.

[Receptacle flattish, villose, with the hairs shorter than the calyx. Seeds small, ovate, woolly, crowned with the permanent corollet, woolly on the outside and continuous with the external integument of the seed. No down except a copious wool common to the seed and corollet. Bergius is mistaken in attributing



buting a superior germ to the flower; and Linneus in assigning a feathered down to the seeds<sup>b</sup>.

Native of the Cape of Good Hope; also of China, according to Miller.—Cultivated 1690, in the Royal garden at Hampton Court.

2. This resembles the preceding very much, but is void of smell, and entirely smooth all over. It varies with wider and narrower, entire and toothed leaves.

3. This is a stiff branching shrub, seldom attenuated at the top. Leaves like those of Heath, clustered, linear, very short. Flowers clustered, lateral, bigger than the leaves, on short peduncles. Calyx-leaves oval. Corollas few, minute, concealed within the snow-white down of the receptacle, which is much larger than the flower.

These are both natives of the Cape of Good Hope<sup>i</sup>.]

#### PROPAGATION AND CULTURE.

These plants are too tender to live through the winter in the open air in England, but requiring no artificial heat, may be placed with Myrtles, Oleander, &c. in winter, and in summer may be exposed to the open air in a sheltered situation.

They may be increased by cuttings, planted in may, in pots filled with light earth, and if they are plunged into a moderate hot-bed, it will promote their putting out roots; screen them from the sun until they have taken root, which will be about the middle of July; when each should be transplanted into a separate pot, and placed in the shade until they have taken new root: after which set them with other hardy exotic plants in a sheltered situation to the middle or end of October, when they should be removed into the greenhouse, placing them where they may have a large share of air in mild weather. Being very thirsty plants, they must be often watered. They must be shifted every year, and as they increase in size, into larger pots.

[TARCHONANTHUS. See *Iva*.

TARDAVEL. See *Spermacoce*.

TARE. See *Ervum* and *Vicia*.

TARENAYA. See *Cleome*.

TARGIONIA. (So named by Micheli, in honour of Cypriani Targioni, M.D. of Florence, who had a Museum there.)

Cryptogamia Algæ:—now Hepaticæ.

#### GENERIC CHARACTER.

Cal. two-valved, compressed, containing at bottom a Capsule nearly globular, many-seeded.

#### SPECIES.

1. *Targionia hypophylla*.

Micheli. 3. *Engl. bot.* 287. *Wither.* 884.

Lichen. *Dill. musc. t.* 78. *f.* 9. *Col. ecphr.* 1. 331. *f.* 333. *Buxb. cent.* 1. *t.* 61. *f.* 4.

#### DESCRIPTION, &c.

Not larger than the finger nail. Green not pellucid, rough with white rising dots. Leaf cordate-lanceolate, at first green, afterwards dark purple, blackish underneath. Fructification at the end, on the under side, the size of a Vetch. Calyx black; opening, containing the fruit covered with a yellowish skin, and filled with a yellowish pulp which rubs to powder between the fingers, and stains them<sup>k</sup>.

Native of Italy, Spain, Constantinople, Flanders, Saxony about Dresden, and England near Dawlish in Devonshire: flowering from March to May.

TARRAGON. See *Artemisia*.

TARTARIAN LAMB. See *Polypodium*.

TARTONRAIRA. See *Daphne*.

TATAI-IBA. See *Morus tinctoria*.

TATULA. See *Datura*.]

TAXUS (of Pliny, &c. *Τάξος* of Aëtius. Derivation uncertain. From *τοξον*; a bow or arrow. Pliny says, that according to some, the toxica or poisons, used for arrows, were called taxica, from this tree. But these poisons were so named from *τοξον*. Others derive it from *Taxo*, in the sense of reprehendo, culpo: this being a poisonous tree.)

*Lin. gen. n.* 1135. *Reich. n.* 1241. *Schreb. n.* 1553.

*Tournef. t.* 362. *Juss.* 412. *Gertn. t.* 91.

<sup>b</sup> Gærtner. <sup>i</sup> Linn. suppl. <sup>k</sup> Withering from Columna.

Class. 22. 13. Dioecia Monadelphia.

Nat. order of *Coniferæ*.

#### GENERIC CHARACTER.

##### \* Male.

CAL. none: except a *Bud* like a four-leaved Perianth.

COR. none.

STAM. *Filaments* numerous, united at bottom into a column, longer than the bud. *Anthers* depressed, blunt at the edge; eight-cleft, gaping every way at the base, and, when they have discharged their pollen, flat, peltate, and remarkable for their eight-cleft margin.

##### \* Female.

CAL. as in the Male.

COR. none.

PIST. *Germ* ovate-acuminate. *Style* none. *Stigma* obtuse.

PER. *Berry* from the receptacle elongated into a præputium globular, succulent, gaping at the top, coloured, at length wasting from dryness, and evanescent.

SEED one, ovate-oblong, prominent at the top, beyond the berry.

OBS. *The berry, strictly speaking, ought not to be called a pericarp. This species of berry is remarkable, nor does a similar one occur, except that of Gualtheria.*

#### ESSENTIAL CHARACTER.

MALE. Cal. none. Cor. none. Stam. many. *Anthers* peltate eight-cleft.

FEM. Cor. none. Style none. Seed one, in a berried calycle that is quite entire.

#### SPECIES.

1. *Taxus baccata*. Common Yew-tree.

*Lin. spec.* 1472. *Reich.* 4. 279. *hort. cliff.* 464. *fl. suec. n.* 916. *Gertn. fruct.* 2. 65. *Willich obs. n.* 3. *illustr. n.* 2. *Huds. angl.* 437. *Wither. arr. ed.* 3. 614. *Lightf. scot.* 626. *Engl. bot. t.* 746. *Relb. cant. ed.* 2. *n.* 817. *Sibth. oxon. n.* 607. *Gunn. norv. n.* 420. *Hall. helv. n.* 1663. *Villars dauph.* 3. 815. *Allion. pedem. n.* 1953. *Du Roi barbecc.* 2. 451. *Dubam. arb.* 2. *t.* 86. *Blackw. t.* 572. *Kniph. cent.* 1. *n.* 89. *mas. Hunt. Evel. silva ed.* 1. 378. 2. 257.

*Taxus. Bauh. pin.* 505. *Camer. epit.* 840. *Dod. pempt.* 859. 1. *Matth.* 1099. *Lob. obs.* 637. 1. *ic.* 2. 232. *Ger.* 1187. 2. *emac.* 1370. *Park. theat.* 1412. *Bauh. hist.* 1. 241. 2. *Raii hist.* 1416. *ffst.* 445.

*Smilax. Dioscor. l.* 4. *c.* 80.

*Μίλος. Theophr.* 3. *hist.* 10.

*Leaves linear approximating.*

[2. *Taxus nucifera*. Acorn-bearing Yew.

*Lin. spec.* 1472. *Reich.* 4. 280. *Kämpf. amoen.* 814. *t.* 815. *Thunb. jap.* 275.

*Leaves linear distant.*

3. *Taxus macrophylla*. Long-leaved Yew.

*Lin. fyst.* 895. *Thunb. jap.* 276. *Kämpf. amoen.* 5. 780. *ic. select. t.* 24.

*Leaves solitary lanceolate remote.*

4. *Taxus verticillata*. Whorl-leaved Yew.

*Lin. fyst.* 895. *Thunb. jap.* 276. *Kämpf. amoen.* 5. 780.

*Leaves whorled linear, sickle-shaped.*

#### DESCRIPTIONS, &c.

1. Trunk straight, with a smooth deciduous bark. Wood very hard, tough, and of a fine grain. Leaves thickly set, linear, smooth, evergreen. Flowers axillary, enveloped with imbricate bractes: the male on one tree, sulphur-coloured, without a calyx; the female on another, with a small green calyx, sustaining the oval flattish seed, which calyx at length becomes red, soft, full of a sweet slimy pulp<sup>l</sup>.

The singular fructification of this tree is differently described. According to Gærtner, the calyx is imbricate with four or seven rounded, concave scales. The receptacle in the male is elongated into a column, to which are fastened about ten anthers, after they open becoming lobed and peltate:—in the female, first orbicular, narrow, fungose; then subhemispheric,

<sup>l</sup> Engl. bot.



rical, membranaceous; finally fleshy, berried, scarlet. Pericarp a bony obovate nut, mucronate at the tip, of a turgid lenticular form, smooth, dark-coloured, one-celled, valveless, involucre with the receptacle of the flower enlarged, ovate-globular, pervious at the tip, fleshy and scarlet. Seed of the same shape with the cavity of the nut, but with a manillary process at the base, pale.

The fruit in some degree resembles a small acorn whilst it is young, but as it advances, the scarlet cup becomes more fleshy, and is elongated till it covers the whole seed or nut, except a round hole at the tip.]

Mr. Miller asserts, that though the male and female flowers are commonly on different trees, yet they are sometimes found upon the same. I have never observed this, but it is not improbable.

The Yew-tree is a native of Europe, North America, [and Japan. Its proper situation is in mountainous woods, or more particularly the clefts of high calcareous rocks. Cæsar mentions the *Taxus* as very common in Gaul and Germany. England formerly possessed great abundance, and it is now not very uncommon in a wild state, in some parts of the country. Of planted trees there are yet many in church-yards. In Ireland, it was evidently very plentiful in former times, being at present common in a fossil state, but it is not now found there except in cultivation<sup>m</sup>.

The Yew, says Mr. Gilpin, is a pure native of Britain: and Mr. Pennant informs us, that it is to be found wild upon the hills that bound the waters of the Winander, and on the face of many precipices of different places in this kingdom<sup>n</sup>.

Mr. Lightfoot says, that it is found here and there in the Highlands of Scotland in a truly wild state.

In some parts of Buckinghamshire it comes up in great abundance from the berries spontaneously.

The accounts of large Yew-trees yet remaining in England are numerous.

Mr. Lysons mentions one in the church-yard at Totteridge, the girth of which, at three feet from the ground, is twenty-six feet: and another in Woodford church-yard, which girths at the same height eleven feet nine inches; and at four feet and a half from the ground fourteen feet three inches: the spread of its boughs forms a circumference of about one hundred and eighty feet<sup>o</sup>.

At Waltham in Essex, were two large Yew-trees in which they used to hang the bells.

There is one of an extraordinary size at Peterham: and another with a thick and sturdy trunk at Lord Newberry's, in the old palace garden at Richmond, planted three days before Queen Elizabeth was born.

The aged Yew groves at Mickleton in Surrey could not escape the notice of Mr. John Toland, in his pleasant description of Epsom, 8vo. 1711.

Mr. Evelyn says, "he that in winter should behold some of our highest hills in Surrey, clad with whole woods of these trees (the Box and the Yew) for divers miles in circuit, as in those delicious groves of them, belonging to the late Sir Adam Brown of Bechworth castle, from Box-hill, might easily fancy himself transported into some new or enchanted country<sup>p</sup>."—These woods and groves are now no more.

The same author mentions "a Yew-tree in the church-yard of Crowhurst in Surrey, which was ten yards in compass. Another in Braburne church-yard, not far from Scots-Hall in Kent, which being fifty-eight feet eleven inches in circumference, will bear near twenty-feet diameter: not to mention the goodly planks, and other considerable pieces of squared and clear timber, which had been hewed and sawn out of some of the arms only torn from it by impetuous winds. Such another monster is also to be seen in Sutton church-yard near Winchester<sup>q</sup>.

Several fine old trees are to be seen on some sandy

<sup>m</sup> Information from Mr. Templeton of Orange Grove near Belfast.

<sup>n</sup> Hunter's Evelyn.

<sup>o</sup> Silva, b. 2. c. 6.

<sup>p</sup> Environ, vol. 4. p. 43. 277.

<sup>q</sup> Idem, b. 3. c. 3.

rocks about two miles from Withyam, and five from Tunbridge<sup>r</sup>.

Near the church at Hedfor in Bucks, is a fine growing Yew-tree, which measures twenty-seven feet circumference<sup>s</sup>. There are other large trees on the chalk hills of the same county: and a shady walk of them in the garden of Bradenham house near West Wycombe, the branches of which would make excellent bows.

At Mill Hill, Hendon, in Middlesex, are four beautiful Yew trees. Dr. Trinder, whose property they are, favoured me with the following account of them on the 20th of April, 1797.—"Their position is nearly rhomboidal, in a little field belonging to me, in size about two acres and a half, and near the ten mile stone from London. The tradition is, that there were many more Yews in this field, which seems probable from the hollows that appear therein. I measured them this morning round the sound and solid wood. The trees are in good preservation, showing but small symptoms of decay.

N<sup>o</sup> 1. in girth 9 feet.

2. ——— 8 feet.

3. ——— 7½ feet.

4. ——— 7 feet.

An apprehension that Dr. Trinder had an intention of felling those magnificent and venerable trees, attracted the attention of the late Michael Collinson, and induced him to write a feeling letter to the learned and benevolent proprietor in their behalf.

Other remarkable Yews that are mentioned are, Sir Francis Vincent's at Stoke. One at Ifley by Oxford, four yards and six inches round. Talbot's Yew in Takersley parish. One in Martley church-yard, Worcestershire, about twelve yards in circumference. In the church-yard at Ashill in Somersetshire are two very large Yew-trees; one fifteen feet round, with a vast spread of branches, extending N. and S. fifty-six feet. The other divides into three large trunks just above the ground, but many of the arms are decayed<sup>t</sup>. Two trees are now growing on the hill above Fountain's abbey, near Ripon, which in 1770 measured in circumference from thirteen feet to twenty-six feet six inches<sup>u</sup>. In the church-yard at Aberistwith are eleven Yew-trees, the largest twenty-four feet, and the smallest eleven and a half in circumference. In Mamkilad church-yard are twelve fine trees, the largest of which is twenty-five feet in circumference<sup>v</sup>. Doubtless there must be many large ancient Yew-trees remaining in Wales.

Mr. Pennant mentions one in Fontingal church-yard, in the highlands of Scotland, the ruins of which measured fifty-six feet and a half in circumference. And Mr. Lightfoot informs us, that at Glenure, near Glen-Creran, in Upper Lorn, there are the remains of an old wood of Yew.

In Ireland, there is a Yew-tree at Macruss Abbey, having one great stem, two feet in diameter, and fourteen feet high, with a vast head of branches spreading on every side, and filling the area of the cloisters<sup>w</sup>.

This catalogue might probably be much increased by a diligent research into County histories, and the works of travellers.

The comparative value of a Yew with other trees, in former times, may be seen from the following table, taken from the ancient laws of Wales.

A consecrated Yew, its value is a pound.

An Oak, its value is six score pence.

A Mistletoe branch, its value is three score pence.

Thirty pence is the value of every principal branch in the Oak.

Three score pence is the value of a sweet Apple-tree.

Thirty pence is the value of a four Apple tree.

Fifteen pence is the value of a wood Yew tree.

Seven pence halfpenny is the value of a Thorn tree.

Four pence is the value of every tree after that.

<sup>r</sup> Engl. bot.

<sup>s</sup> Langley's hundred of Desbro'. p. 279.

<sup>t</sup> Collinson's Somersetshire, 1. 13.

<sup>u</sup> Hunter's Evelyn.

<sup>v</sup> Cox's Monm. p. 248. & 264.

<sup>w</sup> Young's Irish tour.



The great value set upon a consecrated Yew, in the above table, in comparison with a common tree of the same kind, induces me, among other reasons to think, that the Yew was commonly planted in church-yards, rather from motives of superstition, than on account of its utility in making bows, as many have supposed: for a single tree would have afforded a very scanty supply for this purpose. Our forefathers were particularly careful in preserving this funeral tree, whose branches it was usual to carry in solemn procession to the grave, and afterwards to deposit therein, under the bodies of their departed friends. Our learned Ray says, that our ancestors planted the Yew in church-yards, because it was an evergreen tree, as a symbol of that immortality which they hoped and expected for the persons there deposited. For the same reason this and other evergreen trees are even yet carried in funerals and thrown into the grave with the corpse in some parts of England; and in Wales, planted, with flowers, upon the grave itself.

The wood of the Yew is red and veined, very hard and smooth, much used by turners, inlayers, and cabinet-makers. For cogs of mills, handles of tools, posts to be set in moist grounds, and everlasting axle-trees, there is none to be compared with it. It is likewise used for the bodies of lutes, &c., bowls, wheels, and pins for pullies, &c.—spoons, cups, and flood-gates for fish-ponds, which hardly ever decay<sup>a</sup>.

Formerly, says Mr. Gilpin<sup>b</sup>, the Yew was, what the Oak is now, the basis of our strength. Of it the old English yeoman made his long-bow; which, he vaunted, nobody but an Englishman, could bend. In shooting he did not, as in other nations, keep his left hand steady, and draw his bow with his right: but keeping his right at rest upon the nerve, he pressed the whole weight of his body into the horns of his bow. Hence arose the English phrase of *bending a bow*; and the French of drawing one.

So great was the demand for Yew in the days of archery, that our own stock could not supply the Bowyers, and they were obliged by statute to import staves of it for making Bows; sometimes at a very high price.

By the 5th Edward iv. it was directed that every Englishmen in Ireland, and Irishmen dwelling with Englishmen, shall have an English bow of his own height, made of Yew, Wych, Hazel, Ash, or Awburne (perhaps Alder<sup>c</sup>.) But “as for Brasell (says Roger Ascham) Elme, Wych and Ashe, experience doth prove them to be but mean for bowes, and so to conclude, *Ewe* of all other things is that, whereof perfite shootinge would have a bowe made<sup>d</sup>.”

All Venetian ships, with every butt of Malmsey or Tyre wine, were to import ten bow staves, as the price had risen from 40s. to 8*l.* a hundred.

33 Hen. viii. c. 9. recites the great price of Yew bows made of Elke (probably Elbe) Yew; and reduces it to 3*s.* 4*d.*

By one of the ancient statutes a bow of foreign Yew may be sold for no more than 6*s.*

8 Eliz. c. 10. regulates the price of bows; and 13 Eliz. c. 14. enacts that bow staves shall be brought into the realm from the Hanse towns and the eastward.—From the end however of the reign of Hen. viii. archery seems to have been chiefly considered as a pastime<sup>e</sup>.

Mr. Gilpin, contrary to general opinion, is a great admirer of the form and foliage of this tree. “The Yew, says he, is of all other trees, the most tonsile. Hence all the indignities it suffers. We every where see it cut and metamorphosed into such a variety of deformities, that we are hardly brought to conceive, it has a natural shape; or the power which other trees have, of hanging carelessly or negligently. Yet it has this power in a very eminent degree; and in a state of nature, except in exposed situations, is perhaps one of the most beautiful evergreens we have.

<sup>a</sup> Evelyn. <sup>b</sup> Withering. <sup>c</sup> Forest scen. 1. 92.

<sup>d</sup> Barrington in Archæologia, 7. 48, 53.

<sup>e</sup> Works, ed. Benn. 133. <sup>f</sup> Archæol. 7. 54, 55, 61, 65.

We seldom however see the Yew in perfection. In the New Forest it formerly abounded: but it is now much scarcer. Still in many parts of the forest, some noble specimens are left. One of these is a tree of peculiar beauty. It immediately divides into several massy limbs, each of which, hanging in grand loose foliage, spreads over a large compass of ground, and yet the whole tree forms a close compact body: that is, its boughs are not so separated as to break into distinct parts. It cannot boast the size of many other trees on record, but it has sufficient size for all the purposes of landscape, and in point of picturesque beauty it probably equals any of them. It stands not far from the banks of Lymington river, and occupies a small knoll, surrounded with other trees, some of which are Yews, but of inferior beauty. If such trees were common, they would recover the character of the Yew among the admirers of picturesque beauty<sup>f</sup>.

Dr. Hunter mentions a variety with short leaves which appears very ornamental in plantations.

It has been much debated whether the Yew-tree be poisonous or not; there cannot now be any doubt of its being so. Mr. White in his history of Selborne, has given some authentic information on the subject, as well as on other particulars relative to this interesting tree.

“In the church-yard of this village, says he, is a Yew-tree, whose aspect bespeaks it to be of a great age: the body is squat short and thick, and measures twenty three feet in the girth, supporting an head of suitable extent to its bulk. This is a male tree, which in the spring sheds clouds of dust, and fills the atmosphere around with its farina. As far as we have been able to observe, the male trees become much larger than the females; and most of the Yew-trees in the church-yards of this neighbourhood are males; but this must have been matter of mere accident, since men, when they first planted Yews, little dreamed that there were sexes in trees.

In a yard, in the midst of the street, till very lately grew a middle-sized female tree, which commonly bore great crops of berries. By the high winds usually prevailing about the autumnal equinox, these berries, then ripe, were blown down into the road, where the hogs ate them. It was remarkable, that though barrow-hogs and young sows found no inconvenience from this food, yet milch-sows often died after such a repast: a circumstance that can be accounted for, only by supposing that the latter, being much exhausted and hungry, devoured a larger quantity.

But the twigs and leaves of Yew, eaten in a very small quantity, are certain death to horses and cows, and that in a few minutes. An horse tied to a yew-hedge, or to a faggot-stack of dead Yew, shall be found dead before the owner can be aware that any danger is at hand: the writer has been several times a sorrowful witness to losses of this kind among his friends; and in the isle of Ely had once the mortification to see nine young steers or bullocks of his own all lying dead in an heap from browsing a little on an hedge of Yew in an old garden, into which they had broken in snowy weather. Even the clippings of a Yew hedge have destroyed a whole dairy of cows when thrown inadvertently into a yard. And yet sheep and turkies, and as park-keepers say, deer, will crop these trees with impunity.

Some intelligent persons assert, that the branches of Yew, while green, are not noxious: but among the number of cattle that we have known fall victims to this deadly food, not one has been found, when it was opened, but had a lump of green Yew in its paunch. True it is, that Yew-trees stand for twenty years or more in a field, and no bad consequences ensue: but at some time or other, cattle, either from wantonness when full, or from hunger when empty, will be meddling, to their certain destruction<sup>g</sup>.

According to Linneus, horses and cows refuse the Yew, but sheep and goats eat it. It should seem that sheep feed on it with impunity, since the lower part

<sup>f</sup> For. scen. p. 92, 93.

<sup>g</sup> P. 324.



of the trees, in sheep-walks where the boughs come near the ground, are as much formed into shapes by their browsing, as any other tree or shrub: it is however so common to find a sheep dead, that the cause is seldom enquired into<sup>b</sup>. Sheep are said to have been killed by eating the bark. It is a common notion, that the loppings in a withering or half dried state are most detrimental to cattle<sup>1</sup>. This may be true, but yet it is certain from what has been said above, that the fresh leaves are often fatal to them. And this contradicts the assertion of Theophrastus, that ruminating animals eat Yew-leaves with impunity<sup>k</sup>. Though perhaps they are killed by them less frequently, and not so suddenly as horses and asses, which by eating a handful or two of leaves from the extremities of the branches, have been known to die in a quarter of an hour after, suddenly, and without any apparent symptoms or pain, not distended by wind, nor inflamed. Some cows die in the same easy manner; but others vomit, are very sick, and languish a long time. Six or eight sheep perished by browsing on this tree. A horse and a mule died by eating five ounces each of the leaves; the former, who took them fasting, died within an hour; the latter at the end of three hours, he had taken them after eating<sup>l</sup>.

Yew-leaves are certainly fatal to the human species. Evelyn, from Aubrey, relates a case of two women who died from a drink of it: and Dr. Percival of Manchester mentions another of three children, who were killed by a spoonful of the green leaves, which was given them for worms: they died without agony or any of the usual symptoms of vegetable poisons. The same quantity of the dried leaves had been given the day before without any effect<sup>m</sup>.

A clergyman, who was curate in Suffex, informed me, that a young lady and her servant, his parishioners, being seized with an ague, were advised to take a decoction of Rue, which they unhappily mistaking for Yew, sent to the church-yard, where a large old tree grew, and gathered a quantity of the leaves, of which they made a decoction, and drank it upon going to bed. The next morning they were both found dead. This was Sunday: on the Thursday following, the clergyman was called upon to bury them: he performed the office on the servant, but the young lady had so fine a bloom on her countenance, that they entertained hopes of her being in a state of suspended animation, and accordingly tried the experiments usual in such cases, but without success: they determined however not to bury her at that time, but kept her till the ensuing Saturday, and even then the corpse remained totally unchanged. What made it more remarkable was, that the accident happened in November, and the weather was of that damp murky kind in which flesh keeps the worst.

Respecting the fruit, Theophrastus says it is eaten by some persons, being sweet and harmless. The berries are certainly not so deleterious as the leaves; I was fond of sucking them in my youth, but spit out the stones. The fows, I presume, mentioned by Mr. White, swallowed the whole fruit, and in large quantities. They are eaten by birds, after the haws are consumed, or destroyed by frost. Dioscorides says they occasion the flux: and that a drink of the leaves brings on a coldness of the whole body, suffocation and death in a little time. Cæsar, in his gallic war relates, that Cativulcus king of the Eburones killed himself by a draught of Yew.—Gerarde with his usual simplicity relates, that when he was young, and went to school, he and divers of his school-fellows did eat their fills of the berries of this tree.

Mr. Boucher asserts upon his own experience, that the wooden parts of a bed made of Yew, will not be approached by bugs.

An anonymous writer in the Gentleman's Magazine suggests that the Yew afforded branches for the processions on Palm-Sunday. In the eastern counties, the children gather the branches of the Sallow, which

is then in flower, and carry them about on that festival.]

The only use this tree is fit for in gardens, is to form hedges for the defence of exotic plants; for which purpose, when it is necessary to have hedges, it is the most proper of any; the leaves being small, and the branches so close together, that if carefully shorn, they break the winds better than any other sort of fence, because they are not reverberated, as they are against walls and pales. [But they have this disadvantage, that they are a harbour for snails and other vermin.

If the only use of the Yew in gardens be for hedges: in plantations, notwithstanding its sombrous hue, it may be placed so as to be an ornament, among other evergreen trees; and where a disagreeable object is to be concealed, nothing is more effectual than the Yew, which with proper care may be removed even when it is of a considerable size.

In the south of England almost every church-yard has its tree, and some have two; but in the north few are to be found.

2. The fruit resembles the acorns of the Oak, and is astringent. It is eaten in deserts, is said to be very wholesome, and notwithstanding its astringent taste, to be laxative to the bowels. An oil expressed from it is used in cookery. The wood is in request among the cabinet-makers.—Native of Japan, here and there near Nagasaki and in Nipou.

3. Branches round, knotted from the fallen leaves, flexuose, erect, ash-coloured, smooth. Leaves scattered, elliptic, entire with a thick rib, smooth, pale beneath, patulous, a finger's length. Flowers among the leaves, axillary, dioecous. Ament male, cylindrical. Berry ovate, smooth, green, size of a large pea, one-celled, one-seeded, growing black as it dries. Seed one, filling the berry, ovate, white. The wood is used by the cabinet-makers.—Native of Japan near Nagasaki, &c. It flowers in June.

4. Branches round, smooth, ash-coloured. Leaves sessile, about eight in a whorl, blunt, entire, smooth; above green, convex, with a groove in the middle; beneath concave, with the margin and two lines raised, pale; spreading, a finger's length and more.—Native of Japan<sup>n</sup>.

Loureiro's *Sebifera glutinosa* is perhaps the same with *Taxus macrophylla* of Thunberg. It is certainly very nearly allied to this genus.]

#### PROPAGATION AND CULTURE.

Sow the berries in autumn, as soon as they are ripe, without clearing them from the pulp, upon a shady bed of fresh undunged soil, covering them about half an inch thick with the same earth. In the spring clear the bed carefully from weeds, and if the season prove dry, refresh the bed with water occasionally, to promote the growth of the seeds, many of which will come up the same spring, but others will remain in the ground until autumn or spring following; but where the seeds are preserved above ground, until spring before they are sown, the plants never come up until the year after.

In this bed, constantly well cleared from weeds, the plants may remain two years; when they should be removed, in autumn, into a spot of fresh undunged soil, divided into beds four or five feet wide. Set them in rows a foot asunder, and six inches from each other, observing to lay a little mulch upon the surface of the ground about their roots, as also to water them in dry weather until they have taken root, after which they will require no farther care, but to keep them clear from weeds in summer, and to trim them according to the purpose for which they are designed.

In these beds they may remain two or three years, according as they have grown, when they should be removed, in autumn, into a nursery; placing them in rows at three feet distance, and the plants eighteen inches asunder in the rows; and trimming them in summer according to the design for which they are intended. In three or four years they may be transplanted where they are to remain; always ob-

<sup>b</sup> Gent, magaz. vol. 56. for 1786. p. 941.

<sup>k</sup> Hist. l. 3. c. 10.

<sup>l</sup> Villars.

<sup>m</sup> Withering.

<sup>n</sup> Thunberg.



erving to remove them in autumn where the ground is very dry, but on cold moist land it is better in the spring. These trees are very slow of growth.

[Mr. Boucher advises, that the seeds should be divested of their pulp before they are sowed. In this case some will appear the following spring; but as these will be much the smaller part, he advises the seeds to be mixed with earth till spring.

The Yew may likewise be propagated by cuttings of one or two years growth, planted in a shady border, the beginning of april, or the end of august: torn branches are preferable for this purpose. In two years they will be fit for removal to another nursery, where they may remain three years, and so on, according to the size required. No tree is more patient of being transplanted old than the Yew; so that you may at once form with it hedges seven or eight feet high. It should be a rule never to clip these hedges in autumn.

**TAZETTA.** See *Narcissus*.

**TEA-BUCKTHORN.** See *Rhamnus*.

— **TREE.** See *Thea*.

—, New Jersey. See *Ceanothus*.

—, New Zealand. See *Philadelphus*.

—, Oswego. See *Monarda*.

—, West Indian. See *Sida*.

**TEAK TREE.** See *Tectona*.

**TEASEL.** See *Dipsacus*.

**TECTONA.** (*Τεκτωνία, structura, opus fabrilis, so named from the use of this noble tree in building.*)

Lin. gen. Schreb. n. 356. suppl. 20. Thunb. nov.

gen. 71. Gærtn. t. 57. Theka Malab. Juss. 108.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Vitices* Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, bell-shaped, half-five-cleft, permanent: *segments* ovate, from upright spreading, obtuse.

**COR.** one-petalled, funnel-form, length of the calyx. *Tube* short. *Border* five-cleft: *segments* spreading, ovate, externally tomentose.

**STAM.** *Filaments* five, inserted into the orifice of the tube of the corolla, very short. *Anthers* globular, grooved, standing out.

**PIST.** *Germ* superior, ovate, very villose, girt with a short pitcher-shaped gland. *Style* filiform, erect, a little longer than the calyx. *Stigma* obtuse, two or three-toothed: (according to Thunberg, *Stigmas* two, revolute, obtuse.)

**PER.** *Drupe* subglobular, depressed, four-lobed, rounded-four-cornered, hirsute, corky-spongy, juiceless, within the calyx now large, inflated, membranaceous, veined, concealed.

**SEED.** *Nut* subglobular, terminated by a round tubercle, four-ribbed, four-celled: axis bony, hollow within. *Kernels* compressed.

**OBS.** *The flowers are often six-cleft, hence the genus is referred to the class Hexandria by Thunberg.*

#### ESSENTIAL CHARACTER.

*Cor.* five-cleft. *Stigma* toothed. *Drupe* dry, spongy, within the inflated calyx. *Nut* three-celled.

#### SPECIES.

1. *Tectona grandis.* *Teak-wood* or *Indian Oak*.

Lin. spec. ed. Willd. 1. 1088. suppl. 151. Thunb.

nov. gen. 4. 71. Roxb. corom. 1. 10. t. 6. Ait.

kerw. 1. 260.

T. Theka. Lour. cochinch. 137. ed. Willd. 169.

Theka. Rheed. mal. 4. 57. t. 27. Marsd. Sumatr. 129.

Jatus. Rumph. amb. 3. 34. t. 18.

*Quercus indica.* Bont. jav. l. 6. c. 16. p. 151.

#### DESCRIPTION, &c.

Trunk erect, growing to an immense size: bark ash-coloured. Branches cross-armed, numerous, spreading: young shoots four-sided; sides channelled. Leaves opposite, spreading, ovate, a little scolloped, above scabrous, beneath covered with soft white down; larger at a distance from the flowers, and on young trees from twelve to twenty-four inches long, and from eight to sixteen broad. Petiole short, thick, laterally compressed. Panicle terminating, very large,

cross-armed: divisions dichotomous, with a sessile fertile flower in each cleft; the whole covered with a hoary farinaceous substance. Common peduncle quadrangular, with the sides deeply channelled, and the angles obtuse. Bractes opposite, lanceolate, two at each subdivision. Flowers small, white, very numerous, fragrant. Calyx and corolla oftener six-cleft than five-cleft. Nectary very small; often wanting. Stamens oftener six than five. Stigma two-cleft: divisions obtuse and spreading. Nut exceeding hard, four-celled.

In the Supplementum Plantarum of the younger Linneus it is said that the bark is like that of the Alder; the larger leaves pendulous, parabolic, acute, for the most part oblique at the base, silvery beneath, smooth above with very minute white dots; the common peduncle erect; calyx white-tomentose; corolla scarcely bigger than the calyx, pubescent on the outside with black dots interspersed; nectary red-orange; anthers tawny; germ white-villose; drupe size of a hazel nut.

Loureiro describes the bark as smooth, and the branches ascending; leaves very large, ovate, acute, quite entire, oblique at the base, with ribs opposite, curved in, thick; flowers white, terminating, in large, upright racemes, regularly divided; corolla five-parted; drupe small, roundish, three-celled, covered with the inflated calyx, which is five-cleft and gaping at the top.

According to Gærtner, the drupe is hirsute all over with roughish curled ash-coloured villose hairs; the rind friable; the shell bony, marked with four raised narrower ribs, and as many thicker rounded swellings, and perforated at the axis. Seed one in each of the four cells, lens-shaped swelling a little, having an umbilical chord from the top to the bottom, fastened to the vertex of the cells.

Native of the vast forests in Java and Ceylon, Malabar, Coromandel, Pegu, Ava, the confines of Cochinchina and Cambodia, &c. On the coast of Coromandel it flowers in the hot season; and the seed is ripe in august and september. Lord Cornwallis and Colonel Kyd begun some time ago to introduce it into Bengal, where it thrives well.

The wood of this tree has by long experience been found to be the most useful timber in Asia: it is light, easily worked, and at the same time both strong and durable: that which grows near the banks of the Godavary is beautifully veined, and very closely grained; it is particularly fit for furniture, gun-carriages, &c. where small timber is wanted. For ship-building the Teak is reckoned superior to any other sort of wood, being light, strong, and very durable, either in or out of the water. Pegu produces the largest quantity, the large rivers there enable the natives to bring it down to the sea ports from the interior mountainous parts of the country where it grows, at a cheap rate, which enables them to sell it lower than in any other part of India.

The trade between Calcutta, Madras and Rangoon (the principal port of Pegu) has of late years rapidly increased, particularly on account of Teak timber, the produce of Ava and Pegu, whence Calcutta and Madras draw all their supplies of wood for ship-building, and various other purposes: it being conveyed from the Malabar to the Coromandel coast, or to Calcutta, at an expense so great as to preclude the attempt. The commerce in this article is so extensive, as to require an annual return of Indian commodities to the amount of £.200,000 sterling. And it is produced in the forests of the Birman and Pegu empires in inexhaustible abundance.

A durable vessel of burthen cannot be built in the river of Bengal, without the aid of Teak plank. Within the last six years (previous to 1795) some of the finest merchant ships ever seen in the river Thames, have arrived from Calcutta, where they were built of Teak timber. Madras also is supplied from Rangoon, with timber for all the common purposes of domestic use; and even Bombay, although the coast



of Malabar is its principal store-house, finds it worth while, annually to import a large quantity of planks from Pegu<sup>a</sup>.

This tree was introduced at Kew in 1777, by John Walsb, Esq.<sup>r</sup>

TEF. See *Poa*.

TEGANIUM. See *Nolana*.

TELEPHIASTRUM. See *Portulaca*.

TELEPHIOIDES. See *Andrackne*.]

TELEPHIUM (of *Pliny*. Τηλεφίον of *Dioscorides*. So named from *Telephus* son of *Hercules* by *Auge*, and according to some, king of *Mysia*.)

Lin. gen. n. 377. Reich. n. 408. Schreb. n. 515.

Tournef. t. 128. Juss. 313. Gært. t. 129.

Class. 5. 3. Pentandria Frigynia.

Nat. order of *Portulacæ* Juss. *Miscellanæ* Linn.

#### GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong, obtuse, concave, keeled, length of the corolla, permanent.

COR. Petals five, oblong, obtuse, narrower below, erect, inserted into the receptacle.

STAM. Filaments five, awl-shaped, shorter than the corolla. Anthers incumbent.

PIST. Germ three-sided, acute. Style none. Stigmas three, acute, spreading.

PER. Capsule short, three-sided, three-valved, one-celled, Receptacle free, shorter by half than the capsule.

SEEDS very many, roundish.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, inserted into the receptacle. Caps. one-celled, three-valved.

#### SPECIES.

1. *Telephium Imperati*. True Orpine.

Lin. spec. 388. Reich. 1. 743. Willd. 1. 1506.

vir. cliff. 20. hort. cliff. 73. upf. 70. Hall. herb.

n. 841. Ger. prov. 450. Villars dauph. 2. 555.

Allion. pedem. n. 1682. Desfont. atlant. 270.

Gært. fruct. 2. 221. Lamark illustr. t. 213.

Kniph. cent. 2. n. 95.

T. *Dioscoridis Imperati* 665. Tournef. inst. 248.

T. *legitimum Imperati* 7. Clus. hist. 2. 67. Ger. emac. 520. 3. Park. theat. 727.

T. *repens folio non deciduo*. Baub. pin. 287.

*Helianthes species rara*, coma inflexa ut in *Heliotropio*. Baub. hist. Raii hist. 1016.

*Polygonum perenne procumbens folio brevior floribus in capitulum congestis*. Mor. hist. 2. 592.

Leaves alternate.

[2. *Telephium oppositifolium*.

Lin. spec. 388. Reich. 1. 743. Willd. 1. 1506.

Desfont. atlant. 270.

T. *Myosotidis foliis amplioribus conjugatis*. Shaw afr. 572. ic.

Leaves opposite.]

#### DESCRIPTIONS, &c.

1. Root composed of yellowish woody fibres, spreading out wide. Stalks and branches slender, trailing, eight or nine inches long. Leaves small, ovate, grayish, smooth and pretty stiff, having one longitudinal nerve running through the middle. Flowers terminating, in short thick bunches, reflexed like those of *Heliotrope*.

[Stem prostrate, smooth, round, scarcely branched. Leaves glaucous, elliptic, quite entire, narrower at the base, thick, hard, solid. Flowers in a close corymb, white. Styles three, converging at the base. Capsule ovate, contracted at top into a point, three-sided, having a depressed streak along the middle of each side. Seeds about twelve, ovate-globular, somewhat kidney-shaped, scarcely or very slightly compressed, dotted all over with very minute raised dots, but smooth and of a very dark colour not shining; fastened to a short, free central receptacle.

Native of the South of France, Spain, Switzerland, Italy and Barbary.—It flowers from June to August; and was cultivated by Mr. Miller in 1739<sup>a</sup>.

2. Native of Barbary, where it was found by Shaw; and is distinguished by its larger conjugate leaves.]

<sup>a</sup> Major Symes's Embassy to Ava, 1800. qu. pp. 217, 457. &c.

<sup>r</sup> Hort. kew. <sup>s</sup> Desfontaines. <sup>t</sup> Gærtner. <sup>u</sup> Hort. kew.

#### PROPAGATION AND CULTURE.

1. Sow the seeds in autumn, on a bed of fresh light earth, in an open situation; for if they be sown in the spring, the plants will not come up till the following spring. Leave them six or eight inches asunder, and clear them well from weeds, which will soon overbear such trailing plants. They do not transplant well, and therefore should be sown where they are to remain. The seeds will soon scatter, and if the ground be not disturbed, plants will come up in plenty.

[TELEPHIUM. See *Arenaria*, *Cotyledon*, *Crassula*, *Ornithopus*, *Rhodiola*, *Sedum*.

TENDO. See *Fucus*.

TENGA. See *Cocos*.

TENTWORT. See *Asplenium*.

TERAMNUS. (Τεραμνος, the same with τεραμων and τερνν, soft: properly predicated of legumes and seeds which are made tender by boiling. Theophr. l. 4. c. 13. Land adapted to produce seeds fit for boiling is called by *Dioscorides* γυν τεραμωνα.)

Lin. gen. Schreb. n. 1171. Brown. 290. Swartz prodr. 105.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionacæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, two-lipped: upper lip a little larger, bifid; lower three-toothed, teeth acute, erect, approximating.

COR. papilionaceous: standard obcordate, spreading, erect, bent down a little; wings length of the standard, erect, approximating, rounded at the tip; keel very small, concealed at the base by the calyx between the lower part of the wings, bipartite, covering the stamens.

STAM. Filaments ten; five very small and barren, alternate with the others, which are fertile, longer, and united at the base. Anthers roundish.

PIST. Germ elongated, pubescent. Style none. Stigma round-headed.

PER. Legume linear, compressed, margined.

SEEDS many, roundish, compressed, retuse at the end.

#### ESSENTIAL CHARACTER.

Keel very small, concealed within the calyx. Stam. alternate; five barren. Stigma sessile, headed.

#### SPECIES.

1. *Teramnus volubilis*.

Swartz prodr. 105. Brown. jam. 290.

*Dolichos uncinatus*. Linn. & Diet. nostr.

*Phaseolus sylvestris minor*, flore minori. Sloan. jam. 1. 182.

Leaves ovate-lanceolate pubescent.

2. *Teramnus uncinatus*.

Swartz prodr. 105.

Leaves oblong obtuse, silky beneath.

#### DESCRIPTIONS, &c.

1. This creeping or climbing plant is pretty common in the lower hills of Jamaica, and runs generally the length of six or seven feet from the root. The leaves are oblong, and covered moderately with down. The flowers are small, and disposed in slender spikes at the axils of the leaves. The seed-vessels are long, slender and compressed. See *Dolichos uncinatus*.

2. Native of Jamaica<sup>x</sup>.

TEREBINTHUS. See *Bursera*, *Clusia*, *Pistacia*, and *Rhus*.

TERMINALIA. (So named, I presume, from the leaves in clusters terminating the branches, with spikes of flowers intermixed.)

Lin. gen. Reich. n. 1261. Schreb. n. 1583. Jacqu. collect. 1. 130. Forst. escul. 20. Juss. 76. Cattappa Gært. t. 127.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Elæagni* Juss.

#### GENERIC CHARACTER.

\* *Hermaphrodite* Flowers, at the lower part of the raceme, flowering first.

CAL. Perianth one-leaved, superior, five-cleft, coloured within: segments ovate, acute, equal.

<sup>x</sup> Swartz.



COR. none.—*Nectary* pitcher-shaped, in the bottom of the calyx, consisting of five small hispid corpuscles.

STAM. *Filaments* ten, awl-shaped, from erect spreading, longer than the calyx, and inserted into the bottom of it. *Anthers* roundish, erect.

PIST. *Germ* inferior, ovate-oblong. *Style* filiform, erect, length of the stamens. *Stigma* simple.

PER. *Drupe* oval, depressed, two-grooved; or compressed, acuminate.

SEED *Nut* oval-oblong, two-valved; *kernel* oblong.

\* *Males* superior, flowering later.

CAL. as in the Hermaphrodites.

COR. none. *Nectary* as in the Hermaphrodites.

STAM. as in the Hermaphrodites.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Cor. none. Stam. ten.

HERM. Style one. Drupe inferior, boat-shaped.

#### SPECIES.

##### 1. Terminalia Catappa.

*Lin. syst. ed. 13. 764. ed. 14. 910. suppl. 434. mant. 128 519. Reich. 4. 326. Jacqu. collect.*

1. 130. *Forst. prodr. n. 388. escul. 52. n. 19.*

Catappa. *Rumph. amb. 1. 174. t. 68.*

Adamaram. *Rheed. mal. 4. t. 5. Raii hist. 1650.*

Amygdalus indica Nieuhoff. *Raii hist. 1521.*

*Leaves obovate, tomentose beneath.*

##### 2. Terminalia glabrata.

*Forst. prodr. n. 389. escul. 52. n. 20.*

*Leaves obovate, smooth on both sides.*

##### 3. Terminalia latifolia.

*Swartz prodr. 68. Brown. jam. 255.*

Arbor maxima, forte prunifera. *Sloan. jam. 2. 130.*

*Raii dendr. 43.*

*Leaves obovate subserrate, drupes fleshy.*

##### 4. Terminalia arbutula.

*Swartz prodr. 68.*

*Leaves ovate-lanceolate entire pubescent, branches dichotomous, racemes erect.*

##### 5. Terminalia Chebula.

*Retz. obs. 5. 31. n. 91.*

*Leaves ovate naked, petioles biglandular above, racemes simple.*

##### 6. Terminalia angustifolia.

*Jacqu. hort. 3. 51. t. 100.*

T. Benzoin. *Lin. syst. 910. suppl. 434.*

Croton Benzoe. *Lin. syst. ed. 13. 721. mant. 297.*

*Reich. 4. 184. mat. med. 206.*

Catappa Benzoin. *Gartn. fruct. 2. 206.*

Arbor Benzoinæ. *Grim. ephem. nat. cur. dec. 4. ann.*

1. *Valentin. ind. litt. 487.*

*Leaves lanceolate pubescent.*

#### DESCRIPTIONS, &c.

1. This is a large tall leafy tree, with spreading branches in whorls. Leaves at the ends of the branches in clusters, spreading, obovate or subcordate, marked with a notch, somewhat tomentose beneath, on short roundish petioles. Racemes among the leaves, very many, round. Bractes oblong, caducous, cordate. Racemelets cylindrical. Hermaphrodite flowers few, more remote, at the base of the racemelet, smaller than those of the Currant<sup>1</sup>. The fruit is a drupe, three inches long, egg-shaped, grooved, containing an oblong kernel, that has the taste of an Almond, and may be used for the same purposes, but it has not so much oil. At Banda and Batavia it appears in the desert, and is much liked by Europeans. Rheede says that the Catappa bears ripe fruit three times in a year. This tree is commonly planted near houses, in wide areas, and seats are placed under it, for the enjoyment of the close extensive shade which it affords. The timber is fit for ship-building, being light and lasting many years in salt water. The bark and leaves yield a black pigment, with which the Indians dye their teeth, and Indian ink is made<sup>2</sup>.

Native of the East Indies. Introduced in 1778, by Messrs. Kennedy and Lee<sup>3</sup>.

2. This also is a lofty widely-branching tree, with

a straight stem clear of branches to a great height; the branches mostly opposite, round, spreading, smoothish, with a cinereous cloven bark. Leaves terminating in clusters, ovate and obovate, bluntish, quite entire, spreading, smooth, even, a span long, on round spreading petioles, covered with a brownish pile, and scarcely an inch in length. Peduncles from the axils of the upper leaves, simple, round, filiform, erect, bent down at the top, smooth, a span long. Raceme quite simple, with the flowers scattered and whitish: the males on the upper part, pedicelled; the hermaphrodites below, numerous, up to the middle of the raceme, very like the others, but really sessile; the germ itself being inferior, and performing the office of a pedicel.

It differs from the preceding, in having the leaves only half the size, and without any pubescence on the lower surface; the nut only one third of the size, oval, not at all grooved or margined, but as it were appendicled with an acute, compressed, membranaceous apex.

Native of the Society and Friendly isles in the South Seas. In the former it is cultivated near their huts and in their burial places. In the language of Otaheite it is named *Auwiri*, or *e-Tara-iri* and *e Tara-beiriri*, and is accounted sacred to their idols. The wood is used in building boats, and making drums, benches, &c. The kernels are eaten, and have the flavour of almonds<sup>b</sup>.

3. This tree has a very large trunk, and grows to a vast height, covered with a gray or very light-brown bark, seeming to be loose and come off in long pieces; it has here and there some knobs or eminencies on its surface, the leaves are very large and long. It grows in all the inland great woods of the island of Jamaica<sup>c</sup>.

4. This also is a native of Jamaica<sup>d</sup>.

5. This tree scarcely exceeds three or four times the height of a man, and is not much diffused. Branches scattered, covered with an ash-coloured bark. Leaves mostly opposite, quite entire; the younger ones silky-hirsute. Under the leaf on the upper side of the petioles are two glands, and sometimes two others in the very base of the leaf, especially in the tender leaves. Peduncles racemed, with the flowers sessile in whorls, at the ends of the branchlets. Calyx bell-shaped, short, five-toothed, outwardly naked, yellowish, inwardly bearded. Glands at the bottom oblong, densely bearded. Filaments twice as long as the calyx. All the flowers are hermaphrodite, but those which are fertile may easily be distinguished from the barren ones, by having the germ thickened at the base.—Native of the East Indies, where it was found by Koenig<sup>e</sup>.

6. Bark smooth, or very minutely cloven, brown. Branches in whorls, leafy at the end, spreading, simple, hairy. Leaves in clusters, petioled, repand, hairy, green with blood-red netted veins. Stipules none. Raceme horizontal, immediately below the leaves, simple, short, male flowers with one hermaphrodite. Germ inferior obclavate or ovate-oblong, contracted at the neck. Drupe boat-shaped or concave, convex on the other side. Nut bony, very hard, ovate, obtuse, sharp. The bark on the wood of the officinal Benzoin which Thunberg brought over resembles that of this tree very much<sup>f</sup>. But that is now ascertained to be a species of *Styrax*.

Native of the East Indies. Cultivated in 1757, by Mr. Miller<sup>g</sup>.

TERMINALIS. See *Dracæna*.]

TERNATEA. See *Clitoria*.

[TERNSTROEMIA. (So named by Mutis, in memory of Ternstroem, known by his travels into China.)

*Lin. gen. Schreb. n. 872. suppl. 39. Swartz prodr.*

81. *Juss. 262. Cleyera Thunb. jap. 12. nov.*

*gen. 68. sec. Vahl. Taonabo Aubl. 227, 228.*

*sec. Swartz. Tonabea Juss. 262.*

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Columniferae*. *Aurantia* Juss.

<sup>b</sup> Forster, escul.

<sup>c</sup> Sloane.

<sup>d</sup> Swartz.

<sup>e</sup> Retz.

<sup>f</sup> Linn. suppl.

<sup>g</sup> Hort. kew.

<sup>1</sup> Linn. mant.

<sup>2</sup> Forster escul.

<sup>3</sup> Hort. kew.



## GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, five-parted, upon which two smaller *scales* are incumbent: all the *segments* are orbicular, concave, and permanent.
- COR. one-petalled, bell-shaped: *tube* none: *border* five-parted: *segments* orbicular, concave, emarginate, longer than the calyx.
- STAM. *Filaments* numerous, filiform, inserted in a double row into the base of the corolla, and shorter than it. *Anthers* linear, erect, length of the filaments.
- PIST. *Germ* superior, roundish. *Style* cylindric, length of the stamens. *Stigma* capitate.
- PER. *Berry* juiceless, ovate, even, two-celled.
- SEEDS about eight, convex on one side, flat on the other.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. one-petalled, wheel-shaped, with the border bell-shaped, five or six-parted. *Anthers* thick at the tip. *Berry* juiceless, two-celled.

## SPECIES.

1. *Ternstroemia meridionalis*.  
*Lin. syst.* 487. *spec. ed. Willd.* 2. 1128. *suppl.* 264.  
*Vahl symb.* 2. 60. *Swartz prodr.* 81. *obs.* 207.  
*Mutis amer.* t. 9.  
*Leaves* obovate emarginate quite entire, peduncles axillary.
2. *Ternstroemia elliptica*.  
*Lin. spec. ed. Willd.* 2. 1128. *Vahl symb.* 2. 61.  
*Swartz prodr.* 81.  
*Leaves* elliptic quite entire, peduncles lateral.
3. *Ternstroemia punctata*.  
*Lin. spec. ed. Willd.* 2. 1128. *Swartz prodr.* 81.  
*Taonabo punctata.* *Aubl. guian.* 1. 571. t. 228.  
*Leaves* oblong quite entire subemarginate dotted at the edge, peduncles axillary.
4. *Ternstroemia japonica*.  
*Lin. spec. ed. Willd.* 2. 1129. *Thunb. in Linn. trans.* 2. 335.  
*Cleyera japonica.* *Thunb. jap.* 224.  
*Leaves* ovate-lanceolate serrulate at the tip, peduncles lateral.
5. *Ternstroemia dentata*.  
*Lin. spec. ed. Willd.* 2. 1129. *Swartz prodr.* 81.  
*Taonabo dentata.* *Aubl. guian.* 1. 569. t. 227.  
*Leaves* oblong acuminate tooth-ferrate, peduncles axillary and lateral.

## DESCRIPTIONS, &amp;c.

1. This is a tree with determinate branches, and more simple stiffish branchlets, with an ash-coloured bark. Leaves alternate, subpetioled, coriaceous, perennial, oval, obtuse, subemarginate, somewhat recurved at the edge, quite entire, veinless. Stipules none. Peduncles thick, compressed-ancipital, shorter by half than the leaves, drooping. Calyx rigid, almost cartilaginous. Corolla mostly five-parted, seldom six-parted, white; first globular, then bell-shaped. Berry dry, falling when ripe without splitting. Seeds blood-red, silky<sup>b</sup>.

Swartz remarks, that the flowers are whitish below, but yellow above; and the seeds scarlet.

According to Vahl it differs little from the next species: the leaves are shorter, acute at the base, rounded at the top and emarginate; and the peduncles are commonly longer than the leaves.

Found in New Granada by Mutis; and since in Jamaica, Nevis and Dominica by Swartz.

2. The branches have a smooth wrinkled bark. Leaves at the top of the branches, scattered, alternate, two inches long and more, quite smooth, coriaceous, a little bent back at the edge, having numerous minute raised dots scattered over both surfaces, narrower at the base, above veinless, shining. Petiole short, flat above, convex beneath. Peduncles towards the top, a little above the leaves, scattered, an inch long, one-flowered, purplish. Calyx-leaves blunt, coriaceous<sup>i</sup>.

Willdenow remarks, that the leaves are rather obtuse than acute.

<sup>b</sup> Linn. suppl.<sup>i</sup> Vahl.

Native of the West Indies, Guadeloupe, St. Vincent's, &c.

3. This is a tree of about twenty-five feet in height, and branching in a scattered manner at the top: the leaves are alternate, ovate, of an obscure green, smooth, and marked with rough dots on the edges: the flowers are yellowish and stand on longish footstalks.

Native of Guiana, in the woods of Serpent mountain<sup>k</sup>.

4. Stem arboreous, branched, smooth all over. Branches and branchlets subverticillate, three, four or five together, cinereous, wrinkled, directed one way, upright. Leaves at the very ends of the final branchlets, in a sort of whorl, four, five or six together, unequal, oblong-ovate, obtuse, thick, evergreen, bright green above, paler beneath, flat, an inch and half long. Petioles half round, grooved above, red, a line in length. Flowers axillary, one, two, or three together, on drooping, one-flowered peduncles, half an inch long.—Native of Japan; flowering in the autumnal months<sup>l</sup>.

5. A tree, of the height of about twenty feet, spreading into several straight but bending branches at the top: these branches divide into alternate, leafy branchlets: the leaves are ovate, alternate, smooth, ferrated, and terminate in a long point: the flowers spring singly from the branchlets and the bosoms of the leaves, and are of a yellowish colour<sup>m</sup>.

Native of the woods of Guiana, flowering in august and september.

TERRÆ GLANDES. See *Lathyrus tuberosus*.

TERRA JAPONICA. See *Mimosa*.

TESSIO. See *Cycas*.

TESTICULUS. See *Ophrys* and *Orchis*.

TETRACERA. (*Téρας* and *τερας*, quadruplex cornu. The seed-vessel, in some species, being composed of four capsules, like horns.)

*Lin. gen.* n. 683. *Reich.* n. 738. *Schreb.* n. 930. & p. 833. *Gartn.* t. 69. *Juss.* 339. *Euryandra* Forst. *gen.* n. 41. *Delima* Linn. *Rhinium* Schreb. *gen.* 1545. *Mappia* n. 1755.

Class. 13. 4. Polyandria Tetragynia.—Icosandria Tetragynia. *Schreb.*

Nat. order of *Rosaceæ* Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five or six-parted, (five or six-leaved,) spreading, permanent: *segments* roundish, a little unequal.

COR. *Petals* three to five, or none? (four or five) roundish, concave, inserted into the calyx.

STAM. *Filaments* numerous, capillary, widening at the top, permanent, inserted into the calyx. *Anthers* twin, with the cells disjoined.

PIST. *Germ*s three or four, sometimes solitary, ovate, oblique, diverging. *Styles* simple, permanent. *Stigmas* obtuse.

PER. *Capsules* as many (four) as there are germs, ovate, divaricating, opening by the inner side.

SEEDS solitary or few, surrounded by a rayed aril.

## ESSENTIAL CHARACTER.

Cal. five or six-leaved. Cor. four or five-petalled. *Filam.* widening above and anther-bearing on each side. *Caps.* four, opening on the side. *Seed* arilled at the base.

## SPECIES.

\* *Flowers* one-styled.

[1. *Tetracera farmentosa*.

*Lin. spec. ed. Willd.* 2. 1240. *Vahl symb.* 3. 70.

*Delima farmentosa.* *Lin. spec.* 736. *syst.* 494. *Reich.* 2. 587. *fl. zeyl.* n. 205. *amoen.* 1. 403. *Burm. ind.* 122. t. 37. f. 1. *Dict. nostr.*

*Frutex indicus farmentosus*, foliis hispidis rigidis. *Burm. zeyl.* 101.

*Piripu.* *Rheed. mal.* 7. 101. t. 54.

*Leaves* oblong ferrate rugged, flowers one-styled.

2. *Tetracera tomentosa*.

*Lin. spec. ed. Willd.* 2. 1241.

*Tigarea dentata.* *Aubl. guian.* 2. 920. t. 351.

<sup>k</sup> Aublet.<sup>l</sup> Thunberg.<sup>m</sup> Aublet.



Leaves ovate acuminate toothed smooth above tomentose beneath, flowers one-styled.

3. *Tetracera aspera*.

*Lin. spec. ed. Willd. 2. 1241.*

*Tigarea aspera. Aubl. guian. 2. 918. t. 350.*

*Rhinium. Schreb. gen. n. 1545.*

Leaves roundish subrepand rugged, flowers one-styled.

4. *Tetracera Doliocarpus*.

*Lin. spec. ed. Willd. 2. 1241.*

*Doliocarpus caule scandente, foliis ovatis dentatis, pedunculis lateralibus unifloris. Roland. act. holm. 1756. p. 249. t. 9.*

Leaves oblong acuminate, toothed at the end, peduncles axillary one-flowered, flowers one-styled.

5. *Tetracera stricta*.

*Lin. spec. ed. Willd. 2. 1241.*

*Doliocarpus caule stricto, foliis deflexis ovato-lanceolatis dentatis, floribus terminalibus. Roland. act. holm. 1756. p. 249.*

Leaves ovate-lanceolate toothed, flowers terminating one-styled, stem strict.

6. *Tetracera Calinea*.

*Lin. spec. ed. Willd. 2. 1241.*

*Calinea scandens. Aubl. guian. 1. 556. t. 221.*

*Doliocarpus Calinea. Dist. nostr. n. 3.*

Leaves oblong acuminate quite entire smooth, peduncles many-flowered lateral, flowers one-styled.

7. *Tetracera obovata*.

*Lin. spec. ed. Willd. 2. 1241.*

*Soramia guianensis. Aubl. guian. 1. 552. t. 219.*

*Mappia guianensis. Dist. nostr.*

Leaves obovate quite entire smooth, peduncles subcorymbose lateral, flowers one-styled.

8. *Tetracera nitida*.

*Lin. spec. ed. Willd. 2. 1242. Vahl symb. 3. 70.*

Leaves lanceolate-oblong rugged quite entire, flowers one-styled.

\*\* Flowers mostly four-styled.

9. *Tetracera Euryandra*.

*Lin. spec. ed. Willd. 2. 1242. Vahl symb. 3. 71.*

*Euryandra scandens. Forst. prodr. n. 228. gen. n. 41. Dist. nostr.*

Leaves oblong obtuse even quite entire, flowers three-styled.]

10. *Tetracera volubilis*.

*Lin. spec. 751. Reich. 2. 617. Willd. 2. 1242.*

*hort. cliff. 214. Vahl symb. 3. 71. Gærtner.*

*fruct. 1. 336. Pluk. phyt. t. 146. f. 1.*

*Petraea floribus spicatis, scabris laevi foliis. Amm. hort. 581.*

Leaves very rugged serrate, flowers four-styled.

[11. *Tetracera laevis*.

*Lin. spec. ed. Willd. 2. 1242. Vahl symb. 3. 71.*

Leaves oblong even almost quite entire acuminate, flowers terminating.

12. *Tetracera alnifolia*.

*Lin. spec. ed. Willd. 2. 1243.*

Leaves oblong acute almost quite entire somewhat rugged beneath, panicle terminating.

DESCRIPTIONS, &c.

1. Calyx-leaves often six. Capsule ovate, attenuated, smooth, opening longitudinally on one side. Seed one, small, black, girt below by a toothletted aril<sup>a</sup>.—Native of the East Indies. See DELIMA.

2. A shrub, with long downy twigs, and alternate, sharp-pointed, toothed leaves, which are of a bright green above, and downy beneath: the flowers are white. It is a native of Guiana, flowering in January.

3. A shrub, with several rough stems or twigs, subdividing into long branches and branchlets, which rise to the branches of the neighbouring trees, and, bending over them, hang downwards to the ground: the branches, branchlets, and even the leaves are very rough: the latter stand alternate, and are roundish and slightly undulated on the edges: the flowers, according to Aublet, are male and female, and are of a white colour.

Native of Guiana, where it grows in woods, sometimes so very plentifully as to be extremely inconvenient to those who endeavour to walk in them<sup>b</sup>.

<sup>a</sup> Vahl.

<sup>b</sup> Aublet.

4. A shrub, with a climbing stem, and alternate, ovate, toothed, pointed leaves: the flowers are rather small, and are succeeded by rounded or globose capsules.—Native of Surinam.

5. A shrub, rising with a straight stem: leaves ovate, lanceolate, and toothed: flowers borne at the extremities of the branches.—Native of Surinam<sup>c</sup>.

6. See *Doliocarpus Calinea*.

7. See *Mappia guianensis*.

8. Branches round, smooth. Branchlets mostly two-parted, somewhat hairy, rugged. Leaves alternate, three or four inches long, somewhat shining, marked with lines above along the nerves, beneath in a manner ribbed with the raised nerves; the nerves beneath and the rib on both sides villose; they are veined, rugged especially the younger ones, bluntish; sometimes obscure remote toothlets run from the nerves a little beyond the edge: the younger leaves when examined with a magnifier appear to have minute whitish scales scattered over the upper surface; the older ones are marked with impressed dots. Petiole short, convex beneath, channelled above from a thin upright margin. Racemes a little above the axils of the upper leaves, and from the end of the branchlets, compound, longer than the leaf. Partial peduncles and pedicels alternate, filiform, villose, purplish. Bracte ovate, membranaceous, acute, at the base of the partial peduncles. Calyx five-leaved: leaflets roundish, the three outer smaller, short, the two inner larger, concave, smooth, the edges appearing to be subciliate when examined with a magnifier. Corolla four-petalled: petals roundish, a little plaited and waved about the edge, two somewhat less than the others. Filaments length of the petals, smooth. Anther on each side by the side of the filament towards the top. Germ ovate, acute, smooth. Style length of the filaments. Stigma flat, subpeltate. Supposed to have been found in the island of Trinidad by von Rohr.

9. Leaves petioled, paler underneath, two inches long and more<sup>d</sup>. See EURYANDRA.]

10. This has a woody stalk rising to the height of twelve or fourteen feet, covered with a gray bark, and sending out several slender woody branches which twine about any neighbouring support. Leaves oblong-ovate, near six inches long, and two inches and a half broad, slightly indented on their edges towards their points, and having many transverse veins running from the midrib to the edges; they are placed alternate on the branches, stand upon short foot-stalks, are of a grayish colour on their upper surface, and brown on their under. The flowers are produced in panicles at the end of the branches; these panicles are composed of three or four short thick spikes, which branch out from the lower part of the principal spike, which is much longer and thicker than the others. The flowers have six thin purple petals, of the same length as the calyx, and very fugacious. The four germs become so many oval capsules, which are reflexed, open lengthwise on the upper side, and have each one oblong seed inclosed. Mr. Miller affirms, that this shrub is very different from the *Fagus americana*, &c. of Plukenet: [but that is continued as a synonym by Gærtner, Willdenow, &c.

Capsules acuminate both ways, spreading horizontally, coriaceous, smooth, very dark chestnut-coloured, one-celled. Seed ovate, somewhat wrinkled and angular, black, shining, very minutely dotted; surrounded by a fleshy membranaceous aril, which is white, quite entire below, fastened to the navel, above divided longitudinally by a cleft, and thence towards each side deeply cloven into linear parallel segments: the seed is fastened to the bottom of the capsule<sup>e</sup>.

Native of South America.] Mr. Miller says, it grows naturally at La Vera Cruz, where it was discovered by Dr. Houstoun, who sent it to England. He received it also from the island of Bermuda, where it was found by Dr. Cressy.

11. Branchlets flexuose, with an ash-coloured bark, smooth, somewhat angular. Leaves alternate, attenu-

<sup>c</sup> Roland.

<sup>d</sup> Vahl.

<sup>e</sup> Gærtner.



ated at the base, obscurely ferrate at top with a few teeth, two or three inches long, veined, smooth on both sides, on very short petioles. Peduncles solitary or two together, an inch long. Flowers in a sort of raceme, on one or two-flowered pedicels. Calyx-leaves six, roundish. Styles two, awl-shaped. Capsules four, roundish, ventricose, mucronate, very smooth, shining. Seed one, small, black, shining, covered below up to the middle with a whitish aril toothed at the edge.—Native of the East Indies<sup>r</sup>.

12. Branches round, smooth. Leaves alternate, petioled, coriaceous, attenuated at the base, rounded at the tip, mostly quite entire at the edge, but sometimes having an obscure tooth or two at the tip, parallel-netted veined, smooth and shining above. Calyx four-leaved. Corolla seems to be five-petalled. Filaments widening a little at the top. Anther on each side. Capsules four, one-seeded. Seed black, wholly covered with a whitish aril. Panicle simple. Peduncles three-flowered.—Native of Guinea<sup>s</sup>.

We have here many distinct genera of various authors united under one, from their agreement in the general characters. As *Delima* of Linneus, *Rhinium* and *Mappia* of Schreber, *Tigarea*, *Calinea* and *Soraminia* of Aublet, *Doliocarpus* of Rolander, and *Euryandra* of Forster. Willdenow suspects, that *Affa indica* of Houttuyn, (*syn.* 4. p. 40. t. 26.) is a species of this genus.]

#### PROPAGATION AND CULTURE.

The seeds being procured from the countries where the plant naturally grows should be sown in pots filled with light earth, and plunged into a moderate hot-bed of tanners bark, where they must be treated in the same way as other exotic seeds from the same countries: and as the plants seldom come up the same year, the pots should be removed into the stove before winter, and plunged into the tan-bed between the other pots of plants, where they should remain till spring, when they should be taken out and plunged into a fresh hot-bed of tanners bark, which will bring up the plants if the seeds were good. When the plants are fit to remove, they should be each planted in a separate small pot filled with light earth, and plunged into a good bed of tan, shading them from the sun till they have taken new root; after which their treatment must be the same as for the *Annona*, and the like tender exotic plants, which require to be kept always in the tan-bed.

**TETRAGONIA.** (*Abbreviated by Linneus, from Tetragonocarpus a name of Commelin's, given from the four-cornered form of the fruit.*)

*Lin. gen.* n. 627. *Reich.* n. 683. *Schreb.* n. 859.

*Gartn.* t. 127. 179. *Juss.* 317.

*Class.* 12. 4. Icosandria Pentagynia.

*Nat. order of Succulentæ. Ficoideæ Juss.*

#### GENERIC CHARACTER.

**CAL.** *Perianth* four-leaved, superior: *leaflets* four, ovate, bent down and flat, rolled back at the edge, coloured, permanent.

**COR.** none, unless the calyx be called so.

**STAM.** *Filaments* twenty, capillary, shorter than the calyx. *Anthers* oblong, incumbent.

**PIST.** *Germ* roundish, five-cornered, inferior. *Styles* four, awl-shaped, recurved, length of the stamens. *Stigma* longitudinal of the style, pubescent.

**PER.** *Drupe* coriaceous, four-cornered with four longitudinal wings, the opposite angles narrower, not opening.

**SEED** one, bony, four-celled: *kernels* oblong.

**OBS.** *The first flower adds a fifth part of the number in every part of the fructification: hence, according to the general rule, it is placed in the order pentagynia.*

#### ESSENTIAL CHARACTER.

*Cal.* three to five-parted. *Pet.* none. *Drupe* inferior, inclosing a nut from three to eight-celled.

#### SPECIES.

1. *Tetragonia fruticosa.* *Shrubby Tetragonia.*

*Lin. spec.* 687. *syn.* 467. *Reich.* 2. 504. *Willd.*

2. 1023. *mant.* 398. *hort. cliff.* 126. *ups.* 126.

<sup>r</sup> Vahl.

<sup>s</sup> Willdenow.

*Gartn. fruct.* 2. 204. *Ait. kew.* 2. 176. *Mill. fig.* 176. t. 263. f. 2. *Kniph. cent.* 4. n. 87. *Comm. hort.* 2. 205. t. 103. *Seba thes.* 2. 13. t. 11. f. 8. (*Euonymo affinis.*)

*Shrubby, leaves linear, fruits winged.*

2. *Tetragonia decumbens.* *Trailing Tetragonia.*

*Lin. spec. ed. Willd.* 2. 1023. *Ait. kew.* 2. 177.

*Mill. fig.* 176. t. 263. f. 1.

*Shrubby frosty, leaves obovate, fruits winged.*

3. *Tetragonia herbacea.* *Herbaceous Tetragonia.*

*Lin. spec.* 687. *syn.* 467. *Reich.* 2. 504. *Willd.*

2. 1023. *mant.* 398. *Ait. kew.* 2. 177. *Comm.*

*hort.* 2. 203. t. 102. (*Tetragonocarpos.*)

*Herbaceous even, leaves ovate petioled, fruits winged.*

[4. *Tetragonia hirsuta.* *Hairy Tetragonia.*

*Lin. syn.* 467. *Willd.* 2. 1023. *suppl.* 258.

*Herbaceous hirsute procumbent, leaves ovate villose, flowers axillary tern sessile.*

5. *Tetragonia spicata.* *Spiked Tetragonia.*

*Lin. syn.* 467. *Willd.* 2. 1024. *suppl.* 258.

*Smooth herbaceous erect, lower leaves ovate, uppermost lanceolate smooth, flowers racemed.*

6. *Tetragonia echinata.* *Hedge-hog Tetragonia.*

*Lin. spec. ed. Willd.* 2. 1024. *Ait. kew.* 177.

*Herbaceous, leaves rhomb-ovate; fruits echinate.*

7. *Tetragonia expansa.* *Horned Tetragonia.*

*Lin. syn.* 467. *Willd.* 2. 1024. *Murr. in comm.*

*goett.* 1783. p. 13. t. 5. *Scop. insubr.* 1. 32. t. 14.

*Thunb. in Linn. trans.* 2. 335. *Ait. kew.* 178.

*T. cornuta.* *Gartn. fruct.* 2. 483.

*T. halimifolia.* *Forst. prodr.* n. 223. *escul.* 67. n. 37.

*Roth. abhand.* 48. t. 8.

*T. japonica.* *Thunb. jap.* 208. *Lin. syn.* 467.

*Demidovia tetragonoides.* *Pallas hort. demid.* 150. t. 1.

*Herbaceous, leaves ovate-rhombed, fruits four-horned.*

8. *Tetragonia crystallina.* *Diamond Tetragonia.*

*Lin. spec. ed. Willd.* 2. 1025. *L'Herit. stirp.* 1. 81.

t. 39. *Ait. kew.* 2. 178.

*Herbaceous frosty, leaves ovate sessile, fruits unarmed.]*

#### DESCRIPTIONS, &c.

1. Stems slender woody, rising three or four feet high if supported, otherwise trailing, covered with a light gray bark, and dividing into a great number of trailing branches, which when young are succulent, of an herbaceous colour, and covered with small pellucid drops, which reflect the light, somewhat like the *Diamond Ficoides*. As the branches grow older, they become more woody. Leaves narrow, thick, succulent, about half an inch long, and a tenth of an inch broad, concave and blunt-pointed; they are placed alternately, and at their base comes out a cluster of smaller leaves, which have the like pellucid drops with the stalks. Flowers axillary, at every joint towards the ends of the branches, solitary, or two or three together. Calyx-leaves five, spreading and a little reflexed, green without and yellow within. Stamens about forty, terminated by oblong prostrate anthers which fill up the middle of the flower. [In the axils of the leaves are numerous smaller leaves, or rudiments of branches. The flowers are solitary or digested into a terminating raceme<sup>t</sup>.

The fruit is an inferior juiceless drupe, with eight wings, alternately larger and smaller, but all rounded, leafy-compressed and coriaceous: shell in the upper part of the drupe, bony, ovate-globular, having also eight rounded wings alternately larger and smaller, four-celled, valveless; cells very smooth within, chestnut-brown. Seeds solitary, attenuated upwards and elongated from a subglobular base, smooth, chestnut-rust-coloured, fastened by a short umbilical chord to the top of the cells. Embryo inverted, curved and hooked<sup>u</sup>.

This and all the species except the two last are natives of the Cape of Good Hope.—It was cultivated in 1712, by Bishop Compton; and flowers from July to September<sup>x</sup>.]

2. This has larger stalks than the preceding, but they branch out in like manner; the branches trail upon the ground; the young branches are very succu-

<sup>t</sup> Linn. mant.

<sup>u</sup> Gartner.

<sup>x</sup> Hort. kew.

lent,



lent, and almost as thick as a man's little finger. The leaves are two inches long, and an inch broad; their surface covered with very small pellucid drops, as are also the young branches. Flowers larger, upon pretty long foot-stalks, three or four from the same point. Calyx and anthers of a pale sulphur colour.

[Cultivated by Mr. Miller in 1758. It flowers from July to September<sup>y</sup>.]

3. This has large fleshy roots. Branches weak and trailing, generally decaying about midsummer, and new shoots produced late in autumn. The leaves come out in bunches; they are oval, plane, and not so thick and succulent as in the other sorts; they are little more than an inch long, and half an inch broad. The flowers are produced from the wings of the leaves in February: they are like those of the second sort, and have long slender foot-stalks.

[Axils most commonly without any rudiments of branches. Peduncles three, one-flowered from the axils of the leaves; which are obovate-lanceolate<sup>z</sup>.

Cultivated in 1759, by Mr. Miller. It flowers in June and July<sup>a</sup>.

4. 5. These were found at the Cape by Thunberg.

6. Root biennial. Stem herbaceous, near the root dividing into diffused branches, rendered angular by the petioles running down them, scarcely a foot long. Leaves succulent, spreading, an inch in length: petioles shorter by half than the leaves. Peduncles axillary, solitary, filiform, covered with shining bladders, purple, very short. Flowers pendulous, appearing as if frosted with crystalline bladders. Calyx three-leaved or four-leaved, yellowish green within. Stamens commonly three, seldom four. Germ flat beneath, three-sided; the angles echinate with many conical processes. Styles three. Nut three-celled. Found at the Cape by Masson, and introduced in 1774. It flowers from May to August<sup>b</sup>.

7. Stem herbaceous, even, procumbent, branched, somewhat angular with raised streaks from the decurrent margins of the petioles, a little thicker than a goose quill, weak. Branches numerous, elongated, round, spreading. Leaves alternate, bluntish, quite entire, horizontal, shorter than the internodes, an inch and half long. Petioles slender, flattish above, an inch long. Peduncles subsolitary, axillary, one-flowered, very short. Flowers yellow. Calyx four-parted, seldom five-parted, coloured within, one wider and more rounded than the rest. Stamens sixteen or twelve. Germ very small. Styles six, seldom five. Drupe rude, turbinate or obconical, fleshy, four-cornered or five-cornered towards the top, horned with the acute angles being more produced. Nut bony, with cells corresponding to the number of styles; containing one ovate white kernel. The whole plant is studded with very minute crystalline dots, as in some species of *Atriplex*, *Chenopodium* and *Mesembryanthemum*<sup>c</sup>.

According to Scopoli, the stem is a foot high, upright, with spreading branches from the very bottom, mostly simple, covered with small confluent tubercles. Leaves thickish, tubercled; the tubercles on the back more shining; waved or subsinuate. Petioles channelled, spreading. Flowers solitary from the axils, sessile or shortly peduncled. Calyx four-toothed, with shining granules scattered over it, and from the base of each tooth a petal-shaped lamella, of a subovate form, granulated, and of a yellowish-green colour. Stamens to sixteen, four from each angle, alternate with the teeth of the calyx. Styles five. Fruit four-cornered, four-horned, four-celled, with one seed in each cell; sometimes five-celled, and even eight-celled. Seeds oblong, slightly gibbous, smooth, yellow on the outside, white within.

Thunberg, who at first took the Japanese plant to be a species distinct from this, describes it as wholly succulent and smooth: the stem angular, decumbent, simple, a foot high. Leaves subcordate, ovate,

somewhat angular, acute, entire, dotted all over with very small pores, two inches long, the upper ones gradually smaller, on short petioles widening by degrees into the leaf. Flowers axillary, solitary, on peduncles half a line in length. Calyx four-parted. Drupe four-cornered, four-horned, the size of a pea.

Gartner describes the fruit as a juiceless inferior drupe, subtrubinate, rhomb-compressed, obscurely grooved, crowned with the converging four-toothed calyx, four-horned: rind herbaceous-membranaceous, ending above in the calyx, below in the peduncle, but within between the base of the shell and the origin of the peduncle having an almost hemispherical cavity either quite empty, or with a cellular-cobwebby substance in it. Shell somewhat bony, shorter by half than the fruit; the naked ferruginous six or eight-tubercled top prominent within the cavity of the calyx, the rest covered with the rind, four-horned, eight-grooved, six or eight-celled. Seeds solitary, hooked and doubled together, narrowing upwards, red-ferruginous. Embryo inverted, yellowish, curved and hooked.

Native of New Zealand, by the sides of woods in bushy sandy places; also within the tropics on the shore of the island Tongatabu: and in Japan. Though not used by the inhabitants, it is a very good pot-herb. By the orders of Captain Cook, whilst they were in port it was served to the sailors boiled every day at breakfast and dinner<sup>d</sup>.

It is a biennial plant, and was introduced in 1772, by Sir Joseph Banks. It flowers here in August and September<sup>e</sup>.

8. Root annual. Plant a span high, the whole covered with crystalline papillæ. Stem in a manner upright, round, the thickness of a reed. The bottom branches only opposite, all the rest alternate, dichotomous at the top, spreading a little. Leaves alternate, except the two lower which are opposite, acute, quite entire, three-nerved, somewhat fleshy, soft, bright green on both sides, spreading, gradually smaller upwards, from eighteen to thirty lines in length, and from ten to fifteen lines in breadth. Flowers solitary, or very seldom two together, the uppermost remote from the axil; the rest axillary, subsessile, erect, tawny. Peduncles round, growing in length when bearing fruit. Calyx four-parted, as it were four-leaved. Stamens about sixteen, inserted into the base of the calyx: anthers roundish, two-celled, subpeltate. Germ turbinate-quadrangular, as it were the base of the calyx running down, and of the same substance, in the centre of which the germ properly so called is almost immersed, ovate and pubescent. Styles four, diverging, upright, pubescent. Drupe dry, spongy, obovate-turbinate, quadrangular, umbilicate, one-celled, cinereous, brown within, pubescent, four lines long and three wide. Seed a four-lobed nut, sometimes as it were beaked at the top, four-celled.

Found in Chancaye a province of Peru by Donibey, whence he sent the seeds to the Paris garden, where it flowers and fruits during the summer, growing up and perishing in a few months<sup>f</sup>. It was introduced at Kew in 1788, by Mons. Thouin<sup>g</sup>.]

#### PROPAGATION AND CULTURE.

1—6. These may be propagated by cuttings, which should be cut off from the plants a few days before they are planted, that the part where they are cut may be healed, otherwise they will rot, for the leaves and stalks are very full of moisture. The best time to plant these cuttings is in July, that they may have time to make good roots before winter. These cuttings may be planted on a bed of fresh earth, and if they are shaded from the sun in the heat of the day, it will be of service to them. They should be frequently refreshed with water, but they must not have it in too great plenty, for that will rot them. In about six weeks after planting, the cuttings will be sufficiently rooted to transplant, therefore they should be taken up, and planted into pots filled with

<sup>y</sup> Hort. kew.

<sup>z</sup> Linn. mant.

<sup>a</sup> Hort. kew.

<sup>b</sup> Idem.

<sup>c</sup> Forster, escul.

<sup>d</sup> Forster, escul.

<sup>e</sup> Hort. kew.

<sup>f</sup> L'Heritier.

<sup>g</sup> Hort. kew.



light fresh undunged earth, and placed in a shady situation until they have taken new root, after which time they may be placed with other hardy exotic plants in a sheltered situation, where they may remain till the middle or latter end of october; at which time they should be removed into the green-house, and placed where they may enjoy as much free air as possible in mild weather; for they only require to be protected from the frost, being pretty hardy with respect to cold, but they should not have too much moisture in winter. If these plants are planted in the full ground in the summer season, they will grow prodigiously rank and large; as they also will, if they are permitted to root into the ground through the holes at the bottom of the pots; therefore the pots should be frequently removed to prevent it, for when they grow too freely, their leaves will be very full of moisture; which, together with the weight of the fruit, which is always produced at the extremity of the branches, will weigh the branches upon the ground, and render the plants very unsightly. The plants of this kind commonly grow very straggling; therefore the more their roots are confined in the pots, the more close and stunted will be the heads of the plants; which is what they should always be kept to, in order to render them slightly. The flowers of these plants have no great beauty, but as their whole appearance is singular, they may be allowed a place in collections of plants; especially as they require no great trouble in the cultivation.

The first and second sorts may also be propagated by seeds, sown in a gentle hot-bed or in a warm border of light fresh earth, where sometimes they will remain a whole year before the plants come up. When they are about four inches high, take them up and plant them in pots; treating them in the same manner as has been directed for the cuttings.

The third sort never produces seeds in England, but will grow from cuttings planted early in the spring, with the same facility as the others.

[The two last species are more tender, especially the eighth, and must be kept in the tan-stove. They are propagated only by seeds.]

Tetragonia ivæfolia. See *Haloragis*.

TETRAGONOCARPOS. See *Tetragonia*.

TETRAGONOLOBUS. See *Lotus*.

TETRAGONOTHECA. See *Polymnia*.

TETRAHIT. See *Galeopsis*.

TETRALIX. See *Erica*.

TETRANTHUS. (So named from having four flowers within one common calyx.)

Lin. gen. Schreb. n. 1354. Swartz prodr. 115.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Capitatae*. Cinarocephalæ Juss.

#### GENERIC CHARACTER.

CAL. Common five-leaved, four-flowered: leaflets linear, erect, ciliate, at the base of the florets.

Perianth proper one-leaved, tubulous, attenuated at the base, compressed, oblique at the throat, ciliate at the edge, one-flowered, many times longer than the common calyx.

COR. Compound, uniform, equal. Corollets four, hermaphrodite.

Proper one-petalled, funnel-form; tube gradually widening; border five-cleft, unequal; the two upper segments smaller and less divided, the three lower more spreading, oblong, obtuse.

STAM. Filaments five, from the base of the corollet, half the length of the tube. Anther tubulous.

PIST. Germ from the bottom of the perianth, under the filaments, oblong. Style longer than the stamens and corolla, filiform, divided beyond the middle. Stigmas reflexed, linear, obtuse.

PER. none. Perianth proper unchanged, permanent, including.

SEED oblong, striated, crowned with the membranaceous ciliate margin of the apex.

REC. very small, naked.

#### ESSENTIAL CHARACTER.

Cal. common four-flowered. Perianth proper one-leaved. Seeds crowned.

#### SPECIES.

1. *Tetranthus littoralis*.

Swartz prodr. 116.

#### DESCRIPTION, &c.

It is an annual plant, native of Hispaniola.

TETRAPHIS. One of Hedwig's genera of Cryptogamia Musci, or Mosses. Species of *Mnium* according to Linneus.]

TEUCRII FACIE. See *Coldenia*.

TEUCRII SPECIES. See *Veronica*.

TEUCRIUM. (So named from Teucer, son of Scamander, and father in law of Dardanus, king of Troy.)

Lin. gen. n. 706. Reich. n. 764. Schreb. n. 960.

Tournef. t. 93. Juss. 112. Polium Tournef. t.

98. Chamædrys Tournef. t. 97.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*. *Labiata* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, half-five-cleft, acute, almost equal, gibbous at the base on one side, permanent.

COR. one-petalled, ringent: tube cylindric, short, ending in an incurvated throat: upper lip erect, acute, deeply two-parted beyond the base, the segments at the sides distant: lower lip spreading, trifid: the lateral segments of the same form with the upper lip, almost erect; the middle one very large, and somewhat rounded.

STAM. Filaments four, awl-shaped, longer than the upper lip of the corolla and ascending in the cleft of it, prominent. Anthers small.

PIST. Germ four-parted. Style filiform, situation and size of the stamens. Stigmas two, slender.

PER. none. Calyx unchanged, fostering the seeds at the bottom.

SEEDS four, roundish.

OBS. The upper lip of the corolla, divided beyond the base and gaping, resembles a corolla destitute of an upper lip.

Teucrium of Tournefort has a bell-shaped calyx, and the segment of the lower lip of the corolla concave.

Polium of Tourn. has the flowers collected into heads, terminating the branches.

Chamædrys of Tourn. has the flowers from the axils of the leaves, calyx tubular.

Marum of Boerhaave has the leaves of *Serpyllium*; and an acrid odour.

#### ESSENTIAL CHARACTER.

Cor. upper lip two-parted beyond the base, divaricating where the stamens are.

#### SPECIES.

1. *Teucrium campanulatum*. Small-flowered Germander.

Lin. spec. 786. Reich. 3. 10. Willd. 3. 13.

Schreb. unilab. 31. n. 19. Boerb. lugdb. 1. 181.

Iva moschata flore albo. Rivin. mon. t. 24.

β. *T. fupinum* perenne palustre apulum glabrum, foliis laciniatis, flore albo. Till. pis. 193. t. 49. f. 1. Allion. taur. 53.

Leaves multifid, flowers lateral solitary.

[2. *Teucrium orientale*. Great-flowered Germander.

Lin. spec. 786. syst. 525. Reich. 3. 10. Willd.

3. 14. hort. cliff. 301. Schreb. unilab. 30. n. 17.

*T. orientale* angustifolium laciniatum, flore magno subcæruleo. Tournef. cor. 14. Comm. rar. t. 25. Riv. mon. t. 19.

β. *T. orient.* angustif. lacin. magno flore suaverubente. Tourn. cor. 14.

Leaves multifid, flowers racemed.]

3. *Teucrium Botrys*. Cut-leaved annual Germander.

Lin. spec. 786. Reich. 3. 11. Willd. 3. 14. hort.

cliff. 301. Pollich pal. n. 544. Hoffm. germ.

200. Roth. germ. 1. 250. 2. 14. Scop. carn.

n. 725. Krock. files. n. 900. Villars dauph. 2.

350. Allion. pedem. n. 146. Affo aragon. n.

500. Desfont. atlant. 2. 1. Kniph. cent. 9. n.

88. Sabb. hort. 3. t. 91. Mill. fig. 176. t.

264. f. 1.

Botrys chamædryoides. Baub. pin. 138.

B. verticillata. Baub. bist. 3. 298.

Chamædrys. Hall. helv. n. 289.

C. laciniatis



- C. laciniatis foliis. *Lob. hist.* 209. *ic.* 385. *Park. theat.* 104. 4. *ic.* 105. 4. *Raii hist.* 528. *Tournef. inst.* 205. *Vaill. par.* 33.
- C. altera. *Matth.* 597. *Camer. epit.* 568. *Paulli dan. t.* 48.
- C. vera foemina. *Fuchf. hist.* 870. *Dalech. hist.* 1163.
- C. minor annua, laciniatis hirsutis foliis. *Mor. hist.* f. 11. t. 22. f. 18.
- Chamæpitys altera. *Dod. pempt.* 46.
- C. foemina. *Ger.* 421. 2. *emac.* 525. 2.
- Chamæcyparissus agrestis. *Trag.* 79.
- Iva moschata. *Tabern. ic.* 385.—folio multifido. *Riv. mon. t.* 14.
- Leaves multifid, flowers lateral in threes peduncled.*
4. *Teucrium Chamæpitys.* *Ground Pine.*  
*Lin. spec.* 787. *synt.* 525. *Reich.* 3. 11. *hort. cliff.* 301. *upf.* 160. *mat. med.* 143. *Huds. angl.* 247. *Fl. dan. t.* 733. *Crantz austr.* 249. *Neck. gallob.* 248. *Pollich pal. n.* 545. *Guet. stamp.* 2. 248. *Sauv. monsp.* 175. *Villars dauph.* 2. 351. *Krock. fles. n.* 901. *Affo aragon. n.* 501. *Gron. zing.* 64. *Kniph. cent.* 8. n. 92. *Blackw. t.* 528. *Ludw. est. t.* 130. *Regnault bot.*
- Ajuga Chamæpitys.* *Schreb. unilab.* 24. *Wither. arr. ed.* 3. 517. *Smith brit.* 605. *engl. bot. t.* 77. *Relb. cant. ed.* 2. n. 472. *Willd. spec.* 3. 10.
- A. f. *Chamæpitys.* *Camer. epit.* 679.
- Chamæpitys.* *Matth.* 940.
- Chamæpitys vulgaris.* *Park. theat.* 283. 1. *Raii hist.* 573. *syn.* 244.—odorata flore luteo. *Baub. hist.* 3. 295.
- C. lutea vulgaris, f. folio trifido. *Baub. pin.* 249. *Mor. hist.* f. 11. t. 22. f. 1. *ord.* 3.
- C. prima. *Dod. pempt.* 46. 1. *Riv. mon.* 14. 1.
- C. mas. *Ger.* 421. 1. *emac.* 525. 1.
- Bugula.* *Hall. helv. n.* 284.
- B. *Chamæpitys.* *Scop. carn. n.* 718.
- β. *Chamæpitys vulgaris folio trifido, flore roseo, lusitanica.* *Tournef. inst.* 208.
- Leaves trifid linear quite entire, flowers sessile lateral solitary, stem diffusid.*
5. *Teucrium nissolianum.* *Trifid-leaved Germander.*  
*Lin. spec.* 786. *Reich.* 3. 12. *Willd.* 3. 15. *Schreb. unilab.* 29.
- T. *supinum annuum lusitanicum, foliis laciniatis.* *Tournef. inst.* 208.
- Chamædrys annua multiflora tenuifolia hispanica Tournefortii.* *Mor. hist.* 3. 423. f. 11. t. 22. f. 19.
- Leaves trifid and quinquesid filiform, flowers peduncled solitary opposite, stem decumbent.*
- [6. *Teucrium pseudo-chamæpitys.* *Bastard Ground Pine.*  
*Lin. spec.* 787. *synt.* 526. *Reich.* 3. 12. *Willd.* 3. 15. *Schreb. unilab.* 29. n. 15. *Ger. prov.* 276. n. 3. *Gouan hort.* 271. *illustr.* 35. *Desfont. atlant.* 2. 2. *Sabb. hort.* 3. t. 95.
- T. *supinum perenne, foliis laciniatis.* *Tournef. inst.* 208.
- Pseudochamæpitys.* *Clus. hist.* 2. 185.
- Chamæpitys alba.* *Camer. epit.* 680.
- C. *adulterina.* *Lob. ic.* 385.—f. *Pseudochamæpitys.* *Park. theat.* 283. n. 4. 284. t. 4. *Raii hist.* 574.
- C. *spuria, multifido folio, Lamii flore.* *Baub. pin.* 250. *Mor. hist.* f. 11. t. 21. f. 2.
- C. *spuria altera Dodonæi.* *Ger. emac.* 526. 5.
- Chamæpityos spuriae alterius altera icon.* *Dod. pempt.* 47.
- Leaves three-parted trifid linear, flowers racemed, stem rough-haired.]*
7. *Teucrium Iva.* *Musky Germander.*  
*Lin. spec.* 787. *Reich.* 3. 13. *Vahl symb.* 1. 40. *Sauv. monsp.* 141. *Allion. pedem. n.* 147. *Desfont. atlant.* 2. 3. *Cavan. ic. n.* 130. t. 120. *Gouan hort.* 271. n. 6. *Affo aragon. n.* 502. *Lamarck, encycl.* 2. 690.
- Ajuga Iva.* *Schreb. unilab.* 25. *Willd. spec.* 3. 11.
- Chamæpitys moschata foliis ferratis.* *Baub. pin.* 249. *Raii hist.* 574. *Mor. hist.* f. 11. t. 22. f. 3. *Tournef. inst.* 208.
- C. f. *Iva mosch. Monspeliensium.* *Baub. hist.* 3. 296.

- C. *spuria prior.* *Dod. pempt.* 47.
- Anthyllis altera.* *Clus. hist.* 2. 186. *Park. theat.* 281. f. 3. 282. n. 3.
- A. *chamæpityides minor.* *Lob. hist.* 208. *ic.* 384.
- Iva moschata monspeliaca.* *Tabern. ic.* 386. *Ger.* 422. 3. *emac.* 525. 4.
- Moscharia asperifolia.* *Forsk. descr.* 158.
- Leaves three-cusped linear, flowers sessile lateral solitary.*
- [8. *Teucrium mauritanum.* *Moorish Germander.*  
*Lin. spec.* 787. *Reich.* 3. 13. *Schreb. unilab.* 30. n. 16.
- T. *delphinii folio, non ramosum.* *Shaw afr.* 575. *ic.*
- Leaves pinnate-multifid, stem quite simple erect, bractes subulate-palmate.]*
9. *Teucrium fruticans.* *Narrow-leaved Tree Germander.*  
*Lin. spec.* 787. *synt.* 526. *Reich.* 3. 13. *Willd.* 3. 16. *hort. cliff.* 302. *Schreb. unilab.* 26. *Kniph. cent.* 1. n. 90. *Sabb. hort.* 3. t. 96. *Desfont. atlant.* 2. 3.
- T. *boeticum.* *Tabern. ic.* 381. *Dalech. hist.* 1166. *Ger.* 533. f. 3. *emac.* 659. f. 5. *Park. theat.* 109. n. 3. 110. f. 3. *Raii hist.* 526.
- T. *fruticans boeticum.* *Clus. hist.* 1. 348. *Baub. hist.* 3. 291. *Tournef. inst.* 208. *Barrel. rar.* 348. t. 512. *Dill. elth.* 379. t. 284. f. 366, 367. *Zanich. ist. t.* 163.
- T. *peregrinum, folio sinuato.* *Baub. pin.* 247.
- Chamædrys frutescens, floribus violaceis.* *Mor. hist.* f. 11. t. 22. f. 7.
- Leaves quite entire elliptic tomentose beneath, flowers lateral solitary peduncled.*
10. *Teucrium latifolium.* *Broad-leaved Tree Germander.*  
*Lin. spec.* 788. *Reich.* 3. 13. *hort. upf.* 159. *Curt. magaz.* 245.
- T. *fruticans A.* *Desfont. atlant.* 2. 3.
- T. *fruticans γ.* *Willd. spec.* 3. 17.
- T. *frut. boeticum, ampliore folio.* *Dill. elth.* 379. t. 284. f. 368.
- T. *boeticum humilior & ramosius, folio subrotundo.* *Hort. angl. t.* 3.
- T. *boeticum flore caeruleo.* *Riv. mon. t.* 18.
- T. *hispanicum latiore folio.* *Tournef. inst.* 208.
- Leaves quite entire rhomboid acute villose tomentose beneath.*
- [11. *Teucrium resupinatum.* *Resupine-flowered Germander.*  
*Desfont. atlant.* 2. 4. t. 117. *Willd. spec.* 3. 26.
- Villose, leaves lanceolate deeply serrate, flowers solitary sessile, corollas resupine.*
12. *Teucrium ramosissimum.* *Branched Germander.*  
*Desfont. atlant.* 2. 4. t. 118.
- T. *quadratum.* *Schreb. unilab.* 36. n. 27. *Willd. spec.* 3. 18.
- Chamædrys hispanica minima saxatilis incana.* *Tournef. inst.* 205.
- Hoary, stem fruticulose, very much branched, branchlets filiform, leaves obovate crenate, flowers solitary axillary.*
13. *Teucrium creticum.* *Cretan Germander.*  
*Lin. spec.* 788. *synt.* 526. *Reich.* 3. 14. *Willd.* 3. 17. *hort. cliff.* 303. *upf.* 159. *Gouan monsp.* 272.
- T. *hyssopifolium.* *Schreb. unilab.* 28. n. 11.
- Rosmarinum stoechados facie.* *Alp. exot.* 103. t. 102. *Mor. hist.* 3. 410. f. 11. t. 16. f. 3.
- Leaves lanceolate-linear quite entire, flowers racemed tern.]*
14. *Teucrium Marum.* *Common Marum or Cat-thyme.*  
*Lin. spec.* 788. *synt.* 526. *Reich.* 3. 14. *Willd.* 3. 18. *mant.* 409. *hort. cliff.* 303. *upf.* 159. *mat. med.* 144. *Woodv. med. bot.* 153. t. 56. *Medic. act. palat.* 3. *phys.* 207. *Schreb. unilab.* 36. n. 28. *Blackw. t.* 47. *Kniph. cent.* 3. n. 93. *Ludw. est. t.* 14. *Sabb. hort.* 3. t. 90.
- Marum.* *Matth.* 730.—*Cortusi.* *Baub. hist.* 3. 242. *Raii hist.* 527. *Riv. mon. t.* 23.
- Tragoriganum Lob.* *Ger. emac.* 668.
- T. *latifolium, f. Marum Cortusi.* *Park. theat.* 17. f. 2.
- Chamædrys maritima incana frutescens, foliis lanceolatis.* *Tournef. inst.* 205.
- β. C. *cretica saxatilis tenuifolia foliis, subtus incanis.* *Tournef. inst.* 206.



- Leaves quite entire ovate acute petioled tomentose beneath, flowers racemed all directed one way.
- [15. *Teucrium multiflorum*. Many-flowered Germander.  
*Lin. spec.* 788. *fyft.* 526. *Reich.* 3. 15. *Willd.* 3. 19. *hort. cliff.* 303. *Medic. aët. palat.* 3. *phys.* 208. *Schreb. unilab.* 36. n. 26. *Gouan monsp.* 272. *Zinn. goett.* 291.  
*Marum hispanicum nigrum*. *Bocc. mus. t.* 117.—  
*flore purpureo*. *Hall. goett.* 314.  
*Chamædrys multiflora tenuifolia hispanica*. *Tournef. inst.* 205. *Boerb. lugdb.* 1. 182.  
 3. *C. hispanica tenuifolia, latiori folio, multiflora*. *H. R. P.* *Boerb. lugdb.* 1. 182. n. 7.  
*Leaves ovate, smooth above, serrate-toothed, flowers racemed, whorls six-flowered.*
16. *Teucrium Laxmanni*.  
*Lin. fyft.* 526. *Reich.* 3. 15. *Willd.* 3. 20.  
*Leaves ovate-oblong quite entire sessile, flowers solitary sessile.*
17. *Teucrium sibiricum*. Siberian Germander.  
*Lin. spec.* 788. *fyft.* 526. *Reich.* 3. 15. *Willd.* 3. 20. *Schreb. unilab.* 28. n. 12.  
*Leaves serrate ovate, peduncles solitary three-flowered, the middle flower sessile, bractes linear-lanceolate.*
18. *Teucrium falicifolium*. Willow-leaved Germander.  
*Lin. fyft.* 526. *Reich.* 3. 16. *mant.* 80. *Schreb. dec.* 1. 17. t. 9.  
*Ajuga falicifolia*. *Schreb. unilab.* 26. *Willd. spec.* 3. 12.  
*Chamæpitys orientalis falicis folio*. *Tournef. cor.* 14. *Schreb. dec.* 1. 17. t. 9.  
*Leaves lanceolate-elliptic bluntish quite entire, calyxes quadrifid solitary.*
19. *Teucrium asiaticum*. Asiatic Germander.  
*Lin. fyft.* 527. *Reich.* 3. 16. *Willd.* 3. 21. *mant.* 80. *Jacqu. hort.* 3. 24. t. 41. *Schreb. unilab.* 38. n. 31. *Ait. kew.* 2. 277. *Med. aët. palat.* 3. *phys.* 204. t. 10.  
*Leaves lanceolate repand-serrate rectangular at the base, flowers solitary.]*
20. *Teucrium cubense*. Cuba Germander.  
*Lin. fyft.* 527. *Reich.* 3. 17. *Willd.* 3. 21. *Jacqu. amer.* 172. t. 183. f. 74. *piët.* 85. t. 164. *obs.* 2. 5. t. 29. *Schreb. unilab.* 29. n. 13.  
*T. chamædrifolium*. *Mill. dict.* n. 16.  
*T. americanum Chamædryos folio flore albo*. *Houft. MSS.*  
*Leaves wedge-shaped serrate-gashed smooth attenuated into the petiole, flowers solitary peduncled.*
- [21. *Teucrium Arduini*.  
*Lin. fyft.* 527. *Reich.* 3. 17. *Willd.* 3. 22. *mant.* 81. *Schreb. unilab.* 40. n. 37. *Arduin. spec.* 1. 12. c. 3.  
*Leaves ovate serrate, raceme spiked round sessile terminating.]*
22. *Teucrium canadense*. Nettle-leaved Germander.  
*Lin. spec.* 789. *Reich.* 3. 17. *Willd.* 3. 22. *Pallas it.* 2. 569. *Schreb. unilab.* 41. n. 39. *Gron. virg.* 64?  
*Chamædrys canadensis, urticæ folio subtus incano*. *Tournef. inst.* 205.  
*Leaves ovate-lanceolate serrate, stem erect, raceme round terminating, whorls six-leaved.*
23. *Teucrium virginicum*. Virginian Germander.  
*Lin. spec.* 789. *fyft.* 527. *Reich.* 3. 18. *Willd.* 3. 22. *Gron. virg.* 64. *Schreb. unilab.* 41. n. 38. *Medic. aët. palat.* 3. *phys.* 212. *Walt. carol.* 161.  
*Leaves ovate unequally serrate, racemes terminating.*
- [24. *Teucrium inflatum*. Thick-spiked Germander.  
*Willd. spec.* 23. *Swartz prodr.* 88. *Ait. kew.* 2. 277. *Brown. jam.* 257.  
*Leaves oblong acuminate unequally serrate pubescent, spikes sessile terminating, calyxes inflated villose.*
25. *Teucrium hircanicum*. Betony-leaved Germander.  
*Lin. spec.* 789. *Reich.* 3. 18. *Willd.* 3. 24. *Schreb. bilab.* 40. n. 36. *Medic. aët. palat.* 3. *phys.* 206. *Hall. comm. goett.* 2. 343. t. 13. *Arduin. spec.* 13. t. 4.  
*Leaves cordate-oblong obtuse, stem brachiate dichotomous, spikes very long terminating sessile spiral.*
26. *Teucrium abutiloides*. Mulberry-leaved Germander.  
*Willd. spec.* 3. 24. *L'Herit. stirp. nov.* 84. *Ait. kew.* 2. 278.  
*Leaves cordate toothed acuminate, racemes lateral nodding.]*
27. *Teucrium Scorodonia*. Sage-leaved Germander, or Wood Sage.  
*Lin. spec.* 789. *fyft.* 527. *Reich.* 3. 18. *Willd.* 3. 24. *hort. cliff.* 301. *Huds. angl.* 248. *Wither. arr. ed.* 3. 518. *Smith brit.* 606. *Lightf. scot.* 303. *Curt. lond.* 5. t. 40. *Relb. cant. ed.* 2. n. 473. *Sibth. oxon.* n. 512. *Fl. dan.* t. 485. *Scop. carn.* n. 721. *Hoffm. germ.* 201. *Roth. germ.* 1. 250. 2. 14. *Pollich pal.* n. 546. *Neck. gallob.* 247. *Villars dauph.* 2. 354. *Ger. gallopr.* 278. n. 7. *Affo aragon.* n. 503. *Allion. pedem. h.* 152. *Desfont. atlant.* 2. 5. *Schreb. unilab.* 39. n. 35. *Medic. aët. palat.* 3. *phys.* 206. *Kniph. cent.* 11. n. 96. *Regnault bot.*  
*Scorodonia*. *Cord. hist.* 91. 1. *Riv. mon. t.* 12. *Blackw. t.* 9. *Sabb. hort.* 3. t. 92.  
*S. f. Salvia agrestis*. *Ger. emac.* 662. *Raii hist.* 576. *syn.* 245.  
*S. f. Scordium alterum, & Salvia agrestis*. *Park. theat.* 111. 2.  
*Scordium alterum f. Salvia agrestis*. *Baub. pin.* 247.  
*Scordion alterum Plinii*. *Lob. obs.* 262. 1. ic. 1. 497. 2.  
*Scordotis f. Scordium folio Salviæ*. *Baub. hist.* 3. 295. 1. & 294.  
*Salvia sylvestris*. *Trag. hist.* 15. 2.  
*S. agrestis f. Sphacelus*. *Dod. pempt.* 291.  
*Chamædrys*. *Hall. belv.* n. 287. *Gesner ic. t.* 85.  
*C. elatior Salviæ folio, flore ochroleuco*. *Mor. hist.* 3. 423. f. 11. t. 20. f. 15.  
*C. fruticosa sylvestris Melissæ folio*. *Tournef. inst.* 205.  
*Leaves cordate serrate petioled, racemes lateral directed one way, stem erect.*
- [28. *Teucrium Pseudo-Scorodonia*. Bastard Wood Sage.  
*Desfont. atlant.* 2. 5. *Willd. spec.* 3. 25.  
*Shrubby, leaves cordate toothed petioled hoary beneath, racemes directed one way.]*
29. *Teucrium maffiliense*. Sweet-scented Germander.  
*Lin. spec.* 789. *fyft.* 527. *Reich.* 3. 19. *Willd. spec.* 3. 26. *Jacqu. hort.* 1. 41. t. 94. *Schreb. unilab.* 39. n. 34. *Medic. aët. palat.* 3. *phys.* 205. 271. t. 11. *Ger. prov.* 277. t. 11. *Lour. cochinch.* 362. *ed. Willd.* 439.  
*T. creticum*. *Clus. hist.* 1. 348.  
*Leaves ovate wrinkled gash-crenate hoary, stems erect, racemes straight directed one way.*
- [30. *Teucrium betonicum*. Hoary Germander.  
*L'Herit. stirp. nov.* 83. t. 40. *Ait. kew.* 2. 279. *Willd. spec.* 3. 25.  
*Salvia major folio glauco ferrato*. *Sloan. jam.* 1. 17. t. 3. f. 3.  
*Leaves lanceolate crenate tomentose hoary beneath, racemes terminating, flowering stem brachiate.]*
31. *Teucrium Scordium*. Water Germander.  
*Lin. spec.* 790. *fyft.* 527. *Reich.* 3. 19. *Willd.* 3. 27. *hort. cliff.* 302. *fl. suec.* n. 513. *mat. med.* 144. *Woodv. med. bot.* 156. t. 57. *Huds. angl.* 247. *Wither. arr. ed.* 3. 519. *Smith brit.* 606. *engl. bot.* t. 828. *Relb. cant. ed.* 2. n. 474. *Sibth. oxon.* n. 511. *Fl. dan.* t. 593. *Scop. carn.* n. 719. *Neck. gallob.* 246. *Hoffm. germ.* 201. *Roth. germ.* 1. 250. 2. 15. *Pollich pal.* n. 547. *Krock. files.* n. 903. *Villars dauph.* 2. 353. *Allion. pedem. n.* 151. *Schreb. unilab.* 37. n. 29. *Affo aragon.* n. 504.  
*Scordium*. *Baub. pin.* 247. *Camer. epit.* 588. *Dod. pempt.* 126. *Fuchf. hist.* 776. *Matth.* 842. *Baub. hist.* 3. 292. 2. *Ger.* 534. 1, 2. *emac.* 661. *Raii hist.* 576. *syn.* 246. *Riv. mon. t.* 11. *Blackw. t.* 475.  
*S. legitimum*. *Park. theat.* 111. 1.  
*Chamædrys*. *Hall. belv.* n. 288.  
*C. palustriscanescens f. Scordium officinarum*. *Tournef. inst.* 205.  
*C. pal. allium redolens*. *Mor. hist.* 3. 423. f. 11. t. 22. f. 14.



Leaves oblong sessile tooth-ferrate, flowers axillary in pairs peduncled, stem diffusid.

32. *Teucrium Chamædrys*. Common or Wall Germander.  
*Lin. spec.* 790. *Reich.* 3. 20. *Willd.* 3. 28. *hort. cliff.* 302. *mat. med.* 144. *Woodv. med. bot. suppl.* 82. t. 243. *Schreb. unilab.* 32. n. 21. *Retz. obs.* 1. 21. n. 66. *Medic. æt. palat.* 3. *phys.* 213. *Huds. angl.* 247. *Wither. arr. ed.* 3. 518. *Smith brit.* 607. *Sibth. oxon.* n. 510. *Abbot bedf.* n. 419. *Hoffm. germ.* 201. *Roth. germ.* 1. 250. 2. 15. *Crantz austr.* 251. n. 3. *Scop. carn. n.* 720. *Pollich pal.* n. 548. *Krock. files.* n. 902. *Villars dauph.* 2. 353. *Allion. pedem. n.* 148. *Affo aragon.* n. 505. *Kniph. cent.* 11. n. 95. *Sabb. hort.* 2. t. 88.  
*Chamædrys. Hall. helv.* n. 286.  
*Chamædrys. Cord. hist.* 126. *Lob. obs.* 260. 1. *ic.* 1. 491. 1, 2. *Riv. mon. t.* 10. f. 2. *Blackw. t.* 180.  
*C. major repens. Baub. pin.* 248. *Mor. hist. f.* 11. t. 22. f. 11. *Dod. pempt.* 43. 1.  
*C. vera mas. Fuchs. hist.* 869.  
*C. major. Park. theat.* 104. 2. *Raii hist.* 527.—*latifolia. Ger.* 530. 1, 3. *emac.* 656. 1.  
*C. vulgaris f. fativa. Raii syn.* 231.  
*Triflago f. Chamædrys. Matth.* 818.  
β. *Chamædrys minor repens. Baub. pin.* 248. *Dod. pempt.* 43. 2. *Tournef. inst.* 205. *Mor. f.* 10. *Retz. n.* 66. β.  
*C. vulgaris. Clus. hist.* 1. 351. *Park. theat.* 104. 1. *Raii hist.* 527.  
*C. minor. Ger.* 530. 2. *emac.* 656. 2.  
*C. vulgo vera existimata. Baub. hist.* 3. 288. 1.  
γ. *C. alpina hirsuta repens. Mor. hist.* 3. 422. n. 12. *Raii hist.* 3. 282. 1.  
Leaves subovate petioled gash-crenate, flowers axillary peduncled tern, stem round hairy.  
[33. *Teucrium heterophyllum. White-leaved Tree Germander.*  
*L'Herit. stirp. nov.* 84. *Ait. kew.* 2. 279. *Willd. spec.* 3. 29.  
*T. canariense. Lamarck encycl.* 2. 684.  
Leaves elliptic crenate, flowers lateral solitary; lip of the corolla woolly on the outside, branches with different leaves.]  
34. *Teucrium lucidum. Shining Germander.*  
*Lin. spec.* 790. *syft.* 527. *Reich.* 3. 21. *Willd.* 3. 29. *Medic. æt. palat.* 3. *phys.* 211. t. 12. f. 7, 8, 9. *Schreb. unilab.* 33. n. 22. *Ger. prov.* 278. n. 9. *Allion. pedem. n.* 149. *Desfont. atlant.* 2. 6.  
*Chamædrys alpina major & elatior, foliis profundius dissectis. Mor. hist.* 3. 423. n. 13. *Raii hist.* 3. 282. n. 11.  
*C. alpina frutescens, folio splendente. Magn. hort.* 52. *ic.* *Tournef. inst.* 205.  
*Teucrium regium flore rubro. Rivin. mon. t.* 80?  
Leaves ovate acutely gash-ferrate smooth, flowers axillary tern, stem erect even.  
35. *Teucrium flavum. Yellow-flowered shrubby Germander.*  
*Lin. spec.* 791. *syft.* 527. *Reich.* 3. 21. *Willd.* 3. 30. *hort. cliff.* 302. *ups.* 160. *Medic. æt. palat.* 3. *phys.* 209. *Schreb. unilab.* 34. n. 23. *Scop. carn. n.* 722. *Sauv. monsp.* 145. *Desfont. atlant.* 2. 6. *Kniph. cent.* 9. n. 89. *Sabb. hort.* 3. t. 89. *Jungb. ic. cent.* 1. f. 5.  
*Teucrium. Baub. pin.* 247. *Rivin. mon. t.* 10. *Raii hist.* 526.  
*T. multis. Baub. hist.* 3. 290.  
*T. verum. Best. exst. æst.* 7. p. 11. f. 1.  
*T. vulgare fruticans 1. Clus. hist.* 1. 348.  
*T. majus vulgare. Park. theat.* 109. 1.  
*T. latifolium. Ger.* 532. *emac.* 658. 1.  
*Chamædrys fruticosior f. Teucrium vulgare flore ochroleuco. Mor. hist.* 3. 421. f. 11. t. 22. f. 1?  
β. *T. flavum hirsutum. Desfont. atlant.* 2. 6. A.  
Leaves cordate bluntly ferrate, bractes quite entire concave, stem shrubby, flowers racemed tern.  
[36. *Teucrium bracteatum. Braided Germander.*  
*Desfont. atlant.* 2. 7. *Willd. spec.* 3. 29.

Stem erect villose, leaves cordate crenate, bractes six or more ovate acuminate petioled, whorls distinct.]

37. *Teucrium montanum. Dwarf Mountain Germander.*  
*Lin. spec.* 791. *syft.* 527. *Reich.* 3. 22. *Willd.* 3. 31. *hort. cliff.* 302. *Willd. illustr. n.* 60. *Schreb. unilab.* 50. n. 57. *Crantz austr.* 253. *Scop. carn. n.* 723. *Sauv. monsp.* 141. *Villars dauph.* 2. 351. *Krock. files.* n. 904. *Allion. pedem. n.* 153. *Hoffm. germ.* 201. *Roth. germ.* 1. 251. 2. 16.  
*Polium montanum. Mill. dict. n.* 1.—8. *Clus. hist.* 1. 363.  
*P. lavandulæ folio. Baub. pin.* 220. *Lob. ic.* 488.  
*P. majus. Cord. hist.* 124.  
*P. alterum. Matth.* 841. *Dalech. hist.* 929.  
*P. montanum lavandulæ folio. Park. theat.* 25. 6. *Raii hist.* 525.  
*P. lavandulæ folio, flore albo. Ger. emac.* 655. 5. f. 3.  
*P. campestre. Tabern.* 365.  
*Chamædrys. Hall. helv.* n. 285.  
*Ajuga folio integro. Rivin. mon. t.* 15.  
*Corymb terminating, leaves lanceolate quite entire tomentose beneath.*  
38. *Teucrium supinum. Procumbent Germander.*  
*Lin. spec.* 791. *syft.* 528. *Reich.* 3. 23. *Willd. spec.* 3. 32. *Jacqu. austr.* 5. p. 8. t. 417.  
*Polium 2. Mill. dict. vol.* 2. 1739.  
*P. montanum repens. Baub. pin.* 220. *Raii hist.* 525.  
*P. mont. supinum minimum. Lob. ic.* 488. *Ger.* 529. 4. *emac.* 655. 4. *Park. theat.* 24. 5.  
*Corymb terminating, leaves linear rolled back at the edge.*  
39. *Teucrium pyrenaicum. Pyrenean Germander.*  
*Lin. spec.* 791. *Reich.* 3. 23. *Willd.* 3. 33. *vir. cliff.* 55. *hort. cliff.* 301. *Schreb. unilab.* 41. n. 40. *Affo arag. n.* 506.  
*Polium pyrenaicum. Mill. dict. n.* 6.  
*P. pyren. supinum hederæ terrestris folio. Tournef. inst.* 206.  
*P. saxatile purpureum chamædryoides, ampla coma. Bocc. mus.* 2. t. 61. *Barr. rar.* 315. t. 1086.  
*Corymb terminating, leaves cuneiform-orbicular crenate.*  
40. *Teucrium Polium. Poley.*  
*Lin. spec.* 792. *syft.* 528. *Reich.* 3. 23. *hort. cliff.* 302. *Scop. carn. n.* 724. *Sauv. monsp.* 141. *Villars dauph.* 2. 351. *Allion. pedem. n.* 155. *Gron. orient.* 71. *Lour. cochinch.* 362. *ed. Willd.* 439. *Desfont. atlant.* 2. 7.  
α. *Polium luteum. Mill. dict. n.* 2.—item n. 3.  
*P. montanum luteum. Baub. pin.* 220. *Lob. ic.* 487. *Tabern. ic.* 364. *Ger.* 528. 2. *emac.* 653. 2. *Raii hist.* 525. *Mor. hist.* 3. 455. f. 11. t. 2. f. 1. *Tournef. inst.* 206. *Barrel. obs.* 320. *ic.* 1082. *Blackw. t.* 456.  
*P. montanum vulgare. Park. theat.* 24. 1.  
*Teucrium aureum. Schreb. unilab.* 43. n. 43. *Willd. spec.* 34.—tomentosum. *Villars dauph.* 2. 352.  
*Yellow Poley or Mountain Germander.*  
β. *Polium album. Mill. dict. n.* 4.—item, n. 7 & 8.  
*Polium montanum album. Baub. pin.* 221. *Ger.* 528. 1. *emac.* 653. 1. *Raii hist.* 524.  
*P. mont. 1. Clus. hist.* 1. 361. *Lob. hist.* 257. *ic.* 486.  
*P. mont. monspeliacum. Park. theat.* 24. n. 3.  
*P. mont. album ferratifolium latifolium majus. Barrel. obs.* 326. *ic.* 1074.—*P. latifolium. Mill.* n. 7.—item, minus. *Barrel. obs.* 329. f. 1078.  
*Teucrium Teuthrion. Schreb. unilab.* 46.  
*T. Polium. Willd. spec.* 3. 36.  
*White Poley or Mountain Germander.*  
γ. *Polium montanum supinum alterum. Baub. pin.* 221.  
δ. *Polium maritimum supinum venetum. Baub. pin.* 221. *hist.* 3. 300. *Mor. hist.* 3. f. 11. t. 2. f. 12. *Tournef. inst.* 206.  
*P. marit. supinum. Park. theat.* 24. 4. *Raii hist.* 524.  
*Teucrium Achæmenis. Schreb. unilab.* 44. n. 45. *Willd. spec.* 3. 35.  
*Purple Poley or Mountain Germander.*  
*1. Hyssopium*



40. *Hyssopium* Dioscoridis. *Col. exphr.* 1. 59. t. 67.  
*Teucrium* Pseudhyssopus. *Schreb. unilab.* 45. n. 46.  
*Willd. spec.* 3. 37.  
*Polium montanum incanum*, &c. *Mich. hort. flor.*  
 75. n. 2.  
*Spikes roundish, leaves oblong obtuse crenate tomentose*  
*sessile, stem prostrate.*
41. *Teucrium capitatum*. Round-headed Germander.  
*Lin. spec.* 792. *syst.* 528. *Reich.* 3. 24. *Willd.* 3.  
 38. *Affo arag.* n. 508. *Desfont. atlant.* 2. 7.  
*Cavan. ic.* n. 129. t. 119.  
*T. belion.* *Schreb. unilab.* 47. n. 49.  
*Polium dasphyllum gnaphalodes flore albo.* *Barrel.*  
*rar.* 324. *ic.* 1047. *sec. Schreb.*  
*P. mont. album ferratum latifolium.* *Barr. rar.*  
 325. t. 1079. *sec. Linn.—v. T. Polium β.—*  
*Barrel. t.* 1078, 1079. *et forte* 1048, 1049,  
 1050. *Desf.*  
*β. Polium capitatum.* *Mill. dict.* n. 5. *Villars dauph.*  
 2. 352. *Allion. pedem.* n. 154.  
*P. maritimum erectum monspeliacum.* *Bauh. pin.*  
 221. *Tournef. inst.* 206.  
*P. monspessulanum.* *Bauh. hist.* 3. 299.  
*Heads peduncled, leaves lanceolate crenate tomentose,*  
*stem erect.*
- [42. *Teucrium pumilum*. Dwarf Germander.  
*Lin. spec.* 792. *Reich.* 3. 25. *Willd.* 3. 40. *amoen.*  
 4. 276. *Schreb. unilab.* 48. n. 53.  
*Polium hispanicum montanum pumilum, rosmarini*  
*folio, flore rubro.* *Tournef. inst.* 207.  
*P. mont. pum. rubrum, viridi stœchadis folio, caule*  
*tomentoso.* *Barr. rar.* 336. t. 1092.  
*β. P. mont. pum. angusto viridique folio, caule in-*  
*cano.* *Barr. rar.* 337. t. 1093.  
*Heads terminating sessile, leaves linear flat clustered*  
*four ways, stem procumbent tomentose.*
43. *Teucrium spinosum*. Thorny Germander.  
*Lin. spec.* 793. *syst.* 528. *Reich.* 3. 25. *Willd.* 3.  
 41. *Loefl. it.* 147. *Schreb. unilab.* 38. n. 32.  
*Chamædrys multifida spinosa odorata.* *Grisl. lusit.*  
 20. *Tournef. inst.* 208.  
*C. spinosa.* *Bauh. pin.* 248. *prodr.* 117. *ic.* *Mor.*  
*hist.* 3. 423. f. 11. t. 22. f. 17. *Raii hist.* 528.  
*—cretica.* *Park. theat.* 105. 5.  
*β. Teucrium mucronatum.* *Lin. spec.* 793.  
*Scordium spinosum odoratum.* *Corn. can.* 123.  
*Barr. rar.* 319. t. 202.  
*Thorny, upper lip of the calyxes ovate, corollas resu-*  
*pine, peduncles in pairs.*
44. *Teucrium corymbiferum*. Corymbiferous Germander.  
*Desfont. atlant.* 2. 8.  
*Frutescent, leaves oblong crenate cinereous, flowers co-*  
*rymbed capitate, peduncles leafy.*
45. *Teucrium lævigatum*. Smooth Germander.  
*Vahl symb.* 1. 40. *Willd. spec.* 3. 13.  
*Lower leaves multifid, upper three-parted, peduncles so-*  
*litary length of the leaves.*
46. *Teucrium trifoliatum*. Three-leaved Poley.  
*Vahl symb.* 1. 40. *Willd. spec.* 3. 36.  
*Heads roundish loose, leaves tern oblong revolute, crenate*  
*in front, tomentose.*
47. *Teucrium Gnaphalodes*.  
*Vahl symb.* 1. 41. *L'Herit. stirp. nov.* 4. 84. *Willd.*  
*spec.* 3. 35.  
*Polium montanum 5 purpureo flore.* *Clus. hist.* 1.  
 362.  
*P. mont. gnaphalodes incisum, flore rubro supinum.*  
*Barrel. ic.* 1083.  
*Flowers solitary clustered, leaves linear revolute crenate,*  
*both they and the calyxes woolly.*
48. *Teucrium villosum*. Villose Germander.  
*Forst prodr.* n. 232. *Willd. spec.* 3. 23.  
*Leaves elliptic-ovate acuminate serrate petioled villose,*  
*raceme spiked terminating, calyxes inflated.*
49. *Teucrium undulatum*. Wave-leaved Germander.  
*Lour. cochinch.* 362. *ed. Willd.* 439.  
*Leaves oblong waved, subcrenate, corymb terminating.*
50. *Teucrium Thea*. Tea Germander.  
*Lour. cochinch.* 363. *ed. Willd.* 440.  
*Leaves ovate-lanceolate, stem procumbent, peduncles ax-*  
*illary three-flowered.*
51. *Teucrium trifidum*. Trifid-leaved Germander.  
*Retz. obs.* 1. 21. n. 65. *Willd. spec.* 3. 15.  
*Leaves lanceolate trifid, peduncles axillary three-flow-*  
*ered.*
52. *Teucrium parviflorum*. Small-flowered Germander.  
*Lin. spec. ed. Willd.* 3. 14. *Schreb. unilab.* 31.  
 n. 18.  
*T. orientale latifolium laciniatum flore parvo.* *Tournef.*  
*cor.* 24.  
*Leaves multifid linear, raceme decomposed, pedicels*  
*elongated divaricating.*
53. *Teucrium brevifolium*. Short-leaved Germander.  
*Lin. spec. ed. Willd.* 3. 17. *Schreb. unilab.* 27.  
 n. 10.  
*T. frutescens stœchades arabicæ folio & facie.* *Tournef.*  
*cor.* 14. *Riv. mon. t.* 20.  
*Leaves lanceolate revolute quite entire obtuse hoary,*  
*flowers solitary, calyxes awnless.*
54. *Teucrium regium*. Royal Germander.  
*Lin. spec. ed. Willd.* 3. 19. *Schreb. unilab.* 35.  
 n. 25. *Medic. æt. palat.* 3. *phys.* 208.  
*T. lucidum parvo folio, flore venuste purpureo.* *Pluk.*  
*phyt. t.* 365. f. 2. *Mor. hist.* 3. 422. n. 5.  
*Leaves ovate toothed in front, floral leaves quite entire*  
*sessile, whorls racemed, stem branched.*
55. *Teucrium japonicum*. Japanese Germander.  
*Lin. spec. ed. Willd.* 3. 23.  
*T. virginicum.* *Thunb. jap.* 244.  
*T. virgin. e Japonia.* *Houtt. syst.* 7. 401. t. 56. f. 1.  
*Scorodonia affinis Sinarum, floribus ex albo-purpu-*  
*rascentibus, spica florum compactiore.* *Pluk.*  
*amaltb.* 188. t. 441. f. 2.  
*Leaves ovate doubly-serrate, racemes terminating, bractes*  
*length of the calyx.*
56. *Teucrium Salviastrum*. Sage-like Germander.  
*Lin. spec. ed. Willd.* 3. 27. *Schreb. unilab.* 38.  
 n. 33.  
*Chamædrys fruticosa lusitanica melissæ folio minori,*  
*flore purpureo.* *Tournef. inst.* 205.  
*Leaves oval crenulate wrinkled tomentose beneath petioled,*  
*raceme directed one way.*
57. *Teucrium scordioides*. Scordium-like Germander.  
*Lin. spec. ed. Willd.* 3. 27. *Schreb. unilab.* 37.  
 n. 30.  
*Chamædrys cretica palustris canescens scordioides, be-*  
*tonicæ folio.* *Tournef. cor.* 14.  
*Scordium lanuginosum.* *Bauh. pin.* 247.  
*Leaves oblong cordate embracing crenate lanuginose, flow-*  
*ers axillary peduncled in pairs.*
58. *Teucrium nitidum*. Glittering Germander.  
*Lin. spec. ed. Willd.* 3. 30. *Schreb. unilab.* 35.  
 n. 24.  
*Leaves ovate crenate, floral leaves quite entire, whorls*  
*halved racemed, stem bearded in two rows.*
59. *Teucrium thymifolium*. Thyme-leaved Germander.  
*Lin. spec. ed. Willd.* 3. 32. *Schreb. unilab.* 50.  
 n. 56.  
*Polium faxatile minimum thymi folio carneo flore.*  
*Barr. rar.* 344. t. 1062.  
*β. P. fax. purpureum non ferrato serpilli folio, pressa*  
*coma.* *Barr. rar.* 343. t. 1087.  
*Heads terminating few-flowered, leaves petioled ovate*  
*obtuse tomentose beneath, stem procumbent.*
60. *Teucrium rotundifolium*. Round-leaved Germander.  
*Lin. spec. ed. Willd.* 3. 33. *Schreb. unilab.* 42.  
 n. 41.  
*T. faxatile.* *Lamarck. encycl.* 2. 691.  
*Polium hispanicum chamædryos folio, purpurascens*  
*flore.* *Tournef. inst.* 206.  
*P. faxatile chamædryoides rotundiore folio supinum*  
*rubrum.* *Barr. rar.* 346. t. 1095. *Bocc. mus.* 2.  
 76. t. 62. *Mor. hist.* 3. 356. f. 11. t. 4. f. 3.  
*Corymbs terminating, leaves roundish crenate villose.*
61. *Teucrium buxifolium*. Box-leaved Germander.  
*Lin. spec. ed. Willd.* 3. 34. *Schreb. unilab.* 42.  
 n. 42.  
*T. faxatile.* *Cavan. ic.* 2. 19. t. 121. f. 1.  
*Polium faxatile purpureum chamædryoides ampla*  
*coma.* *Barr. rar.* 345. t. 1086. *Bocc. mus.* 2. 75.  
 t. 61.  
*Corymbs terminating, leaves oval wrinkled crenate at*  
*the end villose.*
62. *Teucrium*



62. *Teucrium flavescens*. Sulphur-coloured Germander.  
*Lin. spec. ed. Willd.* 3. 35. *Schreb. unilab.* 44.  
*n.* 44.  
*Polium angustifolium*. *Mill. dict. n.* 3?  
*P. montanum luteum dasphyllum ferratum*. *Barr.*  
*rar.* 321. *t.* 1073.  
*Heads roundish and leaves linear-lanceolate crenate in*  
*front tomentose, summits yellow.*
63. *Teucrium valentinum*. *Valentia Germander*.  
*Lin. spec. ed. Willd.* 3. 37. *Schreb. unilab.* 46.  
*n.* 48.  
*Polium valentinum fruticosum angustifolium, flore*  
*albo.* *Barr. rar.* 331. *t.* 1043.  
*Heads roundish shortly peduncled, leaves linear crenate,*  
*stem erect hoary.*
64. *Teucrium lusitanicum*. *Portuguese Germander*.  
*Lin. spec. ed. Willd.* 3. 38. *Schreb. unilab.* 47.  
*n.* 59.  
*Polium lusitanicum supinum minus incanum, caulibus*  
*purpurascens, flore albo.* *Tournef. inst.* 206.  
*Heads loose, leaves linear obtuse crenulate hoary, stem*  
*pubescent corymbiferous.*
65. *Teucrium pycnophyllum*. *Thick-leaved Germander*.  
*Lin. spec. ed. Willd.* 3. 39. *Schreb. unilab.* 48.  
*n.* 51.  
*Polium surrectum majus angustifolium ferratum inca-*  
*num tomentosum.* *Barr. rar.* 322. *t.* 1096.  
*P. montanum album angust. ferr. supinum minus.*  
*Barr. rar.* 330. *t.* 1091.  
*Heads roundish, leaves linear revolute crenate in front*  
*clustered, they and the stem densely tomentose.*
66. *Teucrium verticillatum*. *Whorled Germander*.  
*Lin. spec. ed. Willd.* 3. 39. *Cavan. ic.* 2. 77.  
*t.* 198.  
*Head roundish sessile, leaves lanceolate quite entire revo-*  
*lute whorled, stem erect, both tomentose.*
67. *Teucrium Libanitis*. *Rosemary-leaved Germander*.  
*Lin. spec. ed. Willd.* 3. 40. *Cavan. ic.* 2. 17.  
*t.* 118.  
*Polium montanum majus erectum rosmarini folio,*  
*flore rubro.* *Barr. rar.* 338. *t.* 1090.  
*Spikes roundish, leaves clustered linear revolute quite en-*  
*tire, they and the stem tomentose.*
68. *Teucrium angustissimum*. *Narrowest-leaved Ger-*  
*mander.*  
*Lin. spec. ed. Willd.* 3. 40. *Schreb. unilab.* 49.  
*n.* 54.  
*Polium montanum album non ferratum, longis angus-*  
*tisque foliis canescentibus.* *Barr. rar.* 333. *t.*  
*1080.*  
*Heads terminating hairy, leaves linear quite entire almost*  
*naked, stem erect.*
69. *Teucrium cœleste*.  
*Lin. spec. ed. Willd.* 3. 40. *Schreb. unilab.* 49.  
*n.* 55.  
*Polium montanum album non ferratum viride, longis*  
*angustisque foliis, caule incano.* *Barr. rar.* 354.  
*t.* 1081.  
*Heads terminating tomentose, leaves linear quite entire*  
*hoary, stem erect.*

## DESCRIPTIONS, &amp;c.

1. This very much resembles *T. Botrys*, but the plant is smooth. Root perennial. Flowers solitary, on peduncles shorter than the flower: calyxes bell-shaped, and not gibbous at the base: corollas pearly-white, incumbent on the leaf. The older stems are prostrate and creeping. Leaves twice trifid. Seeds rugged<sup>a</sup>.

Native of the Levant, and of Apulia, in moist ground.—Cultivated in 1728, by Mr. Miller. It flowers in July and August<sup>b</sup>.

2. Native of the Levant, it seems doubtful whether it be sufficiently distinct from the preceding<sup>c</sup>. The flowers are in a raceme, larger, and blueish. But it varies with a bright red corolla.]

3. Root annual. Stems four-cornered, hairy, about a foot long. Leaves at every joint, opposite, hairy and cut almost to the midrib; and the segments cut into three points. The flowers come out from the axils in whorls, three together on each side, upon

short foot-stalks: they appear in June and July. The seeds ripen in August and September.

[Stem much branched and very leafy, straight but often decumbent at the base. Leaves two, three or five-cleft, unequal, sometimes entire, obtuse; the lower on longer, the upper on shorter petioles. Whorls two, four, six or eight-flowered, sometimes even nine-flowered, on short peduncles. Corolla rose-coloured or purple, the middle segment of the lower lip dotted with red. Calyx very gibbous<sup>d</sup>.

This plant has a pleasant aromatic odour. In character and qualities it lies between the *Chamædrys* and *Chamæpitys*, being less acrid than the latter, more aromatic and less bitter than the former: it may therefore be used successfully in fevers, rheumatism, gout, and other maladies which depend upon the weakness of the stomach, and the tenacity of the humours<sup>e</sup>.

Native of the South of Europe, and of Barbary about Algiers. Cultivated here before 1633; for Johnson, in his edition of Gerarde's herbal, says that he has often seen it in gardens.

4. Root small, branched, annual. The whole herb hairy, viscid, aromatic and bitter. Stem much branched, four-cornered, leafy, often red. The two or three first leaves are entire; all the rest are deeply three-cleft. Flowers axillary, solitary, opposite, subsessile, yellow dotted with red. The middle segment of the lower lip is obcordate. The upper lip, instead of being deeply divided and divaricated, with the stamens projecting between the lobes, as in the genuine *Teucriums*; is very short and notched, as in the genus *Ajuga*. Hence Haller considered it as a *Bugula*, which is his name for that genus; and he has been followed by Schreber, Scopoli, Allioni, Roth, Willdenow, Smith, Withering and Relhan. Dr. Smith indeed acknowledges, that the habit of *Chamæpitys* is unlike that of Linneus's *Ajugas*; but at the same time remarks, that his *Teucrium Iva*, which belongs to the same genus, is the connecting link between them, by its pubescence and the denticulation of its leaves approaching *Ajuga alpina*, which is moreover a bitter aromatic plant<sup>f</sup>. The whole plant has a highly aromatic odour: and was much esteemed formerly in the same disorders as the preceding. It is an ingredient in the Portland powder.

Native of many parts of Europe, the Levant, Barbary and Virginia. In England it abounds in Kent and Surry, but is otherwise a scarce plant. It is found near Purfleet in Essex; about Rochester and Dartford, &c. Roehill. On the lays about the borders of Triploew-heath, Cambridgeshire.

5. This is an annual plant native of Spain and Portugal. According to Schreber, it is confounded by Morison and Miller with *T. multiflorum*.—It was cultivated in 1768, by Mr. Miller; and flowers in June and July<sup>g</sup>.

6. Stems often many in one tuft, decumbent at the base, four-cornered, simple. Leaves opposite, petioled, numerous; the lower bipinnate, the upper pinnate; pinnules distinct, linear-subulate, unequal, smooth or pubescent. Flowers in whorls, loosely racemed, solitary or in pairs from the axils, each on a short pedicel. Lower bractes many-parted, longer than the calyx; upper three-parted; segments awl-shaped. Calyx bell-shaped, half-five-cleft; segments lanceolate, acute, equal. Corolla the same size as in *T. fruticans*; white and villose: tube cloven above; the two upper lobes ovate, erect: lower lip three-lobed; the middle lobe very large, ovate, concave<sup>h</sup>.

Native of Spain, Portugal, the south of France about Marseilles, and Algiers in Barbary.

*Teucrium delphinii folio, non ramosum* of Shaw, belongs to this species; and consequently *T. mauritanum* of Linneus is to be expunged<sup>i</sup>.]

7. Annual, with a single woody root, sending out a few fibres. Stalks about six inches high, closely set with very hairy narrow leaves, indented towards

<sup>a</sup> Pollich, Krock. Desfont.<sup>b</sup> Smith brit. & Engl. bot.<sup>c</sup> Desfontaines.<sup>d</sup> Villars.<sup>e</sup> Hort. kew.<sup>f</sup> Idem.<sup>g</sup> Linn. spec.<sup>h</sup> Hort. kew.<sup>i</sup> Linn. syst.



their points. The flowers come out from the axils, to which they fit very close; they are large, of a bright purple colour, and appear in July. Mr. Miller has another species (*T. moschatum* n. 15.) which seems to be a variety of this. The leaves are narrower and entire, and the flowers are smaller.

[It is a very villose hoary plant. The stems are branched at the base and procumbent. Leaves in clusters, mostly obtuse, gradually widening from the base to the end, some quite entire, others remotely ferrate, and others having a tooth or two only at the tip. Flowers solitary. Corolla large, rose-coloured, often abortive. The whole plant smells of musk<sup>k</sup>.

It has the same qualities with the *Chamæpitys*, but possesses a more volatile principle, and deserves a place among the sudorifics<sup>l</sup>.

Native of the south of Europe, and of Barbary. Vahl found it flowering at the beginning of October on the rocks about Marseilles, and in various places of the kingdom of Tunis in April.

8. Found by Shaw in Barbary, but not different from *T. pseudo-chamæpitys*, his figure being of that plant in a monstrous or unnatural state<sup>m</sup>. See n. 6. The leaves however are multifid in this, whereas in *Chamæpitys* they are simply trifid.]

9. This has a shrubby branching stalk, rising six or eight feet high, and covered with a hoary bark. Leaves opposite, ovate, sessile or on very short petioles, near an inch long, and half an inch broad, smooth and of a shining green above, and hoary beneath. Flowers axillary from the upper part of the branches, one on each side at a joint, on short peduncles. Calyxes short and hoary. Corollas pale blue.

Native of Spain, Sicily, and Corsica, near the coast; [also in Barbary. Ray found it near Syracuse, and in several other parts of Sicily; also at Capo Passaro. His friend Mr. Willughby found it in his way from Naples to Rome. Clusius gathered it in Andalusia, near Cadiz, and Gibraltar; flowering in February.—It was cultivated here in 1640, as appears from Parkinson<sup>n</sup>.

Dillenius figures a variety, which is a little more branched, and has smaller shorter leaves; the flowers are paler, the stamens somewhat longer, the anthers smaller and brown, whereas in the larger sort they are violet.]

Mr. Miller mentions a variety with variegated leaves, which is preserved in some gardens.

10. This is a shrubby plant, growing seven or eight feet high, and may be trained to a much greater height<sup>o</sup>. The flowers are somewhat shorter and smaller, though the leaves are larger; they are not blue but purplish, with more conspicuous veins and streaks: the anthers are of a dusky greenish colour<sup>p</sup>.]

The leaves are broader of a rhomboid form, more hairy and whiter on their under side.

[Native of Spain. Cultivated in 1714, by the Duchess of Beaufort. It flowers from June to September. Schreber and Desfontaines consider this as a variety of the fruticans, and Willdenow raised it from seeds which were sent him for the fruticans.

11. Roots annual, long, twisted, putting forth capillary branchlets. Stem erect, hirsute. Branches spreading, numerous. Leaves villose, decurrent into a short petiole, deeply ferrate, the lower obovate, the middle and upper lanceolate. Flowers axillary, solitary, sessile or subsessile. Calyx round, gibbous at the base below, villose, five-toothed; teeth small, ovate, acute, almost equal, mucronate. Corolla pale yellow, the size as in *T. Chamædrys*: the two lower segments linear, purple, blunt; the upper middle lobe larger, roundish.—Native of Barbary, near Mascara, in clayey fields.

12. This is a hoary, tomentose, erect shrub, with very numerous filiform branches. Leaves white, paler above, nearly the size of *T. marum*, petioled, obovate or ovate-rhomboid, nerved beneath. Flowers

small, axillary and terminating, subsessile, shorter than the leaf: calyx slender, elongated, white, five-toothed; teeth acute, almost equal: corolla violet-coloured. The whole plant breathes a very sweet odour.

Native of Barbary, near Cassa, in clefts of rocks<sup>q</sup>: also of Spain.

13. Leaves acuminate, white beneath. Flowers in threes or solitary. Calyxes spiny<sup>r</sup>.

Native of Candia and Egypt. Schreber excludes the synonym of Bauhin<sup>s</sup>.]

14. This has a low shrubby stalk, sending out many slender woody branches, in warm countries rising three or four feet high, but in England rarely half that height. The stalks are very hoary, and have small leaves placed opposite at each joint, about the size of those of Thyme, and pointed at both ends, green above, hoary underneath, having a grateful scent, but so piercing as to cause sneezing. The flowers grow in loose whorled spikes at the ends of the branches; they are very downy, and of a bright red colour; appear in July and August, but produce no seeds in England.—Native of Spain.

At the beginning of this century, many of these plants were growing in the Royal gardens at Kensington, which were near three feet high, and clipped into conical forms. Cats are very fond of this plant, and where there are but few will destroy them.

[It appears from Parkinson to have been cultivated here in 1640<sup>t</sup>.

The leaves and younger branches of Marum, when recent, on being rubbed between the fingers, emit a volatile aromatic smell, which readily excites sneezing, but to the taste they are bitterish accompanied with a sensation of heat and acrimony. Judging from the sensible qualities of this plant, it may be supposed to possess very active powers, and on this consideration it is strongly recommended by Wedelius, as an important remedy in many diseases requiring medicines of a stimulant, aromatic, and deobstruent quality: his opinion seems in some measure to have been since verified by actual experience of its efficacy. At present however Marum is here chiefly used as an errhine, and is an ingredient in *Pulvis asari compositus*. The dose of the powdered leaves is from a scruple to half a dram, which Murray advises to be given in wine<sup>u</sup>.

15. The description of *T. nissolianum* in Miller's Dictionary, n. 8. seems to agree better with this species.] It is a perennial plant, having some resemblance of the *Chamædrys*, but the roots do not creep. The stalks are taller and more erect, the leaves are narrower, pointed at both ends, and not so deeply indented; the indentures are sharper, and only towards the point; the flowers come out in bunches from the axils, along the greater part of the stalk; they are longer than those of *Chamædrys*, and of a brighter red colour.—Native of Spain. [It was cultivated by Mr. Miller in 1731<sup>x</sup>.

16. Stem half a foot high, villose. Leaves three-nerved. Flowers solitary, lateral, directed one way. Found in Siberia by Laxmann<sup>y</sup>. It is a native also of Hungary and Slavonia.

17. Leaves naked on both sides, ovate, ferrate. Bractes under the forking two, lanceolate, mucronate, quite entire, length of the calyx, as in *Satureia montana*.—Native of Siberia. Perennial<sup>z</sup>.

18. Stems diffused, roundish, pubescent, perennial at the base. Leaves opposite, naked, not shining, erect, nerved, longer than the internodes. Flowers opposite, on very short peduncles. Calyxes tubular, half-four-cleft, narrow. Corollas three times shorter than the leaves, without any rudiment of an upper lip, or lateral teeth at the base.—Native of the Levant<sup>a</sup>.

19. Stem erect, straight, a foot high, four-cornered, brownish, brachiate, naked; with shorter branches. First leaves lanceolate with a right angle at the base, petioled, wrinkled, bluntly ferrate or

<sup>k</sup> Desfontaines.  
<sup>n</sup> Hort. kew.

<sup>l</sup> Allioni.  
<sup>p</sup> Curtis.

<sup>m</sup> Desfontaines.  
<sup>r</sup> Dillenius.

<sup>q</sup> Desfontaines.  
<sup>s</sup> Hort. kew.  
<sup>t</sup> Linn. syst.

<sup>r</sup> Schreber.  
<sup>u</sup> Woodville.  
<sup>z</sup> Linn. syst. & spec.

<sup>s</sup> Reichard.  
<sup>x</sup> Hort. kew.  
<sup>a</sup> Linn. mant.



acutely crenate, the notches separated by a right angle, soft, spreading, above somewhat wrinkled and dark green, beneath tomentose netted veined and pale green. Flowers axillary, solitary, one-flowered, shortly peduncled, directed one way. Calyx like that of *Ocymum* or *Scutellaria*, with the upper lip cordate, recurved at the edge, acute; lower four-toothed, equal. Corolla white, or scarcely flesh-coloured; without any upper lip, the lower lip trifid, with the middle lobe larger, recurved, emarginate but scarcely crenate. Stamens hardly longer than the throat: filaments hairy; anthers brown with saffron-coloured pollen. Stigmas acuminate, scarcely longer than the filaments<sup>b</sup>.

Native place not known. Conjectured to be the East Indies.—Introduced in 1777, by Monf. Thouin. It flowers from June to October<sup>c</sup>.

20. Stem four-cornered, erect, a foot and half high, smooth, little branched, annual or perhaps biennial. Leaves obtuse, inodorous, opposite. Peduncles one-flowered, axillary, solitary, opposite. Flowers small, inodorous. Corolla white: the middle segment of the lower lip subovate, acute and large; the lateral ones ovate-acuminate. Seeds black.

Native of Cuba in moist hedges and meadows; flowering in December and the following months<sup>d</sup>.

Miller describes his *chamaedrifolium*, which seems to be the same plant, thus—] Annual, with an erect stalk a foot and half high, four-cornered and smooth. Leaves about an inch and half long, and three quarters of an inch broad, upon short foot-stalks. Flowers axillary, two at each joint, upon short slender peduncles: calyx short, cut at the brim into five very acute points: corolla small and white. They appear in July, and the seeds ripen in autumn. It was discovered by Dr. Houstoun at La Vera Cruz.

[21. The whole plant is obscurely pubescent. Stems suffruticose. Spike terminating, like that of *T. hircanicum*, but shorter and yellowish. Its native place not known<sup>e</sup>.]

22. This is a perennial plant, very like our *Scorodonia* or Wood Sage; but does not creep at the root as that does; the stalks are erect: the leaves are white on their under side, and deeply serrate; flowers yellow in terminating racemes.

[The plant from Canada has narrower leaves, equally serrate, tomentose beneath, flat: the spike is composed of whorls or scattered flowers, with a very small bracte under each. But the garden plant has larger wrinkled leaves, unequally serrate, scarcely pubescent beneath; and flowers in a subspiked raceme, of six-flowered, six-leaved whorls, with serrate bractes<sup>f</sup>.

Native of North America. Cultivated in 1768 by Mr. Miller. It flowers in August and September<sup>g</sup>.]

23. This is also a perennial plant. The stalk is annual, rises near a foot high, and is terminated by a long spike of red flowers, which appear in July and August.

[Schreber could not discover the two lipped calyx and doubly-crenate leaves of Gouan: nor do Medicus's specimens correspond with Gronovius's description<sup>h</sup>.—Native of Virginia.

24. This seldom rises above two feet and a half in height; the spikes of flowers are stiff, straight and thick. It is a native of Jamaica, and pretty frequent in the lower parts of St. Mary's, where it grows very luxuriantly<sup>i</sup>. It was introduced here in 1778, by William Wright, M. D.; and flowers from August to October<sup>k</sup>.

Mr. Miller has a species, which he names *vesicarium* (n. 17.) But whether it be the same with this I am not able to say. He thus describes it.] It is an annual plant, with a slender, upright, four-cornered stalk which rises three feet high, and divides into several smooth branches. Leaves ovate-lanceolate, three inches long, and an inch broad, bright green on their upper side, but pale on their under, unequally serrate, upon long foot-stalks. Flowers

axillary and terminating, in long bunches; they are pretty large, white, and have bladdered calyxes.

[25. Leaves like those of *Betonica officinalis*. Spikes very long, with the flowers thickly heaped spirally on every side, from the last forkings of the stem<sup>l</sup>.

Native of Persia. Introduced in 1763, by John Earl of Bute. It flowers from August to October. Perennial<sup>m</sup>.

26. Leaves very large, like those of *Sida*. Teeth of the calyx very blunt. Structure of the corolla almost as in *T. betonicum*; colour yellow<sup>n</sup>.

Native of Madeira, where it was found by Masson, and introduced in 1777. It flowers in April and May<sup>o</sup>.

27. Root perennial, creeping. Stems a foot and half or two feet high, four-cornered, nearly upright, hairy, leafy, hard, often purple, panicle-racemed. Leaves opposite, wrinkled, hairy, veiny and wrinkled like Sage, somewhat glutinous, strong-smelling; bitter. Flowers in pairs, on long opposite naked racemes, pedicelled: calyx a little woolly, upper lip broad, bent back, pointed, lower with four very shallow clefts terminating in pointed teeth bent inwards: corolla straw-coloured, woolly; tube longer than the calyx, upper lip none, but the top of the tube slightly cloven. Stamens violet-coloured. Seeds blackish, shining, almost covered with cross rigid hairs<sup>p</sup>.

Native of Europe and Morocco, in woody and hilly situations, among bushes and under hedges, where the soil is dry and stony: in such places frequent in most parts of Great Britain; flowering from July to September.

Mr. Laurents, in his observations on the husbandry of Flanders remarks, that in smell and taste, the *Scorodonia* or Wood-sage, (which would be more properly named Sage-leaved Germander,) resembles hops. It is called *Ambroise* in Jersey, and in that island, when cyder fails, they malt their barley at home, and instead of hops, use to very good purpose, the *Ambroise* of their hedges<sup>q</sup>. Ruttty says, that when this herb is boiled in wort, the beer sooner becomes clear than when hops are made use of<sup>r</sup>. Dr. Withering relates that upon trial it gave too much colour to the liquor.

28. This has the appearance of the preceding, but differs in having a shrubby and more hairy stem, with the lower leaves tomentose beneath and hoary.

Native of Barbary, on mount Lazar near Mayane in Algiers<sup>s</sup>.

29. Stems suffruticose, scarcely a foot high. Leaves ovate or cordate-ovate, unequally serrate, bluntish, small, reflexed at the edge, veined beneath. Flowers opposite, peduncled. Calyxes nearly like those of *Scutellaria*, as in *T. hircanicum*, with the upper lip subcordate, spreading, acute. Corolla purple with the lower lip very concave. It has the odour of *Nepeta* or Cat-mint<sup>t</sup>.

According to Loureiro, it is three feet high, whitish, smooth. Leaves acute, deeply crenate. Flowers violet-coloured, in erect terminating spikes. Calyx ovate, five-cleft<sup>u</sup>.

Native of the South of France, Candia, and Cochinchina. In the latter, the inhabitants boast much of its medical qualities. It was cultivated in 1731 by Mr. Miller, and flowers in June and July<sup>v</sup>.

30. This is a handsome undershrub, about three feet high. Stem upright, branched, round, cloven, cinereous: branches opposite, spreading, flowering and brachiate at the top: shoots four-cornered, hoary-green, pubescent. Leaves opposite, broad-lanceolate, sharp at both ends, serrate but entire at the base, sparingly nerved, the midrib and veins prominent beneath, marked with lines above, beneath glaucous and softly subpubescent, flat, spreading very much, the older ones reclining, from two to four inches long. Petioles three times shorter than the leaves, round, cinereous or hoary, subpubescent. Racemes terminating and at the same time from the axils of the

<sup>b</sup> Linn. mant.

<sup>c</sup> Hort. kew.

<sup>d</sup> Jacquin.

<sup>e</sup> Linn. mant.

<sup>f</sup> Linn. spec.

<sup>g</sup> Hort. kew.

<sup>h</sup> Reichard.

<sup>i</sup> Browne.

<sup>k</sup> Hort. kew.

<sup>l</sup> Linn. spec.

<sup>m</sup> Hort. kew.

<sup>n</sup> L'Heritier & Willdenow.

<sup>o</sup> Hort. kew.

<sup>p</sup> Smith, Withering, Curtis.

<sup>q</sup> Young's Annals, 1. 249.

<sup>r</sup> Curtis lond.

<sup>s</sup> Desfontaines.

<sup>t</sup> Linn. spec.

<sup>u</sup> Loureiro.

<sup>v</sup> Hort. kew.



upper leaves, digested into a sort of brachiate panicle, erect, peduncled, simple or in a manner ternate, bracted, pubescent, from four to six inches long. Flowers opposite, pedicelled, in the axils of the bractes, solitary, spreading, smelling like apples, purple. Bractes opposite, sessile, lanceolate, entire, spreading very much, longer than the pedicel, of the same colour with the leaves. Seeds wedge-shaped, angular on one side, round on the other, hirsute, cinereous<sup>x</sup>.

Native of Madeira. Introduced in 1775 by Sir Joseph Banks. It flowers from may to august<sup>y</sup>. Monf. L'Heritier says, it was found in the same island also by Masson, and introduced by him into England, and thence into France.

This species, heterophyllum and abutiloides are intermediate between Teucrium and Ajuga. Perhaps on account of the tube of the corolla being very much lengthened out, and the upper lip scarcely emarginate and not cloven, they would more properly range with the Ajugas, unless we should sink that genus in Teucrium<sup>z</sup>.

31. Root perennial, creeping. Stems spreading or even prostrate, little branched, four-cornered, grooved, leafy, hairy. Leaves numerous, opposite, sessile, tapering and entire at the base, serrated upwards, hairy; at the top of the branches, they are sometimes oval-lanceolate and nearly entire. Flowers axillary: the lower ones frequently solitary, the upper in pairs, pedicelled. Calyx hairy, purplish, with five nearly equal teeth. Corolla pale purple or pink, smaller and less handsome than those of Chamædrys<sup>a</sup>.

Native of many parts of Europe. In England not common. Mr. Ray observed it plentifully in the fens of the Isle of Ely. I gathered it in the way from Cambridge to Histon on the first of august 1760. It is found also at Waterbeach, Cottenham, &c. Dr. Sibthorpe gathered it on the banks of the Isis near High-bridge, and on Eynsham-common, Oxfordshire. It flowers in july and august.

The fresh leaves are bitter and somewhat pungent. Powdered they destroy worms. A decoction of the plant is a good fomentation in gangrenous cases<sup>b</sup>. It has a strong disagreeable scent, somewhat approaching to Garlick; whence its name of Scordium (from Σκορδον, Garlick). It was once in high esteem as an antiseptic and alexipharmic, to which it certainly had no claim. Bergius states it to be antiputredinous, tonic, diaphoretic, diuretic and resolvent. Others recommend it to be employed externally in antiseptic cataplasms and fomentations. Cullen says, it has a bitter, joined with some volatile parts, but that neither of these qualities is considerable enough to retain it in the present practice<sup>c</sup>.

Sheep and goats are said to eat this plant: horses, cows and swine to refuse it. If cows compelled by hunger eat it, their milk gets a garlick flavour<sup>d</sup>.

32. Root perennial, creeping. Stems bushy, almost upright, six or eight inches high, round, leafy, hairy. Leaves hairy, attenuated at the base, where they are entire, in the other parts deeply cut: from each axil a bunch of smaller leaves. Flowers from the upper axils, often three together, but sometimes single, opposite, pedicelled, forming a leafy spike. The upper part of the stem and the calyx are dusky purple. The upper segment of the calyx is broadest, the two lower ones narrowest, beset on the outside with white globules. Corolla reddish purple, with white globules also on the outside. Seeds naked<sup>e</sup>.

Retzius describes the stems as decumbent, with straight distinct hairs; the leaves acute, gash-serrate, rough-haired on both sides, about the length of the internodes. Bractes hairy on both sides; the lower like the leaves; the upper quite entire, concave, acute; those in the middle with fewer serratures. Flowers directed one way; the lower by twos, the upper by threes from each bracte. Calyx hirsute. Corolla pale purple, with the lower lip truncate, hollow. Genitals purple. Withering also affirms that

<sup>x</sup> L'Heritier.

<sup>y</sup> Hort. kew.

<sup>z</sup> L'Heritier.

<sup>a</sup> Smith brit. & engl. bot. Woodw. Mfs.

<sup>b</sup> Withering.

<sup>c</sup> Woodville.

<sup>d</sup> Withering.

<sup>e</sup> Smith, Wither. Woodw. Mfs.

the lower lip is truncate: but it is not so in the garden specimens now before me; nor are the leaves hairy on the upper surface.

Native of many parts of Europe, the islands of the Archipelago, and Palestine near Jerusalem. In England scarcely indigenous, being found chiefly on ruins of old buildings. Ray mentions his having found it more than once, but doubted whether it grew spontaneously. James Sherard found it plentifully on the ruins of Winchelsea Castle. Dr. Stokes, in the area of Carisbrook Castle in the Isle of Wight. Mr. Dickenson, on the rubbish of Whittington Castle, near Oswestry, in Shropshire. Mr. Crowe and Dr. Smith, on Norwich city-walls, between Magdalen and St. Austin gates. Dr. Sibthorp, on walls by Whitney, on the right-hand side of the old road leading to Burford. Dr. Abbot, at Warden in Bedfordshire. The late canon Holcombe, near St. David's.

Ray says that it occurs on the borders of corn fields far from any house, but still dared not assert it to be indigenous.

The Chamædrys or Germander has been esteemed chiefly as a mild aperient and corroborant: and was recommended in uterine obstructions, intermitting fevers, rheumatism and gout. Of the last mentioned complaint the Emperor Charles the Fifth is said to have been cured, by a vinous decoction of it, with some other herbs, taken for sixty successive days. It has been employed in various forms and combinations, of which the Portland powder is one of the most celebrated instances. Its qualities seem nearly allied to those of Marrubium or Horehound, and therefore it may be equally useful in asthmatic affections, coughs and infarctions of the lungs<sup>f</sup>.

Dr. Withering says, that the plant is bitter with a degree of aroma, and may be used with advantage in weak and relaxed constitutions.

β. Retzius describes this variety, as a lower plant, the stems decumbent, and somewhat tomentose, especially at the joints: leaves obtuse, less deeply serrate, shining, ciliate near the base, longer than the internodes: the manner of flowering, bractes, calyx and corolla as in the other, except that the bractes are blunt, and the colour of the corolla and genitals white. The odour also is weaker.

γ. This also is described as a smaller lower plant than the common, with procumbent and more hairy stems; the leaves smaller and of a paler green; the calyxes more hairy, greener, and not at all tinged with purple<sup>g</sup>.

33. This is easily known by its heterogeneous leaves, of different colours on the several branches. Flowers purple. It is a shrub, native of Madeira<sup>h</sup>. Cultivated in 1759, by Mr. Miller. It flowers in june<sup>i</sup>.

34. Root perennial, putting forth runners, whence rise straight smooth blackish stems. Leaves petioled, oblong, acutely crenate, nerved, smooth, shorter than the internodes. Flowers axillary, two on each side, purple. Calyxes brown<sup>k</sup>. It differs from T. Chamædrys, by the stem being a foot high, erect, smooth; not a palm high, diffused and hairy<sup>l</sup>.

Stems upright or decumbent, simple or sparingly branched, often purple. Leaves shining on the upper surface; the lower running into the petiole, bluntly toothed; the upper quite entire, sharpish. Flowers two, four or six together, in whorls, mostly directed one way, on pedicels shorter than the leaf, very shortly pubescent. Calyx oblong, somewhat gibbous at bottom, purplish, with five ovate, acute teeth. Corolla rose-coloured<sup>m</sup>.

Mr. Miller compares it with the next species.] It has a shrubby stalk like that, not rising so high, but branching out more, and covered with a short hairy down: the lower leaves ovate, crenate, of a lucid green on their upper side, but a little hoary on their under: the leaves between the flowers spear-shaped and entire: the spikes of flowers much longer, the

<sup>f</sup> Woodville.

<sup>g</sup> Morison.

<sup>h</sup> L'Heritier.

<sup>i</sup> Hort. kew.

<sup>k</sup> Lin. spec.

<sup>l</sup> Lin. syst.

<sup>m</sup> Desfontaines.



flowers themselves larger, and their colour more inclining to a yellow.

[Native of the South of Europe and Mount Atlas.—Cultivated in 1730 by Mr. Miller. It flowers from June to September<sup>a</sup>.

35. Stem shrubby, branched, pubescent, often procumbent at the base. Leaves ovate, shining above, pubescent beneath, crenate, obtuse, petioled; the upper ones quite entire. Whorls from two to six-flowered, distinct. Flowers pedicelled. Calyx pubescent tubular, five-cleft: segments acute, almost equal. Corolla pale yellow: the two upper segments long, linear, greenish, compressing the anthers on both sides, the middle side ones small, acute, straight; the lower lobe ovate, concave, quite entire: tube deeply cloven at top. Filaments bowed. Anthers saffron-coloured<sup>c</sup>.

Schreber is of opinion that the synonym from Morison does not belong to this species.]

According to Miller it is two feet high, and sends out many woody branches. Leaves a little waved, little more than an inch long, and three quarters of an inch broad near the base, upon short foot-stalks. The upper part of the branches for six or eight inches are adorned with flowers from the axils, two or three from each joint; they are of a dirty white colour, and appear in July; under each whorl stand two smaller leaves, which are entire and concave.

[ $\beta$ . The hairy variety remarked by Desfontaines, has the whorls clustered; the bractes and calyxes very villose.

Native of the South of Europe, and of Barbary.—It appears from Parkinson that it was cultivated here in 1640<sup>b</sup>.

36. Stem branched. Leaves like those of *T. hircanicum*, obtuse, petioled, pubescent. Whorls from four to six-flowered. Flowers on short pedicels. Calyx villose, oblong, five-toothed: teeth ovate, acute, almost equal. Corolla purple, the same size as in *T. Scordium*. Stamens standing out, on bowed filaments. Bractes six to eight, whorled, ovate, acuminate, petioled, villose: the lower ones toothed; the upper ones quite entire. It flowers early in the spring, and is found on the uncultivated hills near Mascar and Tlemcen<sup>c</sup>.

37. This and the following species are treated separately by Miller, under their old name of *Polium*. Of these he has fifteen species, some of which are varieties, and others not taken up by Linneus.

Mr. Miller thus describes this species] Root composed of many woody fibres, which spread wide. Hence arise several weak trailing, woody stalks eight or nine inches long, sending out many branches. Leaves small, of a deep green. Flowers white, appearing in June and July; but seldom succeeded by seeds in England. There is another sort (or variety) with much smaller leaves, hoary on their under side.

[Native of Germany, France, Switzerland, Austria, Piedmont.—Cultivated in 1711, as appears from Salmon's herbal<sup>d</sup>.

38. This is allied to the preceding. Leaves quite entire, acute, in clusters. Flowers white<sup>e</sup>. It is the second *Polium* of Miller's second volume of his Dictionary published in 1739; and was therefore at that time cultivated by him<sup>f</sup>: but he omitted it in the later editions of his book.

Jacquin describes it as having a perennial woody root. Stems many, spread in a ring, shrubby. Branches round, annual, ascending, half a foot long, appearing villose with a magnifier. Leaves lanceolate-linear, sharpish, quite entire, subsessile, smooth and green above, wrinkled and hoary beneath, slightly rolled back at the edge. Heads of flowers close, erect; pedicels very short, but lengthened in fruiting. Calyx mucronate, often tinged with purple. Corolla white.—Native of Austria, in mountains.]

39. This has slender shrubby stalks, which trail close upon the ground; they have a purple bark, and

are covered with white hairs: the leaves are round at the top, but at their base are contracted in form of a wedge, so as to resemble at first sight the leaves of Ground-Ivy, but they are hairy, and of a thicker consistence: the flowers are collected in round bunches at the end of the branches; the corolla is large, and one half of it is purple, the other white. It flowers great part of the summer, but seldom produces seeds here. It grows naturally on the Pyrenean mountains. [Cultivated in 1731, by Mr. Miller<sup>g</sup>.

40. Stems suffruticose, round, procumbent. The whole plant tomentose and hoary. Leaves oblong, lanceolate or almost linear. Flowers sessile, close and lying over each other, small. Bractes the length of the calyx. Corolla yellow: the middle segment concave, entire<sup>h</sup>.

Native of the South of Europe, the Levant, and Barbary.—It appears from Turner's herbal, that it was cultivated here in 1562<sup>i</sup>. Linneus has several varieties, some of which other authors consider as distinct species. Mr. Miller has multiplied the varieties very much.]

$\alpha$ . The common Yellow Poley has the stalks rather herbaceous and trailing, about six inches long and hoary: leaves woolly, about half an inch long, some wedge-shaped, others oblong ending in obtuse points, and crenate towards their ends: flowers collected in oblong thick spikes at the end of the branches, of a deep yellow colour, and appearing at the beginning of June. It grows naturally in Spain.

Narrow-leaved Yellow Poley (*n. 3.*) has woody stalks, erect, branching, and covered with a hoary down, rising six or eight inches high: leaves linear, woolly, about half an inch long, having sometimes two or three slight indentures on their edges: flowers collected in roundish spikes at the end of the branches; they are bright yellow, have woolly calyxes, and appear in June and July. This grows naturally in Spain and Portugal.

[Schreber separates this under the name of *Teucrium aureum*; and Villars, under that of *T. tomentosum*. According to the latter it is smaller than the white, the stems more cottony, the leaves cut on the sides and at the end, a little like those of the *Chamaedrys*, but as small again, of a deep yellow, and the lower lip hollowed like the bowl of a spoon and lengthened out: the whole plant is covered with a yellowish cotton, which is more apparent at the top where the flowers are.

$\beta$ . According to Villars the White Poley is intermediate between the preceding variety and the capitatum, which is our next species. The stems are a foot long and trailing; the leaves are a little cottony, entire on the sides, but toothed at the end; the flowers are pretty large, white tinged a little with purple.]

Miller describes it, as having a trailing branching stalk, which at the bottom is woody, but the branches herbaceous and woolly: the leaves linear-lanceolate and woolly, indented on their edges: the flowers produced in a corymb at the end of the branches, small and white; appearing in June and July. It grows naturally in the South of France and in Italy.

Some of his other species may probably be reduced to this: as *Polium latifolium*, *n. 7.* which has a woody erect branching stalk, near a foot high, very hoary, and branching out towards the top; the leaves lanceolate, indented on their edges, and woolly on their under side; the flowers white, small, and growing in clusters at the end of the branches. This and the next flowers in June and July, and grow naturally in Italy and Spain.

*P. erectum*, *n. 8.* rising with a shrubby stalk nine or ten inches high, branching out towards the top in form of a corymb; the leaves linear, and reflexed on the edges; the flowers collected in roundish woolly heads at the end of the branches, white and small.

And perhaps *P. spicatum*, *n. 10.* which has slender shrubby stalks, rising a foot and half high, smooth and white sending out a few short branches towards the top; leaves small, linear, growing in clusters;

<sup>a</sup> Hort. kew.

<sup>c</sup> Desfontaines.

<sup>d</sup> Hort. kew.

<sup>e</sup> Desfontaines.

<sup>f</sup> 880. *n. 3.* Hort. kew.

<sup>g</sup> Linn. spec. & syst.

<sup>h</sup> Hort. kew.

<sup>i</sup> Hort. kew.

<sup>x</sup> Desfont. & Scopoli.

<sup>y</sup> Hort. kew.



the flowers collected in long cylindrical spikes, which stand in bunches at the top of the stalks, and sometimes come out in bunches on the sides; they are small and white, and appear in July and August.—Native of Sicily.

[ $\gamma$ . Villars considers this and the next variety, as mere varieties of the album.

$\delta$ . This is made a separate species by Schreber and Willdenow.—Native of the shore of the Adriatic<sup>z</sup>.

41. Shrubby branched at the base. Branches round, tomentose, erect. Leaves sessile, linear-lanceolate, obtuse, often ternate. Flowers corymbed, headed, close. Calyxes villose-tomentose. Corolla small, pale yellow or white<sup>a</sup>.

It has the habit of *Origanum Majorana*, but it is tomentose and has narrow leaves<sup>b</sup>.—Native of France, Spain, Barbary and Siberia.]

$\beta$ . This has an erect branching stalk, which rises a foot high; the lower part becomes woody, but the upper is herbaceous; the leaves are linear-lanceolate, about an inch long, crenate, of a pretty thick consistence, and a little woolly; the flowers collected in a corymb at the end of the branches, white, appearing in July and August.

[According to Villars, it does not creep like the others; the stems rise a foot or more, and are terminated by a lengthened spike, which is often interrupted; the villose leaves are more pointed, in other respects they resemble those of the white Poley; the flowers also are white.

Gerard considers this as a variety of *T. Polium*. Also remarks, that besides other differences, it flowers much later.

Native of the South of France and Italy.—Cultivated by Mr. Miller in 1731<sup>c</sup>.

42. Native of Spain. Tournefort's plant is considered as a new species under the name of *Teucrium Libanitis*, n. 67.

43. Flowers two axillary peduncled, one from each side of the spine<sup>d</sup>.

*Teucrium mucronatum*, which Linneus had made a distinct species, is only a variety, with white reflexed corollas, and very short stamens<sup>e</sup>.

This is an annual plant, native of the hills and fields of Portugal.

44. This is a procumbent shrub, allied to *T. capitatum*: but it has the leaves and calyxes scarcely tomentose, the peduncles leafy, and the corollas violet-coloured.—Native of Barbary, in the uncultivated fields near Mascara<sup>f</sup>.

45. Herbaceous: the whole plant very smooth. Leaves like those of the *campanulatum*, the uppermost three-parted, with the segments quite entire. Calyxes bell-shaped, five-cleft; the segments lanceolate, with a raised line along the back.—Native of Buones Ayres.

46. Stems a span high, ascending, hoary, mucronated from the fallen leaves; the younger branches tomentose. Leaves on these only, sessile, green with a slender nap, which is thicker underneath, soft, rolled back a little, obtuse. Peduncles three from the uppermost axils on each side, the height of the stem. There is a ternate leaf at the base of each head of the same structure with the stem-leaves. Calyxes tomentose, bluntly toothed.—Native of Spain and Barbary.

47. This is a small shrub, covered wholly with a thick white wool, which becomes yellowish towards the top, and is very much branched; the branches are prostrate and diffused. Leaves sessile, clustered, obtuse. Flowers at the end of the branches, opposite, in clusters. Calyxes larger than in the other species, subglobular, obtuse. Seeds wrinkled<sup>g</sup>.

It differs from *T. Polium*, in having solitary loofish flowers scarcely in heads; and not in round heads; the leaves also are linear not oblong<sup>h</sup>.

Found in Spain, on mountains near Saguntum and Guadalaxara, by Vahl.

<sup>z</sup> Willdenow.

<sup>a</sup> Hort. kew.

<sup>b</sup> Desfontaines.

<sup>c</sup> Desfontaines.

<sup>d</sup> Linn. spec.

<sup>e</sup> Vahl.

<sup>f</sup> Linn. spec.

<sup>g</sup> Linn. syst.

<sup>h</sup> L'Heritier.

48. Differs from *inflatum* by its hairiness, leaves very hairy on both sides and narrower, with teeth longer towards the base, bractes lanceolate-acute, and teeth of the calyx mucronate.—Native of Tongatabu in Australasia<sup>i</sup>.

49. Stem shrubby, upright, round, five feet high, with spreading branches. Leaves ovate-oblong, blunt, smooth, opposite, petioled. Corolla pale, five-cleft, with a short tube, and the segments blunt, the upper ones divaricating. Stamens very long.—Native of Cochinchina, by hedges.

50. Stem shrubby, eight feet high, smooth, round, branched. Leaves ovate-oblong, acute, quite entire, petioled, smooth, opposite. Flowers white.—Native of Cochinchina among bushes, where the natives use it as tea, to promote digestion, and to relieve an overloaded stomach<sup>k</sup>.

51. Stem four-cornered, rough-haired, branched, leafy. Leaves opposite; the larger cut with a lobe, the smaller with a sharp tooth on each side, in other parts entire, rugged above, tomentose beneath, with a yellowish nap scarcely perceptible. Peduncles opposite, the length of the internodes. Calyx bell-shaped, spreading, five-toothed: teeth lanceolate, almost equal; pubescent. Corolla purplish, with the lip pubescent on the outside, deeply three-lobed, the middle lobe reflexed, concave, emarginate. Stamens long. Style longer. Stigma bifid, one segment shorter, both reflexed. Seeds roundish, wrinkled, large in proportion to the calyx.—Native of the Cape of Good Hope<sup>l</sup>.

52. Like the *orientale* in the leaves and inflorescence; but differs in having the racemes more elongated, the peduncles longer, and the corollas scarcely longer than the calyxes, which in that are much longer. Found by Tournefort in Armenia.

53. This is a shrub resembling *Lavandula Stoechas*. Leaves hoary on both sides, rolled back at the edge, veined beneath. Peduncles long, solitary, in the axils of the upper leaves. Calyxes hoary, bluntly toothed. Corolla large, pubescent on the outside.—Native of Candia on the coast<sup>m</sup>.

54. Stem shrubby. Leaves small, shining, hoary beneath, acute, floral ones the length of the calyx. Corolla purple, with linear elongated earlets.—Native of Spain<sup>n</sup>.

55. Stem erect, grooved, smooth, a foot high and more: branches from divaricate-erect, rod-like. Leaves acute, smooth, pale beneath, an inch or more in length, on petioles only half the length of the leaves. Racemes subdistich, erect, unequal, the longest a finger's length. Bractes lanceolate, acute, entire, ciliate and rugged, a little longer than the peduncle. Peduncles capillary, one-flowered, scarcely a line in length. Calyxes angular, slightly awned, ciliate and rugged. Corollas narrow, twice as long as the calyx. It varies with doubly ferrate, unequally ferrate, and gashed leaves<sup>o</sup>.

Thunberg took it for the *virginicum*, to which it is near allied, but less in stature, with the leaves doubly ferrate and rounded at the base, not gradually attenuated into the petiole: the flowers also are smaller and drooping, the raceme compound at the base, the bractes linear and of the same length with the calyx<sup>p</sup>.—Native of Japan.

56. Root perennial, woody. Stem erect, pubescent, somewhat clammy. Leaves unequally crenulate, rounded at both ends, silky-hoary above, whitish beneath, shortly petioled, like those of Sage, but smaller. Raceme short. Calyx hairy, half-five-cleft; teeth lanceolate, the upper tooth a little wider than the rest. Corolla villose on the outside, with a tube the length of the calyx.—Native of Portugal.

57. Root perennial. Stem woolly, higher than in *Scordium*. Leaves wrinkled, less deeply crenate, covered with white wool: branch-leaves smaller. Flowers larger.—Native of Candia.

58. Stem shrubby, smooth, densely hairy on both

<sup>i</sup> Forster.

<sup>j</sup> Willdenow.

<sup>k</sup> Loureiro.

<sup>l</sup> Schreber.

<sup>m</sup> Willdenow.

<sup>n</sup> Retzius.

<sup>o</sup> Thunberg.



files from the point where the leaves meet. Leaves on short petioles, entire at the base, but cut in front with obtuse notches bent back at the edge; they are smooth and shining with the midrib bearded at the base, blunt and hard: the floral leaves are almost lanceolate, more hairy than in flavum, as are also the calyxes. The flowers are smaller. Corolla purple, with smaller earlets, which are blunt but not truncate. —Native of Barbary.

59. Stem shrubby, a finger's length, covered with a white nap, branched. Leaves clustered, ovate or ovate-lanceolate, hoary, bent back at the edge and obscurely crenate all round; they are small and on very short petioles. Flowers four or five, erect, sessile. Calyx even, hoary, mucronate. Corolla purple. —Native of the kingdom of Valentia in Spain.

60. Stem shrubby, decumbent or hanging from the rocks. Leaves less than in pyrenaicum, slightly cut out like reniform leaves at the base, the rest of the circuit almost orbicular, deeply and bluntly crenate, bent back at the edge, the upper surface green, but covered with soft hoary hairs, which on the lower surface are denser and longer, chiefly adhering to the veins and filling the interstices between them. Corymbs roundish, few-flowered. Floral leaves lanceolate, naked above, obtuse, shorter than the calyx. Calyx angular with ten streaks, villose, acuminate. —Native of Valentia, on the rocks of the highest mountains.

61. This also is a native of the kingdom of Valentia on mountains.

62. This is confounded with Yellow Germander, (which is not distinguished from the white by Linnaeus, but is made a separate species by Schreber and Willdenow, under the name of aureum.) It agrees with that in stature, in the whiteness and delicacy of the wool on the stem and leaves, and in having the leaves crenate with a narrower entire base, which however is wider on the flowering branches: but it differs in having the leaves narrower and lanceolate, (on the young shoots linear;) the heads small and few-flowered; the calyx shorter, clothed not with hairs, but with a close nap, neither angular nor keeled; the tops not of a gold, but of an elegant sulphur colour. Schreber saw only three conglobate heads at the top of the stems. Barrelier has several lateral ones in his figure. —Native of the South of France. —This is perhaps *Polium angustifolium* of Miller, n. 3.

63. This differs from the white Poley (40.  $\beta$ .) in having a more slender stalk; the leaves not shorter but very narrow, obscurely crenate, covered with a very thin nap, which is a little closer and hoary on the under side, blunt at the end; heads numerous, smaller, hoary, on almost equal leafy branchlets; flowers smaller. The floral leaves equal to the calyx, which is covered with a thin whitish nap, and has the mouth blunt, more closely tomentose. —Native of Valentia.

64. Root woody. Stem ascending, clothed with a thin white nap. Leaves long, narrower at the base, cut into small reflexed notches from the middle, wrinkled, green but becoming hoary with a thin nap, more so on the under surface, obtuse, the upper ones shorter and twice as broad. Heads roundish, few-flowered, at the top of the stem, and at the ends of the branches, which are elongated and trifid. Floral leaves longer than the calyx. Flowers erect, the lower ones spreading. Calyx angular, closely tomentose. Corolla white. It is larger than *T. pseud-hysopus* (40.  $\alpha$ .); greener and the flowers bigger; of the same size as in Yellow Poley (40.  $\alpha$ .) The leaves are sometimes in threes. —Native of Portugal.

65. The whole plant is covered with a very thick white nap. Stem a span high, procumbent at the base, with ascending branches, and very short branchlets, closely leafy, springing on every side from the axils. Leaves obtuse, with a few indistinct notches towards the tip. Heads small, one terminating and others lateral, on peduncles of a middling length. Floral leaves ovate, obtuse. Calyx minute, tomentose. Corolla white. —Native of Spain.

66. Native of Valentia. Shrubby. Leaves narrow-lanceolate or linear.

67. Shrubby. Stem erect. Leaves like those of Rosemary. Spikes ovate or roundish, leafy. Flowers red. —Native of Spain.

68. Shrubby. —Native of Spain.

69. Shrubby. —Native of the highest mountains of the kingdom of Valentia, especially by the Carthusian monastery called *Porta Coeli*, whence the trivial name.]

## PROPAGATION AND CULTURE.

1. Sow the seeds in the spring where the plants are to remain; when they come up, thin them where they are too close, and keep them clean from weeds. They ripen their seeds the first year, but if they are in a warm situation will live through the winter.

3. This is propagated in the same way; but if the seeds be sown in autumn, or permitted to scatter when ripe, they will succeed better than if sown in the spring, and the plants will come earlier to flower.

4. If the seeds be permitted to scatter, the plants will come up better than if sown, and require no care but to thin them, and keep them clean from weeds.

5. Part the roots in autumn, or sow the seeds at that season. It loves an open situation exposed to the sun, but will thrive in almost any soil which is not too moist.

7. Sow the seeds in autumn, or permit them to scatter, in which way they succeed best.

9, 10. These may be increased by cuttings planted in the spring on a bed of fresh light earth; shading and watering them until they have taken root; and keeping them clear from weeds until the following autumn, when they may be transplanted into pots, taking them up with a ball of earth about their roots, and watering them until they have taken new root. During the winter they must be kept in the greenhouse with hardy exotics.

14. This sort is easily propagated by slips or cuttings, planted during the summer months on a bed of light loamy earth, covering them down close either with bell or hand-glasses, and shading them from the sun. When they have made good roots transplant them either into separate small pots, or on a warm border, at about six inches distance every way: shading them from the sun, and watering them until they have taken new root; after which they will require no other care, but to keep them clean from weeds. These plants will live through the winter in the open air, on a dry soil and in a warm situation, when the frosts are not very severe; but in hard winters they are frequently killed, if not protected by mats or other covering.

20, 24. Sow the seeds in small pots in autumn, and plunge them into the tan-bed in the stove between the other pots; in spring plunge them into a hot-bed, which will bring up the plants. When these are fit to remove, plant each in a separate pot, plunge them into a hot-bed, and treat them in the same way as directed for tender plants from the West Indies.

22, 23. Sow the seeds in autumn on a bed of light earth. They may also be increased by parting the roots, and are hardy enough to thrive in the open air.

27. Wood Sage may be propagated by seeds or parting the roots; it will grow in any soil or situation, but being common in woods and thickets, is rarely admitted into gardens.

29. This may be propagated by seeds or cuttings, in the same manner as n. 9 & 10. but the plants should have a dry soil and a warm situation, otherwise they will not live through the winter in the open air in England. [A plant or two of this and other doubtful species, should be kept in the greenhouse during winter for security.

30, 33. These may be increased both by seeds and cuttings; and must have the protection of the greenhouse in winter.]

31. Water Germander may be propagated by its creeping roots, or planting the young shoots in the



spring, in the same manner as Mint, Penny-royal, &c. and should have a moist soil.

32. Common Germander propagates very fast by its creeping roots, and will thrive in almost any soil or situation. Transplant it in autumn.

34. 35. These may be increased by cuttings in the same manner as n. 9. 10. Also by seeds, which they generally produce in plenty. Sow them on a bed of light earth in april; the plants will come up in six weeks, and may be transplanted in autumn where they are designed to remain.

37 to 41. All these are abiding plants; they may be propagated by seeds, which must be procured from the countries where they naturally grow, because they seldom perfect their seeds in England. These should be sown upon a bed of fresh light earth in the spring, and when the plants come up, they must be carefully kept clean from weeds; about the middle of july the plants will be fit to remove, when they may be carefully taken up, and part of them planted on a warm border of dry rubbishy soil, observing to shade them from the sun, and water them till they have taken new root; after which they will require no other culture but to keep them clean from weeds. My advising these and many other aromatic plants, which are natives of the warmer parts of Europe, to be planted in rubbish, is founded upon long experience of their abiding much longer, and resisting the cold of our winters much better, than when they are in better ground, where they grow much freer, are fuller of moisture, and therefore more liable to be killed by frost.

The other part of the plants may be planted in small pots, filled with fresh, light, undunged earth, and placed in the shade till they have taken new root; then they may be removed into an open situation, where they may remain till the beginning of november, when they should be placed under a common frame, to secure them from the frost in winter, which sometimes destroys these plants; by this method the species may be preserved.

These plants may be mixed advantageously with Marum and other aromatic plants, upon the sloping sides of banks exposed to the sun, or upon little hillocks in a sheltered situation, where by the variety of their hoary branches they will make a pretty appearance, and resist the cold much better than when they are planted in a good soil.

They may also be increased by cuttings or slips, planted at the beginning of april, just before they shoot, upon a border exposed to the east: if the season prove dry, they must be watered and shaded until they have taken root; and being kept clean from weeds, at Michaelmas the plants should be removed where they are designed to remain. But it will be proper to put a plant of each sort in a pot, that they may be sheltered in winter.

[TEUCRIUM. See *Ajuga*, *Bartsia*, *Dryas*, *Prasium*, *Scutellaria*, *Trichostema*, *Veronica*.

THALIA. (So named by Linneus, in memory of John Thalius, a physician at Nordbuys; author of *Plantæ Hercyniæ*, 1588.)

*Lin. gen. n. 8. Reich. n. 8. Schreb. n. 10. Juss. 63. Cortusa. Plum. 8.*

Class. 1. 1. Monandria Monogynia.

Nat. order of *Scitamineæ*. *Cannæ* Juss.

#### GENERIC CHARACTER.

CAL. Perianth, scales three, very small, ovate, ciliate, permanent, crowning the germ.

COR. Petals five, superior, shrivelling, in a double row: three outer longer, oblong, waved, connate at the base, spreading: two inner smaller, from erect spreading, oblong, connate with each other and the nectary at the base.

Nectary petal-shaped, opposite to the smaller petals, lanceolate, acuminate, concave.

STAM. Filament one, awl-shaped, inserted into the nectary. Anther club-shaped.

PIST. Germ turbinate, crowned with the calyx. Style filiform, bent in. Stigma leafy, bent in.

PER. Drupe oblong, gibbous, one-celled.

SEED one, awl-shaped, bent in. (Nut bony, two-celled?)

#### ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. five-petalled: two inner petals less. Nect. lanceolate, concave. Drupe with a one-celled nut.

#### SPECIES.

1. *Thalia geniculata*.

*Lin. spec. 3. syst. 51. Reich. 1. 6. Willd. 1. 15.*

*Rottb. collect. havn. 2. 249. t. 2. Swartz obs. 8.*

*Cortusa arundinacea*, amplis cannacori foliis. *Plum. gen. 26. ic. 108. f. 1.*

*Aguti-guepo-obi. Marcgr. bras. 53. Raii hist. 1203.*

*Corollas five-petalled, nectary lanceolate.*

2. *Thalia cannaeformis*.

*Lin. spec. ed. Willd. 1. 16. Forst. prodr. n. 3.*

*Symes Ava 473. cum. ic.*

*Corollas six-petalled, nectary bifid erect.*

#### DESCRIPTIONS, &c.

1. Leaves alternate, ovate-oblong, with transverse parallel nerves: petioles round, furnished with a joint, below membranaceous and sheathing\*.

Stem taller than a man, quite simple. The American Indians use it for a dart wherewith to kill animals†.

The synonyms from Browne, Sloane, Ray, Plukenet and Bauhin appertain to *Maranta arundinacea*.

Linneus, not having seen this plant, made out the character from Plumier's figure.

Rottboell's plant, referred to above, is perhaps different from this, and seems to be very nearly allied to the next species.—Native of South America.

2. Culm solid, round, smooth, branched. Branches jointed, divaricating. Leaves on the stem, alternate, spreading, oval, quite entire, smooth, with numerous lateral, ascending, parallel nerves. Petiole jointed, round above, membranaceous below, sheathing, embracing, opposite to a branchlet. Stipule solitary, opposite to the petiole, often the length of the sheaths, awl-shaped, channelled at the back: besides this, there are sometimes scattered stipules below the leaves. Panicle pendulous, opposite to a leaf: rachis flexuose, jointed, compressed; joints glume-bearing at the end: glumes two-valved, two-flowered, permanent, involving the peduncle; lower valve length of the peduncle, harder, embracing the upper, which is thinner and coloured: peduncle coloured, club-shaped, bifid, fleshy: flowers white, solitary, sitting on the tips of the pedicel; each having the rudiment of another at the base. Calyx three-parted, superior, very short, coloured: segments erect, acuminate. Corolla one-petalled, irregular: tube three-cornered: border double; three outer segments equal, lanceolate, spreading, acuminate, waved; of the inner segments two wider, spreading; the third short, cowed, covering the genitals. Filament petaloid, two-parted: segments sickle-shaped. Anther club-shaped, growing to the margin of the right segment of the filament. Germ inferior, small. Style cylindric, length of the filament, growing to the tube of the corolla at the base, curved in at the tip, free. Stigma concave\*.

Native of Mallicollo, one of the New Hebrides, in Australasia; and found in the Andaman isles, and Rangoon, in the kingdom of Pegue, by Dr. Buchanan†.

THALIA MARAVARA. See *Epidendrum*.

THALICTROIDES. See *Cimicifuga*.]

THALICTRUM (of Pliny. *Θαλικτρον* of Dioscorides. From *θαλλω*, vireo: to flourish or look green, being full of leaves.)

*Lin. gen. n. 697. Reich. n. 755. Schreb. n. 951.*

*Tournef. t. 270. Juss. 232. Gært. t. 74.*

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Multifloræ*. *Ranunculaceæ* Juss.

#### GENERIC CHARACTER.

CAL. none: unless the corolla be taken for it.

COR. Petals four, roundish, obtuse, concave, caducous.

STAM. Filaments very many, wider at top, compressed, longer than the corolla. Anthers oblong, erect.

\* Linn. spec.

† Swartz obs.

\* Rolander in Rottb. act. havn. 2. 251.

† Symes's Ava. † Forster & Symes.



PIST. Styles very many, very short. Germs many, commonly pedicelled, roundish. Styles none. Stigmas thickish.

PER. none.

SEEDS many, grooved, ovate, tailless.

OBS. *T. tuberosum* and *cornutum* have a five-petalled corolla.

*T. dioicum* has the sexes distinct.

*T. aquilegifolium* and *contortum* have the seeds pedicelled, pendulous, and three-sided with wings.

Number of stamens and pistils different in the several species.

#### ESSENTIAL CHARACTER.

Cal. none. Pet. four or five. Seeds tailless.

#### SPECIES.

1. *Thalictrum alpinum*. Alpine Meadow Rue.  
*Lin. spec.* 767. *syst.* 513. *Reich.* 2. 645. *Willd.* 2. 1295. *hort. cliff.* 227. *fl. lapp.* n. 225. *suec.* n. 491. *Huds. angl.* 238. *Wither. arr. ed.* 3. 500. *Smith brit.* 584. *engl. bot. t.* 262. *Lightf. scot.* 286. *t.* 13. *f.* 1. *Fl. dan.* t. 11. *Gumm. norv.* n. 41.  
*T. minimum montanum atrorubens*, foliis splendentibus. *Raii syn.* 204. *Boerb. lugdb.* 1. 44. *t.* 1.  
*T. minimum præcox*, fol. splendentibus. *Mor. hist.* 3. 325. *f.* 9. *t.* 20. *f.* 14.  
*Stem quite simple almost naked, raceme simple terminating.*
2. *Thalictrum fœtidum*. Fetid Meadow Rue.  
*Lin. spec.* 768. *syst.* 513. *Reich.* 2. 645. *Willd.* 2. 1295. *hort. cliff.* 227. *Sauv. monsp.* 251. *Allion. pedem.* n. 1073. *Hall. belv.* n. 1140.  
*T. minimum fœtidissimum*. *Baub. pin.* 337. *prodr.* 147. *Baub. hist.* 3. 488. *Park. theat.* 265. n. 8. *Raii hist.* 404. *Mor. hist.* 3. 325. *f.* 9. *t.* 20. *f.* 13. *Pluk. phyt.* t. 65. *f.* 4.  
*Stem panicled filiform very branching leafy.*
3. *Thalictrum tuberosum*. Tuberous-rooted Meadow Rue.  
*Lin. spec.* 768. *syst.* 513. *Reich.* 2. 645. *Willd.* 2. 1296. *hort. cliff.* 226. *Mill. fig. t.* 265. *f.* 2.  
*T. minus, asphodeli radice*, magno flore. *Tourn. inst.* 271.  
*T. minus, grumosa radice*, floribus majoribus. *Herm. flor.* 9. *Boerb. lugdb.* 1. 45.  
*Ranunculus thalictri folio*, asphodeli radice. *Mor. hist.* 2. 438. *f.* 4. *t.* 28. *f.* 13.  
*Oenanthe hederæ foliis*. *Baub. pin.* 163.  
*Flowers five-petalled, root tuberous.*
4. *Thalictrum Cornuti*. Canadian Meadow Rue.  
*Lin. spec.* 768. *Reich.* 2. 646. *Willd.* 2. 1296. *Ait. kew.* 2. 262.  
*T. canadense*. *Corn. canad.* 168. *Raii hist.* 403. *Mill. dict.* n. 5.  
*T. americanum*. *Park. theat.* 265.  
*T. majus*, foliis aquilegiæ, flore albo. *Mor. hist.* 3. 325. *f.* 9. *t.* 20. *f.* 15.  
*Flowers dioecious, leaflets ovate trifid, panicles terminating.*
5. *Thalictrum dioicum*. Dioecious Meadow Rue.  
*Lin. spec.* 768. *Reich.* 2. 646. *Willd.* 2. 1296. *Ait. kew.* 2. 262.  
*Flowers dioecious, leaves roundish cordate lobed, lobes obtuse, peduncles axillary shorter than the leaf.*
6. *Thalictrum elatum*. Tall Meadow Rue.  
*Lin. syst.* 513. *Willd.* 2. 1297. *Jacqu. hort.* 3. 49. *t.* 95.  
*Leaflets ovate subcordate subtrifid, panicle terminating, flowers erect, stem roundish.*
7. *Thalictrum majus*. Great Meadow Rue.  
*Lin. syst.* 513. *Willd.* 2. 1297. *Jacqu. austr.* 5. t. 420. *Hofst. syn.* 306. *Smith brit.* 585. *engl. bot. t.* 611. *Wither. arr. ed.* 3. 502.  
*Leaflets roundish subcordate trifid glaucous beneath, panicle leafy, flowers drooping.*
8. *Thalictrum medium*. Middle Meadow Rue.  
*Lin. syst.* 513. *Willd.* 2. 1297. *Jacqu. hort.* 3. 50. *t.* 96.  
*Leaflets oblong wedge-shaped acute trifid, the uppermost undivided lanceolate, flowers nearly upright.]*
9. *Thalictrum minus*. Small Meadow Rue.  
*Lin. spec.* 769. *syst.* 513. *Reich.* 2. 646. *fl. suec.* n. 489. *Huds. angl.* 238. *Wither. arr. ed.* 3. Vol. II.

501. *Smith brit.* 584. *engl. bot. t.* 11. *Lightf. scot.* 285. *Relb. cant. ed.* 2. n. 453. *Fl. dan.* t. 732. *Hall. belv.* n. 1139. *Hoffm. germ.* 192. *Roth. germ.* 1. 233. 2. 597. *Jacqu. austr.* 5. 9. t. 419. *Scop. carn.* n. 674. *Pollich pal.* n. 522. *Krock. files.* n. 861. *Villars dauph.* 3. 713. *Allion. pedem.* n. 1074. *Segu. veron.* 476. t. 11. *Baub. pin.* 355. *Dod. pempt.* 58. 2. *Ger.* 1067. 2. *emac.* 1251. 2. *Park. theat.* 264. 5. *Raii hist.* 404. *syn.* 203. *Mor. hist. f.* 9. t. 20. *f.* 12.  
*T. minus*, f. *Rutæ pratensis* genus minus, femine striato. *Baub. hist.* 3. 487. 3.  
*Ruta pratensis minor*. *Tabern. ic.* 55.  
β. *T. montanum minus*, foliis latoribus. *Raii syn.* 204.  
*Leaves tripinnate, leaflets trifid glaucous, flowers panicled drooping.*
10. *Thalictrum rugosum*. Rough Meadow Rue.  
*Lin. spec. ed.* Willd. 2. 1298. *Ait. kew.* 2. 262.  
*Stem striated, leaves wrinkled veined, lobules blunt.*
11. *Thalictrum sibiricum*. Siberian Meadow Rue.  
*Lin. spec.* 769. *Reich.* 2. 647. *Willd.* 2. 1298. *Gartn. fruct.* 1. 355.  
*T. orientale minimum fumariæ folio*. *Tournef. cor.* 20.  
*Leaves three-parted, leaflets subreflexed sharply cut, flowers drooping.*
12. *Thalictrum squarrosum*.  
*Lin. spec. ed.* Willd. 2. 1299.  
*Leaflets trifid and undivided, petioles embracing membranaceous winged, flowers drooping.*
13. *Thalictrum purpurascens*.  
*Lin. spec.* 769. *Reich.* 2. 647. *Willd.* 2. 1299.  
*T. virginianum elatius glaucum*, staminibus purpurascens. *Mor. hist.* 3. 324. 6.  
*Leaves three-parted, stem twice as high as the leaves, flowers drooping.]*
14. *Thalictrum angustifolium*. Narrow-leaved Meadow Rue.  
*Lin. spec.* 769. *syst.* 513. *Reich.* 2. 647. *Willd.* 2. 1299. *hort. cliff.* 226. *amoen.* 3. 48. *Hall. belv.* n. 1137. *Hoffm. germ.* 192. *Roth. germ.* 1. 233. 2. 597. *Pollich pal.* n. 523. *Scop. carn.* n. 676. *Krock. files.* n. 862. *Allion. pedem.* n. 1075. *Kniph. cent.* 5. n. 86.  
*T. Bauhini*. *Crantz austr.* 105. n. 1.  
*T. pratense angustifolium folio*. *Baub. pin.* 337. *prodr.* 146. *ic.* *Pluk. phyt.* t. 65. *f.* 6. *Park. theat.* 265. n. 7. *Raii hist.* 404. 9. *Tournef. inst.* 271. *Mor. hist. f.* 9. *t.* 20. *f.* 8.  
β. *T. pratense angustifolium*. *Baub. pin.* 337. *Raii hist.* 404. 8.  
*T. minimum*. *Park. theat.* 265. 6.  
*T. angustifolium*. *Crantz austr.* 105. n. 2.  
*Leaflets lanceolate-linear quite entire.*
15. *Thalictrum flavum*. Common Meadow Rue.  
*Lin. spec.* 770. *Reich.* 2. 648. *Willd.* 2. 1300. *hort. cliff.* 226. *fl. suec.* n. 488. *Huds. angl.* 239. *Wither. arr. ed.* 3. 501. *Smith brit.* 585. *engl. bot. t.* 367. *Relb. cant. ed.* 2. n. 454. *Sibth. oxon.* n. 487. *Fl. dan.* t. 939. *Hall. belv.* n. 1138. *Hoffm. germ.* 192. *Roth. germ.* 1. 233. 2. 598. *Pollich pal.* n. 524. *Neck. gallob.* 236. *Krock. files.* n. 864. *Scop. carn.* n. 673. *Villars dauph.* 3. 712. *Allion. pedem.* n. 1076. *Gmel. it.* 1. 139. *Kniph. cent.* 5. n. 87.  
*T. pratense*. *Lin. lapp.* n. 224.  
*T. nigricans*. *Jacqu. austr.* 5. 10. t. 421. *Lin. syst.* 513. *Willd.* 2. 1301.  
*T. nigrius*, caule & femine striato. *Baub. hist.* 3. 486.  
*T. majus*, filiqua angulosa f. striata. *Baub. pin.* 336.  
*T. magnum*. *Dod. pempt.* 58. 1.  
*T. f. Thalictrum majus*. *Raii hist.* 403. *syn.* 203. *Petiv. brit.* t. 71. *f.* 9.  
*T. majus vulgare*. *Park. theat.* 264. 1. *Mor. hist. f.* 9. *t.* 20. *f.* 1. *ord.* 2.—*f.* 3. var.  
β. *T. speciosum*. *Mill. dict.* n. 2.  
*Leaves bipinnate, leaflets trifid, stem grooved, panicle branched very much and contracted, flowers erect.*



- [16. *Thalictrum simplex*. *Simple-stalked Meadow Rue*.  
*Lin. syst.* 513. *Reich.* 2. 648. *Willd.* 2. 1301.  
*mant.* 78. *fl. suec. n.* 490. *Fl. dan. t.* 244.  
*T. angustifolium*. *Villars dauph.* 3. 712.  
*Stem leafy quite simple angular.*]
17. *Thalictrum lucidum*. *Shining-leaved Meadow Rue*.  
*Lin. spec.* 770. *Reich.* 2. 649. *Willd.* 2. 1301.  
*Dalib. par.* 162. *Pluk. phyt. t.* 65. f. 5.  
*T. minus alterum parisiensium*, *foliis crassioribus & lucidis*. *Tournef. inst.* 271.  
*T. l. vel pratense l.* *Clus. hist.* 1. 234.  
*Stem leafy grooved, leaves linear fleshy.*
18. *Thalictrum aquilegifolium*. *Columbine-leaved Meadow Rue* or *Feathered Columbine*.  
*Lin. spec.* 770. *syst.* 513. *Reich.* 2. 649. *Willd.* 2. 1301. *hort. cliff.* 226. *fl. suec. n.* 487. *Hall. helv. n.* 1141. *Reyg. ged.* 2. 96. *Gort. ingr.* 87. *Jacqu. austr.* 4. 10. t. 318. *Scop. carn. n.* 672. *Crantz austr.* 107. n. 3. *Villars dauph.* 3. 713. *Krock. siles. n.* 865. *Allion. pedem. n.* 1077. *Ger. prov.* 379. 4.  
*T. majus*, *florum staminibus purpurascens*. *Bauh. pin.* 337. *Tournef. inst.* 270.  
*T. majus*, *folliculis angulosis, caule lævi*. *Bauh. hist.* 3. 487. *Raii hist.* 403.  
 $\beta$ . *T. atropurpureum*. *Lin. syst.* 513. *Jacqu. hort.* 3. 35. t. 61.  
*Fruits pendulous triangular straight, stem round.*
- [19. *Thalictrum contortum*.  
*Lin. spec.* 720. *syst.* 513. *Reich.* 2. 649. *Willd.* 2. 1302. *amoen.* 3. 47.  
*Fruits pendulous triangular contorted, stem subcapitular.*
20. *Thalictrum petaloideum*.  
*Lin. spec.* 770. *Reich.* 2. 650. *Willd.* 2. 1302. *Pallas itin.* 3. 231.  
 $\beta$ . *T. stamineum*. *Lin. syst.* 514. *suppl.* 271.  
*Scape subumbelled, filaments oblanceolate coloured wider than the anther.*
21. *Thalictrum styloideum*.  
*Lin. syst.* 514. *Willd.* 2. 1303. *suppl.* 271.  
*Leaves three-parted-pinnate, styles winged at the base.*
22. *Thalictrum japonicum*.  
*Lin. spec. ed. Willd.* 2. 1303. *Thunb. in Linn. transf.* 2. 337.  
*Didynamista Salviæ similis*. *Thunb. jap.* 364. n. 74.  
*Seeds even, leaves tripinnate, pinnules gashed serrate.*

## DESCRIPTIONS, &amp;c.

1. The root consists of a few simple fibres, and creeps just below the surface by horizontal runners. It is a delicate little plant, scarcely a span high, and truly alpine. Root-leaves on long purplish foot-stalks, first ternate, and again either ternate or pinnate; leaflets roundish or wedge-shaped, varying much in breadth, with several blunt notches or lobes, shining green above, glaucous beneath, often purplish, smooth, veiny, a little revolute. Stem simple, erect, round, about twice as long as the leaves, glaucous or purplish, smooth, naked or more luxuriant specimens having one sessile leaf, more or less compound, about the middle. Raceme very simple, at first drooping, but afterwards erect, composed of eight or ten alternate flowers, each on a slender pedicel subtended by a simple bracte, of which some of the lowermost approach to the texture and colour of the leaves; the rest are membranous. Petals four, acute, white or purple. Stamens eight or ten, (Linneus says twelve,) capillary, often purplish, with oblong vertical anthers. Germs two or four, scarcely ever more, (Linneus says eight,) roundish, green; each with a whitish, lanceolate, divaricated, downy style, or rather sessile stigma. Seeds almost even.

Native of Lapland, Wales and Scotland, in wet black mould in the clefts of rocks, or on the spongy margins of little rills, on very high mountains, and not rare in such situations. It is perennial, and flowers early in summer<sup>2</sup>.]

2. Stem about six or seven inches high. Leaves downy, composed of a great number of small leaflets, which are bluntly indented, and have a fetid scent. Flowers in loose panicles, small, and of an herbaceous

white colour. [Haller says it has all the habit of *Thalictrum minus*, and can scarcely be distinguished from it: but it has a smell like that of *Geranium Robertianum*, approaching to that of cat's urine; the leaves are somewhat hairy on both sides, pulpy and softer; the petals themselves are somewhat hairy, in the young plant they are reddish, but in the adult whitish; it is also lower, almost a foot high, and less leafy.

Native of the South of France, Switzerland, the Valais and Piedmont.

Cultivated by Mr. Miller in 1739. It flowers from May to July<sup>a</sup>.]

3. This has knobbed roots. Leaves small, obtuse, indented in three parts at their points, of a grayish colour and smooth. The stalks rise a foot and half high, and are naked almost to the top, where they divide into two or three small ones, under each of which is placed one leaf, every division is terminated by a small bunch of pretty large flowers, disposed almost in form of an umbel, each composed of five white petals.

[Native of Spain. Cultivated here in 1713. It flowers in June<sup>b</sup>.

Loureiro has a species, which he names *Thalictrum finense*. The root is a roundish, solid and very white tuber; but he says it differs from this in the form both of the root and leaves. The stem is suffruticose, quite simple, a foot high, round and straight: the leaves linear-lanceolate, quite entire, smooth, sessile, alternate: the flowers white, solitary, terminating: the petals five, rounded, spreading.—Native of China.

4. Height three feet. Stems suffruticose, dark purple, branched. Leaves resembling those of *Columbine*, but glaucous. Flowers in many pale-purple heads, five-petalled<sup>c</sup>, white.

There is a variety of this, which is somewhat smaller, and has pale purple filaments, which in the other are white<sup>d</sup>.

Native of North America. Cultivated in 1683, by Mr. James Sutherland. It flowers from May to July<sup>e</sup>.

5. Height scarcely a foot. Stem straight. Leaflets nodding, by which mark the plant is very distinguishable in its habit. Flowers four-petalled, with about forty white stamens, with yellow anthers. Styles in the female flowers bristle-shaped, longer than in the other species<sup>f</sup>.]

The stalks are naked to the top, where they have one leaf, composed of many leaflets of a grayish colour, indented at their points. The flowers are produced in small terminating bunches.

[Native of North America. Cultivated in 1759 by Mr. Miller. It flowers in June and July<sup>g</sup>.

6. Stems four feet high and more, round, upright, the thickness of a finger at the base, hollow, leafy, branching very much, purple below, smooth. Sheaths of the leaves striated. Petioles round. Leaves wide, many-pinnate: leaflets like those of *Columbine*, smooth on both sides, veined, obtuse, gashed above, deep green on the upper surface, and glaucous on the lower. Flowers paniced, sweet-smelling: petals four, oblong, obtuse, concave, pale, spreading very much. Filaments twelve to fourteen, twice as long as the petals. Pistils from three to five. Seeds lanceolate, acute, brown, straight, somewhat striated. It flowers from the middle of June to the middle of July.—Native of Hungary<sup>h</sup>.

It approaches in habit to *Th. minus*, but is of a larger stature, with wider leaflets less deeply cut, and the flowers are erect not drooping<sup>i</sup>.

7. This is nearest related to the minus, but it is twice or thrice as large. The leaves are broader and more lobed, of a dark green above and glaucous beneath. Stem purplish, paniced, the flowering branches growing two or three together, the partial flower-stalks generally umbellate. Flowers drooping, with

<sup>a</sup> Hort. kew.<sup>b</sup> Idem.<sup>c</sup> Raius ex Cornuto.<sup>d</sup> Morison & Parkinson.<sup>e</sup> Hort. kew.<sup>f</sup> Linn. spec.<sup>g</sup> Hort. kew.<sup>h</sup> Jacquin.<sup>i</sup> Willdenow.<sup>2</sup> Engl. bot.



four purplish-green petals. Stamens capillary, with long yellow anthers. Germs furrowed, with sessile downy somewhat arrow-shaped stigmas<sup>k</sup>.

Crantz, who seems first to have described this plant, particularly notices its differing from *Th. minus*, in its branches growing three together, the darker colour of its leaves, the grayer green of their under surface, and their pellucid veins.

Dr. Withering says, that in the specimen before him, the leaves were trebly winged, the leaflets urn-shaped and three-cleft at the end, the petals four and purplish, the stamens fourteen to eighteen, and the pistils from five to seven.

According to Jacquin, the stamens are from fifteen to twenty, and the pistils from four to seven. He observes that it approaches to the *fibricum*, but in that the fruit is different, the stem is green not purplish, the leaflets are finely serrate and very much smaller than even those of *Th. minus*<sup>l</sup>.

Native of Austria and Hungary in woody places. It has lately been discovered in England by Mr. Robson, on a bushy hill at Baydales near Darlington, and also on the margin of Ullswater in Cumberland. He says that it frequently attains the height of four or five feet. It flowers in June and July.

Dr. Smith remarks, that Dodonæus's figure referred to under *Th. flavum* (n. 15.), and copied in *Ger. emac.* 1251. 1. bears a much greater resemblance to this than to that species.

8. This is a middle species between *majus* and *minus*, differing in leaves and stature from *elatum*, with which it agrees in the fructification. The whole plant is smooth; the stems are two feet high and obscurely angular; the lower leaves are many-pinnate, with oblong sharpish leaflets, having few gashes, and pale green beneath. Native of Hungary on hills<sup>m</sup>.

Willdenow remarks, that it differs from the *minus* in having the leaflets wedge-shaped, the upper ones undivided and lanceolate, and the flowers almost upright never truly drooping.

9. Root fibrous. Stem almost upright, a foot high, flexuose, grooved; glaucous with a blueish bloom, leafy, panicled. Lower leaves very large, patulous, tripinnate almost from the base; leaflets cordate or wedge-shaped, trifid, sometimes gashed, smooth, glaucous. Panicle spreading, compound. Flowers pedicelled, drooping. Petals four, elliptic, glaucous-purple. Seeds grooved<sup>n</sup>.

Mr. Woodward remarks, that the leaflets are broad and blunt, generally trifid at the extremity, though the upper ones are oval-lanceolate and entire; and that the panicle is branched, bearing a few scattered flowers at first nodding, but afterwards erect.

Pollich numbered twenty stamens; and four or five germs as far as nine. Krocker, eighteen or twenty stamens, and three, four, five to eight pistils. Villars reckons as far as twenty-four stamens.

Linneus's character of six-parted leaves has puzzled many persons; Dr. Smith interprets it to mean, that the leaves are compounded in a six-fold order, which is generally near the truth; not, as some have understood it, that the leaflets are in six divisions, which can never be the case, unless by accident, as they have a central lobe, and consequently an odd number of divisions.

Native of many parts of Europe, in meadows. In Britain, it occurs in various parts of the country in calcareous soils; but being found only in such it is by no means a common plant. It is also met with in Ireland on sandy shores about Newcastle near Mourne, and seldom flowers before July<sup>o</sup>.

β. Lhwyd observed it with broader leaves in Wales; but being transplanted into Richardson's garden in Yorkshire, it proved not to be different. Pollich remarks that it varies with broader, larger and smaller leaves.

10. Native of North America. Introduced in 1774, by John Fothergill, M.D. It flowers in July<sup>p</sup>.

11. This has the habit of *Th. minus* or *purpurascens*, but the leaflets are six times smaller and glaucous, the colour of Rue or Fumitory. Stem green, very greatly panicled. Panicle brown at the divisions. It flowers later, with the *flavum* and *dioicum*<sup>q</sup>.

Willdenow adds, that the wild plant is only half the size of the *minus*, but in the garden it becomes much larger, and approaches in habit to the medium; from which however it differs in having all the leaflets three-parted, and the flowers drooping.

Native of Siberia and Armenia.—Introduced in 1775, by Monf. Thouin. It flowers in June and July<sup>r</sup>.

Gærtner describes the fructification as consisting of from five to eight capsules, which are of a spongy coriaceous texture, small, ovate, beaked, grooved, one-celled, valveless; containing one ovate seed, attenuated above, of a russet bay colour, having a brown tubercle at the base. Common receptacle very narrow: the proper one a very slender umbilical chord descending from the vertex of the capsule to the base of the seed.

12. This differs from all the preceding species, which it resembles by its nodding flowers, in the structure of its petiole. Leaves superdecompound as in the rest; the lateral leaflets mostly ovate, acute, quite entire, but the terminating and upper lateral ones trifid or else bifid. Petiole much widened at the base, with orbicular membranaceous wings toothed at the edge. On the partial petioles of the leaves there are also smaller orbicular toothed earlets, by which mark this species is easily distinguished. Native of Siberia<sup>s</sup>.

13. This has the habit of *Th. minus*, but it is lower by half where that is three feet high. Stem purple without any bloom. Flowers purple. Stamens yellow. It differs from *Th. minus* in not having the leaflets at all purple at the tip. It flowers earlier. Flowers as in *Th. minus*; with four petals, fourteen stamens, and eight pistils. Native of Canada<sup>t</sup>.]

14. Stems from two to three feet high. Flowers small, collected in terminating panicles, and of an herbaceous white colour.

[Petals four; stamens sixteen; pistils seven<sup>u</sup>. Stamens from ten to twelve, according to Scopoli.

It is allied to the next species, and in Willdenow's opinion, perhaps only a variety of it, he having frequently observed among the stems of the cultivated plant, some with wider leaves, approaching to those of the *flavum*.

Native of Germany, Switzerland, Carniola and Italy.—Cultivated in 1739 by Mr. Miller. It flowers in June and July<sup>x</sup>.

15. Root yellow. Stem two or three feet high, upright, simple below, panicled above, smooth, so strongly furrowed as to be almost angular, leafy. Leaves alternate, twice compounded in a ternate order; their common footstalk with a short sheathing base, and a toothed intrafoliaceous stipule; leaflets somewhat wedge-shaped, commonly trifid, but sometimes undivided, entire, varying much in breadth and sharpness, veiny, glaucous beneath. (According to Mr. Woodward, the lower leaflets are very irregular, sometimes wedge-shaped, trifid at the extremity, sometimes oval, entire or with a sort of lobe on one side; upper leaflets lanceolate, entire or trifid.) Panicle erect, much branched, somewhat leafy, contracted, composed of many, upright, yellowish-white flowers, with yellow anthers. Petals four. Germs sessile, deeply furrowed. Styles none. Stigmas short, oblique, heart-shaped, downy<sup>y</sup>.

According to Linneus, the flowers have twenty-four stamens, and from ten to sixteen pistils. Haller says, from seventeen to twenty stamens, and from seven to ten or twelve seeds. Pollich agrees with him in the number of stamens, and says that he has reckoned ten germs. Krocker affirms, that there are from seventeen or twenty-four to seventy and even ninety stamens, and from ten to sixteen pistils.

<sup>k</sup> Engl. bot. <sup>l</sup> Withering. <sup>m</sup> Jacquin. <sup>n</sup> Smith brit.  
<sup>o</sup> Engl. bot. and Templeton M. S. <sup>p</sup> Hort. kew.

<sup>q</sup> Linn. spec. <sup>r</sup> Hort. kew. <sup>s</sup> Willdenow.  
<sup>t</sup> Linn. spec. <sup>u</sup> Idem. <sup>x</sup> Hort. kew. <sup>y</sup> Engl. bot.



Dr. Smith having compared our specimens with original ones of Jacquin's *nigricans* from himself, found no specific difference between them. Scopoli suspected that they might be the same. Jacquin thus describes his *nigricans*.—Stems three or four feet high, erect, striated, hollow. Bases of the petioles striated, and dilated into membranes. Leaflets lanceolate, acute, deep green above, paler beneath and wrinkled a little with prominent veins, smooth on both sides, some quite entire, others thrice or twice cut, especially in the lower leaves, which are also wider than those of the upper ones. Panicle close, terminating, erect. Flowers yellowish, odorous, not drooping. Petals four, small, less coloured. Stamens sixteen to thirty. Pistils from two to five at most. Seeds as many, brown, subovate.

Native of Europe: frequent with us in wet meadows, and on the banks of rivers and ditches; flowering in June.

A cataplasim made of the bruised leaves is a slight blister, and has been known to give relief in the sciatica. The root dyes wool yellow; and has been formerly used to cure the jaundice, probably from its colour. Cows, horses, goats and sheep eat it, but swine are not fond of it.

It has the English name Meadow Rue from its place of growth, and a certain vague resemblance to Garden Rue, to which it has no affinity.

The narrow-leaved variety mentioned by Lightfoot, and figured by Morison (f. 3.) is neither rare nor important. It is still distinct enough from Linneus's *angustifolium*<sup>z</sup>.

β. Mr. Miller has a species, which he names *speciosum*: it is a mere variety of this. He describes] the stalks as angular and five feet high, better furnished with leaves, the leaflets of which are very narrow, some ending with two, others with three points, of a bright green colour. The flowers are yellow, and are formed into many panicles which terminate the stalks. It grows naturally in the meadows about Montpellier: [according to Willdenow, in Spain.

16. This differs from *flavum* in having the herb half as small again, the flowers nodding not erect, the petals green not white, the filaments fourteen and purple not seventeen and white, the panicle thinner, the leaves narrower; besides the stipules between the first ramification of the leaves there are no scales, whereas in *flavum* there is a torn scalelet on each side<sup>a</sup>.

The *angustifolium* of Villars is this species, as appears from specimens sent by him to Willdenow<sup>b</sup>.

Native of Sweden, Denmark and France.—Introduced in 1778, by Mons. Thouin. It flowers in May and June<sup>c</sup>.]

17. Stems upright, channelled, five or six feet high, having at each joint pinnate leaves, composed of many linear fleshy leaflets, which are for the most part entire, and end in acute points. The flowers are of a yellowish white colour; they appear in July, and are succeeded by small angular capsules, with one small oblong seed in each, which ripens in August.

[Linneus doubts whether this be sufficiently distinct from *T. flavum*; and in his quaint phraseology says, that it seems to be a daughter of time.—Native of France about Paris, and of Spain. Cultivated by Mr. Miller in 1739<sup>d</sup>.]

18. Root thick, fibrous. Stems taper, rising three feet high. Leaves like those of Columbine. Flowers in large terminating panicles.

[Petals four, stamens sixty, pistils sixteen, according to Linneus; or, as Crantz says; stamens fifty-six or fifty-seven, pistils seven, eight, or ten; or, as Haller, stamens forty to sixty, seeds six to twelve; or, as Scopoli, stamens sixty-five to eighty-five, germs seven to nine, twelve and sixteen.]

It varies with a green stalk and white stamens, and with a purple stalk and stamens of the same colour.

[Native of Scania, Switzerland, Austria, Carniola, Ingria, Silesia, the South of France, and Italy.—Cul-

tivated by Mr. Miller in 1731. It flowers from May to July<sup>e</sup>.

Retzius refers the *atropurpureum* of Jacquin to this species, and professes not to know whither the *aquilegifolium* of that author ought to be referred. Jacquin thus describes his *atropurpureum*.—Stems three feet high, shining, hollow, round, marked with lines, very dark purple with a glaucous bloom before flowering, afterwards partly dark green. Leaves ternate, leaflets like those of Columbine but smaller, veined, smooth but not shining, dark green above, somewhat glaucous and netted beneath, widening towards the end, and there variously cut into lobes. Petioles round, firm, spreading, purplish green. Petals four, roundish, blunt, very concave, dark purple and striated on the outside, white within, caducous. Filaments about sixty, pale purple. Germs from ten to sixteen. Fruit smooth, pendulous, triangular. It flowers from the end of May to the end of June.

19. This is very like the preceding, but it is lower, and has white flowers. Petals four, stamens sixty, pistils eight<sup>f</sup>. Willdenow adds, that the seeds are by no means contorted, but agree exactly with those of *aquilegifolium*; the imperfect seeds however are twisted. Native of Siberia.

20. Root-leaves two, superdecompound as in the other species, but far less. Leaflets ovate, obtuse, often three-lobed. Scape scarcely a foot high, striated, leafless, sometimes but seldom having a single decompound leaf and a lateral peduncle. Flowers heaped into a sort of terminating umbel. Petals four, deciduous, rounded. Stamens numerous, with membranaceous filaments, more widening above, flesh-coloured. Germs sessile. Native of Dauria<sup>g</sup>.

Retzius remarks that the stameneum of the supplement is not at all different from this.

21. Stem with one or two leaves. Both root-leaves and stem-leaves three-parted, with bipinnate leaflets: pinnae subcordate, three or five-toothed. This species is very distinct by its awl-shaped styles, dilated on each side at the base into a vertical semiorbicular wing. Native of Siberia<sup>h</sup>.

22. The root consists of many capillary bundles. Root-leaves very many, on long petioles, ternate-superdecompound, smooth, erect: leaflets gashed, serrate, somewhat wedge shaped, patulous, paler beneath. Scape striated, erect, divided at top. Flowers in whorls, peduncled. Native of Japan<sup>i</sup>.]

#### PROPAGATION AND CULTURE.

These plants are generally propagated by parting their roots, in September, when the leaves begin to decay, and they may take fresh root before frost comes on. They may be planted in almost any soil or situation, provided it be not very hot and dry; but they mostly prefer a fresh light soil, and a shady situation. Most of them creep so much as to be troublesome in a garden; therefore it is better to confine their roots in pots plunged in the ground. The third, fourth and eighteenth, are most frequently cultivated in gardens; their roots not creeping so much as some of the others, and the flowers having some beauty to recommend them.

[*THAMNIA*. See *Latia*.

*THAMNOCHORTUS*. See *Reslio*.]

*THAPSIA* (of Pliny. *Θαψια* of Dioscorides: from *Thapsus* a town of Africa.)

*Lin. gen. n. 361. Reich. n. 391. Schreb. n. 493.*

*Tournef. t. 171. Juss. 220. Gertn. t. 21.*

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatae* or *Umbelliferae*.

#### GENERIC CHARACTER.

CAL. *Umbel universal* large, of about twenty rays, almost equal in length: *partial* of as many rays, almost equal.

*Involucre universal* none: *partial* none.

*Perianth proper* scarcely to be observed.

COR. *universal* uniform. *Florets* all fertile. *Proper* of five petals, lanceolate, curved in.

<sup>z</sup> Engl. bot. and Withering.

<sup>a</sup> Linn. mant.

<sup>b</sup> Willd. spec.

<sup>c</sup> Hort. kew.

<sup>d</sup> Idem.

<sup>e</sup> Hort. kew.

<sup>f</sup> Linn. spec.

<sup>g</sup> Linn. suppl.

<sup>h</sup> Idem.

<sup>i</sup> Thunb. jap.



STAM. Filaments five, capillary, length of the corolla. Anthers simple.

PIST. Germ oblong, inferior. Styles two, short. Stigmas obtuse.

PER. none. Fruit oblong, girt longitudinally by a membrane, bipartile.

SEEDS two, very large, oblong, convex, acuminate at both ends, girt with a margin flat on both sides entire and large, emarginate at top and bottom.

OBS. *T. trifoliata* has the fruit of *Selinum Caruifolia* or *Monnieri*, but no involucre.

#### ESSENTIAL CHARACTER.

Fruit oblong, surrounded by a membrane.

#### SPECIES.

##### 1. *Thapsia villosa*.

*Lin. spec.* 375. *Reich.* 1. 717. *Willd.* 1. 1464. *hort. cliff.* 105. *Plenck ic.* 219. *Allion. pedem.* n. 1307. *Desfont. atlant.* 1. 262. *Gertn. fruct.* 1. 88.

*T. latifolia villosa.* *Baub. pin.* 148. *Mor. hist. f.* 9. t. 18. f. 3. *Tournef. inst.* 322.

*T. 1. Clus. hist.* 2. 192.

*T. latifolia hispanica.* *Park.* 878. 2. t. 877. f. 2. *Raii hist.* 418.

*T. latifolia Clusii.* *Ger.* 875. 1. *emac.* 1030. 1.

Leaflets toothed villose coudunate at the base.

##### 2. *Thapsia foetida*.

*Lin. spec.* 375. *Reich.* 1. 717. *Willd.* 1. 1464. *hort. cliff.* 105. *Blackw. t.* 459.

*T. carotæ folio.* *Baub. pin.* 148.

*T. carotæ effigie.* *Baub. hist.* 3. 187. *Mor. hist.* f. 9. t. 18. f. 7.

Leaflets multifid narrowed at the base.

##### 3. *Thapsia Asclepium*.

*Lin. spec.* 375. *Reich.* 1. 718. *Willd.* 1. 1464. *hort. cliff.* 106.

*T. apulia.* *Mill. dict. n.* 4.

*T. tenuifolia petiolis radiatis.* *Mor. hist.* 3. 319. n. 9. f. 9. t. 18. f. 9.

*T. tenuiore folio apulia.* *Tournef. inst.* 322.

*Panax Asclepium apulum.* *Col. ecpbr.* 1. 87. t. 86.

Leaves digitate, leaflets bipinnate setaceous multifid.

##### 4. *Thapsia garganica*.

*Lin. syst.* 290. *Reich.* 1. 718. *Willd.* 1. 1465. *mant.* 57. *Gouan. illustr.* 18. t. 10. *Desfont. atlant.* 1. 262.

*T. libanotidis folio, glutinosa glabra.* *Pluk. phyt. t.* 67. f. 2.

*T. f. Turbith garganicum, semine latissimo.* *Baub. hist.* 3. 50. *Raii hist.* 418. 2. *Tournef. inst.* 322.

*T. Thaliætri folio.* *Magn. monsp.* 287. t. 286.

Leaves pinnate, leaflets pinnatifid, segments lanceolate.]

##### 5. *Thapsia trifoliata*.

*Lin. spec.* 376. *syst.* 290. *Reich.* 1. 718. *Willd.* 1. 1465. *Gron. virg.* 31. (*Sium*.)

Leaves ternate ovate.

##### 6. *Thapsia polygama*.

*Desfont. atlant.* 1. 261. t. 75.

Leaves decomposed, leaflets acute, involucre pinnatifid at the tip, central flowers abortive.]

#### DESCRIPTIONS, &c.

1. Root thick, fleshy, in shape of a carrot, blackish on the outside, but white within, bitter and very acrid, with a little aromatic taste. Stem spongy, rising about two feet high, dividing upwards into two or three small branches, each terminated by a large umbel of yellow flowers.

[Leaves large, villose, multifariously decomposed: leaflets wrinkled, unequal, linear or linear-lanceolate, paler beneath, reflexed at the edge. Petioles round, sheathing at the base. Stem cylindrical, smooth and even, the thickness of a finger, having a glaucous meal scattered over it. Sheaths large, concave, entire at the base of the petioles. Umbels large, regular, globular: umbellets distinct, round\*. Fruit compressed, ovate-oblong, deeply emarginate at both ends, terminated by the receptacle of the stamens which is permanent waved and peduncled, below that with the five calycine leaflets curved upwards like little horns, in the other parts winged, bipartile.

\* Desfontaines.

Seeds two, with four membranaceous wings, of which the two side ones are very wide, longer than the seed, the two dorsal ones are very narrow, waved, and the length of the seed: between these wings are three raised longitudinal compressed streaks, but not membranaceous: the ventral part is flat without any furrow<sup>1</sup>.

Native of Spain, Portugal, the South of France, Italy and Algiers.—Cultivated in 1739 by Mr. Miller. It flowers in June and July<sup>m</sup>.

Desfontaines remarked a variety, which had the seed only half the size of the common one.]

2. The leaves of this sort are cut into many narrow segments, almost as small as those of the garden Carrot, but rough and hairy; their segments are always opposite, and narrower at their base than their points. The stalks rise about two feet high, and are terminated by umbels of small yellow flowers which appear in July; these are succeeded by flat bordered seeds, which ripen in the beginning of September. Native of Spain and Italy.

3. The root of this is about the thickness of a man's thumb; the bark is yellow and wrinkled, the inside white and abounds with an acrid milky juice: the leaves are finely divided like those of Fennel, hairy and sitting close to the root: the stalk rises from two to three feet high: it is naked, and branches into two or three, each terminated by a small umbel of flowers, which are large, yellow, and appear in July: they are succeeded by flat seeds, having cartilaginous borders, which ripen in September. Native of Apulia [and the Levant.

4. Leaves shining smooth; the primary ones on long petioles, ovate or ovate-lanceolate, quite entire, to which succeed others, ternate, quinate or septenate, finally three or four times decomposed: leaflets narrow-lanceolate or linear, acute, very smooth, shining above, pale beneath, decurrent into the petiole. Petioles round, sheathing at the base. Sheath large. Stem thick, smooth, erect, slightly striated. Umbel hemispherical: umbellets distinct, round. Sheaths concave, leaflets at the base of the peduncles. Petals pale yellow. Seed elongated, semicylindrical, striated at the back, having a yellowish membranaceous wing at the edge on each side. The bruised root is good for resolving tumours. Native of Barbary<sup>n</sup>.]

5. This has a slender tap root, shaped like that of Parsley. The leaves at the bottom are heart-shaped. The stalk is single and does not branch; it rises near two feet high, is of a purple colour and slender; at each joint is one ternate leaf, the leaflets ovate and crenate. The stalk is terminated by a small umbel of purple flowers, which appear in July, and are succeeded by compressed channelled seeds, ripening in September.

Native of North America. The seeds were sent to Mr. Miller by Dr. Bensel from Philadelphia. Gronovius thought this plant very like that which is figured by Kæmpfer under the name of Nin-si.

[6. Leaves bifariously or trifariously decomposed; with the outmost segments small, acute, unequal; most of them three-toothed at the end, but some simple. Stem erect, slightly striated, sparingly branched, smooth. Umbels flat, peduncled. Umbellets distinct. Rays unequal. Universal involucre five or seven-leaved: leaflets linear, pinnatifid at the end, often three-forked, seldom simple: partial involucre simple, slender. Corolla pale yellow. Flowers in the centre male, abortive, smaller, on shorter pedicels. Seeds semicylindrical. Native of Barbary, near Bone by the sea coast<sup>o</sup>.

Mr. Miller has two other species:]

*Thapsia maxima*, n. 2. which he says has a large thick root, of a dark colour on the outside: the leaves very thick, hairy on their under side, spreading circularly on the ground, and divided into very broad hairy leaflets: the petioles are decurrent: the stalks rise four or five feet high, are large, jointed and full of pith, having one leaf at each joint, shaped like

<sup>1</sup> Gertner.

<sup>m</sup> Hort. kew.

<sup>n</sup> Desfontaines.

<sup>o</sup> Idem.



those at the bottom, but smaller as they approach the top. The stalk is terminated by a large umbel of yellow flowers which appear at the end of june, and the seeds ripen about two months after. Native of Spain, all over Old Castile, quite to the Pyrenees.

*Thapsia altissima*, n. 6. has a large taper root; the leaves spread circularly near the ground, are branched into several, and these again are divided into many very large lucid leaflets, standing alternately on short footstalks; the stalk rises near eight feet high, and is terminated by an umbel of yellow flowers, which appear in july, and are succeeded by bordered compressed seeds, which ripen in september.

*Thapsia maxima*, latissima folio *Baub. pin.* 148. is given as a synonym of the former; and *Th. montana omnium maxima*, foliis lobatis *Tilli hort. pisan.* 164. as a synonym of the latter.

PROPAGATION AND CULTURE.

These plants are all propagated by seeds, which should be sown in autumn; for if they are kept out of the ground till spring, they often miscarry, or if they grow, they commonly lie a whole year in the ground before the plants come up; whereas those seeds which are sown in autumn, generally grow the following spring. These should be sown in drills, in the place where they are designed to remain. The drills should be at least three feet and a half asunder, because the plants spread their leaves very wide. When the plants come up in the spring, they must be carefully cleared from weeds; and where they are too close together, some of them should be drawn out to give room for the others to grow, but at this time they need not be left more than two or three inches apart; for the first year when the plants arise from seeds, they make but slow progress, the autumn following the remaining part of the plants may be taken up, leaving those which are designed to remain about eighteen inches asunder; and those plants which are taken up may be transplanted into another bed, if they are wanted. After the first year these plants will require no farther care, but to keep them clear from weeds; and every spring, just before the plants begin to push out new leaves, the ground should be carefully dug between the plants to loosen it, but the roots must not be injured, lest it should cause them to decay. The plants thus managed will continue several years. They delight in a soft loamy soil, and if they are exposed only to the morning sun, they will thrive better than if they have a warmer situation.

[THAPSIA. See *Artemisia* and *Selinum*.

THAPSUS. See *Verbascum*.

THEA. (From *Teh* or *Theh* of the Chinese, or *Tsia* of the Japanese.)

*Lin. gen. n.* 668. *Reich. n.* 726. *Schreb. n.* 911. *Gartn. t.* 95. *Juss.* 262. *Kämpfer. Lettsom monogr. ed. 1.* 1770. *ed. 2.* 1799.

Class. 13. 1. (f. 3.) Polyandria Monogynia f. Trigynia.

Nat. order of *Columniferae* β. *Aurantia* 3. *Juss.*

GENERIC CHARACTER.

PER. five-parted, very small, flat, inferior, permanent: segments roundish, obtuse, equal.

COR. Petals six, (three to nine) roundish, concave, large, of which two are exterior and a little smaller.

STAM. Filaments numerous, (more than two hundred) filiform, shorter than the corolla, inserted into the receptacle. Anthers cordate, fastened by the back.

PIST. Germ globular-trigonal. Styles three, united at the base, at bottom erect, closely approximating, and as it were united into one, above the stamens diverging, somewhat recurved at the top, after flowering separated to the very base, reflexed at the top. Stigmas simple.

PER. Capsule trilocular, trilobular, gaping at the top, in three directions.

SEEDS solitary, globose, angular on the inward side.

Obs. The parts of the flower vary much in number, for sometimes the calyx is six-parted: the corolla has three petals or more as far as nine, of which the six inner ones are larger and equal, the three outer a little smaller: stamens as far as two hundred and eighty.

In *Thea japonica*, the calyx is five-leaved, with ovate obtuse concave leaflets: the corolla six-petalled; petals ovate, very blunt, three lower ones smaller. Germ somewhat scaly: style filiform, erect, very short: stigmas three, filiform, erect, length of the filaments. Thunb. jap.

ESSENTIAL CHARACTER.

Cor. six or nine-petalled. Cal. five or six-leaved. Caps. trilocular.

SPECIES.

1. *Thea*.

α. *Thea viridis*. Green Tea.

*Lin. spec.* 735. *Juss.* 496. *Reich.* 2. 589. *Willd.* 2. 1180. *Hill. exot. t.* 22. *Gärtn. fruct.* 2. 83. *Lettsom monogr. t.* 1. *Woodv. med. bot. suppl.* 116. *t.* 256.

*T. sinensis*. *Blackw. t.* 351.

β. *Thea Bohea*. Bohea Tea.

*Lin. spec.* 734. *Juss.* 495. *Reich.* 2. 589. *Willd.* 2. 1180. *hort. cliff.* 204. *mat. med.* 136. *amoen.* 7. 239. *t.* 4. *Hill. exot. t.* 22. *Blackw. t.* 352. *Thunb. jap.* 225. *Letts. mon. ed.* 2. *p.* 41. *ic.*

*T. cantoniensis*. *Lour. cochinch.* 339. *ed. Willd.* 414.

*Thee*. *Kämpf. jap.* 605. *t.* 606.

*Thee frutex*. *Barthol. art.* 4. 1. *t.* 1. *Bont. jav.* 87. *t.* 88. *Barr. rar.* 128. *t.* 904.

*Thee sinensis*. *Breyn. cent.* 111. *t.* 112. *ic.* 17. *t.* 3. *Bocc. mus.* 114. *t.* 94. *Raii hist.* 1619.

*Chaa*. *Baub. pin.* 147. *Baub. hist.* 3. 1. 27. *c.* 1. *p.* 5.

*Euonymo affinis arbor orientalis nucifera*, flore roseo. *Pluk. phyt. t.* 88. *f.* 6.

DESCRIPTION, &c.

The Tea Tree is commonly about the height of a man. It is described indeed by different authors as varying much in size from that just mentioned to thirty and even two hundred feet. Probably it may attain the height of thirty feet or more when left to itself; but in general the trees are cut down periodically, that they may make stronger shoots, and therefore are seldom seen to be above five or six feet high. The trunk is branching and round: the branches alternate or vague, stiffish, inclining to an ash-colour, but reddish towards the end. Leaves alternate, elliptic, smooth, glossy, of a firm texture, bluntly serrate except near the base, blunt and for the most part slightly emarginate at the end, veined on the under side; on very short petioles, round and gibbous beneath, flatish and slightly channelled above. Stipules to the leaves none. Peduncles axillary, alternate, single, curved, one-flowered, incrassate, having at the base a single stipule or bracte, which is awl-shaped, erect, elliptic, obtusely serrate, with the edges between the teeth recurved. Corolla white, varying in the number and size of the petals. Stamens, according to Loureiro, inserted rather into the base of the corolla than into the receptacle. If so, the Tea Tree should be removed into the class Icosandria.

It is thus described by Thunberg. Stem shrubby and arborescent, a fathom in height, seldom more, smooth in all its parts, evergreen. Leaves alternate, oblong-ovate, obtuse, emarginate, entire at the base and thence serrate, somewhat channelled, parallel-nerved, erect with the end reflexed, thickish, deep green above, paler beneath, longer than the interstices, two inches in length. Petioles half-round, gibbous, a line long. Flowers on the outmost twigs, axillary, solitary or more frequently two together. Peduncles incrassate, jointed, drooping, one-flowered, twice as long as the petioles. Perianth five-leaved, green, permanent, much shorter than the corolla: leaflets ovate, obtuse, concave. Petals six, white, very blunt, concave, unequal, the three lower being smaller. Filaments very many, inserted into the receptacle, capillary, erect, white, a little shorter than the corolla, the outer ones shorter than the inner. Anthers round, twin. Germ superior, conical, somewhat scaly. Style filiform, erect, very short. Stigmas

<sup>p</sup> Lettsom, Linn. Spec.



three, filiform, erect, green, length of the filaments. Capsule tricoccus, often barren either wholly or in one or two of the cells.

Loureiro describes it as a small tree or shrub, four feet high, branching very much and twisted. Leaves lanceolate, acutely serrate, thickish, incurved, subsessile, smooth, alternate. Flowers white, on terminating one-flowered, solitary peduncles. Calyx five or six-leaved, unequal. Corolla composed of seven, eight or nine petals, which are unequal, concave, spreading. Stamens about a hundred, connected at the base with one another and with the petals. Style trifid, and equal to the stamens; segments linear.

Gärtner describes the fruit as a superior coriaceous capsule, sometimes simply globular or made up of two globes, but most frequently composed of three, three-celled, three-valved, on the outside of a smoky colour, and having distant callous dots scattered over it. Seeds solitary, large, globularly-angular, bay-coloured, with a rounded, wide, closed navel on the inner side; the seed is fastened to the central angle of the cells.

Native of China and Japan. Introduced about 1768, by John Ellis, Esq., who raised it from seed. It flowers here in august and september. The first plant that flowered in England was at Sion, in the stove of his Grace the Duke of Northumberland: from this Dr. Lettsom's figure was drawn. Dr. Woodville's figure was taken from a plant which flowered in the stove of John Liptrap, Esq.

Linneus received the true Tea Tree on the third of october, 1763, by Carl Gustavus Ekeberg, captain of a Swedish East-Indiaman, who raised it from seed on the voyage.—It is now to be found in most of the curious botanic gardens in England, France, &c. and was introduced into Georgia in America about the year 1770.

I have considered all the varieties of Tea as forming one species. In which I am supported by the best authorities. Kämpfer attributes their difference to soil, culture, age of the leaves, and method of curing them. Mr. Ellis directly asserts that the green and bohea Tea are one and the same species; and that it is the nature of the soil, the culture, and manner of gathering and drying the leaves, that makes the difference; and a Green Tea Tree planted in the Bohea country, will produce Bohea Tea, and the contrary. So also Sir George Staunton says; every information received concerning the Tea plant concurred in affirming, that its qualities depended upon the soil in which it grew, and the age at which the leaves were plucked off the tree, as well as upon the management of them afterwards.

Linneus, it is well known, distinguished two species of *Thea*; the Bohea with six-petalled flowers, and the *viridis* or green with nine-petalled flowers: but it is now well ascertained that the number of petals is very uncertain; and Dr. Lettsom informs us that he has examined several hundred flowers both from the Bohea and green countries, and that their botanical characters have always appeared uniform. In the catalogue of the Royal Botanic Garden at Kew, two varieties of *Thea* Bohea are given, distinguished by the leaves; namely *laxa* or broad-leaved Tea, with elliptic-oblong wrinkled leaves, and *striata* or narrow-leaved Tea, with lanceolate flat leaves.—The Bohea Tea trees, now introduced into many botanic gardens near London, exhibit very obvious varieties: the leaves are of a deeper green colour, and not so deeply serrated; and the stalk is usually of a darker colour; but the botanical characters are the same.

Thunberg also distinguishes two varieties from the leaves; which in one are smaller, flat, darker green, with straight serratures, and in the other larger, waved, brighter green, with sinuate serratures: but they can scarcely be considered as distinct species.

Loureiro's description given above, is taken from a living plant, which he examined himself. He ob-

served little difference in the Sou-chong, which he also examined: both these have a brown colour, but are more odoriferous and precious than the common Bohea of the province of Fo-kien, which he had not an opportunity of seeing in a living state; though it is the most common and cheapest of all. He examined the dry flowers of the Green Tea, from the province of Kiang-si, and observed the same inconstancy; as to the number of parts in the calyx and corolla, as in the Bohea. Upon the whole he concludes that all the differences of Chinese Tea form only one botanical species, owing their variation to soil, culture, and method of preparation; all retaining the same inconstancy in the parts of the flower, which gave occasion to Linneus to consider them as two species.

Loureiro has two other species: 1. *Thea cochinchinensis*, which both grows wild and is cultivated in Cochinchina, where it is used medicinally, especially in hot weather as a sudorific and refrigerant. The calyx is three-leaved, but sometimes four or five-leaved, and the corolla five-petalled.—2. *Thea oleosa*, a native of China, where an oil obtained from the seed is used both for the table, and to burn in lamps. The calyx is six-leaved, the corolla six-petalled, the peduncles three-flowered; and the fruit rather a berry than a capsule.

Many varieties of Tea are known in China, from mixture and management. The distinctions chiefly regarded in Europe are the following.

#### Green Teas.

1. Bing, Imperial or Bloom Tea, with a large loose leaf, of a light green colour, and a faint delicate smell.
2. Hy-tiann, hikiong, hayssuen or hee-chun. Known to us by the name of Hyson Tea. The leaves are closely curled and small; of a green colour verging towards blue.—Another Hyson Tea, with narrow short leaves, is called Hyson-utchin. There is also a Green Tea named Gobé, with long narrow leaves.
3. Song-lo or Singlo; which name it receives, like several others, from the place where it is cultivated.

#### Bohea Teas.

1. Soo-chuen, sut-chong, sou-chong, or fu-chong; called by the Chinese *saa-tyang*, and *sact-chaon* or *sy-tyann*, is a superior kind of Cong-fou Tea. It imparts a yellowish green colour by infusion; and has its name from a place or province in China.

Padre futchong has a finer taste and smell. The leaves are large and yellowish, not rolled up, and packed in papers of half a pound each. It is generally conveyed by caravans into Russia. Without much care it will be injured at sea. It is rarely to be met with in England.

2. Cam-ho or Soum-lo, called after the name of the place, where it is gathered. A fragrant Tea with a violet smell. Its infusion is pale.

3. Cong-fou, congo or bong-fu. This has a larger leaf than the following, and the infusion is a little deeper coloured. It resembles the common Bohea in the colour of the leaf.

There is a sort called lin-kisam, with narrow rough leaves. It is seldom used alone, but mixed with other kinds: by adding it to Congo, the Chinese sometimes make a kind of Pekoe Tea.

4. Pekao, pecko or pekoe, by the Chinese called back-ho or pack-ho. It is known by having the appearance of small white flowers intermixed with it.

5. Common Bohea or Black Tea, called moji or mo-ee by the Chinese, consists of leaves of one colour.—The best is named tao-kyonn. An inferior kind is called An-kai, from a place of that name. In the district of Honam near Canton, the Tea is very coarse, the leaves yellow or brownish, and the taste the least agreeable of any. By the Chinese it is named Honam-té, or Kuli-té.

Besides these, Tea both Bohea and Green is sometimes imported in balls, from two ounces to the size of a nutmeg and of peas. The Chinese call it Pon-cul-tcha.—The smallest in this form is well known under the name of Gunpowder Tea.

Sometimes

<sup>1</sup> Hort. kew.

<sup>2</sup> Linn. spec. Ellis, p. 28.

<sup>3</sup> Embassy, 2. 424.

<sup>4</sup> Letts. p. 41. Compare the figures.



Sometimes the succulent leaves are twisted like packthread, an inch and half or two inches long; three of these are usually tied together at the ends by different-coloured silk threads. Both Green and Bohea are prepared in this manner.

The Chinese likewise make an extract from Tea, which they form into small cakes not much broader than a sixpence, or into rolls of a considerable size. They dissolve it in a large quantity of water, and ascribe powerful effects to it in fevers, &c. when they wish to procure a plentiful sweat".

The manner of gathering and preparing the leaves, as practised in Japan, is fully described by Kämpfer, an author on whom we may safely depend; and as far as our information reaches, his account is in great measure conformable to the method used by the Chinese.

The leaves are gathered carefully one by one, and each person is able thus to collect from four to ten or fifteen pounds in one day. The first gathering commences about the end of our february or beginning of march, when the leaves are young and tender: they are called Ficki Tsjaa or powdered Tea, because they are pulverised and sipped in hot water: they are disposed of to princes and rich people only, and hence this kind is called Imperial Tea.

A similar sort is called Udsi Tsjaa, and Tacke Sacki Tsjaa, from the places where it grows. Peculiar care and nicety is observed in gathering these leaves.

The second collection is made at the end of march or beginning of april. This is called Tootsjaa, or Chinese Tea, because it is infused and drunk after the Chinese manner.

The third gathering is made in june, when the leaves are full grown. This is called Ban Tsjaa; it is the coarsest, and is chiefly consumed by the lower class of people. By sorting these, several other varieties are produced.

Whether the Chinese collect the Tea precisely at the same seasons as in Japan, we are not well informed; but most probably the Tea harvest is nearly at the same periods, the natives having frequent intercourse, and their commercial concerns with each other being very extensive.

The Tea leaves should be dried as soon as possible after they are gathered. For this purpose public buildings are erected, containing from five to ten and even twenty small furnaces about three feet high, each having at the top a large iron pan. There is also a long table covered with mats, on which the leaves are laid, and rolled by workmen who sit round it. The iron pan being heated to a certain degree by a fire made in the furnace beneath, a few pounds of the leaves are put upon the pan, and continually turned and shifted by the hands till they become too hot to be endured; they are then thrown upon the mats to be rolled between the palms of the hands; after which they are cooled as speedily as possible. In order that all the moisture of the leaves may be completely dissipated, and their twisted form be better preserved, the above process is repeated several times with the same leaves, but less heat is employed than at first. The Tea thus manufactured is afterwards sorted according to its kind or goodness. Some of the young tender leaves are never rolled, and are immersed in hot water before they are dried.

Country people cure their leaves in earthen kettles which answer every necessary purpose, at less trouble and expence, whereby they are enabled to sell them cheaper.

After the Tea has been kept for some months, it is taken out of the vessels in which it was stored, and dried again over a very gentle fire, that it may be deprived of any humidity which remained, or it might have since contracted.

The common Tea is kept in earthen pots with narrow mouths; but the best sort used by the Emperor and nobility is put into Porcellane or China vessels. The coarsest Tea is kept by the country people in straw baskets, made in the shape of barrels, which

\* Lettsom, 38, &c.

they place under the roofs of their houses, near the hole that lets out the smoke \*.

Thunberg adds, that the older the leaves are, and the later in the season they are gathered, the greater is the abundance; but then the Tea is so much the worse: the smaller leaves, and those which have just shot forth, furnish the finest and most valuable. Young shrubs always yield better Tea than old ones; and some places produce it in greater perfection and more delicious than others †.

In the accounts of China, travellers have in general treated very slightly of the preparation of Tea. Le Comte observes, that to have good Tea, the leaves should be gathered while they are small, tender and juicy; that they begin commonly to gather them in march or april, according as the season is more or less forward; that they afterwards expose them to the steam of boiling water to soften them, and as soon as they are penetrated by it, draw them over copper plates kept on the fire, which dries them by degrees, till they grow brown, and roll up of themselves in the manner we receive them.

This account is in two respects at least erroneous; for first, no materials are used in China for drying Tea but iron or earthen plates; copper is not commonly used in China, and from experiments, there does not appear the least symptom of the green efflorescence of that metal having been used to give a verdure to the Green Teas: and secondly, there seems no probability that the leaves will of themselves take so perfect a curl as that in which they are brought to Europe ‡.

According to the more accurate account of Sir George Staunton; the largest and oldest leaves, which are the least esteemed, and destined for the use of the lowest classes of the people, are often exposed to sale with little previous manipulation, and still retaining that kind of vegetable taste which is common to most fresh plants, but which vanishes in a little time, whilst the more essential flavour, characteristic of each particular vegetable, remains long without diminution. But the young leaves undergo no inconsiderable preparation before they are delivered to the purchaser: every leaf passes through the fingers of a female, who rolls it up almost to the form it had assumed before it became expanded in the progress of its growth. It is afterwards placed upon thin plates of earthen ware or iron, made much thinner than is executed by artists out of China. It is confidently said in the country, that no plates of copper are ever employed for that purpose. Indeed, scarcely any utensil used in China is of that metal, the chief application of which is for coin: The earthen or iron plates are placed over a charcoal fire, which draws all remaining moisture from the leaves, rendering them dry and crisp. The colour and astringency of Green Tea is thought to be derived from the early period at which the leaves are plucked, and which, like unripe fruit, are generally green and acrid. For exportation, the Tea, as is well known, is packed in large chests lined with very thin plates of lead; and it is pressed down into these chests by the naked feet of Chinese labourers §.

Chinese drawings, though rudely executed, exhibit a faithful picture of what they are intended to represent. From a set of these giving the whole process of gathering and manufacturing the Tea, we learn that the tree, or rather shrub, grows for the most part in hilly countries, on their rocky summits and steep declivities. Accordingly Sir George Staunton informs us, that vast tracts of hilly land are planted with it, particularly in the province of Fo-chen: and Chevalier Thunberg says, that he met with it frequently in Japan, both on the borders of cultivated lands, and upon such mountains and downs as did not well answer the trouble of cultivation. It appears also from these drawings, that the trees in general are not much taller than a man's height: the gatherers are always represented on the ground; they make use of hooked

\* Kämpf. amoen. & jap. Thunb. jap. Woodv. Letts. 29—35.

† Travels, vol. 4. p. 42, 43. engl. edit.

‡ Letts. p. 35, 46, 47.

§ Embassy, 2. 465.



sticks indeed, but these seem rather intended to draw the branches towards them, when they hang over places difficult of access. They pick the leaves as soon as gathered into different forts, and cure them nearly in the manner above described to be practised by the Japanese; drying them in a range of stoves, like those in a chemist's laboratory, where the men work, and curl the leaves in the pans themselves. They dry it likewise, after having spread it abroad in shallow baskets, in the sun; and by means of sieves, separate the larger from the smaller leaves, and these again from the dust.

The Chinese put the finer kinds of Tea into conic vessels, like sugar loaves, made of tutenague, tin or lead, covering them with neat matting of bamboo. The common Tea is put into baskets, out of which it is emptied, and packed in boxes or chests, as soon as it is sold to the Europeans<sup>b</sup>.

It is not known what arts are used in China to give a variety of colour and flavour to their Teas, which cannot all be satisfactorily accounted for from soil, situation, and the different seasons at which the leaves are gathered. In Japan the produce is chiefly consumed within the country; whereas in China, the exportation we know is very considerable, and the temptation great to exercise the arts of sophistication, in which it is notorious the Chinese are not deficient.

In the Chinese drawings abovementioned, there are figures of several persons apparently separating the different kinds of Tea, and drying it in the sun, with several baskets standing near them filled with a very white substance, and in considerable quantity. To what use this may be applied is uncertain, as well as what the substance is; yet there is little doubt that it is used in the manufacturing of Tea, because the Chinese do not introduce any thing into their pieces, but what relates in some respect to the subject.

We are better acquainted with a vegetable substance which is employed in giving a flavour to Tea. This is the *Olea fragrans*, the flowers of which are frequently to be met with in Teas exported from China. The plant itself is now not unfrequent in our stoves<sup>c</sup>.

The flowers also of the *Camellia Sasanqua* and of the Arabian *Jasmin* are sometimes mixed among the Teas, for the same purpose of increasing their fragrance. The Chinese call the former *Cha-whaw* or flower of Tea. It is cultivated in vast abundance in China, not so much for this purpose, as for its nut, which yields an esculent oil equal to the best which comes from Florence. This plant is particularly valuable from the facility of its culture on the sides and the very tops of mountains, in situations fit for little else<sup>d</sup>.

It seems probable that some art is used in dyeing Teas; they certainly give a much darker and less elegant infusion than they did formerly; and the quality in general has become inferior since the demand has been increased. I remember half a century ago, that lumps of *Catechu*, which is an extract from a species of *Mimosa*, and vulgarly called *Terra japonica*, were frequently found in the chests of Bohea Teas; and that my father, by way of experiment, dried the Green Tea that had been used in the family, and before it was dry scraped over it some of the *Terra japonica*. It curled up very well, and passed with the servants for the same kind of Tea that they were accustomed to drink. Whether lumps of that drug now come over in chests of Tea, or whether it is used by the Chinese to colour or flavour their Teas I cannot say; but if they do, we have the satisfaction to know that it is not noxious.

We are not certain what motive induced the natives of China and Japan first to use an infusion of Tea, but it is highly probable that it was in order to correct the water, which is said to be brackish and ill-tasted in many parts of those countries<sup>e</sup>.

Sir George Staunton says, that persons of rank in China are so careful about the quality of the water intended for their own consumption, that they seldom

drink any without its being distilled; and every Chinese infuses Tea or some other vegetable supposed to be salubrious in the water which he uses. Like beer in England, Tea is sold in public houses in every town; also by the side of public roads, and on the banks of rivers and canals, both in China and Japan; nor is it unusual for the burdened and wearied traveller to lay down his load, refresh himself with a cup of warm Tea, and then pursue his journey<sup>f</sup>.

These qualities, of taking off the ill taste of water, and refreshing after fatigue, have been experienced in other countries besides China and Japan. Thus Kalm says, if Tea be useful, it must be so in travelling through a desert country, where wine or other liquors cannot conveniently be carried, and where the water is generally unfit for use, as being full of insects. In such cases, it is very pleasant when boiled, and Tea is infused in it; nay I cannot sufficiently describe the fine taste it has in such circumstances. It relieves a weary traveller more than can be imagined, as I have experienced with many others who have travelled through the forests of America: on such journeys Tea is found to be almost as necessary as victuals.—Forster, the translator adds, that on his own travels through the desert plains beyond the river Volga, he has had several opportunities of making the same observations on Tea, and that every traveller in the same circumstances will readily allow them to be very just<sup>g</sup>.—Captain Forrest, in his voyage to New Guinea, relates several instances, wherein the sailors experienced the exhilarating effects of this infusion<sup>h</sup>. Other travellers have borne testimony to this pleasant and salutary effect of Tea. And persons, after violent exercise, or coming off a journey much fatigued, and affected with a sense of general uneasiness, attended with thirst and great heat, by drinking a few cups of warm Tea, commonly experience immediate refreshment. It also proves a grateful diluent, and agreeable sedative, after a full meal, when the stomach is oppressed, the head pained, and the pulse beats high<sup>i</sup>. The warm infusion of any aromatic herb, is likely to be grateful to persons exhausted with fatigue, and to stomachs labouring with indigestion<sup>k</sup>.

Neither the Chinese, nor the natives of Japan, ever use Tea, before it has been kept at least a year; because when fresh it is said to prove narcotic, and to disorder the senses. The Chinese pour hot water on the Tea, and draw off the infusion in the same manner as is now practised in Europe; but they drink it without sugar or milk. The Japanese reduce the Tea to a fine powder, by grinding the leaves in a hand-mill; the cups are filled with hot water, and as much of this powder as might lie on the point of a moderate-sized knife is put into each cup, and stirred about till the liquor foams, and it is sipped while warm. According to Du Halde, this method is also used in some provinces of China.

The common people, who have a coarser Tea, boil it for some time in water, and use the liquor for common drink. Early in the morning, the kettle filled with water, is hung over the fire, and the Tea is either put in inclosed in a bag, or by means of a basket pressed to the bottom of the vessel. The coarsest Tea only is used in this manner, the qualities of which being more fixed, would probably not be so fully extracted by infusion.

Tea indeed is the common beverage of all the labouring people in China; and they are scarcely ever represented at work of any kind, but the Tea-pot and Tea-cup appear as their accompaniments: reapers, threshers, and all who work out of doors, as well as within, have these attendants<sup>l</sup>.

With respect to the qualities of Tea, it appears, that an infusion of Green Tea has the effect of destroying the sensibility of the nerves, and the irritability of the muscles; and that it gives out in distillation an odorous water, which is powerfully narcotic.

<sup>f</sup> Embassy, 2. 69, 96.

<sup>g</sup> Travels in North America, vol. 2. p. 314. engl. ed.

<sup>h</sup> Lettsom, p. 20.

<sup>i</sup> Idem, p. 95.

<sup>k</sup> Staunton, 2. 466.

<sup>l</sup> Lettsom, p. 48.

<sup>b</sup> Lettsom, p. 36.

<sup>c</sup> Idem, p. 43.

<sup>d</sup> Staunton Embassy, 2. 467.

<sup>e</sup> Lettsom, p. 19.



That the recent plant contains such an odorous narcotic power, we might presume from the necessity which the Chinese find of drying it with much heat before it can be brought into use; and that even after such preparation, they must abstain from the use of it for a year or more, that is, till its volatile parts are still farther dissipated: and it is said, that unless they use this precaution, the Tea in a more recent state manifestly shows strong narcotic powers. Even in this country, the more odorous Teas often show their sedative powers in weakening the nerves of the stomach, and indeed of the whole system.

From these considerations it may fairly be concluded, that Tea is to be considered as a narcotic and sedative substance; and that it is especially such in its most odorous state, and therefore less in the Bohea than in the Green Tea, and the most so in the finer kinds of the latter.

Its effects, however, seem to be very different in different persons; and hence the contradictory accounts that are given of them. But if we consider the difference of constitution, which occasions some variation in the operating of the same medicine, and of which we have a remarkable proof in the operation of Opium, we shall not be surprised at the different operations of Tea.

If to this we add the fallacy arising from the condition of the Tea employed, which is often so inert as to have little or no effect; and if we still add to this the power of habit, which can destroy the efficacy of the most powerful substances, we shall not allow the various and even contradictory reports of its effects to alter our judgment, with respect to its ordinary and more general qualities in affecting the human body.

These, from experiments and observations, are clearly narcotic and sedative.

It is not at the same time to be denied, that Tea may sometimes have good effects. It is very possible, that in certain persons, taken in moderate quantities, it may, like other narcotics, prove exhilarating, or like them, have some effect in taking off irritability, or in quieting some irregularities of the nervous system.

As its bad effects have been often imputed to the warm water that accompanies the Tea, so there is no doubt that some of its good effects may also be ascribed to the same cause, and particularly its being so often grateful after a full meal<sup>m</sup>.

After all, the infusion of Tea, as it is commonly taken in England, with a competent quantity of cream or milk and sugar, cannot be very narcotic or sedative: especially as after a long voyage it is kept some time in the East India Company's warehouses; and the finer sorts of it are not so much in request as formerly. Nor can it be an unwholesome beverage for sedentary persons and such as live freely, provided it be not taken too hot, or in immoderate quantities, or without any solid food accompanying it. For the lower class of people who generally live poorly, and procure little animal food, Tea conveying little or no nourishment, is a bad succedaneum for beer; and a meal on it, including sugar and butter, is so expensive, that they must forego what is more necessary for their support, in order to enjoy it.

When the Chinese first began to make use of Tea as a beverage we are not able to say, but it is probable that the ill taste of the water in many parts of the empire would induce them to look out for some vegetable to correct it, soon after they arrived at a state of civilization. The first account that we have of it is from two Arabian travellers, who visited China about the year 850, and relate that the inhabitants of that empire had a medicinal beverage, named Chah or Sah, which was prepared by pouring boiling water on the dried leaves of a certain herb, which infusion was reckoned an efficacious remedy in various diseases<sup>n</sup>. From the great revenue which these travellers inform us was levied from the consumption of Tea, it seems then to have been as universally the favourite beve-

rage of the Chinese in the ninth century, as it is at present<sup>o</sup>.

Giovanni Botaro, an eminent Italian author observes, that the Chinese have an herb, out of which they press a delicate juice, which serves them for a drink instead of wine: it also preserves their health, and frees them from all those evils that the immoderate use of wine doth breed in us<sup>p</sup>.

About the year 1600, Texeira, a Spaniard, saw the dried leaves in Malacca, where he was informed that the Chinese prepared a drink from this vegetable: and in 1633, Olearius found this practice prevalent among the Persians, who procured the plant under the name of Cha orchia, from China, by means of the Usbeck Tartars. In 1639, Stirkaw, the Russian Ambassador at the court of the Mogul Chau Altyn, partook of the infusion of Tea; and at his departure was offered a quantity of it, as a present for the Czar Michael Romanoff, which the Ambassador refused, as being an article for which they had no use in Russia<sup>q</sup>.

Tea was not known in Europe as a beverage, before the commencement of the seventeenth century. Some Dutch adventurers seeking, about that time, for such objects as might fetch a price in China, and hearing of the general usage there of a beverage from a plant of the country, bethought themselves of trying how far an European plant, of supposed great virtues, might also be relished by the Chinese, and thereby become a saleable commodity amongst them; and accordingly introduced to them the herb *Sage*, so much once extolled by the Salernian school of physic, as a powerful preservative of health: the Dutch accepting in return the Chinese Tea, which they brought to Europe. The European herb did not continue, long at least, in use in China; but the consumption of Tea has been gradually increasing in Europe ever since<sup>r</sup>.

What authority Sir George Staunton had for the particulars of the above account, I do not know, but it is certain that Tea was introduced into Europe by the Dutch East India Company, very early in the seventeenth century. Dr. Lettsom thinks it probable that the Dutch, as they traded considerably to Japan about that time, might have brought this article first from thence. But China soon became the general mart, and the province Fokien or Fo-chen is the principal country, that supplies both the Empire and Europe with this commodity. In this province, the shrub is called Thee or Te; and the Europeans having first landed there, that dialect has been preserved<sup>s</sup>.

I have been informed that Sage was much esteemed in China; and I recollect that Mr. Miller had a present of a parcel of Tea from that country, which on being infused, had so much the flavour of Sage, that he sent for some of the broad-leaved Sage out of the garden, and having made an infusion of that, he and my father could scarcely distinguish them. It is certain however that the European has not made its fortune in China, as the Chinese shrub has done here.

The first introduction of Tea into England was before the year 1660, when the first mention of it was made in the statute book, and a duty of four-pence a gallon laid on the liquor made and sold in all coffee-houses.

A quantity of it being brought over from Holland about the year 1666 by Lord Arlington and Lord Ossory, Tea soon came into request among people of fashion, and its use, by degrees, since that period, has become general<sup>t</sup>. Hanway informs us, that at this time it sold for sixty shillings a pound<sup>u</sup>.

From these small beginnings, we have seen the infusion of a leaf from almost the farthest extremity of the earth become in a manner a necessary of life, in several parts of Europe, and the passion for it descend from the most elevated to the lowest orders in society. In 1785 it was computed that the whole quantity of Tea imported into Europe was about nineteen mil-

<sup>m</sup> Cullen, mat. med. 2. 309. Woodville, 4. 120. See Lettsom, p. 59. to the end.

<sup>n</sup> Renaudot Anciennes Relations. Par. 1718. p. 31. Haller, Bibl. bot. 1. 176. Letts. p. 21.

<sup>o</sup> Robertson's India, p. 96.

<sup>p</sup> Engl. trans. 1530. Anderson's Commerce. Letts. p. 10.

<sup>q</sup> Lettsom, p. 20.

<sup>r</sup> Staunton Embassy, 1. 21.

<sup>s</sup> Idem, p. 21, 25.

<sup>t</sup> Idem, p. 21.

<sup>u</sup> Journal, 2. 21.



lions of pounds, of which it is conjectured that twelve millions were consumed in Great Britain and its dependencies<sup>a</sup>.

Sir George Staunton informs us, that the annual public sales of Teas, by our East India Company, did not, in the beginning of the eighteenth century, much exceed fifty thousand pounds weight, independently of what little might be then perhaps clandestinely imported. The Company's annual sales now (about 1797) approach to twenty millions of pounds; being an increase of four hundred fold, in less than one hundred years, and answers to the rate of more than a pound each, in the course of the year, for the individuals of all ranks, sexes and ages, throughout the British dominions in Europe and America<sup>2</sup>.

Since the year 1797, it is probable, that the importation of Tea has much increased, and that at least thirty millions of pounds are annually imported into Europe and America<sup>3</sup>.

Taking an average of seven years before the Commutation Act, which took effect in September 1784, the importation of Teas was 17,662,115 lb; and taking an average of the same number of years from 1784 inclusive, it amounted to 30,691,971 lb.

Curiosity and interest would induce the Europeans to discover the real Tea shrub, and the jealous caution of the Chinese would make them use every endeavour to conceal it. Simon Paulli a celebrated physician and botanist at Copenhagen, was the first who pretended to have discovered the genuine Tea plant, in the Myrica Gale, an inhabitant of England, Brabant, and other northern countries of Europe, and known to us by the names of Sweet Gale, Goule or Gaule, Sweet Willow, Wild or Dutch Myrtle. Father Labat thought that he had discovered it in Martinico. He pretended also to have procured Tea seeds from the East Indies, and to have raised the plant in America; but from his own account it appears to be a species of *Lythymachia*, or what is called West-India Tea.

Many other pretended discoveries of the Chinese Tea-tree have been related; all which have proved erroneous, when properly enquired into. *Camellia Safanqua* has the nearest resemblance to it<sup>4</sup>. Linneus says it is so great, that it might deceive a skilful botanist; the only difference being, that those of the *Camellia* are a little broader. Thunberg says, that the leaves of the true Tea-tree are thicker and recurved; that the flowers are axillary and two together, the petals smaller and not keeled under the tip. But these two plants cannot be confounded when they are in flower. It is reported that the leaves of the *Camellia* are mixed with Tea, to give it a fine flavour. This beautiful plant has been repeatedly sent to Europe instead of the true Tea. Linneus endeavoured for many years to procure the Tea-tree for the botanic garden at Upsal; but by a variety of accidents, they were all destroyed on the passage. At length, about the year 1755, Mr. Lagerstroem, a director of the Swedish East India Company, brought him two plants alive, which he had bought in China; but they proved to be the *Camellia*, the crafty Chinese having taken care to pull off the flowers. In 1769 Linneus received a branch from France, which was brought from China for the true Tea, but that proved also to be the *Camellia*<sup>5</sup>; which is now not uncommon in our English greenhouses. Before the true Tea-tree was introduced, this or some other shrub was generally shewn for it; and sometimes plants that bore no resemblance to it were endeavoured to be obtruded upon the curious but ignorant enquirer.

#### PROPAGATION AND CULTURE.

In Japan the Tea-tree is cultivated round the borders of rice and corn-fields, without any regard to the soil. Seeds contained in the seed-vessels, from six to twelve or fifteen, are put into one hole, four or five inches deep. The seeds contain a large proportion of oil, which is liable soon to turn rancid; hence

scarcely a fifth part of them germinate; and this makes it necessary to plant so many together. The seeds vegetate without any farther care: but the more industrious annually remove the weeds, and manure the land.

The leaves are not fit to be plucked before the third year's growth. In seven years the tree is usually cut down, and abundance of fresh shoots spring up. Some defer cutting it till it is of ten years growth<sup>6</sup>.

In China, wherever it is regularly cultivated, it rises from the seed sown in rows; at the distance of about four feet from each other, in land kept free from weeds. It is seldom sown on flat or marshy ground, which is reserved for rice, but vast tracts of hilly land are planted with it, particularly in the province of Fo-chen. Its perpendicular growth is impeded for the convenience of collecting the leaves. Its long and tender branches spring up almost from the root, without any intervening naked trunk.

The Tea-tree is cultivated in several of the provinces of China, but seldom more northerly than thirty degrees beyond the equator. It thrives best between that parallel and the line that separates the temperate from the torrid zone; though it is to be found also in the province of Yunnan, to the southward of it<sup>7</sup>.

The southern countries of Europe, and some provinces of North America would suit it, particularly the latter, the heat there in summer being such, that vegetables make quicker and more early shoots, and therefore acquire more strength and firmness before the winter commences.

To propagate the Tea-tree in Europe it is necessary to procure seeds from China. Care must be taken that they be fresh, sound, ripe, white, plump and moist internally. After being well dried in the sun, they may be inclosed in bees-wax: or, left in their capsules, they may be put into very close canisters of tin or tutenague. Thouin, in his directions to Perouse, recommends these and other seeds to be placed in alternate layers of earth or sand, in tin boxes, closed up exactly, and placed in solid cases, covered with waxed cloth; the boxes to be placed in a part of the ship the least accessible to moisture, and the most sheltered from extreme heat or cold. Mr. Sneyd was very successful in having seeds packed up in absorbent paper, and surrounded by raisins or moist sugar, which kept them in a state fit for vegetation. American seeds are frequently brought over, by putting them into a box, not made too close, upon alternate layers of moss, in such a manner as to admit the seeds to vegetate. This might be tried with the seeds of the Tea-tree: and to succeed more certainly, some of the seeds might be sown in pots or boxes, when the vessel arrives at St. Helena, and after passing the tropic of Cancer, near the latitude of thirty degrees north.

But the best method seems to be, to sow ripe seeds in good light earth in boxes, at leaving Canton; covering them with wire, to prevent rats and other vermin from coming to them; and taking care that the boxes be not exposed to too much air, nor to the spray of the sea. A little fresh or rain water should be sprinkled over them now and then; and when the seedling plants appear, they should be kept moist, and out of the burning sun. If young plants can be procured in China, they may be sent over in a growing state in boxes, forty inches long, by twenty broad, and as much in depth, having a few holes bored through the bottom.

When the trees arrive in England, they must be kept in a green-house during the winter, and in the open air during the summer. If they come in bad condition, it may not be amiss to plunge the pots into which they are transplanted, in a gentle hot-bed, or to set them in the tan-pit, to make them strike and shoot more freely.

Though the Tea-tree will not at present bear the rigour of our winters, in the open air, yet it is not impossible but it may gradually become naturalized to

<sup>a</sup> Robertson's India, p. 252.

<sup>2</sup> Embassy, 1. 22.

<sup>6</sup> Kämpfer. Lettsom, p. 26.

<sup>7</sup> Lettsom, p. 101.

<sup>3</sup> Idem, p. 40.

<sup>4</sup> Ellis, p. 28.

<sup>5</sup> Staunton, Embassy, 2. 464. 466.



our climate, like the Magnolia, among several other trees and shrubs; especially if it were to be brought from the coldest provinces of China where it grows, or from the parts of Europe a little to the southward of us, when it shall have been naturalized there<sup>d</sup>.

The Tea-tree may be increased freely from cuttings, in the same manner with Gardenia: and it will also probably grow from layers.

THEKA. See *Tectona*.]

THELYGONUM. (From *ἑλνυ γονυ*, *genu femineum*. —It is a name from Pliny.)

Lin. gen. n. 1068. Reich. n. 1166. Schreb. n. 1444.

Juss. 405. Cynocrambe Tournef. t. 485. Gærtn. t. 75.

Class. 21. 7. Monoecia Polyandria.

Nat. order of Scabridæ. Urticæ Juss.

GENERIC CHARACTER.

\* Male flower.

CAL. Perianth one-leaved, turbinate, semibifid, segments revolute.

COR. none.

STAM. Filaments very many (twelve or more), erect, length of the corolla. Anthers simple.

\* Female flower on the same plant.

CAL. Perianth one-leaved, very small, erect, bifid, permanent at the side of the germ.

COR. none.

PIST. Germ globular. Style filiform, long. Stigma simple.

PER. Capsule coriaceous, globular, one-celled.

SEED one, globular, with a callous appendicle.

ESSENTIAL CHARACTER.

MALE. Cal. bifid. Cor. none. Stam. commonly twelve.

FEM. Cal. bifid. Cor. none. Pist. one. Caps. coriaceous, one-celled, one-seeded.

SPECIES.

1. Thelygonum Cynocrambe. Purslain-leaved Thelygonum, or Dog's Cabbage.

Lin. spec. 1411. Juss. 857. Reich. 4. 157. Sauv. monsp. 129. Gouan monsp. 489. Fabric. helmst. 367. Allion. pedem. n. 2091. Desfont. atlant. 2. 346. Kniph. cent. 4. n. 89.

Cynocrambe prostrata. Gærtn. fruct. 1. 362.

C. Dioscoridis. Bauh. pin. 122. prodr. 59. ic. Park. theat. 295. n. 3. t. 396. f. 3.

C. Alines folio. Barr. ic. 335.

Alines facie planta nova. Col. phyt. 2. 28. t. 30.

Alfine foetida, Fabio Columnæ Dioscoridæa. Bauh. hist. 3. 365. Raii hist. 206.

DESCRIPTION, &c.

It is an annual plant, which decays as soon as the seeds are ripe. The stalks trail on the ground like those of Chickweed; they grow about a foot long, their joints are pretty close, and have ovate acute-pointed leaves, on pretty long bordered foot-stalks. One of these leaves is placed at each joint, and from the same point come out several smaller leaves of the same shape, on shorter footstalks. Flowers axillary in clusters sitting very close, small, and of an herbaceous white colour, male and female from the same joint.

[Stems round, diffused, flexuose, succulent. Branches opposite, divaricate, from the axils of the opposite leaves. Leaves ovate, bluntish, even, nerved, slightly marked with lines, oleraceous, rugged at the edge; the lower ones opposite, the upper alternate, ending in the petioles, which are the length of the leaves, and connected on each side by a three-toothed, membranaceous, wide, short stipule. Male flowers two together, opposite to a leaf, on very short one-flowered peduncles: anthers from thirteen to nineteen, linear. Female flowers solitary, sessile, axillary<sup>e</sup>.

Gærtner considers the pericarp as a small superior nut, of an ovate-globular form, coriaceous, of a blackish-brown colour, lengthened out at the base into a short hollow process; one-celled, valveless. Seed one, globular, pale, fastened to the bottom of the nut by a small umbilical tubercle at its base.

Native of the South of France, near Montpellier, Italy in the island of Caprea, county of Nice, &c.

<sup>d</sup> Lettson, p. 54 to 58.

<sup>e</sup> Linn. spec.

and Sicily. Said by Linneus to be common in the East Indies. Found by Desfontaines in the kingdom of Tunis, on mount Zowan. Mr. Miller adds Tary. It was cultivated by him in 1759<sup>f</sup>.]

PROPAGATION AND CULTURE.

Sow the seeds in autumn, where the plants are to remain, for when sown in the spring, the plants rarely come up the same year. They require no culture but to be kept clean from weeds, and to be thinned where they are too close.

THELYPTERIS. See *Polypodium*.

THEOBRŌMA. (Θεω βρωμα, the food of the gods.)

Lin. gen. n. 900. Reich. n. 972. Schreb. n. 1215.

suppl. 341. Sonnerat nov. guin. t. 61, 62.

Houtt. veg. 3. t. 14. Juss. 276. Cacao Tournef.

t. 444. Aubl. t. 275.

Class. 18. 1. Polyadelphia Decandria.

Nat. order of Columniferae. Malvaceae Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, acute, spreading, deciduous.

COR. Petals five, smaller than the calyx: claws wide, arched, concave like a helmet, emarginate at the tip, scored internally with a thick triple line, inserted into the nectary at the base: borders roundish, acuminate, spreading, each narrowed at the base into a small claw which is from upright recurved, and fastened into the claw.

Nectary a short little pitcher, putting forth five little horns, which are awl-shaped, long, erect, acuminate, bent in and converging, decurrent along the pitcher.

STAM. Filaments five, filiform, erect, bent outwards at top, lying within the claws of the petals, growing externally to the nectary, alternate with and shorter than the horns. Anthers on each filament two, (one on each side at the tip,) vertical, one cell superior, the other inferior.

PIST. Germ ovate. Style filiform, (striated, Aubl.) a little longer than the stamens. Stigma five-cleft.

PER. Capsule oblong, coriaceous, unequal, five-cornered, five-celled, valveless, not opening.

SEEDS very many, subovate, nestling in a buttery pulp, fastened to a central columnar Receptacle.

ESSENTIAL CHARACTER.

Cal. five-leaved. Petals five, arched. Nect. five-horned. Filam. five, within the calyx of the petals, growing externally to the nectary, having two anthers on each.

SPECIES.

1. Theobroma Cacao. Chocolate Nut Tree.

Lin. spec. 1100. Juss. 696. Reich. 3. 582. hort. cliff. 397. mat. med. 176. Jacqu. obs. 1. p. 2. amer. piest. 104. Brown. jam. 306. 2. 3.

Cacao. Clus. exot. 55. Sloan. jam. 2. 15. t. 160.

Merian surin. 26. t. 26 & 63. Geoffr. mat. 409.

Catesb. car. 3. t. 6. Ger. emac. 1551. Park.

theat. 1642. Raii hist. 1670. Blackw. t. 373.

Mill. dict.

C. americana f. Avellana mexicana. Bauh. hist.

Arbor cacavifera americana. Pluk. phyt. t. 268. f. 3.

Amygdalis similis guatimalensis. Bauh. pin. 442.

DESCRIPTION, &c.

[The Cacao or Chocolate-nut tree grows in a very handsome form, to the height of twelve or sixteen feet: the trunk is upright and about as high as a man before the head spreads out: the wood is light and of a white colour, and the bark is brownish and even. Leaves lanceolate-oblong, bright green, quite entire, alternate, from nine to sixteen inches long, and three or four inches wide at most, on a petiole an inch in length and thickened at both ends. Peduncles slender, about eight or ten together, chiefly from the scars of the fallen leaves; one of them only for the most part fruitful, the rest abortive. Flowers small, reddish, inodorous. Fruits smooth, yellow, red, or of both colours, about three inches in diameter: rind fleshy, near half an inch in thickness, flesh-coloured within: pulp whitish, the consistence of butter, separating from the rind in a state of ripeness, and adhering to it

<sup>f</sup> Hort. kew.



only by filaments, which penetrate it and reach to the seeds. Hence it is known when the seeds are ripe, by the rattling of the capsule when it is shaken. The pulp has a sweet and not unpleasant taste, with a slight acidity; it is sucked and eaten raw by the natives: it may be easily separated into as many parts as there are seeds, to which it adheres strongly, and they are wrapped up in it, so that each seed seems to have its own proper pulp. The seeds are about twenty-five in number: when fresh they are of a flesh-colour: gathered before they are ripe, they preserve them in sugar, and thus they are very grateful to the palate: they quickly lose their power of vegetation, if taken out of the capsule, but kept in it, they preserve that power for a long time. The tree bears leaves, flowers and fruit all the year through; but the usual seasons for gathering the fruit are June and December. In two years from the seed it is above three feet high, and spreads its branches, not more than five of which are suffered to remain: before its third year is complete it shows for fruit. A tree yields from two to three pounds of seeds annually.

It is thus described by Dampier. The Cacao tree has a body about a foot and half thick, and seven or eight feet high to the branches, which are large and spreading, with a pretty thick, smooth, dark-green leaf, shaped like that of a Plum-tree, but larger. The nuts are inclosed in cods as big as both a man's fists put together: at the broad end is a small, tough, limber stalk, by which they hang pendulous from the body of the tree, in all parts of it from top to bottom, scattered at irregular distances, and from the great branches a little way up; especially at the joints or partings, where they hang thickest; but never on the smaller boughs. There may be ordinarily twenty or thirty of these cods upon a well-bearing tree; and they have two crops of them in a year, one in December, but the best in June. The shell is almost half an inch thick, brittle, yet harder than the rind of a lemon; like that, its surface is grained or knobbed, but more coarse and unequal. The cods at first are of a dark green, but the side next the sun of a muddy red. As they grow ripe, the green turns to a fine bright yellow, and the muddy to a more lively red. They do not ripen all at once, but for three weeks or a month in the season, the overseers of the plantations go every day to cut those which are turned yellow. They lay them in heaps to sweat, and then bursting the shell with their hands, they pull out the nuts, of which there are generally near a hundred in a cod; drying them in the sun upon mats.

According to Browne, the Cacao or Chocolate tree seldom exceeds six or seven inches in diameter, or rises above fifteen or sixteen feet in height. It is very beautiful, and in general extremely engaging to the sight, when charged with fruit, which grows from all parts of the trunk and larger branches indiscriminately. When the seeds are loose and rattle in the pods, they are picked off, opened, and the kernels picked out and exposed daily to the sun, until they are thoroughly cured, and fit for the store or market.

These seeds are remarkably nourishing, and agreeable to most people; which occasions them to be commonly kept in most houses in America, as a necessary part of the provisions of the family: they are generally ground or pounded very fine, and made into paste: they are much charged with oil, but mix well with milk or water. Chocolate is much esteemed in all the southern colonies of America; and well known to make the principal part of the nourishment of most old people in those parts, as well as of a great number of Jews.—It was in use among the native Indians, before the arrival of the Spaniards.]

Native of South America, and found in great plenty in several places between the tropics, but particularly at Caracca and Carthage, on the river Amazons, the isthmus of Darien, at Honduras, Guatemala and Nicaragua.

[Dampier says that the Cacao tree grows nowhere in the north seas but in the bay of Campeachy,

on Costa Rica; between Portabel and Nicaragua, chiefly up Carpenter's river, and on this coast as high as the island of Trinidad. In the South Seas it grows by the river of Guiaquil, and in the valley of Collima, on the south side of Mexico. The nuts of the coast of Caraccos, though less than those of Costa Rica, which are large and flat, are better and fatter.—In many places the nuts went for current money before the arrival of the Spaniards; and since that, tribute has been paid them in some provinces, in Chocolate nuts.]

This tree is cultivated in many of the West India islands, belonging to the French and Spaniards, and formerly in some of those belonging to the English; but it has been so neglected in the latter for many years past, that we are now supplied with Chocolate from the French and Spaniards. [The reason probably has been, the difficulty of raising the young trees, and their unfitness to resist the force of those hurricanes, to which the West India islands are subject.

Blome, who published a short account of Jamaica in 1672, speaks of Cacao as being at that time one of the chief articles of exportation: "there are, says he, in the island at this time, about sixty Cacao walks, and many more now planting."

At present (says Edwards, 2. 306.) I believe there is not a single Cacao plantation from one end of Jamaica to the other. A few scattered trees here and there are all that remain of those flourishing and beautiful groves which were once the pride and boast of the country.

There is reason to apprehend that our sugar islands can never again enter into competition with the Spanish Americans in the cultivation of Cacao. At present the only plantations of any account, in our colonies, are in Grenada and Dominica, and the export from them cannot be estimated at more than four thousand bags of a hundred weight each<sup>b</sup>.

Browne says that Chocolate trees are often found wild in the woods of Jamaica, where doubtless they had been cultivated in the time of the Spaniards. The trees are very delicate, and rarely survive, when once they are loosened in the ground, which is generally the case, when they are not well sheltered, in hurricane times. The Spaniards, to prevent this, used to intermix many of the Erythrina or Coral Bean trees, hence called Mader di Cacao, in their walks. Many however thrive well, without any shelter of this kind, but probably they were protected while young, and they have been generally planted in a good deep mould, and a warm sheltered situation.

Jacquin informs us, that since the great hurricane in 1725, which destroyed the Cacao trees in Martinico and the neighbouring islands, they have been so little cultivated as scarcely to supply the home consumption. He thinks that the culture of Coffee, which is more certain, has contributed much to this neglect. A young plant of that shrub was first introduced into Martinico by De Clieux, a captain in the French infantry, in the year 1720, from the royal garden at Paris; and it increased so much, that in 1756, when Jacquin was there, one hundred and eighty hundred thousand pounds were exported to Europe from that island alone.

The Chocolate-nut tree was cultivated by Mr. Miller in 1739<sup>c</sup>.

There are two principal varieties of the fruit; one long, of an oval-oblong form, obtusely attenuated at the end, ten-grooved, and having the surface irregular with little bumps, or somewhat warted, as it is figured by Catesby; this is called in Martinico *Cacao du pays*: the other ovate, not at all warted, scarcely grooved, as thick as the other but shorter; this is called *Cacao de Cayenne*, being supposed to come from that country. The latter was introduced into Martinico after the hurricane<sup>d</sup>. Both are frequent wild in Jamaica<sup>e</sup>.]

#### PROPAGATION AND CULTURE.

As the Chocolate-nut tree may be cultivated to advantage in the West India islands, where Sugar-

<sup>b</sup> Edwards's hist. of the West Indies, 2. 306. ed. 2.

<sup>c</sup> Hort. kew.

<sup>d</sup> Jacquin.

<sup>e</sup> Browne.



canes do not thrive, I shall therefore subjoin the best account of the culture which it requires in those countries, with the profits which have arisen from it to those who have planted some of these trees of late years, by way of experiment, in order to excite others to follow their example; and shall afterwards give directions for cultivating it in England, by way of curiosity.

In making a plantation of Chocolate-trees, you must first be very careful in the choice of the situation, and the soil, otherwise there will be small hopes of success. As to the situation, it should be in a place where the trees may be protected from strong winds, to which if they are exposed, they will soon be destroyed: so that in such places where torrents of water have washed away the earth so as to leave broad and deep furrows (which the inhabitants of those islands call gullies,) these trees will thrive exceedingly: and as these are very frequently to be found in those islands, and many of them are of large extent, and not much cultivated, it may be a great improvement to some estates, which, at present, are of small value. The soil in these gullies is generally rich and moist, which is what these trees require; so that they will make great progress in these places, as hath been experienced by those persons, who have lately made trials of the plants in these situations; but where there are not a sufficient number of these gullies, choice should be made of a situation which is well sheltered by large trees; or, if there are not trees already grown, there should be three or four rows planted round the spot which is designed for the Chocolate-trees, of such sorts which are of quickest growth; and within these rows there should be some Plantain-trees, planted at proper distances, which being very quick of growth, and the leaves very large, will afford a kindly shelter to the young Chocolate-trees placed between them.

The Chocolate-trees which are cultivated, seldom grow to more than fourteen or fifteen feet in height, nor do they spread their branches very wide; so that if the Plantain-trees are placed in rows, about twenty-four feet asunder, there will be room enough for two rows of Chocolate-trees between each row of Plantains; and if they are placed at ten feet distance in the rows, it will be sufficient room for them. Those trees which are found wild in uncultivated places, are generally of much larger growth, which may be occasioned by the other trees, amongst which these are found growing; for, being protected from the winds by those, they are not so much in danger therefrom, as those which are cultivated: and the other trees closely surrounding them, will naturally draw them up to a greater height: however, that is not a desirable quality in these trees; for the lower they are, the better the fruit may be gathered without hurting the trees, and the less they are exposed to the injuries of the weather; so that the inhabitants never desire to have their trees above twelve or fourteen feet high.

The soil upon which these trees thrive to most advantage, is a moist, rich, deep earth; for they generally send forth one tap root, which runs very deep into the ground, so that wherever they meet with a rocky bottom near the surface, they seldom thrive, nor are they of long continuance; but in a rich, deep, moist soil, they will produce fruit in pretty good plenty the third year from seed, and will continue fruitful for several years after.

Before the plantation is begun, the ground should be well prepared by digging it deep, and clearing it from the roots of the trees, and noxious plants, which, if suffered to remain in the ground, will shoot up again after the first rain, and greatly obstruct the growth of the plants; so that it will be almost impossible to clear the ground from those roots, after the Chocolate plants are come up, without greatly injuring them.

When the ground is thus prepared, the rows should be marked out by a line, where the nuts are to be planted, so as that they may be placed in a quincunx order, at equal distance every way, or at least that

the Plantain-trees between them may form a quincunx, with the two rows of Chocolate-trees, which are placed between each row of them.

In making a plantation of Chocolate-nut-trees, the nuts must be planted where the trees are to remain; for if the plants are transplanted, they seldom live; and those which survive it, will never make thriving trees; for, as I before observed, these trees have a tender tap root, which, if broke, or any way injured, the tree commonly decays.

The nuts should always be planted in a rainy season, or at least when it is cloudy weather, and some hopes of rain falling soon after. As the fruit ripens at two different seasons, viz. at Midsummer and at Christmas, the plantation may be made at either of those; but the chief care must be to choose such nuts as are perfectly ripe and sound, otherwise the whole trouble and expence will be lost. The manner of planting the nuts is, to make three holes in the ground, within two or three inches of each other, at the place where every tree is to stand; and into each of these holes should be one sound nut planted about two inches deep, covering them gently with earth. The reason for putting in three nuts at every place is, because they seldom all succeed; or, if most of them grow, the plants will not be all equally vigorous; so that when the plants have had one year's growth, it is very easy to draw up all the weak unpromising plants, and leave the most vigorous; but in doing this, great care should be had of the remaining plants, so as not to injure or disturb their roots in drawing the others out.

It is very proper to observe, that the Chocolate-nuts will not retain their growing faculty long after they are taken from the trees, so that there is no possibility of transporting them to any great distance for planting; nor should they be kept long out of the ground, in the natural places of their growth. There are some authors, who have written the history of this tree, and distinguish three different sorts of the nuts, from the colour of their skins, one of which is of a whitish green colour, one of a deep red, and the third of a red and yellow colour; but these are not specifically different, but all arise from seeds of the same tree, as is the case of our Filberts, which differ in the colour of their skins, but are of the same colour within, and have the same taste. There are others, who would distinguish these nuts by their size and form, some being large and thick, others almost as flat as Beans; but these differences, I have been credibly informed, arise from some accident, as those trees which are young and vigorous, and grow upon a deep rich soil will always produce larger and better nourished fruit, than those which stand on a shallow dry ground, and are unthriving trees: as will also the age of a tree make a great alteration in the size of the fruit; for old trees are generally observed to produce smaller and flatter nuts than those which are young, or than the same trees did bear while they were vigorous.

When the Chocolate-trees first appear above ground, they are very tender, and subject to great injuries from the strong winds, the scorching sun, or great droughts, for which reason the planters are obliged to guard against all these enemies, first, by making choice of a sheltered situation, or at least by planting trees to form a shelter; and, if possible, to have the plantation near a river, for the convenience of watering the plants the first season, until they have made strong roots, and are capable of drawing their nourishment from some depth in the earth, where they meet with moisture. But in order to shelter the plants from the scorching rays of the sun, they generally plant two rows of Cassada between each row of Chocolate-trees, which will grow about seven or eight feet high, and screen the young plants from the violence of the sun the first season; after which time, they will be in less danger of injury therefrom; and the following season, when the Cassada is taken up for use, the ground should be worked between the young plants, being very careful not to injure their roots by this operation. This method of planting



ing the Cassada between the young Chocolate-trees, is of great advantage to the planter; for when the roots of the Cassada are taken up for use, it will defray the expence of keeping the ground clean from weeds, without which the young plants will come to nothing. The Plantains also, which will be fit to cut in about twelve months after planting, will defray the whole expence of preparing the ground, so that the produce of the Chocolate-trees will be neat profit; for as the Plantains produce fruit and decay, they will be succeeded by suckers, which will produce fruit in eight months after; whereby there will be a continual supply of food for the negroes, which will more than pay for keeping the ground wrought, and clear from weeds, until the Chocolate-trees begin to produce fruit, which is generally the third year after planting.

The planters usually set the Plantain-trees two or three months before the Chocolate-nuts are ripe, that they may be large enough to afford shelter to the young plants when they come up; and the Cassada is always planted a month or six weeks before the Chocolate-nuts, for the same reason. Some people plant Potatoes, others Cucumbers and Melons, or Water Melons, between the rows of Chocolate plants; which, they say, will prevent the weeds from rising to injure the young plants: for as all these trail on the ground, they occupy the whole surface, and prevent the weeds from growing: but where this is practised, it should be done with great caution, lest, by being over-covetous, you injure the young Chocolate-nuts so much, that they may never recover it; therefore great care should be taken to reduce the shoots of these plants, whenever they approach the Chocolate-trees; otherwise they will soon greatly injure, if not totally destroy them.

In about seven or eight days after the Chocolate-nuts are planted, the young plants will begin to appear above ground; when they should be carefully looked over, to see if any of them are attacked by insects; in which case, if the insects are not timely destroyed, they will soon devour all the young plants; or if there should be any weeds produced near the plants, they should be carefully cut down with a hoe; in doing which, great care should be taken that neither the tender shoot, nor the rind of the bark are injured.

About twenty days after the plants have appeared, they will be five or six inches high, and have four or six leaves, according to the strength of the plants. These leaves are always produced by pairs, opposite to each other, as are also the branches; so that they make very regular handsome heads, if they are not injured by winds. In ten or twelve months they will be two feet and a half high, and have fourteen or sixteen leaves. By this time the Cassada, which was planted between the rows of Chocolate plants, will have large roots fit for use, therefore should be taken up; and the ground being then wrought over again, will greatly encourage the young plants.

In two years time the plants will have grown to the height of three feet and a half, or sometimes four feet, many of which will begin to flower; but the careful planters always pull off all these blossoms; for if they are permitted to remain to produce fruit, they will so much weaken the trees, that they seldom recover their strength again, so as to become vigorous. When these plants are two years and a half old, they will produce flowers again, some of which are often left to bear fruit; but the most curious planters pull off all these, and never leave any to produce fruit until the third year; and then but a few, in proportion to the strength of the trees; by which method, their trees always produce larger and better nourished fruit, than those which are suffered to bear a larger quantity, and will continue much longer in vigour. The fourth year they suffer their trees to bear a moderate crop, but they generally pull off some flowers from those trees which are weak, that they may recover strength before they are too old.

From the time when the flowers fall off, to the maturity of the fruit, is about four months. It is easy to know when the fruit is ripe by the colour of the

pods, which become yellow on the side next the sun. In gathering the fruit, they generally place a negro to each row of trees; who, being furnished with a basket, goes from tree to tree, and cuts off all those which are ripe, leaving the others for a longer time to ripen. When the basket is full, he carries the fruit, and lays it in a heap at one end of the plantation; where, after they have gathered the whole plantation, they cut the pods lengthways, and take out all the nuts, being careful to divest them of the pulp which closely adheres to them; and then they carry them to the house, where they lay them in large casks, or other vessels of wood, raised above ground, and cover them with leaves of the Indian Reed and mats, upon which they lay some boards, putting some stones thereon to keep them down close, in order to press the nuts. In these vessels the nuts are kept four or five days; during which time, they must be stirred and turned every morning; otherwise they will be in danger of perishing from the great fermentation they are usually in. In this time they change from being white to a dark red or brown colour. Without this fermentation, they say the nuts will not keep; but will sprout, if they are in a damp place, or shrivel and dry too much, if they are exposed to heat.

After the nuts have been thus fermented, they should be taken out of the vessels and spread on coarse cloths, where they may be exposed to the sun and wind; but at night, or in rainy weather, they must be taken under shelter, otherwise the damp will spoil them. If the weather proves fair, three days time will be long enough to dry them, provided they are carefully turned from time to time, that they may dry equally on every side. When they are perfectly dry they may be put up in boxes or sacks, and preserved in a dry place until they are shipped off, or otherwise disposed of. The fresher these nuts are, the more oil is contained in them; so that the older they are, the less they are esteemed.

These trees do not produce their fruit on the young branches, or at their extremities, as most other trees do; but from the trunk, and the larger branches, come out the buds for flowers and fruit. While the trees are young, they do not produce their fruit in great plenty; for before the trees are eight years old, they reckon it a good crop to have twenty-eight or thirty pods on each tree at one gathering, especially that at Midsummer; which is always a much worse crop than the Christmas season, which is occasioned by the much greater drought of the spring; for the autumns being the rainy seasons, the Chocolate-trees produce a much greater quantity of fruit. When the trees are full grown and vigorous, they will sometimes produce two hundred, or two hundred and forty pods at one season: which will make ten or twelve pounds of Chocolate, when dried; so that it is a very profitable commodity, and can be managed with very little charge, when compared with sugar. I have been credibly informed by a person of great worth and integrity, who resided some years in America, that he has seen as much Chocolate gathered from one tree in a year, as hath been worth thirty shillings sterling on the spot: so that the trouble of gathering and preparing for the market, being much less than for many other commodities which are manufactured in the British colonies, it is surprising it should be neglected; especially as it yields so large a share of sustenance to the wealthier inhabitants of those colonies, that they cannot live comfortably without it, and purchase it from the French and Spaniards at a considerable price; which in time must greatly impoverish the colonies.

The Chocolate-trees, if planted on a good soil, and properly taken care of, will continue vigorous and fruitful twenty-five or thirty years: therefore the charge of cultivating a plantation of these trees, must be much less than that of Sugar; for although the ground between the rows of plants will require to be often hoed and wrought, yet the first working of a ground to make a new plantation of Sugar, Indigo, Cassada, &c. is a larger expence than the after-workings



ings are. Besides, Sugar-canes require as much labour in their cultivation, as any plant whatever; and since the insects which destroy the Sugar-canes, have spread so much in the British colonies, nothing is a more uncertain crop than Sugar; for which reason, I think it would be greatly worth those planters care, who are possessed of proper lands for the Chocolate trees, to make some small trials at least, to be convinced of the truth of this fact.

The leaves of these trees being large, make a great litter upon the ground when they fall; but this is not injurious, but rather of service to the trees; for the surface of the ground being covered with them they preserve the moisture in the ground, and prevent its evaporating; which is of great use to the young tender roots, which are just under the surface; and when the leaves are rotten, they may be buried in digging the ground, and it will serve as good manure. Some planters let the pods, in which the Chocolate is inclosed, lie and rot in a heap (after they have taken the nuts out) which they also spread on the ground instead of dung. Either of these manures are very good, provided they are well rotted before they are laid on the ground; and great care should be had, that no vermin should be carried on the plantation with the dung.

Besides the ordinary care of digging, hoeing, and manuring the plantations of Chocolate-trees, there is also another thing requisite in order to their doing well; which is, to prune the decayed branches off, and to take away small ill placed branches, wherever they are produced. But you should be cautious how this work is performed; for there should be no vigorous branches shortened, nor any large amputations made on these trees; because they abound with a soft, glutinous, milky juice, which will flow out for many days whenever they are wounded, which greatly weakens the trees. However, such branches whose extreme parts are decayed, should be cut off, to prevent the infection from proceeding farther; and such branches as are much decayed, should be taken off close to the stem of the tree; but this should be performed in dry weather, soon after the crop of fruit is gathered.

Some people may perhaps imagine, that what I have directed, is a tedious laborious work, and not to be performed by a few slaves: but this is a great mistake, for I have been credibly informed, that five or six negroes will cultivate a plantation of ten thousand of these trees, provided they are properly instructed; which is a small number, when compared to the quantity necessary to cultivate a Sugar plantation of the like extent of ground. And when the profits of both are compared, there will be a great difference: for, supposing we set the price of five shillings per annum, for the produce of each tree, when grown, (which I am of opinion is very moderate, considering what has been related;) then a plantation of ten thousand trees will produce twenty-five hundred pounds a year; which, managed by six or seven negroes, without the expence of furnaces, &c. is a much greater profit than, I think, can be drawn from any other production.

In order to cultivate this plant in Europe, by way of curiosity, it will be necessary to have the nuts planted into boxes of earth (in the countries where they grow) soon after they are ripe; because if the nuts are sent over, they will lose their growing quality before they arrive. These boxes should be placed in a shady situation, and must be frequently watered, in order to forward the vegetation of the nuts. In about a fortnight after the nuts are planted, the plants will begin to appear above ground; when they should be carefully watered in dry weather, and protected from the violent heat of the sun, which is very injurious to these plants, especially while they are young: they should also be kept very clear from weeds; which, if suffered to grow in the boxes, will soon overbear the plants and destroy them. When the plants are grown strong enough to transport, they should be shipped and placed where they may be screened from strong winds, salt water, and the violent heat of the

sun. During their passage they must be frequently refreshed with water; but it must not be given them in great quantities, lest it rot the tender fibres of their roots, which will destroy the plants; and when they come into a cool latitude, they must be carefully protected from the cold, when they will not require so frequently to be watered: for in a moderate degree of heat, if they have gentle waterings once a week, it will be sufficient.

When the plants arrive in England, they should be carefully taken out of the boxes, and each transplanted into a separate pot filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, being careful to cover the glasses in the heat of the day, to screen the plants from the sun: they must also be frequently watered, but it must be done with caution, not to rot their roots. In this hot-bed the plants may remain till Michaelmas, when they must be removed into the bark-stove, and plunged into the tan, in the warmest part of the stove. During the winter season the plants must be frequently refreshed with water, but it must be given to them in small quantities, yet in summer they will require a more plentiful share. These plants are too tender to live in the open air in this country, even in the hottest season of the year; therefore must constantly remain in the bark-stove, observing in very warm weather to let in a large share of fresh air to them, and in winter to keep them very warm. As the plants increase in bulk, they should be shifted into larger pots: in doing of which, there must be particular care taken not to tear or bruise their roots, which often kills the plants; nor must they be placed in pots too large, because that is a slow, but sure death to them. The leaves of these plants must be frequently washed to clear them from filth, which they are subject to contract by remaining constantly in the house; and this becomes an harbour for small insects, which will infest the plants, and destroy them, if they are not timely washed off. If these rules are duly observed, the plants will thrive very well, and may produce flowers in this climate: but it will be very difficult to obtain fruit from them; for, being of a very tender nature, they are subject to many accidents in a cold country.

[When the trees are obtained, they may be increased by cuttings, in the same manner as the Gardenia.

According to Dampier, (in South America) they raise the young trees of nuts, set in fine black mould, and in the same places where they are to bear, which they do in four or five years. There are ordinarily from five hundred to two thousand and upwards of these trees in a plantation or Cacao-walk; and they shelter the young trees with Plantains for two or three years, destroying them, when the Cacao-trees are large enough to endure the heat.

Browne says, that it requires a great deal of care, to raise the Chocolate-tree with success. It is generally planted and cultivated in the following manner. Take a full-grown pod, that has lain by some days, and cut off the top at the pointed extremity, so that the seeds may be fully exposed to view; then bury it two thirds or deeper in mould, in some moist shady place. In a few days the seeds begin to germinate: then take them out, and set them in beds, where the mould is rich, well divided and free, moist and properly shaded; disposing them at such distances as will leave room for the roots and branches to spread in. On each bed set one or two seeds, with the root-part downwards, scarcely covering them at the top: moisten the mould gently about them, and cover the bed with some large leaves, to protect the young plants from the sun; they should be also guarded by some little ambient bulwark against heavy rains or blowing weather. They seldom require to be watered after the first day, but if this should become necessary, it is best done, by laying a piece of wet cloth, or some watered weeds, gently round the plant: taking great care not to break off the seed-leaves, for the loss of them would wholly prevent its further growth.

The Plantain-walks afford the most natural and agreeable shade for these plants, while young; but as they



they rise, they should be supplied with a more substantial guard, to protect them from the inclemencies of the weather: these ought to be continued until the Chocolate-trees grow to full perfection, and even then must be removed with caution.

THEOBROMA GUAZUMA. See *Bubroma*.

THEODORA. See *Schotia*.

THEOPHRASTA. (So named in honour of the celebrated Grecian Philosopher and Botanist Theophrastus Eresius.)

Lin. gen. n. 207. Reich. n. 221. Schreb. n. 271.

Juss. 150. Eresia. Plum. 25.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Apocineæ* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, permanent: segments oblong, ciliate at the edge.

COR. one-petalled, permanent: tube length of the calyx, bell-shaped: segments oblong, erect, spreading.

STAM. Filaments five, below the middle of the tube, inserted into a membrane which surrounds the bottom internally, shorter than the corolla. Anthers acuminate.

PIST. Germ roundish. Style length of the stamens, thick. Stigma blunt, perforated.

PER. Fruit large, roundish, corticose, one-celled, many-seeded.

SEEDS oblong, shining, fastened to a fleshy juicy receptacle which is situated at the base.

#### ESSENTIAL CHARACTER.

Cor. bell-shaped, with oblong erect spreading segments. Fruit one-celled, very large, roundish, many-seeded.

#### SPECIES.

1. *Theophrasta americana*.

Lin. spec. 212. Reich. 1. 424. Willd. 1. 824.

Swartz obs. 59.

Eresia foliis Aquifolii longissimis. Plum. gen. 8. ic. 126.

Leaves repand-toothed sharpish.

2. *Theophrasta longifolia*.

Lin. spec. ed. Willd. 1. 824. Jacqu. collect. 4. 136.

Leaves mucronate-toothed acuminate.

#### DESCRIPTIONS, &c.

1. Stem frutescent, one or two feet high, simple, erect, leafy from the middle to the top (like a frondose trunk, as in the Palms), tomentose-ferruginous, spiny. Leaves on very short petioles, opposite, or inserted into the stem in whorls; erect, elongated, attenuated at the base, blunt at the end, very rigid, ferrate, the ferratures spiny, alternately inflected and reflected. Spines standing out small but rigid, black at the outmost tip. Petioles pressed close to the stem, thick, rufous. Racemes short, terminating, from the middle of the terminating leaves, many-flowered: peduncles numerous, curved, short, one-flowered. Seeds black, hard, fastened at the base but free above. The fruit is not properly a berry, nor is it a capsule, for it does not open; but it is corticose, and the greater part of it is often empty; when ripe it is yellow, and brittle, with the receptacle of the base juicy.—Native of South America; in dry coppices of Hispaniola<sup>a</sup>.

2. This is very like the preceding, but yet it is distinct, in having the leaves attenuated at both ends, with the teeth acute and mucronate. In *T. americana* the teeth are short, and the space between them is excavated.—Native of America, at the Caraccas<sup>b</sup>.

THESIUM (of Pliny. Derivation unknown.)

Lin. gen. n. 292. Reich. n. 315. Schreb. n. 410.

Gartn. t. 86. Juss. 75.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Vepreculæ*. Elæagni Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, permanent, half-five-cleft: segments half-lanceolate, erect, obtuse.

COR. none; unless the calyx internally coloured may be regarded as such.

<sup>a</sup> Swartz.

<sup>b</sup> Willdenow.

STAM. Filaments five, awl-shaped, inserted into the base of the calycine segments, shorter than the calyx. Anthers roundish.

PIST. Germ inferior, growing upon the base of the calyx. Style filiform, length of the stamens. Stigma thickish, obtuse.

PER. none. The calyx contains the seed in its bottom, and does not open.

SEED one, roundish, covered.

OBS. *T. alpinum* takes one fifth from the fructification.

#### ESSENTIAL CHARACTER.

Cal. one-leafed, into which the stamens are inserted. Nut inferior, one-seeded.

#### SPECIES.

1. *Thesium linophyllum*. Flax-leaved *Thesium* or Bastard Toad-flax.

Lin. spec. 301. Reich. 1. 585. Willd. 1. 1211.

hort. cliff. 41. Huds. angl. 101. Wither. arr.

ed. 3. 268. Smith brit. 269. engl. bot. t. 247.

Relb. cant. ed. 2. n. 217. ed. 1. t. 1. Sibth. oxon.

n. 1171. app. Dicks. hort. sicc. 11. 5. Pollick

pal. n. 239. Scop. carn. n. 172. Moench. bass.

n. 204. Krock. fles. n. 363. Villars dauph. 2.

559. Allion. pedem. n. 1895. Gmel. sib. 3. 38.

Desfont. atlant. 1. 205. Kniph. cent. 9. n. 90.

2. *Thesium pratense*.

Schrad. spicil. fl. germ. 1. 26. Hoffm. germ. 82.

*T. floribus sparsis*. Sauv. monsp. 48.

*Linaria montana*, flosculis albicantibus. Baub. pin. 213.

*L. adulterina*. Tabern. ic. 826. Ger. 442. 7.

emac. 555. Raii hist. 399. syn. 202. Pet. brit.

t. 9. f. 5.

*Pseudo-Linaria montana alba*. Park. theat. 459. 6.

*Linariæ similis*. Baub. hist. 3. 461. 3.

*Alchimilla Linariæ folio*, calyce florum albo.

Tournef. inst. 509.

*Sesamoides procumbens montanum*, *Linariæ folio*,

floribus albicantibus. Mor. hist. 3. 601. f. 15.

t. 1. f. 3.

*Anonymos Lini folio*. Clus. hist. 1. 324. f. 1.

3. *Thesium intermedium*.

Schrad. spicil. 1. 27.

4. *Thesium montanum*.

Schrad. spicil. 1. 27. Ebrh. herb. n. 2. Hoffm.

germ. 82.

*T. bavarum*. Schrank. bavar. n. 420.

*T. Hall. helv. n. 1573*.

Spike branched, bractes in threes, leaves linear-lanceolate, calyx-tube very short.

5. *Thesium alpinum*. Alpine *Thesium*.

Lin. spec. 301. syst. 249. Reich. 1. 585. Willd.

1. 1212. Gartn. fruct. 2. 40. Jacqu. austr. 5.

t. 416. vind. 213. Hoffm. germ. 82. Roth.

germ. 1. 110. 2. 282. Pollick pal. n. 240.

Scop. ann. 2. 44. carn. n. 173. Krock. fles. n.

364. Ger. prov. 422. t. 17. f. 1. Villars

dauph. 2. 559. Allion. pedem. n. 1896. Hall.

helv. n. 1574. Schrad. spicil. 1. 25. Desfont.

atlant. 1. 206.

*Linophyllum collinum lignosum minus*, flore albicante. Ponted. anthol. 261. Seguier veron. 3. 90.

*Alchimilla alpina*, *linariæ foliis*, calyce florum albo

in foliorum alis. Tilli pisan. 6.

*A. linariæ folio*, floribus & vasculis in foliorum alis

sessilibus. Shaw afr. 14.

Raceme leafed, leaves linear.

6. *Thesium humile*. Dwarf *Thesium*.

Lin. spec. ed. Willd. 1. 1212. Vahl symb. 3. 43.

*Alchemilla linariæ folio*, floribus & vasculis in foliorum

alis sessilibus. Shaw afr. 14.

Leaves linear somewhat fleshy, flowers axillary sessile

five-cleft.

7. *Thesium lineatum*.

Lin. syst. 250. Willd. 1. 1212. suppl. 162. Thunb.

prodr. 45.

Leaves linear, stem round angular leafless below, branches

erect divaricating, flowers axillary peduncled.

8. *Thesium squarrosum*.

Lin. syst. 250. Willd. 1. 1213. suppl. 162. Thunb.

prodr. 46.

Leaves



*Leaves linear subulate recurved and reflexed, stem round, flowers axillary sessile.*

6. *Thesium Frisica.*

*Lin. syst.* 249. *Reich.* 1. 586. *Willd.* 1. 1213. *mant.* 213. *Thunb. prodr.* 46.

*Flowers subspike directed one way ciliate-woolly, leaves awl-shaped.*

7. *Thesium funale. Flexible Thesium.*

*Lin. spec.* 302. *Reich.* 1. 586. *Willd.* 1. 1213. *Thunb. prodr.* 45. *Retz. obs.* 5. 3.

*Flowers in spikes, calyxes ciliate, stem suffruticose, leaves awl-shaped very short.*

8. *Thesium spicatum. Spike-flowered Thesium.*

*Lin. syst.* 249. *Reich.* 1. 586. *Willd.* 1. 1214. *mant.* 214.

*Flowers in spikes even, leaves awl-shaped very short and very remote.*

9. *Thesium capitatum. Head-flowered Thesium.*

*Lin. spec.* 302. *Reich.* 1. 587. *Willd.* 1. 1214. *Thunb. prodr.* 46. *Roy. lugdb.* 214.

*Flowers in heads sessile terminating, leaves three-sided even, bractes ovate.*

10. *Thesium strictum. Straight Thesium.*

*Lin. syst.* 249. *Reich.* 1. 587. *Willd.* 1. 1214. *mant.* 214. *Berg. cap.* 73. *Thunb. prodr.* 45.

*Flowers in umbels, leaves linear decurrent.*

11. *Thesium umbellatum. Umbelled Thesium.*

*Lin. spec.* 302. *Reich.* 1. 587. *Willd.* 1. 1214. *Centaurium luteum ascyroides virginianum. Pluk. mant.* 43. t. 342. f. 1.

*Flowers in umbels, leaves oblong.*

12. *Thesium fragile. Brittle Thesium.*

*Lin. syst.* 250. *Willd.* 1. 1215. *suppl.* 162. *Thunb. prodr.* 45.

*Leaves ovate-three-sided keeled decurrent, stem angular, flowers axillary sessile.*

13. *Thesium scabrum. Rugged Thesium.*

*Lin. spec.* 302. *Reich.* 1. 587. *Willd.* 1. 1215. *Berg. cap.* 72. n. 1. *Thunb. prodr.* 45.

*Heads of flowers peduncled, leaves three-sided very rugged along the edge and keel.*

14. *Thesium paniculatum. Panicked Thesium.*

*Lin. syst.* 250. *Reich.* 1. 588. *Willd.* 1. 1215. *mant.* 51. *Thunb. prodr.* 45.

*Wholly panicled: leaves lanceolate remote, branches angular diffused, flowers terminating.*

15. *Thesium amplexicaule. Heart-leaved Thesium.*

*Lin. syst.* 250. *Reich.* 1. 588. *Willd.* 1. 1216. *mant.* 213.

*Flowers subspike directed one way ciliate-woolly.*

16. *Thesium triflorum. Three-flowered Thesium.*

*Lin. syst.* 250. *Willd.* 1. 1216. *suppl.* 162. *Thunb. prodr.* 46.

*Leaves lanceolate, stem angular, peduncles axillary trichotomous compound.*

17. *Thesium euphorbioides. Euphorbium-like Thesium.*

*Lin. syst.* 250. *Reich.* 1. 588. *Willd.* 1. 1216. *mant.* 214. *Berg. cap.* 74. *Thunb. prodr.* 46.

*Pluk. amalth.* 173. (*Planta africana*, &c.)

*Peduncles three-flowered terminating, leaves subovate fleshy.*

18. *Thesium Colpoon. Tree Thesium.*

*Lin. syst.* 250. *Willd.* 1. 1216. *suppl.* 161. *Thunb. prodr.* 46.

*Fusanus compressus. Lin. syst. ed.* 13. 765.

*Colpoon compressum. Berg. cap.* 38. t. 1. f. 1.

*Leaves opposite petioled obovate flat quite entire, corymb terminating leafless.*

19. *Thesium spinosum. Thorny-leaved Thesium.*

*Lin. syst.* 250. *Willd.* 1. 1217. *suppl.* 161. *Thunb. prodr.* 45.

*Leaves awl-shaped mucronate, flowers axillary solitary.*

## DESCRIPTIONS, &amp;c.

1. Root woody, branched, crooked, whitish, perennial. Herb rigid, and smooth, except that the edges of the leaves, bractes, and angles of the stem appear rough under the microscope. Stems ascending, angular, five or six inches high, little branched; clothed with numerous alternate linear leaves, all pointing one way, somewhat glaucous and succulent, entire. Flowers in spikes (mostly branched, and sometimes so compound as to form a panicle), soli-

tary, on alternate erect pedicels; with three lanceolate acute bractes close to each flower, in the lower part of the spike one being much larger than the other two. Tube of the calyx very short and open, the margin acutely five-cleft, toothletted, white. Stamens very short, opposite to the segments of the calyx. Style erect, equal to the stamens. Stigma emarginate. Seed oval, five-angled, striated, bony, invested with the hardened base of the calyx. The herb is scarcely bitter, but a little saltish.

This without doubt is *T. linophyllum*, but when cultivated, as Linneus had it, the whole herb becomes luxuriant, the spike panicled and leafy, according to his definition. *T. alpinum* differs from this in having a long tubular calyx; otherwise they are much alike. The intermediate variety mentioned in Withering, seems to be the proper wild appearance of this plant<sup>c</sup>.

Dr. Withering remarks that in a specimen of *T. alpinum* from Switzerland, the leaves are not only broader than in our *linophyllum*, but standing more upright they cloath and nearly hide the stem, which is never the case with our plant.

Having sometimes four stamens, Scopoli refers this plant to the class Tetrandria, but it has much more frequently five stamens than four, and the calyx five-cleft than four-cleft.

Willdenow gives three varieties from Schrader and other German writers, which are owing to a difference of soil and situation. The panicle, he remarks, in this species, is formed of simple bracted racemes placed in the axils of the upper leaves.

Native of Europe, Siberia and Barbary: chiefly in a calcareous soil. It has been long observed in several parts of Cambridgeshire; more lately in Suffolk and Norfolk; in Oxfordshire by Dr. Sibthorp; in Dorsetshire by Dr. Pulteney; in the Isle of Wight by Dr. Stokes; and by the ferry leading to Portland island by Mr. Stackhouse. It flowers in July.

2. Root perennial, fibrous, of a dirty white colour. Stems many, decumbent in a ring, sometimes but seldom a little upright, half a foot long, round, smooth, commonly simple. Leaves linear, flat, acute, scattered, smooth, sessile, numerous. The upper half of the stem becomes a loose raceme, composed of short scattered peduncles, naked at the base not axillary, having two or three leaflets above, and in these a single subsessile flower, glaucous green on the outside, and white within. The pedicel is elongated in the fruit<sup>d</sup>.

The fruit is described by Gærtner as an inferior nut, formed from the indurated belly of the calyx, crustaceous, spherical, striated with somewhat branched longitudinal nerves, one-celled, valveless. Seed globular, pale, fastened by the base.

According to Haller, the flower is most frequently four-cleft, and sometimes only three-cleft. Scopoli observed the flowers in Austria to be four-cleft, but in other specimens to be three-cleft and five-cleft. Jacquin, in examining numerous plants, did not find any with five stamens; but observed the calyx to be most commonly cut into four segments, very seldom into three, with the number of stamens corresponding with the segments. The calyx is three or four-cleft, according to Pollich.

Scopoli distinguishes this species by the following marks: the buds proceed from the old stems; the leaves are more spreading, quite linear, nerveless, more rigid and fewer; the stems are half a foot long; the panicle equals half the length of the whole stem, and points one way; the fruits are oval, striated, and furnished with a sort of neck by the contraction of the calycine segments.

Native of the mountains of Italy, Germany, Austria, Switzerland, the South of France, Mount Atlas and Siberia.

It varies, according to Willdenow, with an erect and decumbent stem. The raceme is formed of one-flowered bracted axillary peduncles on the upper part of the stem.

<sup>c</sup> Smith. brit. & engl. bot.

<sup>d</sup> Jacq. vind.



3. Root annual. Stem herbaceous, erect, scarcely a hand in height, branching immediately from the base. Branches smooth, somewhat subdivided, angular, height of the stem. Leaves thick, an inch and half long, frequent, acute. Tube of the calyx scarcely any, not elongated as in *T. alpinum*. Capsules globular, wrinkled, the size of a Coriander seed.—Native of the kingdom of Tunis<sup>c</sup>.

4. Native of the Cape of Good Hope, where it was found by Thunberg.

5. This is very squarrose with the recurved leaves. Found at the Cape by Thunberg<sup>f</sup>.

6. Stems simple, a hand high, hardish. Leaves alternate, narrower at the base, spreading. Raceme or spike terminating. Flowers alternate, sessile, approximating; with two lateral bractes to each. Calyx five-cleft: segments lanceolate, concave, ciliate at the top and along the edge, with inflexed fibrils, covering the disk of the calyx, like wool. Stamens from the sinuses of the calyx, inserted into the cavity of it. Fruit ovate, much wrinkled, the size of a Coriander seed, villose at the tip within with the permanent calyx. Found at the Cape by Koenig<sup>g</sup>.

7. This is a little shrub, having the appearance of *Restis capensis*, and almost naked. Branches numerous, alternate, clustered, wand-like, simple, round, filiform. Leaves alternate, remote, very small. Spikes terminating, two or three, alternate.—Native of the Cape<sup>h</sup>.

8. Stem erect, stiff, somewhat angular, proliferous, three feet high, the thickness of a quill. Leaves even, very small and remote. Spikes oblong, the thickness of the little finger. Flowers distinct, with three acuminate bractes membranaceous at the edge.—It is very distinct from *T. funale*; the stem not being flexible like a cord; the spikes not very narrow; the bractes between the flowers not slender like a needle.—On mountains near the Cape<sup>i</sup>.

9. Stems shrubby hard. Branches alternate, remote, the upper ones gradually longer. Leaves alternate, small, awl-shaped, mucronate. Heads of flowers terminating, with a branch growing out below. Segments of the flowers very sharp-pointed, and internally villose their whole length.—Native of the Cape<sup>k</sup>.

10. Stem shrubby, branched, angular as in Broom. Leaves alternate, remote, shorter than the interstices, glued at the base and decurrent. Umbels peduncled compound, with an involucre and involucrets. Calyx even within.—Native of the Cape<sup>l</sup>.

11. Root perennial. Leaves alternate, oval-lanceolate, quite entire. Branches alternate, at the top of the stem. Umbellets racemed, terminating, with a small four-leaved involucre. Florets five or three.—Native of Virginia and Pennsylvania, in dry pastures<sup>m</sup>. Introduced in 1782, by John Hope, M. D. It flowers here in June<sup>n</sup>.

12. Habit of *Salsola*. Leaves so short, that at first sight it seems to have none. It is a very brittle plant. Found at the Cape of Good Hope by Thunberg<sup>o</sup>.

13. This very much resembles *T. capitatum*, but the heads are on a long naked peduncle. Flowers bluntish, villose on the inside only at the tips. Leaves roughened with a triple angle having cartilaginous teeth. Native of the Cape<sup>p</sup>.

14. Stem somewhat woody, a foot high, the whole panicled as in *Galium*. Leaves minute, linear, alternate, the upper ones awl-shaped. Flowers minute, peduncled. Calyx inferior, three, four or five-cleft, but removed by a space, whence it is not a proper one. True calyx superior, as in its congeners. Fruit like that of the Coriander. Many of the flowers are abortive.—Native of the Cape.

15. Stem somewhat woody, erect, slightly angular, four feet high, even. Leaves alternate, sessile, embracing, cordate, quite entire, sharpish, even, thickish, an inch long. Racemes terminating. Flowers minute mixed with larger ovate bractes.—Native of

high mountains near the Cape<sup>q</sup>. Introduced in 1787, by Mr. Francis Masson<sup>r</sup>.

16. Peduncles three-flowered, sometimes bifid or trifid, much divaricated. Found at the Cape by Thunberg<sup>s</sup>.

17. Branches dichotomous at top. Leaves alternate, rounded-ovate, even. Flowers pedicelled. It has the appearance of an *Euphorbium*.—Native of the Cape<sup>t</sup>.

18. This is a tree with compressed ancipital branchlets. Leaves on short petioles, blunt with a point, smooth. Racemes from the axils of the branches, erect, compressed, scarcely longer than the leaves. Number of parts in the flower four or five. There does not seem to be any necessity to separate this from the *Thesiums*.—Native of the Cape.

19. This is singular in having the leaves spreading, channelled, terminating in a spine. Found at the Cape by Thunberg<sup>u</sup>.

THEVETIA. See *Cerbera*.

THIRSINE. See *Cytinus*.

THISTLE. See *Carduus* and *Serratula*.

——— Blessed. See *Centaurea*.

——— Carline. See *Atractylis*, *Carlina*, *Carthamus*.

——— Distaff. See *Atractylis* and *Carthamus*.

——— Fish. See *Carduus* and *Carlina*.

——— Fuller's. See *Dipsacus*.

——— Globe. See *Echinops*.

——— Golden. See *Scolymus*.

——— Melon. See *Cactus*.

——— Milk or our Lady's. See *Carduus*.

——— St. Barnabas's. See *Centaurea*.

——— Sow. See *Sonchus*.

——— Star. See *Centaurea*.

——— Torch. See *Cactus*.

——— Woolly. See *Onopordum*.

——— Yellow. See *Argemone*.]

THLASPI (of Pliny. *Θλασπι* of Dioscorides, Perhaps from *Θλαω*, comprimo. The seed vessel being compressed or flattened.)

Lin. gen. n. 802. Reich. n. 866. Schreb. n. 1078.

Tournef. t. 101. F.—L. Dill. gen. 6. Juss.

241. Gartn. t. 141. Burfa Pastoris. Tournef. t. 103.

Class. 15. 1. Tetradinamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*. *Cruciferae* Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* four-leaved: leaflets ovate, concave, from erect patulous, deciduous.

COR. four-petalled, cruciform: petals obovate, twice as long as the calyx; with narrow claws.

STAM. *Filaments* six, shorter by half than the corolla, of these two opposite ones are still shorter. *Anthers* acuminate.

PIST. *Germ* roundish, compressed, emarginate. *Style* simple, length of the stamens. *Stigma* obtuse.

PER. *Silicle* compressed, obcordate, emarginate, with the style the length of the notch, two-celled: *partition* lanceolate: *valves* boat-shaped, margined and keeled.

SEEDS several, nodding, fastened to the sutures.

OBS. Burfa Pastoris of Tournefort has an obcordate *silicle*, without any margin.

Thlaspi of Tournefort has an obcordate *silicle*, with an acute margin.

#### ESSENTIAL CHARACTER.

*Silicle* emarginate, obcordate, many-seeded: valves boat-shaped margined and keeled.

#### SPECIES.

1. *Thlaspi peregrinum*. Foreign Bastard Cress.

Lin. spec. 901. Reich. 3. 222. Willd. 3. 442.

hort. cliff. 330. Scop. carn. n. 809.

*T. capsula cordata*, peregrinum. Bauh. hist. 2. 927.

Mor. hist. 2. 297. f. 3. t. 18. f. 30.

*Silicles* suborbiculate, leaves lanceolate quite entire.

[2. *Thlaspi arabicum*. Arabian Bastard Cress.

Lin. spec. ed. Willd. 3. 442. Vahl symb. 2. 76.

*Iberis arabica*. Lin. spec. 906. & Dist. nostr.

<sup>c</sup> Linn. mant.

<sup>r</sup> Hort. kew.

<sup>s</sup> Linn. suppl.

<sup>t</sup> Linn. mant.

<sup>u</sup> Linn. suppl.

<sup>e</sup> Vahl.

<sup>f</sup> Linn. suppl.

<sup>g</sup> Linn. mant.

<sup>h</sup> Linn. spec.

<sup>i</sup> Linn. mant.

<sup>k</sup> Linn. spec.

<sup>l</sup> Linn. mant.

<sup>m</sup> Linn. spec.

<sup>n</sup> Hort. kew.

<sup>o</sup> Linn. suppl.

<sup>p</sup> Linn. spec.



- Subularia purpurea. *Forfk. descr.* 117.  
*Silicles oval styled, lower leaves wedge-shaped, upper cordate oblong embracing.*]
3. *Thlaspi arvense*. *Field Bastard Cress, Penny Cress or Smooth Mithridate Mustard.*  
*Lin. spec.* 901. *syst.* 587. *Reich.* 3. 222. *Willd.* 3. 442. *fl. lapp.* n. 251. *suec.* n. 574. *hort. cliff.* 330. *mat. med.* 159. *Gartn. fruct.* 2. 280. *Huds. angl.* 281. *Wither. arr. ed.* 3. 568. *Smith brit.* 683. *Curt. lond.* 6. t. 43. *Lightf. scot.* 340. *Relb. cant. ed.* 2. n. 533. *Sibth. oxon.* n. 561. *Fl. dan.* t. 793. *Hoffm. germ.* 227. *Roth. germ.* 1. 279. 2. 92. *Pollich pal.* n. 608. *Ludw. ect.* t. 173. *Krock. filef.* n. 1025. *Neck. gallob.* 274. *Villars dauph.* 3. 298. *Allion. pedem.* n. 909. *Scop. carn.* n. 810. *Thunb. jap.* 259.  
*T. arvense filiquis latis.* *Baub. pin.* 105. *Baub. hist.* 2. 923. *Mor. hist. f.* 3. t. 17. f. 12.  
*T. majus.* *Tabern.* 458.  
*T. latius.* *Dod. pempt.* 712. *Blackw. t.* 68.  
*T. Dioscoridis.* *Ger.* 204. 1. *emac.* 262. 1. *Raii hist.* 831. *syn.* 305. *Petiv. brit. t.* 50. f. 9.  
*T. Drabæ foliis.* *Park. theat. t.* 836. f. 1.  
*T. secundum.* *Matth.* 567. *valgr.* 1. 519. *Camer. epit.* 337.  
*Nasturtium.* *Hall. helv.* n. 511.  
*Silicles orbicular compressed even, leaves oblong toothed smooth.*
4. *Thlaspi alliaceum*. *Garlick Bastard Cress.*  
*Lin. spec.* 901. *Reich.* 3. 223. *Willd.* 3. 443. *Jacqu. ic. rar.* 1. t. 121. *misc.* 2. 330. *Crantz austr.* 22. n. 3. *Hoffm. germ.* 227. *Roth. germ.* 1. 280. 2. 93. *Allion. pedem.* n. 910. *Krock. filef.* n. 1029.  
*T. allium redolens.* *Mor. hist.* 2. 297. f. 3. t. 18. f. 28. *Tournef. inst.* 212.  
*Scorodo-Thlaspi Ulyssis Aldrovandi.* *Baub. hist.* 2. 932. *Raii hist.* 834.  
*Silicles subovate ventricose, leaves oblong obtuse toothed smooth.*
- [5. *Thlaspi Psychine*. *Long-styled Bastard Cress.*  
*Lin. spec. ed.* *Willd.* 3. 443.  
*Psychine stylosa.* *Desfont. atlant.* 2. 69. t. 148.  
*Bursa Pastoris hirsuta Erucæ folio, stylo prominente.* *Shaw afr.* n. 91.  
*Silicles obovate-deltoid styled, leaves lanceolate cordate toothed embracing pubescent.*
6. *Thlaspi faxatile*. *Rock Bastard Cress.*  
*Lin. spec.* 901. *syst.* 587. *Reich.* 3. 223. *Willd.* 3. 444. *Hoffm. germ.* 227. *Roth. germ.* 1. 280. 2. 93. *Krock. filef.* n. 1031. *Crantz austr.* 24. *Jacqu. austr.* 3. 21. t. 236. *Sauv. monsp.* 53. 71. *Gouan monsp.* 316. *Ger. prov.* 348. 2. *Villars dauph.* 3. 299. *Allion. pedem.* n. 916. *Hebenstr. in act. petrop.* 5. 330. f. 6. *Barr. ic.* 845. *Kniph. cent.* 1. n. 92.  
*T. parvum faxatile, flore rubente.* *Baub. pin.* 107. *Tournef. inst.* 212. *Park. theat.* 843. n. 8. *Raii hist.* 833. *Mor. hist. f.* 3. t. 18. f. 29.  
*Lithonthlaspi parvum, carnosio rotundo folio.* *Col. ecphr.* 1. 279. t. 277. f. 2.  
*Nasturtium.* *Hall. helv.* n. 512.  
*Silicles roundish, leaves lanceolate-linear obtuse fleshy.*]
7. *Thlaspi hirtum*. *Hairy Bastard Cress.*  
*Lin. spec.* 901. *Reich.* 3. 223. *Willd.* 3. 444. *Smith brit.* 684. *Gouan illustr.* 40. *Crantz austr.* 22. *Sauv. monsp.* 120. *Villars dauph.* 2. 299. *Allion. pedem.* n. 911.  
*T. capsulis hirsutis.* *Baub. hist.* 2. 922. *Tournef. inst.* 212.  
*T. vaccariæ incano folio perenne.* *Raii syn.* 305. *ed.* 2. 175.  
*T. villosum capsulis hirsutis.* *Baub. pin.* 106. *prodr.* 47. *ic.*  
*Hoary Cress.* *Petiv. brit. t.* 50. f. 10.  
*Silicles elliptic-oblong hairy undotted margined above, stem-leaves sagittate villose.*
8. *Thlaspi campestre*. *Wild Bastard Cress or Common Mithridate Mustard.*  
*Lin. spec.* 902. *Reich.* 3. 224. *Willd.* 3. 444. *hort. cliff.* 330. *fl. suec.* n. 575. *Huds. angl.* 281.

- Wither. arr. ed.* 3. 569. *Smith brit.* 684. *Lightf. scot.* 341. *Curt. lond.* 5. t. 45. *Sibth. oxon.* n. 562. *Hoffm. germ.* 227. *Roth. germ.* 1. 280. 2. 94. *Crantz austr.* 23. *Scop. carn.* n. 807. *Pollich pal.* n. 609. *Krock. filef.* n. 1026. *Villars dauph.* 3. 299. *Allion. pedem.* n. 912. *Gouan illustr.* 40. *Desfont. atlant.* 68.  
*T. vulgatus.* *Baub. hist.* 2. 921. *Raii hist.* 830. *syn.* 305. *Tournef. par.* 1. 396. *inst.* 212.  
*T. arvense, vaccariæ incano folio, majus.* *Baub. pin.* 106.—item, minus. *Baub. pin.* 106. *prodr.* 47. *Raii hist.* 831.  
*T. latifolium.* *Fuchs. hist.* 306.  
*T. secundum.* *Tabern. ic.* 458.  
*Nasturtium.* *Hall. helv.* n. 509.  
*Common Cow-cress.* *Petiv. brit. t.* 50. f. 7.
- β. *Thlaspi Vaccariæ folio glabrum.* *Raii syn.* 305. *ed.* 2. 175. 5.  
*T. vulgatissimum.* *Ger. emac. ex icone.*  
*T. arvense Acetosæ folio.* *Baub. pin.* 105. *Blackw. t.* 407.  
*Smooth Cow-cress.* *Petiv. brit. t.* 50. f. 8.
- γ. *Thlaspi hirtum.* *Huds. angl.* 281.  
*Silicles roundish glandular dotted margined above, leaves sagittate toothed hoary.*
- [9. *Thlaspi montanum*. *Mountain Bastard Cress.*  
*Lin. spec.* 902. *syst.* 587. *Reich.* 3. 224. *Willd.* 3. 445. *Hoffm. germ.* 227. *Roth. germ.* 1. 280. 2. 94. *Pollich pal.* n. 620. *Leers herb. n.* 506. *Krock. filef.* n. 1027. *Crantz austr.* 23. n. 7. *Jacqu. austr.* 3. 22. t. 237. *Villars dauph.* 3. 300. *Allion. pedem.* n. 913.  
*T. montanum, glasti folio, minus.* *Baub. pin.* 106.  
*T. mont.* 2. *Clus. hist.* 2. 131.
- β. *Thlaspi præcox.*  
*Wulff. in Jacqu. collect.* 2. 124. t. 9:  
*T. montanum.* *Scop. carn.* n. 811. *Sauv. monsp.* 121. *Gouan monsp.* 317.  
*T. mont. burfæ pastoris fructu.* *Col. ecphr.* 1. 275. t. 276.  
*Lepidium.* *Hall. helv.* n. 518.  
*Silicles obcordate, leaves smooth, root-leaves somewhat fleshy obovate quite entire, stem-leaves oblong embracing subsagittate, corollas larger than the calyx.*
10. *Thlaspi alpinum*. *Alpine Bastard Cress.*  
*Lin. syst.* 587. *Willd.* 3. 446. *Jacqu. austr.* 3. t. 238.  
*Silicles obcordate, stem-leaves cordate smooth quite entire, petals twice as long as the calyx, stem simple.]*
11. *Thlaspi perfoliatum*. *Perfoliate Bastard Cress or Shepherd's Purse.*  
*Lin. spec.* 902. *syst.* 588. *Reich.* 3. 225. *Willd.* 3. 447. *Huds. angl. ed.* 1. 246. *Wither. arr. ed.* 3. 569. *Smith brit.* 683. *Sibth. oxon.* n. 563. *Jacqu. austr.* 4. 19. t. 337. *vind.* 259. *Crantz austr.* 22. *Roth. germ.* 1. 280. 2. 95. *Hoffm. germ.* 228. *Pollich pal.* n. 611. *Krock. filef.* n. 1028. *Ger. prov.* 349. *Villars dauph.* 3. 302. *Allion. pedem.* n. 914.  
*T. alpestre.* *Huds. angl. ed.* 2. 282. *Dicks. hort. succ.* 6. 5.  
*T. arvense perfoliatum majus.* *Baub. pin.* 106.—& minus. *Mor. hist. f.* 3. t. 17. f. 15, 16.  
*T. arv. perfol. minus.* *Baub. pin.* 106. *Raii syn.* *ed.* 2. 176. *ed.* 3. 305. 6.  
*T. alterum mitius rotundifolium Burfæ Pastoris fructu.* *Col. ecphr.* 278. t. 276. f. 2.  
*T. cordatum minus, flore albo, insipidum.* *Barrel. ic. t.* 815.  
*T. tertium pumilum.* *Clus. hist.* 2. 131.  
*T. minus Clusii.* *Ger.* 210. *emac.* 268.  
*T. rotundifolium.* *Ger. emac.* 266. *opt.*  
*Small Thorow Cress.* *Petiv. brit. t.* 50. f. 12.  
*Nasturtium.* *Hall. helv.* n. 510.  
*Silicles obcordate, stem-leaves sagittate-cordate embracing, stem branched, style very short.*
12. *Thlaspi alpestre*. *Dwarf Bastard Cress or Shepherd's Purse.*  
*Lin. spec.* 903. *syst.* 588. *Reich.* 3. 225. *Willd.* 3. 447. *Wither. arr. ed.* 3. 570. *Smith brit.* 686. *engl. bot. t.* 81. *Hoffm. germ.* 228. *Roth. germ.*



- germ. 1. 280. 2. 96. Krock. filef. n. 1030.  
Gouan. monsp. 470. illustr. 40. Villars dauph. 3.  
301. Allion. pedem. n. 915.  
T. montanum. Hudf. angl. 282. With. 570. Curt.  
cat. in fl. lond. 1. n. 85. Mill. dict. n. 8.  
T. foliis Globulariæ. Baub. hist. 2. 926. Raii hist.  
832. syn. ed. 2. 175. ed. 3. 305.  
T. montanum secundum. Clus. hist. 2. 131.  
T. albi supini varietas. Ger. emac. 268. f. 2.  
T. præcox. Jacqu. collect. 2. 124. t. 9? v. 9. β.  
Lepidium. Hall. belv. n. 519.  
Silicles obovate retuse many-seeded, stem-leaves sagittate,  
stems simple, style stretched out.  
13. Thlaspi Bursa Pastoris. Common Shepherd's Purse  
or Pouch.  
Lin. spec. 903. syst. 588. Reich. 3. 226. Willd.  
3. 447. fl. lapp. n. 252. suec. n. 576. hort. cliff.  
330. mat. med. 159. Hudf. angl. 283. Wither.  
arr. ed. 3. 571. Smith brit. 687. Curt. lond.  
1. t. 50. Lightf. scot. 342. Relb. cant. ed. 2.  
n. 534. Sibth. oxon. n. 564. Fl. dan. t. 729.  
Hoffm. germ. 228. Ludw. est. t. 186. Pollich  
pal. n. 612. Krock. filef. n. 1032. Scop. carn.  
n. 808. Villars dauph. 3. 303. Allion. pedem.  
n. 918. Desfont. atlant. 2. 68. Thunb. jap.  
259. Lour. cochinch. 395. ed. Willd. 480.  
Gærtn. fruct. 2. 281. Berg. phyt. 2. 45.  
Nasturtium Bursa pastoris. Roth. germ. 1. 281.  
2. 96. Hall. belv. n. 514.  
Iberis Bursa pastoris. Crantz austr. 20.  
Bursa pastoris. Fuchs. hist. 611. Matth. 569. 1.  
521. Trag. 215. Lob. obs. 110. 1. ic. 1. 221.  
1. Dod. pempt. 103. 1. Camer. epit. 340.  
Ger. 214. 1. emac. 276. 1. Park. theat. 866. 1.  
Baub. hist. 2. 936. Raii hist. 838. syn. 306.  
Petiv. brit. t. 49. f. 4—7. Blackw. t. 5. Mill.  
dict.  
Bursa pastoris major folio sinuato. Baub. pin. 108.  
Mor. hist. f. 3. t. 20. f. 2. ord. 1.  
β. Bursa pastoris media. Baub. pin. 106. Mor. f. 4.  
γ. Bursa pastoris major, folio non sinuato. Baub. pin.  
108.  
Hirsute, silicles deltoid-obcordate, root-leaves pin-  
natifid.  
[14. Thlaspi ceratocarpon. Siberian Bastard Cress.  
Lin. syst. 588. Willd. 3. 448. suppl. 295. Murr.  
in nov. comm. gotting. 5. 26. t. 1. Scop. insubr.  
1. 10. t. 4. Ait. kew. 2. 377.  
Lepidium ceratocarpon. Pallas it. 2. 740. t. U.  
Very smooth, stem grooved, leaves sagittate lanceolate  
subserrate, silicles two-lobed.

## DESCRIPTIONS, &amp;c.

1. Stems a span high, hard, branched, by age becoming red, as do also the leaves, which are on short petioles. Flowers small, red, with ovate entire petals. Stamens red. Anthers yellow. Style short, yellow. Stigma yellow, flat at top. Seeds ovate, yellowish, somewhat wrinkled, shining, fastened to a fickle-shaped partition<sup>a</sup>.]

It is a biennial plant, rising eight or nine inches high, branching out towards the top. Leaves thick, blunt, of a grayish colour, opposite, sessile, having a bitter warm taste. The flowers are produced in loose terminating spikes; they are small and of a purple colour. Silicles heart-shaped, of a fine green colour, having three or four small, oblong, yellowish seeds in each cell, which have an acrid taste. It flowers in June, and the seeds ripen in August.

[Native of Carniola. Cherlerus was the first who observed this plant in Zuinger's garden<sup>y</sup>. Mr. Miller cultivated it in 1739. He makes it a native of Sicily.

2. Stems herbaceous, diffused, branched, very smooth, as is the whole plant. Leaves two inches long; the lower ones narrowed a little towards the base and sessile; the upper oblong, heart-shaped, embracing, shaped almost like those of Brassica orientalis; the uppermost narrower at the base, cordate-oblong, embracing, for the most part quite entire but sometimes remotely toothletted; all veinless. Raceme

terminating, with a branch growing out beyond it. Flowers at first corymbed, afterwards racemed. Calyx-leaves lanceolate. Petals longer than the calyx; borders roundish, purple, two scarcely larger than the other two. The silicle has a wide membranaceous margin, and an awl-shaped permanent style one fourth only of the length of the silicle; it has a sinus at each end. The petals being scarcely irregular, and the silicle being altogether that of a Thlaspi, this plant belongs rather to this genus than to Iberis, where Linneus had placed it. It seems difficult to conceive why Forskahl made it a Subularia, with which it has nothing in common<sup>z</sup>.

3. Root annual, small. Herb smooth. Stem a foot or more in height, upright, round, leafy, with seven or eight membranaceous edges, and having a few branches at top. Leaves bluntish, distantly toothed, arrow-shaped at the base, embracing, somewhat glaucous beneath. Flowers small, in racemes. Peduncles alternate, nearly horizontal, one-flowered. Petals white, entire, twice the length of the calyx. Silicle length of the peduncle, very broad, orbicular, deeply notched, a little convex in the middle on each side, smooth, having a very wide winged margin<sup>a</sup>. Seeds from five to seven (or four to nine) in each cell, ovate, narrowed and beaked towards the navel, scored with furrows that are parallel to the margin and very minutely crenulated, somewhat shining and of a very dark chestnut colour<sup>b</sup>. Gærtner observes that the striated seed is rare and perhaps the only instance in this family.

This plant is obviously distinguished, as Ray observed, by its smoothness, and large flat round pods, whence it acquired the name of Penny-cress. The seeds are said to produce twice as much oil as linseed. They have an acrimony approaching to that of Mustard, but with an unpleasant flavour somewhat like Garlic. The whole plant has also the taste of Garlic, so that when cows eat it, their milk gets a bad taste.

It flowers at the beginning of June, and the seeds are ripe by the end of the month, hence they are not liable to be ground with corn, to which they might otherwise communicate their ill flavour<sup>c</sup>.

Native of Europe and Japan, in corn-fields, especially in a strong moist soil, sometimes in gravel. Ray observed it in Essex, Suffolk and Staffordshire, Mr. Miller near Godalmin in Surry, Mr. Curtis, near Hampstead, Mr. Rose near Norwich, Mr. Relhan in Waterbeach-fen, Cambridgeshire, Mr. Morton in Wadenhoe-field, Northamptonshire, Dr. Sibthorp and Dr. Goodenough in Oxfordshire, Dawson Turner, Esq. and Mr. Sowerby about Aylesbury.

4. The whole plant has the smell of garlic, and a taste slightly acrid; it is smooth and annual. Root-leaves many, spatulate, on long petioles, quite entire or slightly toothletted below: the stem and branch-leaves are acutely hastate and sessile. Stems few, upright, round, half a foot high, little branched, ending in fruiting racemes as long as themselves. Flowers corymbed, small. Petals white, scarcely bigger than the calyx. Silicles obcordate-ovate, obtuse, gibbous on both sides but especially on the back, with scarcely any margin. Seeds commonly three in each cell, somewhat acrid<sup>d</sup>. It resembles the preceding, but the silicles are ovate and ventricose with little or no margin<sup>e</sup>. Native of Austria and Germany.

5. This is an annual plant, with an upright branched stem, hispid with white hairs. Leaves pubescent; the lower ones obtuse, the upper ones acute. Flowers racemed, pedicelled. Bractes ovate, toothed, longer than the pedicel. Flower the size of Brassica oleracea. Calyx-leaves pubescent, linear, pressed close, deciduous. Corolla pale yellow; claws linear, longer than the calyx; border elliptic, netted-veined, quite entire, rounded at the top. Style permanent, awl-shaped, longer than the silicle; which is large, triangular, gibbous on both sides in the middle, hirsute, two-winged; wings stiffish, increasing above, transversely striated. Seeds numerous, small, rufes-

<sup>z</sup> Vahl.<sup>a</sup> Curtis and Smith.<sup>b</sup> Gærtner.<sup>c</sup> Curtis and Withering.<sup>d</sup> Jacqu. misc.<sup>e</sup> Willdenow.<sup>x</sup> Scopoli.<sup>y</sup> Morison.



cent. It flowers early in spring. Native of Barbary near Mayane, on the borders of fields<sup>f</sup>. Desfontaines has made this plant a distinct genus, under the name of *Psychine*, from ψυχῆ a butterfly; the winged seed-vessel having something of the shape of that insect: but it has nothing that entitles it to be considered as generically separate from the other *Thlaspis*.

6. This also is annual, and resembles *Iberis saxatilis*<sup>g</sup>. Stems trailing, hard and woody. Leaves a little fleshy and entire. Flowers small, flesh-coloured. Silicles large, convex below, concave above, with a leafy margin, and toothed at their upper edge<sup>h</sup>.

Native of the South of Europe: Germany, Austria, the South of France, and Italy.—Cultivated by Mr. Miller in 1748<sup>i</sup>.

7. This is distinguished by Ray from the campestre, with which it has been confounded, by having the flowers three times as large, the silicles longer and more hairy. Linneus's plant is certainly distinguished in having the silicles more oblong, little gibbous, hirsute, by no means glandular-dotted. It is probably biennial<sup>k</sup>.

According to Villars, the stems are many, simple and decumbent at bottom. Lower leaves entire, with some hairs on their edges; stem-leaves more villose. Flowers white, small. Silicles hirsute, rather small.

Native of Italy, the South of France and Austria. Ray observed it on the mountains of Wales and elsewhere.]

Mr. Miller says it grows naturally on the side of a bank beyond Wandsworth in the road to Putney; but he probably mistook a variety of the campestre for it, as other English botanists have done. He describes it as having a perennial creeping root; the lower leaves oblong and hoary, slightly sinuated but not indented on their edges; the stalks five or six inches long, and bent towards the ground; the flowers rather larger than those of campestre; the pods hoary but not hairy. It flowers in may, and the seeds ripen in july.

8. Root annual, simple. Herb more or less pubescent. Stems a foot or more in height, upright, round, very slightly angular, thickly clothed with leaves, undivided except at the top, where it separates into several (seven or eight) branches, and forms a panicle: above the branches it is naked. Root-leaves oblong-ovate, on long flat petioles, sometimes pinnatifid at the base, but for the most part entire, soon decaying: stem-leaves sagittate, embracing, alternate, toothed or sometimes quite entire. Peduncles horizontal, round, a little longer than the silicles. Flowers very small and white, in long upright racemes. Petals spatulate, a little longer than the calyx, entire. Silicle roundish or ovate, convex on the lower, concave on the upper surface, the border very wide at the top, emarginate, having glandular dots on both sides, commonly smooth but sometimes hairy, containing one seed in each cell<sup>l</sup>.

Native of Europe and Barbary, in corn-fields. About Comb-wood near Kingston, in Gunnersbury-lane near Ealing, South Leigh and Stanton-Harcourt in Oxfordshire, Dorsetshire, &c. Flowering in june.

β. A variety was observed by Ray near Beccles in Suffolk, with smooth broader leaves not so tapering to a point, and smooth pods.

γ. Another variety, soft like velvet to the touch, with the silicles cottony in a slight degree, has been mistaken for the hirtum of Linneus; which is not above half so high as this, and has the root-leaves inversely ovate and broad at the end; the silicles in that are hirsute.

This variety has been observed on Dartmoor<sup>m</sup>: and by Mr. Dawson Turner near Warrington.

The campestre as well as the arvense has been used for the same purposes as Mustard-seed. This has not so much of the Garlic flavour as the arvense<sup>n</sup>.

9. Stems erect, a finger or a hand, seldom a foot in height, single or in a cluster from the same root,

not branched, round and smooth. Root-leaves in a tuft forming a rose, wedge-obovate, running into the petiole, sometimes very slightly subsinuate, bright green; stem-leaves alternate, embracing, cordate-lanceolate or ovate, quite entire or very slightly crenulate: all glaucous and very smooth. The flowers at first form a small umbel, but afterwards are drawn out into a long raceme. Calyx brownish, with a white margin. Petals twice as long as the calyx, blunt at the end, white, nearly of the same size as in the arvense. Silicles cordate, oblong, as in *Bursa pastoris*, convex on one side, flat on the other<sup>o</sup>.

Linneus remarks, that the corollas are almost equal or regular, and that the fruit together with the habit or appearance of this genus distinguish it from *Iberis*<sup>p</sup>.

β. Willdenow considers the *præcox* of Wulffen in Jacquin's *Collectanea* as a variety of this, and refers the montanum of Scopoli and *Lepidium*, n. 518. of Haller to it. He remarks, that in the montanum the leaves are oblong, sessile, and scarce apparently sagittate; whereas in *præcox* they are deeply sagittate and glaucous. The silicles in the former are obtusely cordate, in the latter deeply cordate. But he does not discern any certain limits between them; for the leaves in montanum are sometimes more deeply sagittate with blunt earlets, and that on the same plant. —Probably the montanum of other authors besides Scopoli may be referred to this plant. Dr. Smith suspects that this *præcox* may be the same with the alpestre: to which the montanum of Miller, n. 8. must also be referred.

Native of Germany, Austria, the South of France and Italy.

10. A small species, scarcely more than four or five inches high: differs from *Thlaspi perfoliatum* in the size of the petals and perennial root, which is slender, ramified, and produces several circles or roses of leaves, and afterwards several stems, which are smooth, simple, of a pale green, and sometimes procumbent: the leaves are alternate, ovate, smooth and slightly pointed: the flowers are of moderate size and milk white, standing in clusters on the top of each stem<sup>q</sup>.

11. Root annual, fibrous. Stem branched, except in a barren soil, a span high, spreading, roundish, striated, smooth, leafy. Leaves smooth, glaucous, obscurely toothed: root-leaves petioled, ovate, obtuse; stem-leaves alternate, embracing, cordate, subsagittate, bluntish. Corymbs terminating, small, close; afterwards racemed, very long. Calyx spreading, reddish. Petals white, twice as long as the calyx, obtuse, entire. Silicle smooth, obcordate, with the lobes far surpassing the very short style. Stigma headed. Seeds many<sup>r</sup>: according to Pollich, four in each cell.—Linneus says, that the stem is smooth, the corolla white and hardly larger than the calyx, the stamens longer than the flower, and the silicle like that of the common Shepherd's-purse.—According to Withering, the stem is about eight inches high, upright and simple, except in a rich soil and in gardens, where it is branched; the lower leaves ovate, petioled; the others embracing, glaucous.

Native of Germany, Switzerland, Austria, the South of France, Italy and England. Found among the stone-pits between Witney and Burford, by Bobart, and on Burford downs by Sibthorp. It flowers in april and may.

12. Root very long, branched, commonly said to be perennial, but doubtful whether it be more than biennial. Stems several, almost upright, a span high, simple or very seldom divided, round, smooth, leafy. Leaves smooth, glaucous, quite entire, scarcely toothed: root-leaves numerous, forming a thick tuft, petioled, ovate or obovate, obtuse; stem-leaves alternate, sessile, slightly embracing, sagittate, sharpish. Corymbs as in the preceding. Petals white, varying in size. Silicle scarcely obcordate, but rather obovate, retuse, gibbous, with the style lengthened

<sup>f</sup> Desfontaines.

<sup>g</sup> Linn. syst.

<sup>h</sup> Villars.

<sup>i</sup> Hort. kew.

<sup>k</sup> Smith brit.

<sup>l</sup> Smith brit. Curtis, Withering.

<sup>m</sup> Withering.

<sup>n</sup> Curtis

<sup>o</sup> Pollich.

<sup>p</sup> Syst.

<sup>q</sup> Jacquin.

<sup>r</sup> Smith brit.



out and prominent far beyond the lobes, mucronate. Seeds several (three or four) in each cell<sup>1</sup>.

One stem, seldom branched, arises from the tuft of leaves, and flowers early in summer; the lateral stems are afterwards numerous, mostly unbranched, and produce a second crop of flowers in July and August, as in *Iberis nudicaulis*. The whole herb is glaucous, somewhat succulent, bitter and pungent in taste and smell, yet horses and cows seem to feed it down.—This plant is certainly the montanum of Hudson: but the Linnean montanum has much larger petals, leaves more entire, a creeping root, and only one or at most two seeds in each cell. Alpestre of Hudson is really the perfoliatum of Linneus, as it stood in the first edition of the *Flora Anglica*, and is an annual branched plant, with dentated leaves and small flowers<sup>2</sup>.

It is remarked in English Botany, that Dr. Withering (in his second edition), having taken up these plants from Hudson, has much confused their history. To this accusation Dr. Withering, with a degree of ingenuity not very common among authors, pleads guilty, in the third edition of his arrangement: in which he says that the species have been there given without any view to Mr. Hudson's opinions, and are founded on the indisputable veracity, and well known accuracy of Ray, who (syn. 305. n. 4. and 6.) records two species, referring to the same figures which Linneus (in Spec. plant.) has quoted to *T. montanum* and *alpestre*; so that he must believe Ray to have seen both those species. He also particularly notices the creeping root of *T. montanum*; which in English Botany is treated as a mistake; and so it certainly must be, upon the supposition that Linneus's montanum is not a native of England, as there presumed.

Gerard and Jacquin unite this plant with the perfoliatum. Haller separates them. Willdenow thinks it may be a variety of that. Gouan seems to have described the right plant. The stem, says he, is simple and straight. In a garden it became smaller, but perennial and evergreen, and produced several stems from the same root, some upright, others diffused.

Native of Germany, Switzerland, Austria, the South of France, Italy and England. Mr. Ray found it near Settle in Yorkshire (where Mr. Curtis and Dr. Smith have also gathered it,) and between that place and Malham. At Matlock, where it grows abundantly on the lime-stone rocks and about the lead mines, with *Arenaria verna*, as observed by Mr. Curtis near Settle. Gathered by Dr. Smith, July 4th, 1792. Dr. Withering thinks it highly probable that the plant found by Merret in Yorkshire, and by Nicholson on moist limestone pastures in Westmoreland and Cumberland, is the true alpestre.—He refers the plant found by Ray near Settle and in many pastures between that and Malham, by Curtis on the road from Settle to Malham, and by Mr. Woodward on Ingleborough, to the montanum; but they are all probably the alpestre.—It flowers in June and July.

13. Root annual, fibrous. Stem about a foot high, upright, round, branched, leafy, rough. Root-leaves pinnatifid, the segments varying much in form. Stem-leaves oblong, embracing, toothed. All more or less hairy. Flowers in corymbs, lengthening out into racemes. Calyx slightly hairy, with membranous edges. Petals white, a little longer than the calyx, rounded at top. Silicles smooth, deltoid-obcordate, without any margin, terminated by a short style. Seeds numerous, yellowish, on pedicels which connect them with the edge of the partition<sup>3</sup>.

Gærtner remarks, that the valves are keeled, and attenuated into a margin above only; that the partition has frequently a perforation in the middle; and that there are about twelve seeds in each cell, which are ovate, beaked, smooth and saffron-coloured.

This plant, which grows naturally in most parts of the world, is a strong instance of the influence of soil and situation; sometimes not being more than two or three inches high, when it flowers and perfects its seeds, whilst in other situations it attains the height of

as many feet. On walls and in dry situations the root-leaves are more deeply divided, and the segments become much narrower: in cultivated ground they are broader and less jagged: in a dry barren chalk the plant becomes very small with a single undivided stem, and the leaves all entire.

March and April are the months in which it is most generally found in flower; yet like the Groundsel (*Senecio vulgaris*) and *Poa annua*, it may be found in this state at almost any time of the year. Small birds are very fond of the seeds<sup>4</sup>.

Dr. Withering remarks, that this and the other species of this genus begin to flower long before they have attained their full size; the flowers at first forming a corymb, which after a while shoots out and assumes the form of a long spike-like raceme. The stem also, at first simple, in time becomes branched; the first branches issuing from its upper part.

14. This is an annual plant a span in height. Stem upright, round, grooved, branching at top into corymbs. Leaves sessile, very slightly serrate, veined, very smooth. Corymbs lengthened into racemes. Flowers small, white. Silicles ovate, roundly emarginate at the top, with the lobes divaricating produced acute, resembling the seeds of *Ceratocarpus*.—Native of the salt plains of Siberia<sup>5</sup>. Introduced in 1779, by Jonas Dryander, M. A. It flowers in July<sup>6</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds where the plants are to remain, either in spring or autumn; but the latter season is to be preferred. When the plants come up, thin them where they are too close, and keep them clean from weeds.

If the campestre and arvense be cultivated for use, sow them thin upon beds of light ground; hoe and thin them as directed for carrots, onions, &c. so as to leave them three or four inches apart.

If the seeds of any of the sorts be permitted to scatter, the plants will come up without care.

13. Shepherd's Purse is a common weed every where. It increases so fast by seeds, that a garden is not easily cleared of it, when they are permitted to shed. There are generally four crops of this plant from seed in a year; it cannot therefore be too soon or too carefully rooted out of a garden, [which is easily done by hoeing in dry weather. In fallows it is insignificant, and affords food for cattle and sheep.

THLASPI. See *Alyssum*, *Anastatica*, *Biscutella*, *Cheiranthus*, *Clypeola*, *Cochlearia*, *Draba*, *Iberis*, *Lepidium*, *Myagrum*, *Peltaria*.

THLASPIDIODES. See *Dodonæa*.

THLASPIDIUM. See *Biscutella* and *Iberis*.

THOA.

*Lin. gen. Schreb. n. 1454. Aubl. t. 336. Juss. 406.*

Class. 21. 7. Monoecia Polyandria.

Nat. order of *Urticæ* Juss.

#### GENERIC CHARACTER.

\* *Male Flowers* in spikes.

CAL. none.

COR. none.

STAM. *Filaments* at the top of each joint in the spike, numerous, short. *Anthems* very small.

\* *Female Flowers*, at the base of the spike, one on each side sessile.

CAL. none.

COR. none.

PIST. *Germ* ovate. *Style* scarcely any. *Stigma* three or four-cleft, very small.

PER. *Capsule*? oblong, brittle, one-celled.

SEED one, oblong, in a brittle shell, covered with very small rigid pungent bristles, weaved into a sort of dry aril.

#### ESSENTIAL CHARACTER.

*Cal.* and *Cor.* none.

MALE. *Stam.* numerous, at the joints of the spike.

FEM. *Germ*s two, at the base of the male spike, one on each side sessile. *Stigma* three or four-cleft.

SEED in a brittle shell, covered with a bristly web.

<sup>1</sup> Smith brit.

<sup>2</sup> Engl. bot.

<sup>3</sup> Curtis & Smith.

<sup>4</sup> Curtis & Withering.

<sup>5</sup> Willdenow.

<sup>6</sup> Hort. kew.



# T H O

## SPECIES.

### 1. Thoa urens.

*Aubl. guian. p. 875. t. 336.*

#### DESCRIPTION, &c.

This is a shrub, rising with a tortuous stem to about the length of ten feet, and emitting several twisted and climbing branches upon the neighbouring trees: the bark is rough and greyish: the wood white and spongy: the leaves opposite, smooth, green, entire, and oval, terminating in a sharp point: the largest are about five inches and a half long, and about three inches wide: the spikes of male flowers spring from the bosoms of the leaves and the tips of the branches, and on each side the base of the male flowers is a female one: the female flowers are each succeeded by a smooth reddish capsule, under the bark of which is found a dry substance composed of stiff recumbent bristles which separate easily and cause a severe itching when rubbed on the skin. The native name of the plant is Thoa<sup>a</sup>.

THORA. See *Cytisus* and *Ranunculus*.

THORN-APPLE. See *Datura*.

THORN, Black. See *Prunus*.

—— Box. See *Lycium*.

—— Christ's. See *Rhamnus*.

—— Cockspur. See *Cratægus*.

—— Egyptian. See *Acacia*.

—— Evergreen. See *Mespilus*.

—— Glastonbury. See *Cratægus*.

—— Goat's. See *Tragacantha*.

—— Haw. See *Cratægus*.

—— Lily. See *Catesbæa*.

—— Purging. See *Rhamnus*.

—— White. See *Cratægus*.

THORNY TREFOIL. See *Fagonia*.

THOROW-WAX. See *Bupleurum*.

THOUINIA. (So named by Dr. Smith, in honour of Mons. André Thouin, fellow of the National Institute, and Professor of Horticulture in the French Museum.—“Pulcherrimum genus e plantis Commerſonianis, Linnæo filio ab optimo Thouinio liberaliter oblati, selegi, lætissimus equidem quod in tam gratum reservatus sit officium, quo observantiam erga amicum optimum testificer, et botanicum dignissimum honoribus dudum meritis condecorum.” *Smith ic. ined.*)

*Lin. gen. Schreb. n. 1731. p. 793. Smith ic. 7.*

*Humbertia Commers. Endrachium Juss. 133.*

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Convolvuli*. Juss.

#### GENERIC CHARACTER.

CAL. five-leaved, permanent: leaflets roundish; three outer thicker wrinkled naked, two inner membranaceous at the edge, silky at the back.

COR. one-petalled, bell-shaped, plaited, twice as long as the calyx, five-cleft, the segments very blunt, hispid on the outside with very frequent rigid fulgid bristles, within and along the edge between the plaits smooth, tomentose-ciliate at the top.

STAM. Filaments five round naked, twice as long as the corolla, declining. Anthers biggish, cordate, two-lobed, smooth.

PIST. Germ ovate, very hairy, superior. Style length, form and situation of the stamens. Stigma simple, obtuse.

PER. Drupe globular, size of a Plum, supported by the permanent calyx.

SEED.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, bell-shaped, inferior, hispid on the outside. Style simple. Drupe.

#### SPECIES.

### 1. Thouinia spectabilis.

*Lin. spec. ed. Willd. v. 935. Smith ic. ined. 1. 7.*

*Humbertia madagascariensis. Lamarck encycl. 2. 353. t. 103.*

#### DESCRIPTION, &c.

This is a tree with a hard wrinkled bark: the branches are round, silky towards the top, terminated by leaves and flowers in bundles. Leaves scattered, obovate-lanceolate, obtuse, very smooth, with a stout

<sup>a</sup> Aublet.

# T H R

midrib; quite entire, often emarginate: petioles short, channelled, when young silky. Stipules none. Flowers axillary, solitary, large and handsome, nodding a little, on roundish peduncles thickened at the top, silky towards the base, having in the middle two small acute silky opposite bractes<sup>b</sup>.

According to Commerſon's manuscripts, the fruit is a drupe; but Jussieu and Lamarck consider it as a two-celled capsule, with two seeds in each cell<sup>c</sup>.

Native of Madagascar, where it was found by Commerſon.

Thouinia of Swartz. See *Linociera*.

Thouinia of Linn. suppl. See *Chionanthus zeylanica*.

THRASI. See *Cyperus*.

THREE-SEEDED MERCURY. See *Acalypha*.

THRIFT. See *Statice*.

THRINAX. (Θρινᾶξ or τρινᾶξ, a trident or three-tined fork, from τρεῖς three.)

*Lin. gen. Schreb. n. 1686. Swartz prodr. 57.*

Class. 25. 1. Appendix Palmæ.—6. 1. Hexandria Monogynia Swartz and Willdenow.

Nat. order of *Palms*.

#### GENERIC CHARACTER.

CAL. Spathe universal, compound. Spadix simply branched, imbricate with proper Spathes, in decussated spikes.

Perianth minute, six-toothed.

COR. none.

STAM. Filaments six, short, filiform, inserted into the base of the germ. Anthers large (larger than the pistil) erect, bifid at the base and top.

PIST. Germ half-inferior, ovate, surrounded by the calyx. Style thickish, short. Stigma widish, compressed, retuse, emarginate.

PER. Berry one-celled, naked.

SEED a single kernel covered with a bony shell.

#### ESSENTIAL CHARACTER.

Cal. six-toothed. Cor. none. Stigma funnel-form, oblique. Berry one-seeded.

#### SPECIES.

### 1. Thrinax parviflora. Palmeto Royal or Palmeto Thatch.

*Lin. spec. ed. Willd. 2. 202. Swartz prodr. 57.*

*descr. 1. 614. Brown. jam. 190. n. 1.*

#### DESCRIPTION, &c.

Trunk from ten to twenty feet high, swelling at the base, unarmed. Fronds terminating, palmate-plaited, from one to two feet long: divisions lanceolate, nerved and marked with lines, rigid, almost equal. Stipes longer than the leaves, round-flatted, smooth, flexible, unarmed. Spadix terminating, almost upright, two or three feet long, panicle-branched: branches alternate, subdivided, spreading: branchlets or spikes decussated, opposite or in threes. Flowers pedicelled, opposite or in threes, placed on the rachis, small, hermaphrodite. Berry roundish, the size of a small pea, almost juiceless. Kernel white within, red in the middle.

Native of Jamaica and Hispaniola, on the coast and in dry places<sup>d</sup>.

Browne says, that this tree covers whole fields in many parts of Jamaica; that it grows both in the rocky hills, and low moist plains near the sea, but seems to thrive best in the former. It shoots by a simple stalk, and rises generally from four or five to ten or fourteen feet in height. It is always furnished with leaves in form of a fan, sustained by slender compressed footstalks, and bears a great abundance of small berries, which serve to feed both the birds and beasts of the wood, when they are in season. The trunk seldom exceeds four or five inches in diameter: it is much used for piles in wharfs and other buildings made in the sea; for it stands the water well, and is never touched by the worms. The foot-stalks of the leaves, split and pared, serve to make baskets, bow-strings, ropes, &c. where strength and toughness are required. The leaves are called Thatch, and are used as such, especially for out-houses, and stand the weather many years; but such coverings are apt to harbour rats and other vermin.

<sup>b</sup> Smith.

<sup>c</sup> Willdenow.

<sup>d</sup> Swartz descr.



THROATWORT. See *Campanula*.

THRYALLIS. (*Θρυαλλίς*, elychnum, a wick: hence a plant so named, because the leaves are fit to make wicks for lamps. Dioscor. 4. 99. Plin. 25. 10.)

Lin. gen. n. 533. Reich. n. 581. Schreb. n. 733. Juss. 251.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Tricoccæ*. *Accra* Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: segments lanceolate, erect, permanent.

COR. Petals five, roundish, spreading.

STAM. Filaments ten, awl-shaped, longer than the calyx. Anthers roundish.

PIST. Germ obtuse. Style filiform, length of the stamens. Stigma simple.

PER. Capsule three-sided, triangular, obtuse, tripartite: cells opening by the exterior angle.

SEEDS solitary, very smooth, obovate, obtuse at the base, mucronate and curved inwards.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Caps. tricoccous.

SPECIES.

1. *Thryallis brasiliensis*.

Lin. spec. 554. Reich. 2. 278. Willd. 2. 570.

Fruticescens herba Pisonis. Marogr. brasil. 97. f. 3.

DESCRIPTION, &c.

This is a little shrub, with round jointed branches. Leaves opposite, petioled, ovate, quite entire. Stipules bristle-shaped. Raceme terminating, from the fork of the branches, simple, a foot long: with very short bristle-shaped bractes; and filiform pedicels, longer than the flower. Flowers small, yellow. Fruits tricoccous or three-grained.—Native of Brasil<sup>o</sup>.]

THUJA. (Corrupted from *Θυα* of Theophrastus, *Thya* of Pliny.)

Lin. gen. n. 1078. Reich. n. 1176. Schreb. n. 1457.

Tournef. t. 358. Juss. 413. Gært. t. 91.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Coniferae*.

GENERIC CHARACTER.

\* Male flower.

CAL. Ament ovate, composed of a common rachis, on which opposite flowers are placed in a triple opposition. Each flower has for its base a subovate, concave, obtuse scale.

COR. none.

STAM. Filaments (in each floret) four, scarcely manifest. Anthers as many, fastened to the base of the calycine scale.

\* Female Flower on the same plant.

CAL. Strobile common subovate, surrounded with opposite florets: composed of two-flowered, ovate, convex scales, converging longitudinally.

COR. none.

PIST. Germ very small. Style awl-shaped. Stigma simple.

PER. Strobile ovate-oblong, obtuse, opening longitudinally, with oblong scales, almost equal, convex outwardly, obtuse.

SEEDS oblong, girt longitudinally with a membranaceous wing, emarginate.

OBS. This genus is very nearly allied to *Cupressus*.

ESSENTIAL CHARACTER.

MALE. Cal. Scale of an Ament. Cor. none. Stam. four.

FEM. Cal. of a strobile, with a two-flowered scale. Cor. none. Pist. one. Nut one, girt with a membranaceous wing.

SPECIES.

1. *Thuja occidentalis*. *American Arbor-vitæ*.

Lin. spec. 1421. syst. 861. Reich. 4. 178. hort.

cliff. 449. upf. 289. Gært. fruct. 2. 62. Gmel.

fib. 1. 182. Kalm. it. 3. 389. ed. angl. 3. 170.

Du Roi barbecc. 2. 455. Blackw. t. 210.

Kniph. cent. 1. n. 91.

*Thuya* Theophrasti. Baub. pin. 488.

*Arbor vitæ*. Clus. hist. 1. 36. Dod. pempt. 630.

Ger. 1187. emac. 1369. Park. theat. 1478. Raii

hist. 1408. & 1916.

<sup>c</sup> Linn. spec.

Strobiles smooth with blunt scales, branches spreading.

2. *Thuja orientalis*. *Chinese Arbor-vitæ*.

Lin. spec. 1422. syst. 861. Reich. 4. 178. hort.

cliff. 449. upf. 289. Du Roi barbecc. 2. 458.

Gært. fruct. 2. 61. Thunb. jap. 266. Lour.

cochinch. 580. ed. Willd. 712.

Strobiles squarrose with sharp scales, branches erect.

[3. *Thuja articulata*. *African Arbor-vitæ*.

Vahl symb. 2. 96. t. 48. Desfont. atlant. 2. 353.

*Cupressus fructu quadrivalvi*, foliis *Equiseti* instar articulatis. Shaw itin. n. 188. ic.

Strobiles four-cornered four-valved, fronds compressed jointed leafless.

4. *Thuja dolabrata*. *Japanese Arbor-vitæ*.

Lin. syst. 861. suppl. 420. Thunb. jap. 266.

Strobiles squarrose, leaves imbricate three ways, beneath excavated and snow white.]

DESCRIPTIONS, &c.

1. The common *Arbor-vitæ* has a strong woody trunk, which rises to the height of forty feet or more: the bark, while young, is smooth and of a dark brown colour, but as the trees advance, the bark becomes cracked and less smooth: the branches are produced irregularly on every side, standing almost horizontal, and the young slender shoots frequently hang down; these branches stand but thin, and the younger branches only have leaves, so that when the trees are grown large, they make but an indifferent appearance, being so thinly clothed with the leaves. The young branches are flat, and the small leaves are placed over each other like the scales of fish. The flowers are produced from the side of the young branches, pretty near to the foot-stalk: the males grow in oblong katkins, and between these the females are collected in form of cones. When the former have shed their farina, they soon drop off; but the latter are succeeded by oblong cones or strobiles, having obtuse smooth scales, containing one or two oblong seeds.

[Gærtner describes the strobile as elliptic-globular, with coriaceous scales, marked on the outside under the tip with a small indistinct tubercle, within simply concave. Seeds (nuculæ) oblong, of a bay colour, surrounded on each side with a widish membranaceous wing, emarginate at the top and bottom.]

Native of Siberia and Canada, where it is very plentiful, but not much farther south. The most southerly place that Kalm saw it in, was a little to the south of Saratoga, in the province of New York, and near Caffes, in the same province, which places are in 42°. 10'. north latitude. Mr. Bartram found a single tree in Virginia, near the falls in the river James. Dr. Colden also saw it in many places round his seat of Coldenham, between New York and Albany, in about 41°. 30'. north latitude. The French in Canada call it *Cedre blanc*. The English and Dutch in Albany call it the White Cedar.

It generally succeeds in grounds where the roots have sufficient moisture. In swamps and marshes it grows pretty tall. Stony hills, and places where many stones lie together, covered with mosses, seem to suit it next to the former situations. When the sea shores are hilly, and covered with mossy stones, it seldom fails to grow on them. It is likewise seen now and then on hills near rivers and other high grounds; but such places commonly carry a sourish water with them, or receive moisture from the upper countries. In very dry places it never comes to any considerable size. It is pretty frequent in the clefts of mountains, but cannot grow there to any remarkable height or thickness. The tallest trees in the woods of Canada are about thirty or thirty-six feet high. A tree of ten inches diameter had ninety-two rings round the stem; and another of fourteen inches had a hundred and forty-two rings.

Being reckoned the most durable wood in Canada, inclosures of all kinds are scarcely made with any other wood; especially the posts which are driven into the ground. The palisades round the forts are made of this wood. It furnishes planks or boards for houses. The thin narrow pieces which form the ribs and bottom of the bark-boats commonly used in Can-



nada are taken from this tree, because it is pliant enough for the purpose, especially whilst it is fresh, and because it is very light. It is reckoned one of the best woods for the use of the lime-kilns. The branches are used all over Canada for besoms, which the Indians bring to the towns for sale. The fresh branches have a peculiar agreeable scent, which is perceived strongly in houses where such besoms are used. Mr. Miller says that the leaves have a rank oily scent when bruised.

This Thuja is used in Canada for rheumatic pains; the leaves being made into a salve with hog's-lard, and applied to the part. For violent wandering pains they use the cones with four-fifths of Polypody, both powdered coarsely, made into a poultice with water milk-warm, and wrapped round the body, with a cloth between, to prevent its scorching the skin. A decoction of the leaves is employed by the Indians in coughs and intermitting fevers.

The common Thuja flowers early in the spring, and the seeds are ripe towards the end of September. Where the trees grow thick they seldom bear seeds; but a single tree, where the air can freely come at it, is always full of seeds<sup>f</sup>.

The great value of the wood for bowls, boxes, cups, mortars, pestles, and various works of the turner and cabinet-maker, make this tree justly claim a place in plantations. It bears our severest winters, and soon arrives at a middling stature<sup>g</sup>.

Clusius says, that he first saw this tree in the royal garden at Fontainebleau, whither it was sent from Canada as a present to Francis the First, and that he believed this to have been the first tree of the kind which had been brought to Europe.

It was cultivated in England before 1596; for Gerard says, "it groweth in my garden very plentifully, and it flowreth about may. The new writers do terme it *Arbor vitæ*, in English the tree of life; I do not meane that, whereof mention is made in Genesis."]

2. The branches of the Chinese *Arbor vitæ* grow closer together, and being much more adorned with leaves, which are of a brighter green colour, make a much better appearance than the former. The branches cross each other at right angles. The leaves are flat, but the single divisions are slender, and the scales are smaller, and lie closer over each other than those of the first sort. The cones (strobiles) are also much larger, of a beautiful gray colour, and their scales end in acute reflexed points.

[Gærtner describes them as ovate, obscurely four-cornered, composed of oblong, thick, suberose scales, opposite by pairs, armed on the outside below the tip with a recurved little hook, very smooth within, and having a double little excavation near the base. The little nut is bony, globular, one-celled, valveless, covered with a thin epidermis of a rufescent bay colour, produced on each side into a very narrow scarcely perceptible margin. There is no proper receptacle except the cavities of the scales wherein the nuts lie. Seed elliptic-globular, pale.

Native of China and Japan.—It was cultivated by Mr. Miller in 1752<sup>h</sup>.] According to him the seeds were first sent to Paris by some of the Missionaries in China.

[3. Height from two to six feet, in a dry soil a low shrub. Branches round, alternate, spreading at a right angle. Fronds roundish at the base and branched: branches opposite, branchletted, jointed, the last and those of the branchlets gradually smaller, widening a little upwards, having a hollow at the top for the next joint, marked with a line on each side. Leaves none, but small scales (four or six) at the top of the joints, sharp and unequal. At the base of these are scarcely visible glands. The male strobile is small, ovate, nodding a little, obtusely four-cornered: scales in four rows, commonly four in each, pedicelled, peltate, pale yellow; anthers three or four, sessile, roundish, under each scale. Female strobile solitary at the end of the branches, four-cornered, with the

corners blunt: scales four, woody, thick, cordate, on the outside longitudinally hollowed in the middle, convex within; opening from top to bottom; two of them bigger, opposite, fertile, the other two narrower, barren. Seeds small, with a membranaceous margin.

Native of Mount Atlas, and barren hills in Barbary.

Broussonet affirms that the resin commonly called gum Sandarack, flows from this tree in the kingdom of Morocco. It is totally different from *Thuja cupressoides* of Linneus's mantissa; that has the scales imbricate, and a smooth strobile, three times as large as that of this species<sup>i</sup>.

4. This is a very large and lofty tree, and the handsomest of all the evergreens. Branches and branchlets alternate, compressed, covered with imbricate leaves, which are disposed by threes; they are ovate, obtuse, entire, compressed, above shining green and smooth, convex with a groove in the middle, beneath concave, margined, snow white.

Native of Japan; observed by Thunberg<sup>k</sup>; planted every where by the road side in Fokion. He considers it as the handsomest of the evergreen trees, on account of its height, its straight trunk, and its leaves of a silvery hue on the under part. He sent over to Holland seeds and growing plants of it<sup>l</sup>.]

#### PROPAGATION AND CULTURE.

These trees may be propagated by seeds, layers, or cuttings. The first sort is commonly propagated by cuttings; these should be planted in September, upon a shady border and in a loamy soil; the cuttings should be chosen from the shoots of the same year, with a small joint of the former year's wood at the bottom of each. These should be planted three or four inches deep, in proportion to their length, treading the ground close to them, to prevent the admission of air. If the following spring should prove dry, there should be a little mulch laid over the surface of the ground to prevent its drying; where this is performed in time, it will save the trouble of watering the cuttings, and it will be much better for them, because when these are putting out their young fibres, if they are much watered, it will rot them while they are tender. These cuttings will be rooted enough to transplant by the next autumn, when they may be either planted in beds, or in nursery rows to be trained up.

When they are propagated by layers, the young branches only should be laid down in autumn, or March, which will also put out roots by the next autumn, when they may be taken up, and transplanted in the same manner as those raised from cuttings: but although these are very expeditious methods of propagating this tree, yet those who are desirous to have large trees, should always propagate them by seeds, for the plants so raised will be much preferable to the other.

There is a variety of the first sort with variegated leaves, which some people keep in their gardens for the sake of variety; but as this proceeds from a weakness in the plants, so whenever the plants become strong and vigorous, they always return to their plain colour again, to prevent which they generally plant them in very poor ground. This variety can only be preserved by propagating the plants either by cuttings or layers.

The China sort is generally propagated by layers in the same way as the former; but the cuttings of this, if rightly managed, will take root very freely; but most people have over-nursed them. If these are planted in September in a border of soft loam, exposed to the east, and before hard frost sets in, and the surface of the ground covered with old tanners bark about two inches thick, it will prevent the frost from penetrating the ground very deep; and if this remains in the spring, it will also keep the ground moist; for if these cuttings, or the layers of this sort are watered in the spring, when they are beginning to put

<sup>i</sup> Desfontaines & Vahl.

<sup>k</sup> Thunb. jap.

<sup>l</sup> Travels, 3. 160. engl. ed.

<sup>f</sup> Kalm.

<sup>g</sup> Boucher.

<sup>h</sup> Hort. kew.



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out young fibres, it will certainly rot them; as I have frequently experienced; therefore I advise every one not to water these cuttings or layers, nor should the plants be much watered when they are transplanted, for the same reason: but as there are many plants now in England which ripen their seeds, so those who can be supplied with them should prefer this to both the other methods of propagating the plants; for, after the two first years, the seedling plants will greatly outstrip the others in growth, and the plants growing with their branches closer, will be much handsomer.

These seeds should be sown soon after they are ripe, which is in the spring. They should be sown in pots filled with soft loamy earth, and plunged into the ground in an east border, where they may have only the morning sun, observing always to keep the pots clean from weeds. Sometimes these seeds will come up the same year, but they often lie in the ground till the next spring; therefore the pots should be put in a common hot bed frame in winter, and in the spring the plants will come up; these must not be too much exposed to the sun the first year, and if in the next winter they are sheltered under a frame, it will be a good way to preserve them, and the spring following they may be transplanted into beds, and treated in the same way as those propagated by cuttings.

[The plants raised either from cuttings or layers, having got sufficient roots, transplant them to a border screened from the mid-day sun, in rows two feet and a half asunder, and one foot in the row; water them at planting, and continue so to do once in five or six days, when the weather is dry. Here let them remain two years.

Then remove them again, cutting a very little from the ends of the roots. Plant them in rows three feet and a half asunder, and two feet distance in the row; to continue three years, when they will be of a proper size to transplant where they are to remain. This tree however is as patient of removal large as any evergreen.

The Chinese Arbor vitæ, is when young, a little more delicate and slower of growth than the other, neither does it root well by layers in less than two years, or take freely by cuttings in the open ground: it may be advisable therefore to sow some of the seeds.

If the Chinese sort be propagated by layers, the plants must stand two years to be rooted. The beginning of april plant them in penny-pots, and plunge them in a moderate hot-bed of tanner's bark till the beginning of august; after which inure them to the air by degrees, and place them under some protection during the succeeding winter. In these pots let them remain a second year, when they may be taken out and treated as the common kind. They should be planted, not near, but under the protection of other trees.

The sort with striped leaves may be increased by layers or cuttings, but must be planted on thin dry land, to preserve the variegation strong<sup>m</sup>.

THUJA APHYLLA. See *Tamarix articulata*.

THUNBERGIA. (So named by Retzius, in honour of Charles Peter Thunberg, M. D. knight of the order of Vasa, professor of botany in the university of Upsal, member of several learned societies. Author of *Travels into Europe, Africa and Asia; Flora Japonica, &c.*)

Lin. gen. Schreb. n. 1058. suppl. 46. Thunb. nov. gen. 22. Juss. 103.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Acanthi* Juss.

## GENERIC CHARACTER.

CAL. Perianth double: outer two-leaved; leaflets ovate, obtuse, five-nerved, almost the length of the tube: inner one-leaved, many-parted; segments about twelve, awl-shaped, three times as short as the outer perianth.

COR. one-petalled, bell-shaped: tube widening gradually: border five-cleft; segments equal, ovate, very obtuse, three times as short as the tube.

STAM. Filaments four, inserted into the tube above the

<sup>m</sup> Boucher.

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base, unequal: the two lower shortest, the two upper shorter than the tube. Anthers ovate, adnate.

PIST. Germ superior. Style filiform, a little shorter than the tube, erect. Stigma two-lobed.

PER. Capsule globular, beaked; smooth; two-celled, opening longitudinally: beak compressed, grooved, linear, obtuse: partition obovate, emarginate, perforated below the top, membranaceous at the sides, permanent.

SEEDS in each cell two, reniform, wrinkled, convex on one side, concave on the other with a longitudinal groove.

OBS. It agrees in many circumstances with the *Barlerias*. The leaflets of the exterior calyx are named bractes by Thunberg.

## ESSENTIAL CHARACTER.

Cal. double: outer two-leaved; inner twelve-toothed.

Cor. bell-shaped. Caps. beaked, two-celled.

## SPECIES.

1. *Thunbergia capensis*.

Lin. spec. ed. Willd. 3. 388. suppl. 292. Retz. alt. lund. 1. 163. cum. ic. Thunb. nov. gen. 1. 21.

Leaves ovate obtuse, stem diffused.

2. *Thunbergia fragrans*.

Lin. spec. ed. Willd. 3. 388. Roxb. corom. 1. 47. t. 67. Bot. repos. t. 123.

Leaves cordate acuminate somewhat angular-toothed at the base, stem scandent.

## DESCRIPTIONS, &c.

1. This is a singular plant, which nobody would suppose to be different from the *Barlerias*, if he did not attend to the double calyx. Stem four-cornered, hirsute. Leaves opposite, on very short petioles, quite entire, five-nerved, veined, smooth above, beneath hirsute, erect. Peduncles length of the leaves or longer, solitary, one-flowered. Bractes two ovate, rough-haired, length of the tube. Calyx enlarging into the fruit. Corolla yellow. Capsule smooth, awl-shaped, two-parted.—Native of the Cape of Good Hope, where it was found by Thunberg<sup>n</sup>.

2. The root consists of many thick woody fibres. Stem and branches twining, woody, of two or three fathoms in extent, jointed and swelled from the insertions of the leaves or their scars, round: bark light ash-coloured: young shoots downy. Leaves opposite, petioled, three-nerved, scabrous, about three inches long, and an inch and half broad: petiole about three quarters of an inch long, channelled, bent in various directions. Stipules none. Peduncle axillary, solitary, one-flowered, round, club-shaped, downy, one or two inches long. Bractes none. Flowers large of the purest white. Leaves of the exterior calyx acute and many-nerved. Corolla salver-form: tube compressed, enlarged about the middle, a little hairy, longer than the exterior calyx, bent to one side with a curve: border flat, five-parted; divisions equal, obovate, with their extremities truncate, and in general irregularly three-toothed, shorter than the tube. Style length of the tube: lobes of the stigma obcordate, funnel-form. Capsule subglobular, flat-beaked, opening from the base with an elastic jerk. Seeds in general one in each cell, the other seldom or never ripening, round, rugose, with a large cavity (as in the *Coculi indici*) which penetrates two thirds of the seed.

This plant is common in hedges, among bushes, on the banks of water-courses, about Samulcotah, in the East Indies. It flowers during the wet and cold seasons: when cultivated it flowers all the year. It possesses a peculiar and agreeable fragrance; and the beauty of its flowers, though they are not fragrant, entitles it to a place in the flower garden<sup>o</sup>.

Willdenow remarks, that it has the appearance of *Convolvulus sepium*.

THUYA. See *Thuja*.

THYLACITIS. See *Gentiana*.]

THYMBRA. (Perhaps from *Thym*; as being used in sacrifices, on account of its fragrance.)

Lin. gen. n. 708. Reich. n. 766. Schreb. n. 962. Juss. 115.

<sup>n</sup> Linn. suppl.

<sup>o</sup> Roxburgh.

Class.



Class. 14. 1. Didynamia Gymnospermia.  
Nat. order of *Verticillatæ* or *Labiata*.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, subcylindrical, keeled at the sides, two-lipped at the mouth: *upper lip* wider, half-three-cleft, equal, converging; *lower* narrower, two-parted.

COR. ringent: *tube* subcylindrical: *upper lip* flat, straight, half-two-cleft, obtuse; *lower* three-cleft, almost equal, flat.

STAM. *Filaments* four, filiform, approaching by pairs: the two lower ones shorter. *Anthers* two-lobed: lobes remote, under the upper lip of the corolla.

PIST. *Germ* four-cleft. *Style* filiform, half-two-cleft. *Stigmas* two, acute.

PER. none. *Calyx* unchanged.

SEEDS four.

## ESSENTIAL CHARACTER.

Cal. subcylindrical, two-lipped, scored on each side with a villose line. *Style* femibifid.

## SPECIES.

1. *Thymbra spicata*. *Spiked Thymbra*.

Lin. spec. 795. Reich. 3. 28. Willd. 3. 46.

Allion. pedem. n. 90. Kniph. cent. 3. n. 94.

Barr. rar. 281. t. 230. Pluk. phyt. t. 116.

f. 5. (Thymum.) Mor. hist. 3. 361. n. 11.

(Hyssopus.)

*Satureia hirsuta purpurea olibani*. Dodart mem.

*Flowers in spikes*.

2. *Thymbra verticillata*. *Whorled Thymbra*.

Lin. spec. 796. Reich. 3. 28. Willd. 3. 46.

Allion. pedem. n. 89.

*Hyssopus angustifolia montana aspera*. Baub. pin. 218.

*H. montana*. Dalech. hist. 394.

*Flowers in whorls*.

[3. *Thymbra ciliata*. *Headed Thymbra*.

Lin. spec. ed. Willd. 3. 47. Desfont. atlant. 2.

10. t. 122.

*Flowers in heads, leaves linear ciliate*.]

## DESCRIPTIONS, &amp;c.

1. This is a low shrubby plant like Heath, branching out into slender woody stalks which are six or eight inches long, covered with a brown bark, and garnished with narrow acute-pointed leaves about half an inch long, fitting close to the stalks opposite; they have an aromatic odour when bruised. The stalks are terminated by thick close spikes of purple flowers, near two inches long. The calyxes are stiff and hairy; they are cut half their length into acute segments, out of these the flowers peep, with their two lips; the upper is concave and arched, the under is cut into three equal portions, and these are a little reflexed. They appear in June and July, and in warm seasons they are sometimes succeeded by seeds which ripen in autumn.

Native of Mount Libanus, Macedonia, Spain, [and the County of Nice.—Cultivated in 1699, by Mr. Jacob Bobart<sup>2</sup>: who had the seeds from Aleppo by Dr. Huntington<sup>3</sup>.]

2. The second sort has a shrubby stalk which seldom rises much more than a foot high, putting out many small woody branches, which have narrow spear-shaped leaves with many punctures; they stand opposite, and are of an aromatic flavour. The flowers grow in whorled spikes at the end of the branches. The leaves which stand under each whorl, are broader than those below, and are covered with fine hairs. The flowers are purple, and sit close to the stalks; the upper lip is concave and ends with two obtuse points, the lower ends with three equal points. These appear about the same time with the other, and in warm seasons the seeds ripen in England.

[Stems scarcely a foot high. Leaves linear-lanceolate entire dotted. Floral leaves a little wider and sharper, but ciliate. This is altogether whorled, with sessile flowers: whereas the preceding is indistinctly spiked; the spike oblong, imbricate with bractes or ciliate leaves. Perhaps it may be no more than a variety of the first<sup>1</sup>.

<sup>2</sup> Hort. kew.

<sup>3</sup> Hist. oxon.

<sup>1</sup> Linn. spec.

Native of Spain and Italy. Cultivated in 1702, by the Dutchess of Beaufort<sup>4</sup>.

3. This is an elegant, upright and very branching shrub. The younger branches have a very short down upon them; they are round or scarcely four-cornered, simple or branched, unequal. Leaves stiffish, spreading, opposite, sessile, edged with white hairs, and punctured. Flowers in close, ovate-cylindrical, obtuse heads. Bractes large, ovate, acute, ciliate, nerved beneath, longer than the calyx: which is round, compressed a little, two-lipped; teeth ciliate, the two lower longer, bristle-shaped. Corolla violet: tube straight, twice as long as the calyx: upper lip entire, obtuse, flattish; lower three-lobed, lobes roundish, entire. Stamens scarcely longer than the corolla. Anthers very small. Stigmas acute.

Native of Barbary, on dry barren hills near Mascara<sup>5</sup>.]

## PROPAGATION AND CULTURE.

Sow the seeds in the spring on a bed of light earth, and the plants will appear in six or eight weeks. Keep them clean from weeds, and remove them in July, some into small pots, and others into a warm dry border; shading them from the sun, and supplying them with water till they have taken new root. If the winter should prove very severe, cover the plants in the border with mats or other covering. The pots should be sheltered under a common frame in winter, where they may enjoy the free air in mild weather, and be protected from frost. But these plants will live in the open air, unless in very severe winters, especially if they be planted in a poor dry stony soil.

THYME. See *Thymus*.

THYMELÆA. See *Daphne* [*Globularia*, *Gnidia*,] *Passerina*.

[THYMELÆA Sloan. See *Ernodea littoralis*.

THYMIFOLIA. See *Lythrum*.

THYMO SIMILE. See *Thymus*.

THYMUM. See *Satureia*, *Thymbra*, *Thymus*.]

THYMUS. (Θυμος of Theophrastus and Dioscorides. From θυμος, courage, strength, being supposed to revive the spirits: or from θυω sacrificio, because it was used for incense in the temples.

Lin. gen. n. 727. Reich. n. 785. Schreb. n. 982.

Tournef. t. 93. Juss. 115. Acinos. Dill.

gen. 4.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ* or *Labiata*.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, half-five-cleft into two lips, permanent, having the throat closed with villose hairs: *upper lip* wider, flat, erect, three-toothed: *lower lip* two-bristled, of equal length.

COR. one-petalled, ringent: *tube* length of the calyx: throat small: *upper lip* shorter, flat, erect, emarginate, obtuse: *lower lip* longer, spreading, wider, trifid, obtuse; middle segment wider.

STAM. *Filaments* four, curved in, two of which are longer. *Anthers* small.

PIST. *Germ* four-parted. *Style* filiform. *Stigma* bifid, acute.

PER. none. *Calyx* narrowed at the neck, cherishing the seeds in its bosom.

SEEDS four, small roundish.

OBS. *Thymus Tourn.* has the stamens very short.

*Serpyllum Tourn.* has the stems woody, less hard, and lower.

*Acinos Riv. & Dill.* has the middle segment of the lower lip in the corolla emarginate.

*Mastichina Boerh.* has the teeth of the calyx extended into very long villose bristles.

## ESSENTIAL CHARACTER.

Throat of the two-lipped calyx closed with villose hairs.

## SPECIES.

1. *Thymus Serpyllum*. *Wild Thyme*.

Lin. spec. 825. Juss. 541. Reich. 3. 79. Willd.

3. 138. Fl. suec. n. 535. hort. cliff. 306. mat.

med. 152. Woodv. med. bot. 301. t. 110. Hudf.

angl. 262. Wither. arr. ed. 3. 536. Smith brit.

<sup>4</sup> Hort. kew.

<sup>5</sup> Desfontaines.



639. *Lightf. scot.* 318. *Curt. lond.* 2. t. 47.  
*Relb. cant. n.* 904. *Sibth. oxon. n.* 536. *Hall. helv. n.* 235. *Hoffm. germ.* 211. *Roth. germ.* 1. 259. 2. 38. *Pollich pal. n.* 574. *Lüdw. est.* t. 121. *Krock. files. n.* 953. *Neck. gallob.* 260. *Crantz austr.* 277. *Scop. carn. n.* 736. *Villars dauph.* 2. 354. *Allion. pedem. n.* 76. *Kniph. cent. 6. n.* 91. *Berg. phyt.* 143. *Regnault bot.*  
*Serpyllum vulgare.* *Dod. pempt.* 277. *Ger.* 455. 1, 2. *emac.* 570. 1. *Raii hist.* 521. *syn.* 230. *Vaill. par. t.* 32. f. 9, 7. *Blackw. t.* 418.  
*S. vulgare minus.* *Baub. pin.* 220. *Mor. hist. f.* 11. t. 17. f. 1. *Park. theat.* 8. 10.  
*S. vulg. repens.* *Clus. hist.* 1. 359. 1.  
*S. alterum.* *Matth.* 725.  
*S. flore minore.* *Rivin. mon.* 42. 2.  
*S. vulgare flore albo.* *Tournef. inst.* 197.  
*White-flowered Wild Thyme.*  
*S. vulg. flore amplo.* *Vaill. par. t.* 32. f. 8.  
*S. vulg. secundum genus.* *Baub. hist.* 3. 2. 269. *Raii syn.* 230. *Petiv. brit. t.* 31. f. 2. *Riv. mon.* 42. 3.  
*Large-flowered Wild Thyme.*  
*S. vulg. majus.* *Baub. pin.* 220. *Raii syn.* 231. *Petiv. brit. t.* 31. f. 3. *Sabb. hort.* 3. t. 69.  
*S. majus.* *Park. theat.* 7. 7. *Raii hist.* 522.—*flore purpureo & albo.* *Ger.* 456. 3. *emac.* 570. 3. & 573. 7.  
*Thymus glaber.* *Mill. dict. n.* 6.  
*Broad-leaved Wild Thyme.*  
*S. citratum.* *Ger.* 458. 2. *emac.* 571. 7. *Park. theat.* 8. 9. *Raii hist.* 522. *syn.* 231. *Petiv. brit. t.* 31. f. 4.  
*S. foliis citri odore.* *Baub. pin.* 220.  
*S. citrei odore.* *Baub. hist.* 3. 2. 270. *Clus. hist.* 359.  
*Lemon Thyme.*  
*S. angustifolium glabrum.* *Baub. pin.* 220. *Raii hist.* 522. *syn.* 231.  
*S. odore Juglandis.* *Baub. hist.* 3. 2. 270.  
*S. angusto glabroque folio.* *Clus. hist.* 359.  
*S. pannonicum Clusii.* *Park. theat.* 8.  
*Thymus Serpyllum.* *Woodv. t.* 110.  
*Narrow-leaved Smooth Wild Thyme.*  
*S. vulg. hirsutum.* *Raii syn.* 231.  
*Hoary Wild Thyme.*  
*S. hirs. minus repens inodorum.* *Raii syn.* 231.  
*Scentless Wild Thyme.*  
*S. villosum fruticosus, floribus dilute rubentibus.* *Raii syn.* 231.  
*S. latifolium hirsutum.* *Baub. pin.* 220. *prodr.* 108. *Raii hist.* 522.  
*Woody Wild Thyme.*  
*Flowers in heads, stems decumbent, leaves flat ovate obtuse ciliate at the base.*  
2. *Thymus lanuginosus.* *Woolly Wild Thyme.*  
*Lin. spec. ed. Willd.* 3. 138. *Schkuhr bot. handb.* 2. 164. *ic.* *Mill. dict. n.* 8.  
*T. Serpyllum d.* *Lin. spec.* 825.  
*T. Serpyllum angustifolium hirsutum.* *Baub. pin.* 220. *Kniph. cent. 6. n.* 92.  
*S. angusto lanuginosoque folio.* *Baub. hist.* 3. 270. *Raii hist.* 522.  
*Flowers in heads, stems creeping hirsute, leaves obtuse villose.*  
[3. *Thymus lævigatus.* *Smooth Thyme.*  
*Lin. spec. ed. Willd.* 3. 139. *Vahl symb.* 2. 65.  
*T. Serpyllum.* *Forfk. descr.* 107.  
*Flowers in heads, stems procumbent, leaves linear obtuse sessile narrowed at the base.]*  
4. *Thymus vulgaris.* *Garden Thyme.*  
*Lin. spec.* 825. *syn.* 542. *Reich.* 3. 80. *Willd.* 3. 139. *hort. cliff.* 305. *ups.* 160. *mat. med.* 152. *Woodv. med. bot.* 299. t. 109. *Sauv. monsp.* *Ger. prov.* 262. 2. *Villars dauph.* 2. 356. *Krock. files. n.* 954. *Allion. pedem. n.* 78. *Affo arag.* 541. *Gmel. sib.* 3. 247. *Pallas it.* 72. *Kniph. cent. 5. n.* 89. *Lüdw. est.* 123. *Berg. phyt. t.* 227. *Blackw. t.* 211. *Regnault bot.*  
*T. vulg. folio tenuiore.* *Baub. pin.* 119. *Tournef. inst.* 196.

- T. tenuifolius.* *Mill. dict. n.* 2.  
*Narrow-leaved Garden Thyme.*  
*S. T. vulg. folio latiore.* *Baub. pin.* 219. *Raii hist.* 521. *Sabb. hort.* 3. t. 68.  
*Thymum durius.* *Dod. pempt.* 276. *Ger.* 458. *emac.* 573. 1.—*vulgare.* *Park. theat.* 7. f. 2.  
*T. vulgaris.* *Mill. dict. n.* 1.  
*Broad-leaved Garden Thyme.*  
*T. supinus candicans odoratus.* *Magnol. Tournef. inst.* 196.  
*Thymum durius candidius.* *Park. theat.* 6. n. 3. *Raii hist.* 521.  
*Hoary Garden Thyme.*  
*T. capitulis minoribus, massiliensis.* *Tournef. inst.* 196.  
*Flowers whorl-spiked, stems erect, leaves ovate rolled back.*  
[5. *Thymus lanceolatus.* *Lance-leaved Thyme.*  
*Lin. spec. ed. Willd.* 3. 140. *Desfont. atlant.* 2. 30. t. 128.  
*Flowers whorl-spiked, stem suffruticose erect, leaves oblong flat, pubescent.*  
6. *Thymus numidicus.* *Barbary Thyme.*  
*Lin. spec. ed. Willd.* 3. 140. *Desfont. atlant.* 2. 29. *Poiret itin.* 2. 187.  
*Flowers in heads, calyxes hirsute, bractes ovate-lanceolate ciliate, stem fruticose erect, leaves linear patulous smooth.*  
7. *Thymus Zygis.* *Linear-leaved Thyme.*  
*Lin. spec.* 826. *syn.* 542. *Reich.* 3. 80. *Willd.* 3. 140. *mant.* 413. *Kniph. cent.* 8. n. 94.  
*Thymo vulgationi rigidiori simile.* *Baub. hist.* 3. 2. 271.  
*Thymum angusto longioreque folio.* *Barr. ic.* 777.  
*Serpyllum sylvestre Zygis Dioscoridis.* *Clus. hist.* 1. 358.  
*S. folio Thymi.* *Baub. pin.* 220? *Raii hist.* 523.  
*Flowers whorl-spiked, stem suffruticose erect, leaves linear very blunt nerveless rolled back at the edge, ciliate at the base.*  
8. *Thymus marshallianus.* *Marshall's Thyme.*  
*Lin. spec. ed. Willd.* 3. 141.  
*T. Zygis.* *Pallas in nov. act. petrop.* 10. 313.  
*Flowers whorl-spiked, stem suffruticose erect, leaves linear-lanceolate bluntish flat obscurely triple-nerved ciliate at the base.*  
9. *Thymus inodorus.* *Scentless Thyme.*  
*Lin. spec. ed. Willd.* 3. 141. *Desfont. atlant.* 2. 30. t. 129.  
*Stem shrubby very much branched, leaves needle-form bundled shorter than the flower.*  
10. *Thymus Acinos.* *Basil Thyme.*  
*Lin. spec.* 826. *Reich.* 3. 81. *Willd.* 3. 142. *fl. suec. n.* 478. *hort. cliff.* 306. *Hudsf. angl.* 263. *Wither. arr. ed.* 3. 537. *Smith brit.* 641. *engl. bot. t.* 411. *Lightf. scot.* 319. *Curt. lond.* 1. t. 43. *Relb. cant. ed.* 2. n. 505. *Sibth. oxon. n.* 537. *Abbot bedf. n.* 443. *Dicks. hort. succ.* 11. 8. *Pollich pal. n.* 575. *Crantz austr.* 277. *Scop. carn. n.* 735. *Neck. gallob.* 260. *Villars dauph.* 2. 356. *Krock. files. n.* 955. *Allion. pedem. n.* 79. *Kniph. cent.* 8. n. 93.  
*Clinopodium.* *Hall. helv. n.* 237.  
*C. arvense, ocymi facie.* *Baub. pin.* 225.  
*C. vulgare.* *Lob. ic.* 1. 506. 1. *Clus. hist.* 1. 354. 1.  
*C. minus f. vulgare.* *Park. theat.* 21. 1.  
*Acinos.* *Rivin. mon. t.* 43. f. 2.—*multis.* *Baub. hist.* 3. 259. *Raii hist.* 553. *syn.* 238. *Petiv. brit. t.* 32. f. 10. *Mill. dict. n.* 1. ed. 7.  
*A. f. Ocimum sylvestre.* *Mor. hist.* 3. 404. f. 11. t. 18. f. 1.  
*Ocimum sylvestre, Acinos.* *Dod. pempt.* 280.  
*Ocimum sylvestre.* *Ger.* 548. 1. *emac.* 675. 1.  
*Ocimastrum.* *Fuchs. hist.* 896.  
*Whorls six-flowered, peduncles simple, stem ascending branched, leaves acute serrate, calyx gibbous.*  
11. *Thymus patavinus.* *Great-flowered Thyme.*  
*Lin. spec. ed. Willd.* 3. 142. *Jacqu. obs.* 4. 7. t. 87. *Ait. kew.* 2. 314. *Desfont. atlant.* 2. 28.  
*Clinopodium perenne pulegii odore, majoranæ folio, patavinum.* *Bocc. mus.* 60. t. 45. f. B.  
*Flowers*



- Flowers in whorls, throat inflated longer than the calyx, leaves ovate serrate, stems suffruticose.
12. *Thymus alpinus*. *Alpine Thyme*.  
*Lin. spec.* 826. *syst.* 542. *Reich.* 3. 81. *Willd.* 3. 142. *Jacqu. austr.* 1. 60. *t.* 97. *Scop. carn.* n. 734. *Krock. files.* n. 956. *Villars dauph.* 2. 356. *Allion. pedem.* n. 80.  
*T. montanus*. *Crantz austr.* 278.  
*Clinopodium*. *Hall. belv.* n. 238.  
*C. montanum*. *Baub. pin.* 225. *Bocc. mus.* 2. 50. *t.* 45.  
*Acini pulchra species*. *Baub. hist.* 3. 620. *Mill. dict.* n. 2. ed. 7.  
*Whorls six-flowered, leaves roundish bluntish concave serrate, corollas inflated.*
13. *Thymus montanus*. *Mountain Thyme*.  
*Lin. spec. ed. Willd.* 3. 143. *Waldst. & Kitaib. rar. Hung. ined.*  
*T. pannonicus*. *Allion. pedem.* n. 77.  
*T. Hall. belv.* n. 236.  
*Serpyllum angusto & lanuginoso folio*. *Clus. pann.* 628. *Baub. hist.* 3. 267.  
*S. pannonicum* 3. *Clus. hist.* 235.  
*Flowers in whorls, peduncles one-flowered, stem erect branched, leaves ovate quite entire, calyxes smooth.*
14. *Thymus Piperella*.  
*Lin. syst.* 542. *Reich.* 3. 81. *Willd.* 3. 143. *Allion. pedem.* n. 81. *t.* 37. *f.* 3. *Vahl symb.* 2. 65. *Desfont. atlant.* 2. 28.  
*T. imbricatus*. *Forsk. descr.* 108.  
*Marum hispanicum nigrum*. *Bocc. mus.* 2. 166. *t.* 117. *Barr. rar.* 354. *t.* 694.  
*Peduncles many-flowered lateral, leaves ovate obtuse smooth nerved quite entire.*
15. *Thymus Brownei*. *Jamaica Thyme*.  
*Lin. spec. ed. Willd.* 3. 144. *Swartz prodr.* 89. *Brown jam.* 259. n. 1.  
*Leaves orbicular crenate, flowers peduncled axillary.*
16. *Thymus filiformis*. *Small-leaved Thyme*.  
*Lin. spec. ed. Willd.* 3. 144. *Ait. kew.* 2. 313.  
*Flowers axillary solitary peduncled, leaves cordate acute quite entire petioled, stems filiform decumbent.]*
17. *Thymes cephalotus*. *Great-headed Thyme*.  
*Lin. spec.* 826. *Reich.* 3. 82. *Willd.* 3. 144. *Vahl symb.* 3. 77.  
*T. lusitanicus cephalotus, squamis capitularum amplioribus*. *Tournef. inst.* 196.  
*Tragoriganum dictamni capite hispanicum*. *Barr. ic.* 788. *Bocc. mus.* 2. 50. *t.* 43.  
*Heads loosely imbricate, bractes broad-ovate coloured undotted, leaves linear quite entire.*
- [18. *Thymus striatus*. *Striated Thyme*.  
*Lin. spec. ed. Willd.* 3. 144. *Vahl symb.* 3. 78.  
*Heads closely imbricate, bractes ovate and the leaves linear-lanceolate striated dotted at the edge.]*
19. *Thymus villosus*. *Hairy Thyme*.  
*Lin. spec.* 827. *Reich.* 3. 82.  
*T. lusitanicus, folio capillaceo villoso, capite magno purpurascente oblongo et rotundo*. *Tournef. inst.* 196.  
*Heads imbricate large, bractes toothed, leaves bristle-shaped hairy.*
20. *Thymus Mastichina*. *Mastick Thyme*.  
*Lin. spec.* 827. *syst.* 542. *Reich.* 3. 82. *Willd.* 3. 145. *mant.* 413. *hort. cliff.* 306. *upf.* 160. *Gron. orient.* 73. *Affo aragon.* n. 543. *Desfont. atlant.* 2. 29.  
*Sampfucus f. Marum mastichen redolens*. *Baub. pin.* 224.  
*Marum vulgare f. Clinopodium*. *Dod. pempt.* 271. *Blackw. t.* 134.  
*Marum*. *Tabern. ic.* 341. *Ger.* 544. 1. *emac.* 670. 1. *Raii hist.* 520. *Rivin. mon.* 40.—vulgare. *Park. theat.* 12. 7.  
*Mastichina*. *Mill. dict. ed.* 3. & 4.  
*Flowers in whorls, calyxes lanuginose, tooth of the calyx setaceous villose.*
21. *Thymus Tragoriganum*. *Goat's-Thyme*.  
*Lin. syst.* 542. *Reich.* 3. 82. *Willd.* 3. 145. *mant.* 84. *Turr. farset.* 11.  
*Tragoriganum creticum*. *Baub. pin.* 223. *Park. theat.* 16. n. 1. 17. *f.* 1. *Raii hist.* 523.

- T. cretense*. *Ger. emac.* 668. *f.* 3.  
*T. magnum*. *Alp. exot.* 79. *t.* 78.  
*T. 2. altera species*. *Clus. hist.* 1. 355.  
*Flowers in whorls, stem suffruticose erect, leaves hispid acuminate.]*
22. *Thymus virginicus*. *Virginian or Savory Thyme*.  
*Lin. syst.* 542. *Reich.* 3. 83. *Willd.* 3. 145.  
*Satureia virginiana*. *Lin. spec.* 793. *Herm. par. t.* 218. *Mill. dict.* n. 4.  
*Pulegium erectum virginianum angustifolium, floribus in cymis oppositis*. *Mor. hist.* 3. 371. *f.* 11. *t.* 7. *f.* 8.  
*Clinopodium*. *Lin. hort. cliff.* 304. *Gron. virg.* 65. *Pluk. phyt. t.* 54. *f.* 3.  
*Serpentaria virginiana*. *Bocc. mus.* 2. 161. *t.* 115.  
*Heads terminating, stem erect, leaves lanceolate.*

DESCRIPTIONS, &c.

1. [Root woody, fibrous, brown, perennial. Stems numerous, woody, branched, leafy, pubescent, commonly tinged with red: branches alternate. Leaves petioled, elliptic or ovate, obtuse, quite entire, hollow-dotted with little pellucid glands, ciliate at the base and on the petiole with a few fine white hairs; otherwise it is commonly smooth, though sometimes hairy all over. Heads of flowers terminating, roundish, with little leaves among them. Flowers pedicelled. Calyx striated or ribbed, dotted like the leaves; the two lower teeth deeply gashed, narrower, acute, ciliate; the mouth closed with white converging villose hairs: according to Withering, it is coloured, with a circle of white hairs running round the inside at the base of the segments, which, while the plant is in flower, lie flat to the sides of the calyx, but when the corolla falls off, expand and close up its mouth.—Corolla purplish red; the upper lip erect and turning back a little; lower divided into three obtuse segments, the middle one longest. Stamens divaricating; the pair inserted below the upper lip shorter than the tube, that below the under lip longer than the tube. Anthers very minute. Style longer than the corolla and turning upwards. Seeds of a brown colour and very small.

Native of Europe, on heaths and dry downs, flowering in july and august.

The whole plant of Wild Thyme is fragrant, and yields an essential oil that is very heating. An infusion of the leaves removes the head-ach occasioned by a debauch. It has the same sensible qualities as Garden Thyme, but the flavour is milder, and rather more grateful. Its essential oil is both smaller in quantity and less acrid, and its spirituous extract comes greatly short of the penetrating warmth and pungency of the other.

It is a common notion that the flesh of sheep, that feed upon aromatic plants, particularly Wild Thyme, is superior in flavour to other mutton. The truth is, that sheep do not crop these aromatic plants, unless now and then by accident, or when they are first turned on hungry to downs, heaths or commons; but the soil and situations favorable to aromatic plants, produce a short sweet pasturage best adapted to feeding sheep, whom nature designed for mountains, and not for turnep grounds and rich meadows.

The attachment of bees to this and other aromatic plants is well known.

Few plants are subject to more varieties than Wild Thyme. In its most natural state, on dry exposed downs, it is small and procumbent; but when it grows among furze or other plants, it runs up with a slender stalk to a foot or more in height. It differs also very much in the smoothness or hairiness of its leaves. The flowers are sometimes larger than ordinary; and of a paler purple colour, or even white.

The varieties  $\beta$ ,  $\gamma$  and  $\eta$  are not uncommon:  $\delta$  depends principally upon the authority of Petiver, who found it in Okeyhole, Somersetshire. According to Miller, if it be his *glaber*] the leaves are broader and smoother than those of the common sort; the stalks grow much longer; the joints are farther distant, the heads of flowers are larger, and the corolla is of a brighter purple colour. There is a variety of it with variegated leaves, which was formerly planted for edgings



edgings to borders, and is frequently brought in pots to the London markets.

ε. Lemon Thyme is frequently kept in gardens, for the agreeable odour of its leaves: when this is propagated by seeds, the plants have not the same scent, it is therefore an accidental variety, which is preserved by means of slips or cuttings. It is found wild in Kent, and at Downton-castle, Shropshire.

ζ. Is known by its narrow smooth leaves, smelling like those of the Walnut tree. [Dr. Woodville's figure corresponds best with this variety.

η. The Hoary Wild Thyme, observed by Ray on Gogmagog hills, and the like barren places, scarcely differs in any thing from the common except in its hairiness. The *angustifolium hirsutum* of Bauhin is different from this, and is perhaps a distinct species, n. 2.

θ. The small creeping Wild Thyme, without scent, was sent to Plukenet from Ireland, by Bonavent.

ι. The more shrubby hairy Mother of Thyme, or Wild Thyme, was found by Lhwyd near Llanberys, and by James Sherard on Snowdon.

Another variety is mentioned by Linneus, with woolly heads, which are the nidus of some insect. This is not uncommon in England. Veronica Chamædrys, Glecoma hederacea, Valeriana Locusta, and other plants, are frequently distorted, from a similar cause<sup>a</sup>.

The Latin name of *Serpyllum*, and the Greek *ερπυλλον*, is derived from *ερπω*, to creep.

2. This, which is considered as a variety of the preceding by Linneus, is not changed into that by culture, according to Willdenow. It is a native of Germany and France, on rocks. Miller describes his *lanuginosus*] as having trailing slender stalks, with small, ovate-lanceolate, hoary leaves, and the young shoots of the same year very white and hoary. The leaves are stiffer than those of the other sorts. The flowers, which are in round terminating heads, are of a bright purple colour. According to him, it grows naturally in the forest of Fontainebleau.

[3. Stems fruticulose, filiform, smooth below, villose above, ash-coloured, branched: branches jointed, and forming a ring after the leaves are fallen. Leaves very smooth, nerveless, hollow-dotted on both sides, ciliate at the base. Head terminating, sessile, hemispherical, girt with many leaves of the same structure with those on the stem but larger. Calyx marked with raised hairy lines; teeth awl-shaped, ciliate. Corolla somewhat hairy. Stamens longer than the corolla<sup>a</sup>.—Native of Arabia Felix, on mount Chadra.

4. Garden Thyme is more hoary, higher, harder and more woody than the *Serpyllum* or Wild Thyme; the leaves are whiter and narrower: and the flowers smaller<sup>b</sup>.

Native of the South of Europe and Siberia; flowering from may to august.]

Miller makes two species of the broad-leaved and narrow-leaved Garden Thyme. The latter, he says, has shorter stalks; the leaves are longer, narrower, and end in sharper points, and the whole plant is hoary; the flowers grow in long whorled spikes, and are larger than those of the common (broad-leaved) Thyme.

Tournefort has two other varieties, one very hoary, the other with the heads much smaller.

This herb has an agreeable aromatic smell, and a warm pungent taste. The qualities are said by Bergius to be resolvent, emmenagogue, diuretic, tonic and stomachic; but we find no disease mentioned in which its use is recommended either by him or other writers on the Materia Medica. Its aromatic qualities indicate that it may be useful in those complaints for which other verticillatae, as lavender, sage, rosemary, &c. are employed.—It yields a species of Camphor in distillation with water<sup>c</sup>.

Thyme was cultivated in 1596 by Gerarde<sup>d</sup>: and

<sup>a</sup> Curtis, Smith, Withering, Lewis, Woodville.

<sup>x</sup> Vahl.

<sup>y</sup> Villars.

<sup>z</sup> Woodville.

<sup>a</sup> Hort. kew.

doubtless long before; these aromatic herbs being so much used in cookery, before the oriental spices were common. In Spain they infuse it in the pickle with which they preserve their olives.

5. Stems numerous, branched or simple, pubescent, roundish. Leaves clustered, obtuse, quite entire, petioled, longer than the internodes, nerved underneath, glandular-dotted. Bractes lanceolate, longer than the flower, quite entire. Flowers in whorls, clustered into a blunt round spike. Calyx round, pubescent, striated, dotted; teeth bristle-shaped, ciliate, the two lower ones longer than the other three. Corolla purple, glandular, longer than the calyx, the same size as in Garden Thyme.

Native of Mount Atlas, about Tlemcen; flowering in spring.

6. This is a branching shrub: branches slender, erect, pubescent at the upper part. Leaves quite entire, beneath nerved and dotted. Flowers clustered, terminating, in an oblong head. Bractes acute, nerved, length of the flowers. Calyx villose; striated, with bristle-shaped teeth. Corolla small, rose-coloured. It is allied to the next species, but has the leaves very smooth, not ciliate; and the bractes wider at the base.—Native of Barbary, near La Calle<sup>b</sup>.

7. This has the appearance of common Garden Thyme. Branches many, recurved before flowering. Leaves rolled back longitudinally, pubescent above, red underneath. Petioles ciliate. Corolla white<sup>c</sup>.—Leaves rugged, thickish, dotted. It varies with hairy leaves<sup>d</sup>.

Native of Spain. Introduced in 1786, by William Picairn, M.D. It flowers in august<sup>e</sup>.

8. Stems half a foot high, branched at the base, several from one root, upright, round, pubescent towards the top. Leaves opposite, eight lines long, and a line and half wide, on very short petioles, attenuated to both ends, smooth on both sides, dotted underneath. Upper floral leaves like those of the stem, but shorter and three-nerved. Calyxes rough-haired, striated. Corollas longer than the calyx. It varies with leaves narrower by half; is abundantly different from the preceding, and is not even like it in habit. It derives the trivial name from L. B. Marshall ab Biberstein, a very sagacious and indefatigable botanist, who found it in Tauria. Pallas took it for the *T. Zygis*<sup>f</sup>.

9. This is a very branching, upright shrub: branches approximating: bark on the older branches cloven. Leaves very small, perennial, very close together, stiffish, nerved beneath, with the margin bent downwards and ciliate. Flowers in whorls, axillary, pedicelled, longer than the leaf, numerous. Calyx slender, round, striated; teeth bristle-shaped, ciliate, the two lower ones longer. Corolla purple, longer than the calyx, the same size as those of *T. Serpyllum*: upper lip entire, obtuse; the three lobes of the lower almost equal, rounded. Stamens shorter than the corolla. Style a little longer than the stamens. It has no glands, or very few, and flowers in winter.—Native of dry barren hills near Algiers<sup>g</sup>.

10. Root annual, simple, fibrous. Stems villose, branched, ascending, about six inches high, hairy, purplish: branches like the stalk, long, spreading, the bottom ones opposite. Leaves in distant pairs, ovate, acute, shortly petioled, mostly serrate, the inner middle part next the petiole entire, the outer middle part next the point toothed, the edges turned a little back and ciliate: sometimes quite entire or having only a single notch on each side: they vary to roundish or oblong, and the upper ones taper very much at the base. Flowers about six in a whorl, each on a pedicel various in length. Calyx swelling at the base on the lower side, deeply grooved, the prominent ribs fringed with bristly hairs: upper lip erect, with three broadish nearly equal segments; lower projecting in two narrow sharp ones: mouth fringed with white hairs, which pointing inwards completely close it when

<sup>b</sup> Desfontaines.

<sup>c</sup> Linn. mant.

<sup>d</sup> Willdenow.

<sup>e</sup> Hort. kew.

<sup>f</sup> Willdenow.

<sup>g</sup> Desfontaines.



the corolla is fallen. Corolla purple: tube dilated upwards: upper lip shorter, blunt, turned back, slightly notched; lower of three roundish segments, the middle one longer, obcordate, marked at the base with a raised white semilunar spot, and a spot or two of darker purple. Anthers small, red. Style the length of the stamens. Seeds oblong.

Native of Europe, in dry hilly fields, especially in a calcareous soil: flowering in July and August. Not uncommon in England: as about Charlton, Dartford, and other parts of Kent; in Surrey and Norfolk not unfrequent; Gogmagog hills and Newmarket heath in Cambridgeshire; Barton hill and Aspley in Bedfordshire; Headington Wick, Stonesfield and South Leigh in Oxfordshire; on St. Vincent's rocks near Bristol; on the side of Hamilton, Yorkshire; &c.

It has a pleasant aromatic smell, but commonly much weaker than in *T. Serpyllum*, to which it bears very little resemblance: it is much more like *T. alpinus*, but the flowers of that are nearly twice as large, and the swelling at the base of the calyx is not so considerable<sup>b</sup>.

11. From a perennial fibrous root, arise many stems, from a palm to a foot in height, ascending, pubescent, branched. Leaves ovate or lanceolate, acute, somewhat villose, more or less serrate above the middle, petioled. The whorls have about ten flowers. Peduncles one-flowered, axillary, short. Calyx ten-streaked, pubescent. Corolla pale red<sup>1</sup>: a little larger than that of *T. Acinos*, according to Desfontaines.

Willdenow remarks, that it is very nearly allied to the next species.—It seems to be biennial, if not annual.

Supposed to be a native of the South of Europe and Hungary. Desfontaines found it near Mascara in Barbary.—Boccone had the plant from the Padua garden; and Jacquin received the seeds at various times from several botanists, under Boccone's name.—It was introduced in 1776, by Joseph Nicholas de Jacquin, M.D. and flowers here from June to August<sup>k</sup>.

12. This is allied nearly to *T. Acinos*, but it is a larger plant, and the flowers are three times as big, peduncled, four on each side.

According to Scopoli, the leaves are ovate, toothed here and there above the middle, on villose petioles. Peduncles villose, two lines long, shorter than the calyxes, and these shorter than the corolla. Calyx striated, hairy, more or less violet-coloured. Corolla red; the middle segment emarginate.

Villars says, it differs from *T. Acinos*, in having larger, greener and less hard leaves; stems lower and less branched; flowers twice as large, with the calyx coloured not gibbous.

Krocker says, that the flowers are three times as big as those of *T. Acinos*, and redder; the leaves more orbicular, and less serrate; almost indeed quite entire.

Native of the South of France, Austria, Carniola, Switzerland, and Italy.—It was cultivated in 1731, by Mr. Miller<sup>1</sup>: who says that he received the seeds from Austria, Istria and Bohemia. It flowers from June to September.

Villars says, it has an aromatic odour, with an agreeable acid, approaching to that of lemon, in which as well as in its characters it approaches nearer to the Calamints and Melissa than to *Serpyllum*. Accordingly Scopoli has united them, and Dr. Smith has united the Calamints to this genus.

13. Stem half a foot high, erect, branched, pubescent at the corners. Leaves petioled, blunt, smooth, dotted on both sides, veined beneath. Whorls many-flowered. Calyxes striated, with the three upper teeth oblong, cusped, smooth, and the two lower lanceolate-subulate, longer, ciliate.—Native of the Carpathian mountains, the Valais and Piedmont<sup>m</sup>.

Allioni says, it constantly preserved its hairiness, the size of its leaves, and its peculiar habit, for many

years, when cultivated in the Botanic Garden at Turin.

14. Stem almost decumbent, round, simple or little branched; the first branches opposite, the rest alternate. Leaves subsessile, with the aromatic odour of *Serpyllum*. The stems and branchlets begin to flower about the middle. From each axil issues a short peduncle supporting three or five flowers, the two lower of which flower later, the middle one earlier, without any bractes, and on a longer peduncle. Calyx striated, cylindrical, the teeth ending in a spinule, the three upper ones a little shorter. Corolla purple; tube twice as long as the calyx; upper lip erect, cordate, roundly emarginate; lower trifid, the lateral segments ovate, the middle one wider, emarginate. Filaments very short: anthers semilunar, purple on the inner, white on the outer part. Style shorter than the anthers. This plant is nearer to *Melissa* than to *Thymus*<sup>n</sup>.

Dav. Royen remarks, that it resembles *Melissa Nepeta*, but is smooth, and that the leaves are very small.

Vahl says, that he has observed numerous individuals of this species, in some places scarcely a finger's length and decumbent, with the leaves in clusters, and fewer flowers in the axils; but for the most part half a foot high, with many-flowered peduncles. The leaves are always a little thickened at the edge, and the keel is ciliate.—Forskahl's plant differs from Linneus's only in being smaller in all its parts.

Native of Spain, Barbary and Arabia.

15. This is very small and herbaceous. Flowers solitary, acute, on a very short peduncle. Upper lip of the corolla slightly bifid, erect; middle segment of the lower larger, cordate.—Native of Jamaica, in many parts<sup>o</sup>.

16. Native of the Balearic islands, Majorica, Minorca and Yvica. Introduced in 1770, by Mr. William Malcolm. It flowers in June and July<sup>p</sup>.]

17. This has a low woody stem, from which come out many stiff branches five or six inches long. Leaves small, narrow. Heads of flowers pretty large, terminating. Corolla white and very small. The whole plant is hoary, and has a weak aromatic scent.

[Stems filiform, purplish, with a few simple opposite flowering-branches at top, somewhat villose and of an ash-colour. Leaves sessile, spreading, nerveless, ciliate at the base, a little bent back at the edge, dotted on both sides: two under the heads linear-lanceolate, a little longer, obscurely oblique-nerved. Bundles of leaves in all the axils. Heads at the ends of the stem and upper branches, solitary, the size of a hazel nut. Bractes obliquely nerved, membranaceous, purple, acuminate, quite entire, ciliate. Calyxes purple: the upper lip a little wider: teeth bristle-shaped; the two lower ciliate<sup>q</sup>.

Native of Spain and Portugal.—Tournefort distinguishes three varieties: one with very wide bractes; a second with larger heads, and a third with smaller heads.

18. This differs from the preceding, in having shorter stiffer stems, not branched at top; wider, upright leaves, striated beneath, serrate, dotted only at the edge; the heads smaller, closely imbricate; the bractes striated, smaller, dotted.

Native of the kingdom of Naples, whence it was sent to Vahl by Cyrillo<sup>r</sup>.]

19. This has slender, woody, hairy stalks, which grow erect about six inches high. The lower leaves come out in clusters, but the upper ones are in pairs. The stalks are terminated by single scaly heads. The leafy scales are indented in acute points, and the purple flowers peep out between them in July; but they do not produce seeds in England.—Native of Portugal.

[This and the cephalotus were cultivated by Mr. Miller in 1759.

20. This is an intermediate species between *Satureia* and *Thymus*, but since the stamens are concealed

<sup>b</sup> Curtis, Engl. bot.

<sup>1</sup> Jacq. obs.

<sup>k</sup> Hort. kew.

<sup>1</sup> Idem.

<sup>m</sup> Willdenow.

<sup>n</sup> Allioni.

<sup>o</sup> Browne.

<sup>p</sup> Hort. kew.

<sup>q</sup> Vahl.

<sup>r</sup> Idem.



in the bottom of the corolla, and the style is longer than the corolla, Linneus refers it to this genus. Whorls several, distant. Corollas white, the length of the calyx<sup>1</sup>.

It is a shrub, a foot in height, or a little more. Leaves heaped on the stem, linear or even ovate, the lower hoary beneath, the upper ones smooth. Whorls hirsute. Teeth of the calyx hairy and as it were feathered<sup>2</sup>.

Native of Spain. Cultivated by Gerarde in 1596<sup>3</sup>. It is omitted in the later editions of Miller's Dictionary.

21. This is a sweet-smelling plant. Stems hirsute, a foot high. Leaves acuminate both ways, and stiffish.—Native of the island of Candia or Crete<sup>4</sup>.]

22. Root perennial; but the stalk annual, rising about a foot and half high, stiff, angular, branching out towards the top. Leaves stiff, pointed, about an inch and half long, and a quarter of an inch broad in the middle, pointed at both ends, and having a strong scent of Pennyroyal. Flowers white, collected into globular heads. They appear in July; but the seeds seldom ripen in England.—Native of North America. [It was cultivated in 1739, by Mr. Miller<sup>5</sup>.]

PROPAGATION AND CULTURE.

1. The common Mother of Thyme or Wild Thyme, is very frequent on dry pastures, and is very rarely admitted into gardens. This plant may be propagated either by seeds or parting the roots; the season for either is in March or October. If it is propagated by seeds, they should be sown upon a bed of light earth, observing not to bury the seeds too deep, which will cause them to rot, nor to sow them too thick, for the seeds are very small. When the plants are come up, they should be carefully cleared from weeds; and if the spring should prove dry, and they are watered twice a week, it will greatly promote their growth. In June the plants should be thinned, leaving them about six inches asunder each way, that they may have room to spread; and those plants which are drawn out may be transplanted into fresh beds at the same distance, observing to water them until they have taken root; after which they will require no farther care but to keep them clear from weeds, and the winter following they may be drawn up for use.

But if the plants are propagated by parting their roots, the old plants should be taken up at the times before mentioned, and slipped into as many parts as can be taken off the root; these should be transplanted into beds of fresh light earth, at six or eight inches distance, observing, if the season is dry, to water them until they have taken root, after which they must be duly weeded, and they will thrive, and soon be fit for use.

In order to save the seeds of these plants, some of the old roots should remain unremoved in the place where they were sown the preceding year; these will flower in June, and in July the seeds will ripen, which must be taken as soon as ripe, and beat out, otherwise the first rain will wash it all out of the husks.

These plants root greatly in the ground, and thereby draw out the goodness of the soil sooner than most other plants; so that whatever is sown or planted upon a spot of ground whereon Thyme grew the preceding year, will seldom thrive, unless the ground be trenched deeper than the Thyme rooted, and well dunged.

If this plant grows upon walls, or on dry, poor, stony land, it will endure the greatest cold of this country; but in rich ground where the plants grow vigorously, they are sometimes destroyed by severe frost.

There is a variety of this with variegated leaves, which is by some preserved in their gardens.

7. 16. 17. 19. 20. These may be increased by slips, planted in April, on an east border, and closely covered with a bell or hand-glass, refreshing them twice a week with water, in a moderate quantity. When they have put out good roots, transplant some

into pots, to be sheltered under a frame in winter; and plant the rest on a warm border of dry ground, observing to shade and water them till they have taken new root: in severe frost, the latter will generally be destroyed. They may also be propagated by seeds, sown on a bed of light earth, in the same way as common Marjoram.

Most of the other sorts may be increased by slips or parting the roots. Or the seeds may be sown in the spring. They delight in dry undunged ground, where some of them will increase by their trailing stalks.

[THYMUS. See *Cunila*, *Melissa*, *Satureia*, *Ziziphora*.

THYRSINE. See *Cytinus*.

THYRSIS. See *Dianthus barbatus*.

THYSSELINUM. See *Selinum*.]

TIARELLA. (*Dimin. from Tiara*.)

Lin. gen. n. 560. Reich. n. 609. Schreb. n. 765. Juss. 309.

Class. 10. 2. Decandria Digynia.

Nat. order of *Succulentæ*. *Saxifragæ* Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted: *segments* ovate, acute, permanent.

COR. *Petals* five, oblong, permanent, entire, inserted into the calyx.

STAM. *Filaments* ten, filiform, longer than the corolla; inserted into the calyx. *Anthers* roundish.

PIST. *Germ* bifid, ending in two very short *Styles*. *Stigmas* simple.

PER. *Capsule* oblong, one-celled, two-valved: *valves* flattish, one twice as long as the other.

SEEDS numerous, ovate, shining.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled, inserted into the calyx: petals entire. Caps. one-celled, two-valved, with one valve larger.

SPECIES.

1. *Tiarella cordifolia*. *Heart-leaved Tiarella*.  
Lin. spec. 580. Reich. 2. 322. Willd. 2. 659. amoen. 3. 17.

*Mitella nudo scapo*. Lin. hort. cliff. 167. Gron. virg. 160.

*Cortusa americana*, flore spicato, petalis integris.  
Herm. par. 1. 129.

*Leaves cordate*.

2. *Tiarella trifoliata*. *Three-leaved Tiarella*.  
Lin. spec. 580. Reich. 2. 322. Willd. 2. 659. amoen. 3. 17.

*Mitella foliis ternatis*. Lin. amoen. 2. 351.

*Leaves ternate*.

DESCRIPTIONS, &c.

1. This has a perennial fibrous root, which creeps. Leaves of a light green colour, unequally indented on their edges, on slender foot-stalks, three inches long, arising immediately from the root. Flower-stalks slender, naked, about four inches long, arising also from the root between the leaves, and terminated by a loose spike of small herbaceous white flowers, which appear in May, but are seldom followed by seeds in England. Native of North America, [and the northern part of Asia.]

Retzius has a species (*obs.* 3. 30. n. 48.) which he names *unifolia*, from its having a single leaf upon the stem. All the leaves are cordate. It is much smaller than the *cordifolia*; the leaves are not lobed, the scape is few-flowered, and the single leaf on it is almost sessile.

In *cordifolia* the scape is quite naked; and the leaves are dusky, sublobed, and have the notches more frequent.—*T. unifolia* is a native of Newfoundland.]

2. This also has a perennial fibrous root, from which spring up a few trifoliate petioled leaves, like those of the Bilberry, but much smaller. The stalk is slender, and rises five or six inches high; it is rough and hairy, has two leaves at the bottom, and one towards the top, a little below the spike of flowers; they are angular and serrate. The stalk is terminated by a loose spike of white flowers, which appear early in May; but the plants rarely produce any seeds in England. Native of the northern parts of Asia. Both the sorts were cultivated by Mr. Miller in 1759.

<sup>1</sup> Linn. mant.

<sup>2</sup> Affo.

<sup>3</sup> Hort. kew.

<sup>4</sup> Linn. mant.

<sup>5</sup> Hort. kew.



# T I L

## PROPAGATION AND CULTURE.

These plants are propagated by parting the roots, which spread in the ground, and shoot up heads, which may be taken off and transplanted in the autumn. They love a moist soil and a shady situation, and require no other care but to keep them clean from weeds.

[TIBOUCHINA. See *Melastoma*.

TICKSEED. See *Corispermum*.

———— Sun-flower. See *Coreopsis*.

TIERA-KUREN-PULLU. See *Saccharum*.

TIGAREA. See *Tetracera*.

TIGLIUM. See *Croton*.

TIL. See *Laurus foetens*.

TILIA (of *Pliny*, &c. Derivation uncertain.—*Papias* says it is so named quasi telia, quod lignum ejus ad telorum usum fit utile, ob levitatem ejus. *Martinius* derives it from τιλον penna; on account of the whiteness of the bractes. *Vossius*. The *Dictionaries* derive it from τιλια, *Ulmus*.)

*Lin. gen.* n. 660. *Reich.* n. 717. *Schreb.* n. 894.

*Tournef.* t. 381. *Juss.* 292. *Gärtn.* t. 113.

*Class.* 13. 1. Polyandria Monogynia.

*Nat. order* of *Columniferae*. *Tiliaceae* *Juss.*

## GENERIC CHARACTER.

CAL. Perianth five-parted, concave, coloured, almost the size of the corolla, deciduous.

COR. Petals five, oblong, obtuse, crenate at the tip.

STAM. Filaments numerous (thirty and more) awl-shaped, length of the corolla. Anthers simple.

PIST. Germ roundish. Style filiform, length of the stamens. Stigma a blunt pentagon.

PER. Capsule coriaceous, globular, five-celled, five-valved, opening at the base.

SEEDS solitary, roundish.

OBS. One seed only commonly comes to maturity, and drives the other abortive ones to one side, so that, to an incautious observer, the capsule appears to be one-celled.

T. americana has five scales placed round the germ, annexed to the claws of the corolla.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Caps. coriaceous, globular, five-celled, five-valved, opening at the base, one-seeded.

## SPECIES.

1. *Tilia europæa*. European Lime Tree.

*Lin. spec.* 733. *Juss.* 660. *Reich.* 2. 584. *Willd.* 2. 1161. *mat. med.* 136. *hort. cliff.* 204. *fl. suec.* n. 471. *Gärtn. fruct.* 2. 150. *Huds. angl.* 231. *Wither. arr. ed.* 3. 490. *Smith. brit.* 571. *engl. bot.* t. 610. *Lightf. scot.* 280. *Relb. cant. ed.* 2. n. 445. *Sibth. oxon.* n. 477. *Fl. dan.* t. 553. *Hall. herb.* n. 1030. *Roth. germ.* 1. 229. 2. 587. *Leers herb.* n. 407. *Pollich pal.* n. 510. *Neck. gallob.* 232. *Crantz austr.* 96. *Krock. files.* n. 824. *Villars dauph.* 3. 798. *Allion. pedem.* n. 1626. *Gmel. fib.* 4. 179. *Ludw. cët.* t. 48. *Kniph. cent.* 10. n. 87. *Knorr. del.* 1. t. 11. *Willd. arb.* 387. *Regnault bot.* *Hunt. Evel. silva ed.* 1. 201. *ed.* 2. 194.

α. *T. europæa communis*. Common Lime Tree.

*T. grandifolia*. *Hoffm. germ.* 184. *Du Roi barbecc.* 2. 461.

*T. platyphyllos*. *Scop. carn.* n. 641.

*T. vulgaris platyphyllos*. *Baub. hist.* 1. 2. 133. *Raii hist.* 1694. *syn.* 473.

*T. foemina*. *Ger.* 1298. *emac.* 1483. *Fuchs. hist.* 862. *Matth.* 174.—major. *Park. theat.* 1407. f. 2.—folio majore. *Baub. pin.* 426. *Blackw.* t. 469.

*T. urbana*. *Gesn. t.* 3.

*Tilia*. *Trag. hist.* 1110. *Dod. pempt.* 838.

β. *T. montana maximo folio*. *Baub. pin.* 426. *Raii hist.* 1695.

γ. *T. europæa parvifolia*. Small-leaved Lime Tree. *Hoffm. germ.* 185.

*T. ulmifolia*. *Scop. carn.* n. 642.

*T. cordata*. *Mill. dict.* n. 1. *Du Roi barbecc.* 2. 466.

*T. folio minore*. *Baub. hist.* 1. 2. 137. *Raii hist.* 1695. *syn.* 473.

# T I L

*T. foemina folio minore*. *Baub. pin.* 426.

*T. foemina minor*. *Park. theat.* 1407. n. 3.

δ. *T. ulmifolia*, femine hexagono. *Merr. pin.* *Raii syn.* 473.

ε. *T. europæa corallina*. Red-twigged Lime Tree. *Ait. kew.* 2. 229. β.

*T. foliis molliter hirsutis*, viminibus rubris, fructu tetragono. *Raii syn.* 473.

ζ. *T. bohémica*, foliis minoribus glabris, fructu oblongo utrinque acuminato minimo costulato. *Tilli pisan.* 165.

Flowers destitute of a nectary, leaves cordate, at the branches of the veins villose underneath.

2. *Tilia americana*. Broad-leaved American Lime Tree.

*Lin. spec.* 733. *Reich.* 2. 584. *Willd.* 2. 1162. *Ait. kew.* 2. 229.

*T. caroliniana*. *Wangenb. amer.* 56. *Du Roi barbecc.* 2. 469.

*T. foliis majoribus mucronatis*. *Gron. virg.* 58.

*T. amplissimis glabris foliis*, nostrati similis. *Pluk. mant.* 181.

Flowers furnished with nectaries, leaves deeply cordate sharply serrate smooth.

3. *Tilia pubescens*. Pubescent Carolina Lime Tree.

*Lin. spec. ed.* *Willd.* 2. 1162. *Ait. kew.* 2. 229.

*T. caroliniana*. *Mill. dict.* n. 4.

*T. americana*. *Wangenb. amer.* 55.

Flowers furnished with nectaries, leaves truncate at the base oblique toothlet-serrate pubescent underneath.

[4. *Tilia alba*. White Lime Tree.

*Lin. spec. ed.* *Willd.* 2. 1162. *arb.* 389. *Waldst. et Kitaibel hung.* t. 3.

*T. tomentosa*. *Moench. weissenst.* 136.

*T. americana*. *Du Roi barbecc.* 2. 467.

Leaves deeply cordate subsinuate toothed tomentose underneath.

## DESCRIPTIONS, &c.

1. The Lime or Linden is a tall upright tree, with smooth spreading branches, thickly clothed with alternate, petioled, heart-shaped, smooth, serrate leaves, pointed at the end, oblique at the base, glaucous beneath, and the veins, where they branch off from the nerve, being furnished with a tuft of glandular wool, as in the *Laurus tinus*. The flowers, which are delightfully fragrant, especially at night, come forth in July, in umbels or cymes, (from three to five together,) on long axillary peduncles, with a singular oblong, blunt, inmembranaceous, pale, entire bract, nearly as long as the peduncle, and attached to it for about half its length, and falling off with it. Calyx green with a downy edge. Petals yellowish, obtuse, concave. Stamens filiform. Stigma five-cleft. Germ villose, depressed. Capsule smooth, with from four to eight unequal angles: commonly one-celled and one-seeded, spongy within, with most of the cells abortive. Seed roundish<sup>2</sup>.

Gärtner describes the capsule as coriaceous, subtrilobate or ovate-globular, terminated by a long permanent style, indistinctly angular with five filiform ribs, of a dusky or smoky colour, pubescent, five-celled, valveless: partitions membranaceous, very thin, white, obverse to the ribs. Receptacle none: but two ovaries one above the other fastened to the central angle of the cells. Seeds solitary, or sometimes, but very seldom, two in a cell, but it rarely happens that more than one ripens: shape ovate-acuminate, convex on one side, on the other obscurely angular, marked on the middle of the belly with an oblong umbilical scar, and having a small excavation at the vertex; it is smooth and of a pale reddish brown colour.

Gärtner could not observe that the capsules ever open spontaneously from the base, as *Linneus* affirms they do, nor could he even discover any vestiges of futures, he therefore suspects that they burst rather than separate regularly.

It is remarkable that the cotyledons of the Lime tree are subtrilobate and toothed; and it is peculiar to it, as far as we know, that these are already toothed whilst they are lying within the coats of the seed<sup>2</sup>.

<sup>2</sup> *Smith brit. & engl. bot.*

<sup>2</sup> *Gärtner.*



Native of Europe, and according to Thunberg of Japan.—The small-leaved variety is truly wild in many parts of England, in woods and on grassy declivities: the common broad-leaved and other varieties are more commonly seen cultivated in hedges, avenues, parks and before houses. It will in some degree bear the smoke of London<sup>b</sup>. The Lime-trees in St. James's park are said to have been planted at the suggestion of Mr. Evelyn<sup>c</sup>. Probably with a view to the improvement of the air, and to avert, in part, the evils pointed out in his *Fumifugium*. The Dutch plant this tree very much by the side of their canals. The whole country is perfumed by the flowers during the months of July and August; when the stagnant water of the canals in many parts would otherwise be very disagreeable at that season. As an ornamental tree it is common in Germany, Switzerland, &c. And in England it was formerly much more cultivated than it is at present.] Of late years, says Mr. Miller, the Lime tree has been little esteemed, because it is late in the spring before the leaves come out, and they begin to decay first in autumn; and when it is planted in a dry soil, the leaves frequently fall off in July, and continue to make a litter all the remaining part of the summer.

[It was highly esteemed by the Romans for its shade, and the numerous uses for which it served: "Tiliæ ad mille usus petendæ."

Mr. Evelyn speaks of it, as "a shameful negligence, that we are no better provided of nurseries, for a tree so choice, and universally acceptable: for in his time they sent into Holland and Flanders, to our excessive cost, whilst our own woods spontaneously produce them, and though of somewhat a smaller leaf, yet altogether as good, apt to be civilized, and made more florid."

However the Lime tree may be now gone out of fashion, it is certainly a handsome tree, having a smooth taper straight trunk, and the branches forming a beautiful cone. The foliage also is smooth and elegant. It will grow to a very large size, and the shade being reputed excellent, it was proper for avenues, when they were in request. It makes a fine detached object in parks and open lawns, planted singly. The branches are so tough as seldom to be broken by the winds; and if they are, no tree heals its wounds sooner. To all this we may add the fragrantcy of the flowers, which are continually haunted by bees<sup>d</sup>.

Lime-tree wood is turned into light bowls and dishes, and into boxes for the apothecaries. With the twigs they make baskets and cradles. Formerly the bark was used for writing tablets. Shoemakers make dressers of the plank to cut leather on. The truncheons make a far better coal for gunpowder than that of Alder itself; and also scribbles for painters first draughts. The wood is soft, light and smooth, close grained and not subject to the worm. The most elegant use to which it is applied, is for carving. Many of Gibbons's beautiful works in Lime-tree are dispersed about the kingdom, in our churches and palaces; as in the choir of St. Paul's, the Duke of Devonshire's at Chatsworth, Trinity College Library at Cambridge, &c.—Mr. Evelyn first recommended him to King Charles the Second<sup>e</sup>. The sap inspissated affords a quantity of sugar.

Mr. Boucher remarks, that the timber is stronger and lighter than any sort of Willow; and makes a proper lining for rooms, which when painted will last long.]

The Lime-tree will continue growing, and remain sound a great number of years: in a good loamy soil, it will also grow to a considerable bulk. One of these trees was near ten yards in girth two feet above the ground, and was then in a thriving condition. Sir Thomas Brown mentions one of these trees which grew at Depeham in Norfolk, that was sixteen yards in circuit, about half a yard high, almost twelve yards near the ground, and in the least part of the

trunk eight yards and a half; it was thirty yards in height.

[A Lime-tree is described by Dr. Turner as growing in a park near Colchester; it must therefore have been cultivated in England before 1562.]

There are or were several very large trees of this kind in Switzerland: as one near Morges twenty-four feet four inches in circumference; another near the great church at Berne, thirty-six feet in girth, planted before 1410; the hollow trunk of which existed in 1720; and a third near Morat, at least thirty-six feet round, and not less than ninety feet high, it was lopped in 1550, and is now, or was lately standing<sup>f</sup>.

Mr. Evelyn gives an account of several enormous Lime-trees in Switzerland, Germany and Hungary<sup>g</sup>.

The Italians and French have followed the Latin name in *Tiglio* and *Tilleul*: we have adopted the German Linden, in our *Lime*, or as it is in Gerard *Line-tree*.

In Lincolnshire, as Mr. Ray was informed by Dr. Martin Lister, it is called *Bast*, because they make ropes of the bark.—This, by maceration, separates into thin tough layers, and is used for making the mats used by gardeners, and called in the north of Europe *Bast*. They form a considerable part of the exports from Russia. This quality in the bark, and a great degree of viscosity in the whole tree, evince its acknowledged affinity to the Mallow tribe<sup>h</sup>.

Mr. Miller makes two species of our European Lime tree, the *cordata*, which is the small-leaved one, wild in England, and the *europæa*, to which he gives Ray's synonym of the red-twigged Lime tree.] Of the first, he says, there are two or three varieties, which differ in the size and smoothness of the leaves, some having much larger and rougher leaves than others; but they vary from one to the other, when raised from seed, and it is even doubtful whether the second (*europæa*) be more than a seminal variety. The large-leaved Dutch Lime (*maxima* β.) was generally preferred to our common sort, for the size of its leaves.

[Scopoli also, following Haller, distinguishes the large-leaved and small-leaved varieties. The former, he says, not only has the leaves larger, but softer and somewhat hairy or villose; in the latter they are harder, and no where villose: this likewise flowers two or three weeks later.

δ. Was observed by Merret at Whitstable and near Darking in Surry.—The Red Lime ε was found growing naturally in Stokenchurch-wood, by Bobart, and lately by Sibthorp.

In Ray's synopsis (ed. 3.) three varieties are remarked in St. James's-park. 1. The smooth small-leaved. 2. The smooth large-leaved. 3. The softly hairy-leaved. 4. There is a fourth with wrinkled leaves not hairy; of which Mr. Doody observed several trees on Enfield-green going to the Chase.

Besides all these, there is a variety with striped leaves.]

2. This was brought from New England by the name of Black Lime; the branches being covered with a dark brown bark. The leaves are large, heart-shaped, end in acute points, are deeply serrate, and of a full green on their upper side, but of a pale green and a little hairy on their under side; standing upon long slender foot-stalks. The petals are narrower, and have nectariums growing to their base. The flowers do not appear till late in July, a full month after the common sort. The capsules are smaller, rounder, and less hairy than in that.

[Native of Virginia and Canada. Cultivated in 1752 by Mr. Miller<sup>i</sup>.]

3. This tree seems to be of much smaller growth than either of the former; the branches spread more horizontally; the leaves are smaller, and have a smoother surface, they are heart-shaped but the mid-rib runs obliquely to the foot-stalk, so that one side of the leaf is much larger than the other, the edges are slightly serrate and their ends run out into long acute

<sup>b</sup> Engl. bot.

<sup>c</sup> Gough's anecd. of Brit. topogr. 627. See Bauhin's history and Ray's synopsis.

<sup>d</sup> Hunter's Evelyn.

<sup>e</sup> Evelyn's silva.

<sup>f</sup> Coxe's Switzerl. 2. 64.

<sup>g</sup> Engl. bot.

<sup>h</sup> Sylva, b. 3. ch. 3.

<sup>i</sup> Hort. kew.



points. The bunches of flowers stand upon long slender foot-stalks; the petals are narrow, and end in acute points; they have each a narrow nectarium fastened to their base on the inside standing erect close to the petals. The flowers emit a very fragrant odour, and are continually haunted by bees during their continuance: they come out towards the end of july, and when the season proves favourable, the seeds ripen in autumn.

The seeds were brought from Carolina by Mr. Castesby: [it was therefore introduced about the year 1726<sup>k</sup>.

4. The leaves are snow-white beneath. The flowers as in *T. americana*, but smaller. In the *hortus kewensis* it is said to be a native of North America, but no authority is given; and Kitaibel having lately discovered woods of this species in Hungary, its supposed American origin must be considered as doubtful.

It was cultivated in 1767, by Mr. James Gordon<sup>m</sup>.]

#### PROPAGATION AND CULTURE.

All these trees are easily propagated by layers, which in one year will take good root, and may then be taken off, and planted in a nursery, at four feet distance row from row, and two feet asunder in the rows. The best time to lay them down and to remove them, is at michaelmas, or soon after, when their leaves begin to fall, that they may take root before the frost comes on, though they may be laid and transplanted any time from september to march, in open weather; but if the soil is dry, it is much the better way to remove them in autumn, because it will save a great expence in watering them, especially if the spring should prove dry. In this nursery they may remain four or five years, during which time the ground should be dug every spring, and constantly kept clear from weeds, and the large side shoots pruned off, to cause them to advance in height; but the small twigs must not be pruned off from the stems, because these are absolutely necessary to detain the sap, for the augmentation of their trunks, which are apt to shoot up too slender, when they are entirely divested of all their lateral twigs. If the soil in which they are planted be a fat loam, they will make a prodigious progress in their growth, so that in three years time they will be fit to transplant out where they are to remain.

They may also be propagated by cuttings, but, as this method is not so certain as by layers, that method is generally practised. In order to obtain proper shoots for laying down, a Lime-tree is cut down close to the ground, from the roots of which a great number of strong shoots are produced the following year; these will be strong enough to lay down the following autumn, especially if the smallest of them are cut off close early in the summer; for when too many shoots are suffered to grow all the summer, they will be much weaker, than if only a sufficient quantity is left. See LAYING.

There are some persons who raise these trees from seeds, which, although it is a slower way, yet when the trees are designed to grow large, is the best method; and if they are only once transplanted, and this performed while they are young, it will be still the better way; for all trees that are transplanted when large, are shorter lived than those which remain in the places where they arose from seeds, and their timber will be sounder, and grow to a much larger size.

When this method is practised, the seeds should be sown in autumn soon after they are ripe, upon a shady border of moist light soil, where the plants will come up the following spring; but, when the seeds are kept out of the ground till spring, the plants will not come up till the year after. When they appear, keep them clean from weeds till the following autumn, and then carefully take them up and transplant them into a nursery, where they may grow two or three

years to get strength, and then may be planted where they are designed to remain.

[Mr. Boutcher recommends the seeds to be gathered at the end of october, when they are ripe, and after being quite dry, to mix them with sand, to protect them from frost and rain, and to sow them the beginning of march.

Dr. Hunter directs the seeds to be sown in beds three feet and a half or four feet wide, about an inch asunder, covering them three quarters of an inch or an inch deep. They will appear in the spring; during summer they must be weeded, and in very dry weather watered a little: before winter sift some ashes over them to destroy the moss. In two years they will be fit to plant out in the nursery, in rows two feet and a half asunder, and each tree at eighteen inches distance, shortening the roots a little, and cutting off any side branches. They will bear removing at any size.

If they are wanted to remove large, says Mr. Boutcher, they must be removed again and again every four years. At eleven years old they will be twenty feet high, and at sixteen years old, from thirty to thirty-five. This may do for a few trees destined to some particular purpose; but for utility they can hardly be finally transplanted too young.

In taking up layers, Mr. Boutcher directs the roots to be moderately shortened, and such as cross each other to be cut away. If the layer be well rooted and thick in proportion to its height, plant it at full length of a foot or six inches, according to its size and quantity of roots. Plant these layers in rows three feet asunder, and at fifteen inches distance in the row.

The Lime-tree will grow in almost any soil and situation; but in thin soils the leaves are often infested with insects, and fall early in autumn, especially in dry seasons.

TILIA. See *Bofea*.

TILIÆ AFFINIS. See *Malpighia*.

TILLÆA. (So named by Micheli, in honour of Michael Angelo Tilli, M. D. F. R. S. born 1653, Professor of Botany at Pisa, author of *Horti Pisani catalogus*, Flor. 1723. fol. with fifty plates. It contains a few rare plants observed by him in two voyages to Constantinople and Tunis.)

Lin. gen. n. 177. Reich. n. 189. Schreb. n. 237.

Mich. 20. Gært. t. 112. Juss. 307.

Class. 4. 3. Tetrandria Tetragynia.

Nat. order of Succulentæ. Sempervivæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth four-parted, flat: segments ovate, large.

COR. Petals four, ovate, acute, flat, commonly smaller than the calyx.

STAM. Filaments four, simple, shorter than the corolla. Anthers small.

PIST. Germs four. Styles simple. Stigmas obtuse.

PER. Capsules four, oblong, acuminate, reflexed, length of the flower, opening longitudinally upwards.

SEEDS in pairs, ovate.

OBS. In *T. muscosa* the parts of fructification are in threes.

#### ESSENTIAL CHARACTER.

Cal. three or four-parted. Pet. three or four, equal. Caps. three or four, many-seeded.

#### SPECIES.

1. *Tillæa aquatica*. Water Tillæa.

Lin. spec. 186. Reich. 1. 361. Willd. 1. 720.

fl. suec. n. 156. Schkuhr. in Ust. nov. annal. 6.

Stuck. p. 6. t. 1.

Crassula. Lin. suec. ed. 1. 259. hort. cliff. 497.

Stem upright, leaves linear, flowers sessile.

2. *Tillæa prostrata*. Prostrate Tillæa.

Lin. spec. ed. Willd. 1. 720. Schkuhr. in Ust. nov.

annal. 6. Stuck. p. 4.—et aquatica. p. 21. t. 3.

Stem prostrate, leaves lanceolate, flowers peduncled, peduncles shorter than the leaf.

3. *Tillæa Vaillantii*. Vaillant's Tillæa.

Lin. spec. ed. Willd. 1. 720.

Sedum minimum annum, flore roseo tetrapetalo.

Vaill. par. 181. t. 10. f. 2.

Stem

<sup>k</sup> Hort. kew.

<sup>l</sup> Willdenow.

<sup>m</sup> Hort. kew.



*Stem upright dichotomous, leaves oblong acute shorter than the peduncled flower.*

4. *Tillæa capensis*. *Cape Tillæa*.  
*Lin. syst.* 170. *Willd.* 1. 721. *suppl.* 129.  
*Crassula natans*. *Thunb. prodr.* 54.  
*Leaves somewhat oblong, flowers four-cleft.*
5. *Tillæa perfoliata*. *Perfoliate Tillæa*.  
*Lin. syst.* 170. *Willd.* 1. 721. *suppl.* 129.  
*Crassula inanis*. *Thunb. prodr.* 54.  
*Leaves perfoliate ovate, corymbs terminating, flowers four-cleft.*
6. *Tillæa umbellata*. *Umbelled Tillæa*.  
*Lin. spec. ed. Willd.* 1. 721.  
*Crassula umbellata*. *Thunb. prodr.* 54.  
*Leaves subpetioled ovate obtuse entire, stem capillary upright, flowers umbelled.*
7. *Tillæa decumbens*. *Decumbent Tillæa*.  
*Lin. spec. ed. Willd.* 1. 721.  
*Crassula decumbens*  $\alpha$ . *Thunb. prodr.* 54.  
*Decumbent, leaves awl-shaped, petals shorter than the calyx.*
8. *Tillæa muscosa*. *Mossy Tillæa*.  
*Lin. spec.* 186. *Reich.* 1. 361. *Willd.* 1. 721.  
*hort. ups.* 24. *Gærtn. fruct.* 2. 147. *Huds. angl.* 73. *Witber. arr. ed.* 3. 175. *Rose elem. app.* 448. *t.* 2. *f.* 2. *Smith brit.* 201. *engl. bot. t.* 116. *Dalib. par.* 43. *Mich. gen.* 22. *t.* 20.  
*Bocc. mus.* 36. *t.* 22. (*Sempervivum*) *fic.* 56.  
*t.* 29. (*Polygonum*.) *Guett. stamp.* 2. 97.  
(*Crassula*.)

*Stems procumbent, flowers sessile mostly trifid.*

#### DESCRIPTIONS, &c.

1. This is a small plant, and annual, as indeed all the species are. The flowers are commonly four-cleft and four-stamened.

Native of Lapland; and very abundant near Upsal, where water stagnates on the mountains<sup>a</sup>.

2. Native of Germany, in moist places.

3. Linneus has given Vaillant's name to the first species, but it is very distinct from that in the form of the leaves, and in its long-peduncled flower.—Native of France, in moist places<sup>b</sup>.

4. Roots capillary, abundant, stem an inch high, herbaceous, dichotomous. Leaves opposite, somewhat fleshy. Flowers peduncled, solitary. Calyx four-parted, spreading, with oval leaflets. Petals four, oval, white, twice as long as the calyx. Nectaries purple, triangular.

Native of the Cape of Good Hope<sup>c</sup>. In the Supplement of the younger Linneus this is supposed to be a mere variety of *T. aquatica*.

5. 6. 7. These are also natives of the Cape, and all found there by Thunberg, who unites them with the *Crassulas*; from which they differ, as *Sedum* does from *Sempervivum*<sup>d</sup>.

It is remarked in the *Supplementum Plantarum*, that there is a great affinity between this genus and *Crassula*, and that scarcely any difference is to be found between them except in the number of parts. Gærtner observes, that this difference is of little avail in the *Succulentæ*; and that *Tillæa* differs from *Crassula* only in the want of a nectary.

*Tillæa decumbens* (n. 7.) is a distinct plant from *Crassula decumbens*.

8. Root annual, small, fibrous. Herb succulent, smooth, generally red. Stems numerous, filiform, round (becoming quadrangular when dry,) jointed, one or two inches high, but lengthening considerably after flowering, at first nearly erect but after a while procumbent. Leaves strictly perfoliate, very fleshy, obtuse, gibbous, opposite, sometimes three together, concave above, convex beneath, sometimes as long as the internodes, and sometimes only half as long. Flowers one or two together in the bosoms of the leaves, nearly sessile, and sometimes accompanied with a pair of smaller leaves, which Mr. Rose calls bractes. Calyx of three still smaller leaves, distinguishable by their sharp points. Petals three, ovate, or awl-shaped, acute, pellucid, less than the calyx.

<sup>a</sup> Linn. succ.

<sup>b</sup> Willdenow.

<sup>c</sup> Linn. suppl.

<sup>d</sup> Willdenow.

The flowers are sometimes four-cleft, and even, according to Gærtner, five-cleft. Stamens and styles still shorter. Capsules three, ovate, two seeded<sup>e</sup>. — They are thus described by Gærtner. Capsules three, or five in the cultivated plant, oblong, acuminate, erect, knobbed a little where the seeds are, one-celled, opening lengthwise inwardly. Seeds two, very small, ovate, smooth, ferruginous, fastened to the opening suture.

Native of Italy, Sicily, France and England, in dry, barren, sandy and gravelly soil; flowering from the end of May to October.

The most dreary sands are not always unprofitable to a botanist. Their loose and fluctuating surface being often arrested for a while, and destined to afford support to a tribe of plants, the constitution of which is fitted by the all-wise Creator to thrive best on the meagre nourishment they afford. Thus some of the vast African deserts are turned to account by means of *Mesembryanthemums*, *Cotyledons*, and other succulent vegetables. We have here a production nearly allied to the *Cotyledons*, which flourishes on the driest sandy heaths, where few others would live, and at a season when Mosses and Lichens are dried up. Large tracts of the above description in Norfolk, as Drayton, Cawston and Moushold heaths, as well as Brandon heath in Suffolk, are enlivened by its red colour. Sir Thomas Gery Cullum found it also near Bury. Mr. Rose says, it was first determined (in England) by the Rev<sup>d</sup>. Mr. Bryant in 1766.

Although this plant is commonly triandrous, yet as the other species of *Tillæa* have four stamens, it must continue with them in the fourth class, where Linneus has placed them<sup>f</sup>.

*TILLÆA*. See *Crassula*.

*TILLANDSIA*. (So named by Linneus, in memory of Elias Tillandsius, Professor of Physic at Abo, Author of *Flora Aboensis*, 1673.)

*Lin. gen.* n. 396. *Reich.* n. 428. *Schreb.* n. 541.

*Juss.* 50. *Caraguata*. *Plum.* 33. *Renealmia* *Plum.* 38.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariæ*. *Bromeliæ* Juss.

#### GENERIC CHARACTER.

*CAL.* *Perianth* one-leafed, trifid, oblong, erect, permanent, segments oblong-lanceolate, acuminate.

*COR.* tubular, one-petalled: tube long, ventricose: border trifid, obtuse, erect; small.

*STAM.* *Filaments* six, as long as the tube of the corolla. *Anthers* acute, in the neck of the corolla, incumbent.

*PIST.* *Germ* oblong, acuminate both ways. *Style* filiform, length of the stamens. *Stigma* trifid, obtuse.

*PER.* *Capsule* long, obtusely three-cornered, acuminate, one or two-celled, three-valved.

*SEEDS* many, fastened to a very long capillary pappus.

*Obs.* *Caraguata* *Plum.* has a trifid corolla.

*Renealmia* *Plum.* has a three-parted corolla.

#### ESSENTIAL CHARACTER.

*Cal.* trifid, permanent. *Cor.* trifid, bell-shaped. *Caps.* one-celled. *Seeds* comose.

#### SPECIES.

1. *Tillandsia utriculata*. *Bottle Tillandsia*.

*Lin. spec.* 409. *Reich.* 2. 8. *Willd.* 2. 11. *hort. cliff.* 129. *Brown. jam.* 194. n. 5. *Sloan. jam.* 1. 188. *Raii suppl.* 405. (*Viscum*.)

*Visci modo arboribus indicis adnascens.* *Bauh. pin.* 423.

*Caraguata multiplici spica, flore albo.* *Plum. gen.* 10. *Culm panicled.*

2. *Tillandsia ferrata*. *Serrate-leaved Tillandsia*.

*Lin. spec.* 409. *Reich.* 2. 8. *Willd.* 2. 11. *Brown. jam.* 194. n. 7.

*Caraguata clavata & spicata foliis ferratis.* *Plum. gen.* 10. *ic.* 75. *f.* 1.

*Leaves serrate-spiny above, spike comose.*

3. *Tillandsia lingulata*. *Tongue-leaved Tillandsia*.

*Lin. spec.* 409. *syst.* 314. *Reich.* 2. 8. *Willd.* 2. 11. *Jacqu. amer.* 92. *t.* 62. *piet.* 48. *t.* 92.

<sup>e</sup> Rose, Smith brit. and engl. bot.

<sup>f</sup> Engl. bot.



- Brown. jam. 194. n. 3. Sloan. jam. 1. 189. t. 110. Raii suppl. 405. (Viscum.)
- Caraguata latifolia* & *clavata*. Plum. gen. 10. ic. 74. Leaves lanceolate-tongue-shaped quite entire ventricose at the base.
4. *Tillandsia tenuifolia*. Fine-leaved *Tillandsia*.  
Lin. spec. 410. syst. 314. Reich. 2. 8. Willd. 2. 12. Swartz obs. 121. descr. 1. 592. Brown. jam. 194. n. 2. Sloan. jam. 1. 190. t. 122. f. 1. (Viscum.)  
*Renealmia spica multiplici angustifolia*, flore cæruleo. Plum. gen. 37. ic. 238. f. 2.  
Spikes alternate imbricate, flowers distich, leaves linear-filiform erect bristle-shaped at the tip.
5. *Tillandsia flexuosa*. Flexuose-spiked *Tillandsia*.  
Lin. spec. ed. Willd. 2. 12. Swartz prodr. 57. descr. 1. 590.  
*T. tenuifolia*. Jacq. amer. 92. t. 63. pict. 48. t. 93.  
Spikes loose flexuose, flowers distich somewhat remote, leaves lanceolate-linear reclined, stem subdivided at the top.
6. *Tillandsia setacea*. Bristle-leaved *Tillandsia*.  
Lin. spec. ed. Willd. 2. 12. Swartz descr. 1. 593.  
Spike simple, spathes distich imbricate, leaves linear-filiform reclined smooth.
7. *Tillandsia paniculata*. Panicked *Tillandsia*.  
Lin. spec. 410. Reich. 2. 9. Willd. 2. 13. Brown. jam. 194. n. 4.  
*Renealmia ramosissima*, foliis variegatis et circinatis. Plum. gen. 27. ic. 237.  
Leaves radical very short, culm almost naked, branches subdivided ascending.
8. *Tillandsia fasciculata*. Bundled *Tillandsia*.  
Lin. spec. ed. Willd. 2. 13. Swartz prodr. 56. descr. 1. 586.  
*T. clavata*. Lamarck encycl. 1. 610?  
Spikes lateral distich imbricate, leaves lanceolate-subulate erect strict.
9. *Tillandsia nutans*. Nodding *Tillandsia*.  
Lin. spec. ed. Willd. 2. 13. Swartz prodr. 56. descr. 1. 588.  
Spikes subdivided nodding, flowers distinct ovate, leaves ovate-lanceolate membranaceous, stem almost naked.
10. *Tillandsia polystachya*. Many-spiked *Tillandsia*.  
Lin. spec. 410. syst. 314. Reich. 2. 9. Willd. 2. 13. Catesb. car. 2. t. 89? (Viscum.)  
*Renealmia spica multiplici*, flore albo. Plum. gen. 37.  
β. *R. sp. mult. alia angustifolia*. Plum. gen. 37.  
Culm with imbricate lateral spikes.
11. *Tillandsia monostachya*. One-spiked *Tillandsia*.  
Lin. spec. 410. Reich. 2. 9. Willd. 2. 13. Brown. jam. 194. n. 6.  
*Renealmia non ramosa squamata*, et floribus niveis. Plum. gen. 37. ic. 238. f. 1.  
Leaves linear channelled reclined, culm simple imbricate, spike simple.
12. *Tillandsia pruinosa*. Frosty *Tillandsia*.  
Lin. spec. ed. Willd. 2. 14. Swartz descr. 1. 594.  
Spike simple, spathe imbricate, leaves lanceolate-linear reclined, these and the spathes tomentose with little scales.
13. *Tillandsia canescens*. Hoary *Tillandsia*.  
Lin. spec. ed. Willd. 2. 14. Swartz prodr. 57. descr. 1. 595.  
Spikes subtern, leaves linear erect equalling the stem hoary.
14. *Tillandsia angustifolia*. Narrow-leaved *Tillandsia*.  
Lin. spec. ed. Willd. 2. 14. Swartz prodr. 57. descr. 596.  
Spikes in bundles, leaves linear-lanceolate suberect smooth surpassing the stem.
15. *Tillandsia recurvata*. Recurve-leaved *Tillandsia*.  
Lin. spec. 410. Reich. 2. 9. Willd. 2. 14. Swartz obs. 121. Brown. jam. 194. n. 1. Sloan. jam. 1. 190. t. 121. f. 1. Raii suppl. 406. (Viscum.)  
Leaves awl-shaped rugged reclined, culms one-flowered, glume two-flowered.
16. *Tillandsia usneoides*. Mossy *Tillandsia*.  
Lin. spec. 411. Reich. 2. 9. Willd. 2. 15. hort. cliff. 129. Gron. virg. 36. Barr. aquin. 99.

Brown. jam. 193. 1. (Renealmia.) Sloan. jam. 1. 191. t. 122. f. 2, 3. Raii suppl. 406. (Viscum.) Pluk. phyt. t. 26. f. 5. (Cuscuta.) Marcgr. bras. 46. Petiv. gaz. t. 62. f. 12. (Camanbaya.)  
Filiform branched intorted rugged.

## DESCRIPTIONS, &amp;c.

1. Many brown fibrils encompass the arms, or take firm hold on the bark of the trunk of trees, not as Mistleto, entering the bark or wood to suck nourishment, but only weaving and matting themselves among one another, and thereby making to the plant a firm and strong foundation, whence rise several leaves on every side, like those of Aloes or Ananas, which has given occasion to its name of Wild Pine; they are folded or inclosed one within another, each three feet and a half long, and three inches broad at the base, but ending in a point, having a very hollow or concave inward side, and a round or convex outward one, forming a basin or cistern, containing about a quart of water, which in the rainy season falls upon the upper parts of the spreading leaves, and being conveyed down them by channels, lodges in the bottom as in a bottle; for the leaves having swelled out at the base, bend inwards close to the stalk, thus hindering the evaporation of the water by the heat of the sun. From the midst of the leaves rises a round smooth straight green stalk, three or four feet high, having many branches, and when wounded yielding a clear white mucilaginous gum. The flowers come out here and there on the branches. The corolla is of a yellowish white or herbaceous colour; and the calyx is made up of three green viscid leaves with purple edges. Capsule greenish-brown, having under it three short capsular leaves, and within several long pappose seeds, which are oblong-pyramidal and very small, have a very soft down, as long as the capsule itself. By this down the seed is not only carried with the wind, but it is enabled by it to stick fast in the bark of trees. As soon as it sprouts, although it be on the under part of a bough, it rises perpendicularly; for if it had any other position, the cistern could not hold the water which is necessary for the life and nourishment of the plant.

In the mountainous as well as dry low woods, this reservoir is very useful to men, birds and insects, who in scarcity of water frequent these plants in troops.

Dampier says he has many times to his great relief stuck his knife into the leaves just above the roots, and let out the water into his hat.

Native of South America. In Jamaica it is found every where in the woods, especially on decaying trees, which in time it dissolves<sup>1</sup>.

2. This also is a native of South America, and common in Jamaica, where it is called Wild Pine, with all the other sorts. Browne names it the largest *Tillandsia* or Wild Pine, with a variegated flower-spike.

3. This grows on large trees, to which it fastens itself by many long dark brown threads, making all together an oblong root. Culm leafy, simple, erect, solitary, bearing conglomerate flowers at the top. The radical leaves are linear-tongue-shaped, acuminate, shining, quite entire, a foot long, numerous, containing water like the first species. Flowers yellow, inodorous, three inches long. Capsules brown<sup>2</sup>.

Native of South America, Jamaica and Martinico, where it is called *Ananas de Bois*, or wood Pine-Apple.—Cultivated in 1776, by Mr. James Gordon<sup>3</sup>.

4. Stem a foot high, simple, sheathed, leafy. Leaves often the length of the stem; the radical and lower ones sheathed at the base, above the base attenuated, keeled, convolute, rigid. Stem-leaves or sheaths closely surrounding the stem, terminated by a very long linear-filiform apex. Spikes three or four, terminating, sessile, subdistich, an inch long, lanceolate. Spathes oblong, obtuse. Petals blue.—Native of South America and the Antilles, on trees.

5. Roots filiform, long, rigid. Leaves mostly ra-

<sup>1</sup> Sloane.<sup>2</sup> Jacquin.<sup>3</sup> Hort. kew.



dical, wider at the base, sessile, ventricose, embracing, entire, loose, striated, membranaceous, beneath whitish, subtomentose or mealy with very minute scales which are peltate and hollowed in the middle, surrounded by a hyaline striated margin, not to be distinguished without a magnifying glass. Stem or scape longer than the leaves, two or three feet high, loose, round, with alternate, lanceolate, acute, red sheaths; the lower ending in linear leaves; subdivided at the top, and terminated by two or three spikes, which are solitary, long, loose, with a flexuose three-sided rachis, and alternate, distich, remotish florets. Bractes or spathes one-leafed, lanceolate, concave striated. Calyx three-parted, three-cornered at the base: segments erect, coloured. Petals three, linear, longer than the calyx, turned back at the tip, scarlet or blue. Filaments alternately a little shorter, inserted into the receptacle, filiform, almost the length of the petals. Anthers ovate, bifid at the base, whitish. Germ ovate, three-cornered, three-keeled, three-celled, three-valved, within shining and black. Seeds crowned with a capillary yellowish down.

On the branches of old trees near the coast in Jamaica, and near Carthage in New Spain.

6. This resembles *T. tenuifolia*, but is quite distinct in having the leaves reclined, and the spike simple; whereas in that the leaves are erect, the spikes many and alternate.

Stem a foot high and more, round, almost upright, covered from the root up to the spike with alternate, subimbricate sheaths, broad-ovate at the base, and at the end attenuated into linear-setaceous leaves. Radical leaves almost the length of the stem, sheathing, imbricate, numerous, somewhat mealy with very minute scales, ash-coloured, rigid. Sheaths small, or only the base of the leaf widened. Spike terminating, undivided, ovate-lanceolate, with alternate, distich flowers: spathes wide-ovate, acuminate, membranaceous, subcoriaceous, equitant. Capsule ovate, acuminate.—Native of Jamaica on trees<sup>7</sup>.

7. Native of South America and Jamaica. Browne calls it the loose-headed *Tillandsia* or Wild Pine.

8. Roots filiform, rigid. Stem simple, from one to two feet high, leafy. Leaves next the root sheathing at the base, broad, concave, towards the end lanceolate, convolute-subulate, upright and straight or a little recurved at the tip, pubescent on the outside: stem-leaves shorter, subimbricate, ovate, ending in a long awl-shaped point. Spikes terminating and lateral, erect, alternate, ancipital, an inch wide, imbricate in two rows with bractes or spathes, which are called glumes by Linneus, equitant, ovate-acuminate, membranaceous at the edge, smooth. Rachis three-sided. Flowers solitary, sessile between the spathes. Calyx tubular, three-cornered, or two-keeled at the back, three-parted at the end: after the flower increases, it surrounds the capsule with two leaves, the superior bifid and two-keeled, the inferior lanceolate and convex. Capsule oblong, acuminate, an inch long, three-cornered, three-celled, three-valved: valves rigid, black within. Seed-down capillary, silky.—*T. polytachya* is distinct from this, in having the spikes scattered, (not distich) and narrower; leaves reclined not erect.—Native of Jamaica, on trees, near the coast.

9. Plant from one to two feet high. All the leaves radical, entire, ventricose at the base, striated longitudinally, marked with lines, smooth, half a foot long. Scape sheathed, jointed, round, loose, smooth. Sheaths alternate, approximating, ovate-lanceolate, acuminate, striated, smooth, membranaceous. Spikes terminating, alternate, somewhat remote: rachis angular: flowers ovate, scattered, distinct, approximating, but not imbricate. Bractes or spathes ovate, obtuse, concave, membranaceous, rigid, solitary, inclosing the florets. Calyx three-leaved: leaflets ovate-lanceolate. Petals three ovate-lanceolate, erect, shrivelling, white. Filaments awl-shaped, from the base of the petals, and of the same length with them, erect. Anthers ovate, bifid at the base, subagittate.

<sup>7</sup> Swartz, descr.

Germ three-cornered, acuminate, smooth. Style short, three-cornered. Stigmas three, simple. Capsule roundish-ovate, acuminate, three-cornered, three-keeled, three-celled, three-valved: valves black and shining within. Seed-down very long, white shining and silky.—Native of Jamaica, on the branches of trees in the mountains<sup>2</sup>.

10. Native of South America.—See n. 13. 14.

11. Native of South America and Jamaica. Browne calls it the larger *Tillandsia* with obtuse leaves.

12. Plant from two to three inches high. Rootlets filiform simple rigid curled. Stem very short, leafy. Radical leaves sheathing at the base; sheaths wide, ovate, ventricose, membranaceous, striated: the edges of the leaves are convolute; they are bent different ways; and are tomentose with very numerous scales, which are subimbricate, (not pressed close,) torn, whitish, glittering like hoar frost. Stem-leaves sheathed, imbricate, equal to the radical leaves and like them, with embracing sheaths, not ventricose at the base. Spike terminating, an inch long, ovate, acute: flowers subdistich: spathes ovate, acuminate, scaly-tomentose all over. Petals longer than the spathes, blue. Capsule oblong, acuminate, three-sided, smooth.—This is not to be confounded with *T. recurvata*, which has linear-subulate leaves, radical peduncles, and two-flowered spathes.—Native of Jamaica, on old boughs of trees.

13. Plant about a foot high. Radicles short, simple, filiform, curled, brown. Stem sheathed, leafy, undivided. Radical leaves sheathed at the base, imbricate, whitish, rigid. Sheaths very wide, ovate, concave, ventricose, membranaceous. Stem-leaves sheathed loosely, and linear-acute. Spikes terminating, for the most part in threes, approximating, sessile, ovate, acute, compressed a little, subdistich: flowers distich: spathes ovate-lanceolate, imbricate, equitant, smooth. Petals long, red. Capsule oblong, acuminate, three-cornered, involved in a spathe.—This is different from *T. polytachya*, to which it is near allied: the stem in that is higher; the leaves are reclined, flexuose and smooth; the spikes many, lanceolate and scattered.—Native of Jamaica, on trees near the coast.

14. Plant two feet high. Stem almost upright, simple, sheathed, leafy. Radical and stem-leaves imbricate, wide and sheathing at the base, lanceolate above and linear at the end, striated, longer than the whole plant, stiff and straight. Radical sheaths wider, subventricose. Spikes very many, alternate, separated by leafy sheaths, subimbricate, compressed, lanceolate, an inch and half long, many-flowered. Flowers distich: spathes imbricate, equitant, ovate, acuminate, keeled, striated, smooth. Capsules elongated, acuminate, three-sided, smooth; longer than the spathes.—Distinct from *T. polytachya*, in having the leaves longer than the stem, and more erect; the spikes separated by leafy sheaths.—Native of Jamaica and Hispaniola, on the trunks and branches of trees<sup>3</sup>.

15. Roots filiform, clustered, whitish. Stems aggregate, simple; or leaves constituting the stem, sheathing at the base, so that the plant is rather stemless. Sheaths of the leaves alternate, half-embracing. Leaves filiform-subulate, compressed, plano-convex, slightly channelled, recurved at the end, pubescent and mealy with ash-coloured scales. Peduncles terminating from the middle of the leaves, filiform, round, two or three inches long. Spathe two-leaved, two-flowered: leaflets equal, lanceolate-acuminate, concave, erect, mealy: one flower sessile, the other peduncled within the spathe. Spathe one-leafed to each flower, sheathing, lanceolate, smooth, ash-coloured, inclosing the flower. Calyx three-leaved: leaflets lanceolate, concave, smooth, dusky red. Petals three, lanceolate, blue, blunt at the end, almost inclosed by the calyx. Filaments inserted into the base of the corolla, awl-shaped. Anthers oblong, yellow. Style short and thick. Stigma obtuse, simple. Capsule long, round, awl-shaped, three-cor-

<sup>2</sup> Swartz, descr.

<sup>3</sup> Idem, ibid.



nered, three-celled, three-valved: valves revolute. Seed-down capillary. Native of Jamaica, on old rotten trees<sup>b</sup>.

16. Stem the bigness of a thread; the skin whitish as if covered with hoar frost, within tough and black like a horse-hair. Many of these together stick on the branches of the Ebony or other tree superficially by the middle, and send down on each side some of the same stems, very often a yard long, hanging on both sides, curled or turning and winding one within another, and resembling an old man's beard, whence its common name in Jamaica. The stems are branched, and the branches which are two or three inches long, are set with roundish, white, frosted leaves. The flowers come out at the end of the branches<sup>c</sup>.

This slender parasitical plant is found upon the trees in many parts of Jamaica, but does not grow so common there nor so luxuriantly, as it does in the more northern provinces of the main continent, where it is said to overrun whole forests. It is frequently imported to Jamaica from North America, for the use of the sadlers and couchmakers, who commonly stuff their pannels, cushions, &c. with it.—In Louisiana and the neighbouring settlements, this plant being very carefully gathered and stripped of the bark, is made into mattresses, cushions, pannels, &c. It is manufactured by tying the stalks in bundles, and sinking them in water, or burying them under ground in a moist place, until the bark rots: they are then taken up, boiled in water, and washed until the fibres are quite cleared of the pulp. These are not only used instead of horse-hair, but are so very like it, that a man cannot distinguish them, without a strict examination, and that even with a glass, unless he observes the branchings of it.

The Bonana bird's nest is always made of the fibres of this plant, and is generally found hanging by a few threads, from the tops of the most expanded branches of the most lofty trees, especially those that spread over ponds or rivers<sup>d</sup>.

The Renealmias of Plumier differing from his Caraguatas only in the fruit, and in that not very greatly, Linneus has united them.

TILO-ONAPU. See *Impatiens*.

TILLS, for Lentils. See *Ervum*.

TIMBER. See *Woods*.

TIMMIA. (From Joachim Christian Timm, consul and apothecary in Malchin. Author of *Floræ Megapolitanæ* (Magdeburg) prodromus. Lips. 1788. 8.)

This name is applied to a genus of Mosses by Hedwig, *musc.* 1. p. 83. t. 31. Schreb. *gen. n.* 1652.

In Gmelin's edition of the *Systema Naturæ*, vol. 2. p. 538. it is applied to two species named *Cyrtanthus* in *Hort. kew.*, and this editor has repeated them under *Crinum*, from the younger Linneus's *Supplementum Plantarum*.

TIMOTHY GRASS. See *Phleum*.

TINDA-PARUA. See *Morus*.

TINGULONG. See *Amyris*.

TINUS. See [*Clethra*, *Decumaria*,] *Viburnum*.

[TIOUANNA. See *Ophioxylum*.

TIRI-PANNA. See *Acrostichum*.

TIRU-CALLI. See *Euphorbia*.

TITHYMALOIDES. See *Cacalia*, *Cluytia*, *Euphorbia*.]

TITHYMALUS. See [*Apocynum*, *Cluytia*,] *Euphorbia*, [*Hippomane*, *Tragia*.]

TOAD-FLAX. See *Antirrhinum*.

TOBACCO. See *Nicotiana*.

[TOCOCA. See *Melastoma*.

TODDA-PANA. See *Cycas*.

TODDA-VADDI. See *Oxalis*.

TOFIELDIA. See *Anthericum*.]

TOLUIFERA. (From Tolu and fero, to bear. *Balsam of Tolu-tree*.)

*Lin. gen. n.* 524. *Reich. n.* 566. *Schreb. n.* 713. *Juss.* 372.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Terebintaceæ* Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped, five-toothed, almost equal, with one angle more remote.

COR. *Petals* five, inserted into the receptacle: of which four are equal, linear, a little longer than the calyx; the fifth twice as big, obcordate; claw length of the calyx.

STAM. *Filaments* ten, very short. *Anthers* longer than the calyx.

PIST. *Germ* oblong. *Style* none. *Stigma* acute.

PER. *Berry*? round, four-celled, four-seeded. *Mill.*

SEED single, ovate. *Mill.*

## ESSENTIAL CHARACTER.

*Cal.* five-toothed, bell-shaped. *Pet.* five, the lowest twice as big, obcordate. *Style* none.

## SPECIES.

1. *Toluifera Balsamum.* *Balsam of Tolu Tree.*

*Lin. spec.* 549. *Reich.* 2. 267. *Willd.* 2. 545. *mat. med.* 114. *Woodv. med. bot.* 526. t. 193.

*Balsamum Tolutanum.* *Pharm. Lond. & Edinb.*—*foliis ceratiæ similibus.* *Baub. pin.* 401.

*Balsamum de Tolu.* *Monarda in Clus. exot.* 304. *Baub. hist.* 1. 296. *Park. theat.* 1570. *Raii hist.* 1758.

## DESCRIPTION, &amp;c.

This is a tree of large size. The bark is very thick, rough and of a brown colour. The branches spread out wide on every side. Leaves alternate, oblong-ovate, four inches long, and two inches broad in the middle, rounded at the base, acuminate at the end, smooth, of a light-green colour, on very short strong foot-stalks. The flowers are produced in small axillary racemes or bunches, each on a slender pedicel. The corolla has four narrow petals of a yellow colour, a little longer than the calyx, and a fifth, the claw of which is of the same length as the other petals, and the top ovate-cordate. Stamens within the tube, and terminated by oblong erect sulphur-coloured anthers. Fruit roundish, the size of a large pea, divided into four cells, each containing one oblong-ovate seed.

Native of Spanish America, in the province of Tolu, behind Carthagena; whence Dr. Houstoun sent the seeds to England. [Mr. Miller therefore must have cultivated this tree before 1733, in which year the Doctor died.

Balsam of Tolu, which is brought to Europe in little gourd-shells, is obtained by making incisions in the bark of the tree, and is collected into spoons, which are made of black wax, and from them it is poured into proper vessels.

This Balsam is of a reddish yellow colour; transparent, in consistence thick and tenacious: by age it grows so hard and brittle, that it may be rubbed into a powder between the finger and thumb. Its smell is extremely fragrant, somewhat resembling that of lemons; its taste is warm and sweetish, and on being chewed it adheres to the teeth. Thrown into the fire it immediately liquefies, takes flame, and disperses its agreeable odour. Though it does not dissolve in water, yet if boiled in it for two or three hours in a covered vessel, the water receives its odoriferous smell: water also suffers a similar impregnation from the Balsam by distillation. With the assistance of mucilage it unites with water, so as to form a milky solution. It dissolves entirely in spirit of wine, and easily mixes with distilled oils, but less easily with those of the expressed kind. Distilled without addition, it produces not only an empyreumatic oil, but sometimes a small portion of a saline matter, similar to that of the flowers of Benzoin.

Balsam of Tolu possesses the same general virtues with the balsams of Gilead and Peru; but it is less heating and stimulating, and may therefore be employed with more safety. It has been chiefly used as a pectoral, and is said to be an efficacious corroborant in gleans and feminal weaknesses. It is directed by the Pharmacopœias in *syrupus tolutanus*, *tinctura tolutana*, and *syrupus balsamicus*.]

<sup>b</sup> Swartz, obs.

<sup>c</sup> Sloane.

<sup>d</sup> Browne.

<sup>e</sup> Woodville.



## PROPAGATION AND CULTURE.

Sow the seeds in pots filled with light earth, as soon as they arrive, and plunge them into the tan-pit. If they are not taken out of their covers, they will be long before they vegetate. When the plants are large enough to remove, transplant them carefully, each into a separate pot, and plunge them into a good hot-bed of tanner's-bark, shading them from the sun till they have taken new root. After which treat them in the same way as the Coffee Tree.

The seeds should be gathered ripe, and whilst fresh should be put up in sand; for when sent over in papers, they are commonly devoured by insects.

[TOMATA. See *Solanum*.

TOMEX. (From tomentum, the whole plant having a nap upon it.)

Lin. gen. Schreb. n. 802. Thunb. jap. 10. nov. gen. 65. Juss. 440.

Class. II. 1. Dodecandria Monogynia.

## GENERIC CHARACTER.

CAL. Involucre universal five-leaved, five-flowered, permanent: leaflets ovate, very concave, externally tomentose, very blunt, unequal, imbricate: outer smaller.

Perianth proper five-leaved, permanent: leaflets lanceolate, externally villose, from upright spreading.

COR. none, unless the proper perianth be considered as such.

Nectary: scales five, between the interior stamens, plaited, crenate, smooth, length of the filaments.

STAM. Filaments twelve, filiform, unequal: exterior five, length of the perianth; interior seven, shorter. Anthers twin.

PIST. Germ three-sided, smooth, superior. Style none. Stigma awl-shaped.

PER. Berry.

SEED one.

OBS. Involucre seldom six-leaved, six-flowered.

## ESSENTIAL CHARACTER.

Invol. four or five-leaved. Cal. none. Cor. five-petalled. Nect. scales five, between the lower stamens. Berry one-seeded.

## SPECIES.

1. Tomex japonica. Japanese Tomex.

Lin. syst. 441. Willd. 2. 839. Thunb. jap. 190. Floscules corolled, leaves tomentose beneath.

2. Tomex tetranthera. Laurel-leaved Tomex.

Lin. spec. ed. Willd. 2. 839.

Tetranthera laurifolia. Jacqu. hort. schoenb. 1. 59. t. 113.

Floscules corolled, leaves smooth.

3. Tomex Sebifera. Glutinous Tomex or Tallow Tree.

Lin. spec. ed. Willd. 2. 840.

Berrya chinensis. Klein in litt.

Sebifera glutinosa. Lour. cochinch. 638. ed. Willd. 783.

Laurus involucrata. Retz. obs. 6. 27. Diet. nostr. n. 27.

Floscules apetalous, leaves smooth.

## DESCRIPTIONS, &amp;c.

1. Stem arboreous, lofty, branched, more than a fathom in height. Branches and branchlets tomentose, knobbed; the end ones angular. Leaves alternate, oblong, obtuse, quite entire, erect, parallel-nerved, smooth and green above, beneath hoary-tomentose, a hand in length, the younger ones smaller. Petioles angular, striated, tomentose, an inch long. Flowers axillary, collected into a head, pedicelled, dioecious. Peduncles angular, striated, solitary, tomentose: with small opposite tomentose bractes near the base. Pedicels within the head, very short, five rarely six, one-flowered, tomentose, half a line in length.

Native of Japan; where it flowers in october and november.

2. Branches round, yellowish, the younger ones rough-haired. Leaves alternate, oblong-obovate, obtuse, quite entire, veined, smooth except the midrib,

which appears villose under the magnifier. Petioles half an inch long, rough-haired. Peduncles lateral on the naked part of the younger branches, from two to five-flowered. Involucre four-leaved, leaflets roundish, concave, pubescent, many-flowered, containing about twelve pedicelled flowers. Pedicels rough-haired. Calyx none. Corolla five-petalled, white: petals somewhat toothletted at the end. Nectaries club-shaped, green, shorter than the stamens. Filaments from twelve to seventeen, awl-shaped, hairy. Anthers oblong, flat, having four distinct segregate cells. Germ oblong. Style very short. Stigma simple. Berry globular, red, the size of a red Currant, and containing one seed.—Native of China.

3. The Tallow Tree is a large tree, with round knobbed branches, covered with a yellow shining bark: the branchlets are covered with a fine down. Leaves scattered, obovate, obtuse, or even oblong-lanceolate, quite entire, veined. Petioles an inch long, pubescent. Peduncles four-cornered, three or five-flowered, pubescent, axillary and lateral. Pedicels four-cornered, very rough-haired.—According to Klein, the involucre is four-leaved; the leaflets ovate, concave, tomentose on the outside; and it incloses from eight to ten apetalous floscules on short pedicels. Calyx none except the entire hairy margin, of the pedicel of the floscules. Corolla none. The nectaries are little bodies at the base of the filaments. These are from twelve to fifteen, filiform and hairy. Anthers oblong, ovate, grooved. Germ ovate, surrounded closely by the stamens. Style filiform, twice as long as the stamens. Stigma thickened, hollowed, with a reflexed margin. Berry one-seeded, globular.

According to Loureiro, it is a large tree, with spreading branches. Leaves ovate-oblong, quite entire, smooth, alternate, petioled. Peduncles lateral and subterminating, two or three-flowered. Berries small, smooth, blackish.—Native of China and Cochinchina, in woods.

The wood, which is light and of a pale colour, is used for rafters, studs, &c. in building. The leaves and twigs abound in a viscid juice, and being bruised and macerated in water, render it glutinous; for this reason the natives work up their plaster with it, to render it more tenacious and that it may last the longer. A great quantity of a thick white oil is extracted from the berries, of which common candles are made, resembling spermaceti or wax candles, but having an unpleasant smell.

For Retzius's description, see *Laurus involucrata*.

TOMEX. See *Callicarpa*.

TONCHAT. See *Maranta*.

TONDIN of Schilling is *Paullinia pinnata*.

TONINA. See *Hyphydra*.

TONSELLA.

Lin. gen. Schreb. n. 74. Tontelea. Aubl. guian. 31. t. 10. Juss. 436.

Class. 3. 1. Triandria Monogynia.

## GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, permanent, five-parted: segments ovate, acute.

COR. Petals five, ovate, rude, permanent, inserted into the receptacle, longer than the calyx.

Nectary pitcher shaped, quite entire, surrounding the germ.

STAM. Filaments three, inserted into the inner wall of the nectary, after flowering spreading. Anthers roundish.

PIST. Germ roundish, surrounded by the nectary. Style short. Stigma simple.

PER. Berry spherical, one-celled, accompanied by the calyx and corolla.

SEEDS four.

## ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Nect. pitcher-shaped. Berry one-celled, four-seeded.

## SPECIES.

1. Tonsella scandens. Climbing Tonsella.

Lin. spec. ed. Willd. 1. 194. Vahl symb. 2. 17.

Tontelea scandens. Aubl. guian. 1. 31. t. 10.



Leaves quite entire acuminate.

2. *Tonfella africana*. *African Tonfella*.

*Lin. spec. ed. Willd.* 1. 194.

Leaves obtuse glandular-toothed.

DESCRIPTIONS, &c.

1. This is a tree with round branches, hairy at top, and covered with a purplish somewhat rugged bark. Leaves opposite, petioled, an inch and half long, distant, oblong, ending in a short point, rigid, veined, somewhat rugged on both sides, villose on the veins beneath: the younger ones have very minute dots scattered over them. Peduncles axillary, opposite, shorter by half than the leaf, tomentose, not at all rugged, branched with a dichotomous tip: branches and branchlets short. Bractes lanceolate, small, opposite, at the base of the branches and branchlets of the peduncle. Calyx five-cleft, with the segments toothletted at the edge. Petals like the calyx hoary, inserted into the nectary below the margin by a short claw, roundish, toothlet-ciliate, two a little smaller than the other three. Nectary margined, villose and somewhat silky within. Filaments inserted into the disk of the nectary, approximating to the style, lanceolate, compressed, short. Anthers twin. Style conical, the length of the filaments. Stigma obtuse. Aublet's figure is not a very good one<sup>h</sup>.—He found it in Guiana, and von Rohr in the island of Trinidad.

2. This resembles the preceding, but the leaves are smaller, obtuse, and very seldom glandular-toothletted; the corollas are larger, and the anthers are sessile.—Native of Guinea<sup>i</sup>.

TONTANEA. See *Bellardia*.

TONTELEA. See *Tonfella*.

TOOTHACH TREE. See *Zanthoxylum*.

TOOTHPICK. See *Daucus Visnaga*.

TOOTH-WORT. See *Dentaria* and *Plumbago*.

TORA. See *Cassia*.

TORCH-THISTLE. See *Cactus*.]

**TORDYLIUM** (of *Pliny*. *Tordylium* of *Dioscorides*. From *τορνος* tornus, and *αλλω*, volvo. *Lin.*—*Quod semen ferat copiosum, circinatum quasi toreumatis elaboratum, orbiculatum, compressum, geminisque valvulis conflatum, clypeoli speciem referens.* *Bodæus*.)

*Lin. gen. n.* 330. *Reich. n.* 361. *Schreb. n.* 463.

*Tournef. t.* 170. *Juss.* 224. *Gartn. t.* 21.

*Class.* 5. 2. Pentandria Digynia.

*Nat. order of Umbellatae or Umbelliferae.*

GENERIC CHARACTER.

**CAL.** Umbel universal unequal, manifold. Partial unequal, manifold, very short, flat.

*Involucre universal* of slender undivided leaflets, commonly the length of the umbel. *Partial* halved, outwardly longer than the umbellet.

*Perianth proper* five, toothed.

**COR.** universal difform, radiate. *Florets* all fertile.

*Proper of the disk* of five equal inflex-cordate petals.

*Proper of the ray* similar, but the outmost petal very large and two-parted.

**STAM.** all with five capillary *Filaments*. *Anthers* simple.

**PIST.** all with a roundish inferior *Germ.* *Styles* two small. *Stigmas* obtuse.

**PER.** *Fruit* suborbicular, compressed, crenulate at the edge, bipartite.

**SEEDS** two, roundish, almost flat, with a raised crenulate margin.

**OBS.** *T. Anthriscus* has a subradiate umbel, and the florets of the disk male: it is therefore now removed to the genus *Caucalis*.

ESSENTIAL CHARACTER.

*Cor.* radiate, all hermaphrodite. *Fruit* suborbicular, notched at the edge. *Involucres* long, undivided.

SPECIES.

1. *Tordylium syriacum*. *Syrian Hartwort*.

*Lin. spec.* 345. *syft.* 275. *Reich.* 1. 661. *Willd.*

1. 1381. *hort. cliff.* 90. *upf.* 58. *Gron. orient.*

78. *Jacqu. hort.* 1. 21. *t.* 54. *Gartn. frust.* 1.

85. *Riv. pent. t.* 3. *Kniph. cent.* 8. *n.* 95.

*T. syr. humilior* femine granulato majore. *Mor. hist.*

3. 317. *f.* 9. *t.* 16. *f.* 7. *umb. t.* 1. *f.* 28. 28.

<sup>a</sup> Vahl.

<sup>i</sup> Willdenow.

*T. creticum.* *Best. eyft. aff.* 12. *t.* 9. *f.* 1.

*Gingidium foliis pastinacæ latifoliæ.* *Bauh. pin.* 151.

*G. latifolium.* *Ger.* 885. *f.* 1.

*G. latif. syriacum.* *Park. theat.* 891. 4. 890. *f.* 4.

*Caucalis syriaca cum maximo femine.* *Bauh. hist.*

*Raii hist.* 412.

*Involucres longer than the umbel.*

2. *Tordylium officinale*. *Officinal Hartwort*.

*Lin. spec.* 345. *Reich.* 1. 661. *Willd.* 1. 1381.

*hort. cliff.* 90. *upf.* 58. *mat. med.* 77. *Huds. angl.*

112? *Wither. arr. ed.* 3. 286? *Smith brit.*

294. *Sauv. monsp.* 230. *Villars dauph.* 2. 641.

*Plenck ic.* 177.

*T. s. Sefeli creticum minus.* *Park. theat.* 905. 8.

906. *f.* 8. *Raii hist.* 412. *syn. ed.* 2. 102.

*T. narbonense minus.* *Tournef. inst.* 320. *Dill. in*

*Raii syn.* 206. *Petiv. brit. t.* 24. *f.* 6.

*T. apulum minimum.* *Column. ecpbr.* 124. *f.* 1?

*Sefeli creticum.* *Dod. pempt.* 314.—*minus.* *Bauh.*

*pin.* 161. *Ger. emac.* 1050.

*Caucalis minor pulchro femine, f. Bellonii.* *Bauh.*

*hist.* 3. 2. 84.

*Involucres length of the flowers, leaflets ovate gashed crenate, stem pubescent.*

[3. *Tordylium peregrinum*.

*Lin. syft.* 275. *Reich.* 1. 662. *Willd.* 1. 1381.

*mant.* 55.

*Caucalis peregrina, femine rugoso.* *Bauh. pin.* 153.

*C. hispanica.* *Cam. hort.* 37. *t.* 11.

*Seeds grooved wrinkled plaited, universal involucre one-leaved subtrifid.*]

4. *Tordylium apulum*. *Apulian or Small Hartwort*.

*Lin. spec.* 345. *syft.* 275. *Reich.* 1. 662. *Willd.*

1. 1382. *hort. cliff.* 90. *Jacqu. hort. t.* 53.

*Kniph. cent.* 12. *n.* 96.

*Umbellets remote, leaves pinnate, pinnae roundish lacinate.*

5. *Tordylium maximum*. *Great Hartwort*.

*Lin. spec.* 345. *syft.* 275. *Reich.* 1. 662. *Willd.*

1. 1382. *mant.* 350. *hort. cliff.* 90. *Wither.*

*arr. ed.* 3. 286. *Smith brit.* 295. *engl. bot. t.*

1173. *Sibth. oxon. n.* 288. *Hall. helv. n.* 811.

*Hoffm. germ.* 92. *Roth. germ.* 1. 131. 2. 349.

*Scop. carn. n.* 319. *Crantz austr.* 153. *Jacqu.*

*austr.* 2. 26. *t.* 142. *Sauv. monsp.* 230. 259.

*Villars dauph.* 2. 641. *Allion. pedem. n.* 1288.

*Riv. pent.* 1. *Tournef. inst.* 320. *Dill. in Raii*

*syn.* 206.

*Sefeli creticum majus.* *Park. theat.* 906. *f.* 7. *Ger.*

*emac.* 1050. *f.* 2. *Bauh. pin.* 161.

*Caucalis major.* *Clus. hist.* 2. 201. 1.—*femine minus*

*pulchro hirsuto.* *Bauh. hist.* 3. 2. 85.

*Umbels clustered radiate, leaflets lanceolate gash-ferrate, stem rough with deflexed bristles.*

[6. *Tordylium filifolium*.

*Lin. spec. ed. Willd.* 1. 1383. *Scop. carn. n.* 318.

*t.* 8.

*Umbels clustered radiate, leaflets angular toothed pubescent.*]

7. *Tordylium Secacul*. *Arabian Hartwort*.

*Mill. dict. n.* 5. *fig. t.* 266.

*T. orientale, Secacul Arabum dictum Rauwolfio.*

*Nissol.*

*Pastinaca Secacul.* *Ruff. Alepp.*

*Umbellets remote, leaves doubly pinnate, pinnae gashed tomentose.*

DESCRIPTIONS, &c.

1. This is a low plant, the stalks seldom rising a foot high. The lower leaves are composed of two pairs of ovate leaflets terminated by a large one; they are hairy and slightly crenate. The stalks branch out into two or three divisions, and are terminated by umbels of white flowers, which have large involucre, for the most part trifid. The points are lanceolate, and at their base is a small umbel, composed of a few flowers sitting close to the tails of the involucre. [Seeds orbicular, compressed, very slightly convex in the middle, subpubescent, with a thick, suberous, white margin, crenulate with tubercles: belly part flat, smooth<sup>k</sup>.

<sup>k</sup> Gartner.

Native



Native of Syria. Cultivated in 1597, by Gerarde. It flowers in July, and is annual\*.

2. Root annual. Stem almost upright, branched, leafy, round, grooved, villose with soft short deflexed hairs. Leaves unequally pinnate, hairy, rugged; the radical ones on very long petioles, with ovate crenate sublobed leaflets, the end one very large; stem-leaves alternate, subsessile, with oblong leaflets, sharply serrate and gashed. Umbels on long peduncles, terminating. Involucres and involucres bristle-shaped, rugged. Flowers flesh-coloured, with the outer petals very large and radiant<sup>n</sup>.

Native of the South of France, Italy and Sicily. Very doubtful whether it be indigenous of England. It is said by Ray to have been found by Mr. Doody about Isleworth; and Petiver says it grows about London. It is said by Dillenius to have been found by Mr. James Sherard growing plentifully on the banks of the road to Headington, about half a mile from Oxford, probably from seeds of plants thrown out of a garden. Mr. Miller also says, that he has found it on the side of banks, but that the seeds were sown there by Jacob Bobart. But they perhaps mistook the *T. apulum* of Linneus for this plant, from which it is quite distinct: or confounded it with *T. maximum*.

3. Stem smooth, branched. Leaves like those of Chervil. Universal umbel of about three rays; partial of about seven. Involucre of a single linear leaf: involucres of five leaflets, the length of the florets. All the florets fertile, floscular, white. Seeds ovate, subcompressed, with three deep grooves, which are lamellated and plaited on the sides.—Native of the Levant. *Arduini*<sup>o</sup>.

4. This is an annual, rising, when in a garden, to the height of a foot and half: radical leaves growing in a circle, decumbent, and pinnate; with eight leaflets roundish or oblong, obtusely toothed, and somewhat downy: stem-leaves smooth and sharp: stems several, upright, striated and branched; and at their lower parts clothed with white hairs: flowers white, with broad-lanced petals turning inwards so as to appear cordate: the exterior petal, in the exterior florets, bifid, with lanced divisions: anthers yellowish-green, with brownish sides. The wild plant is more hairy than the cultivated one: flowers in July and August<sup>p</sup>.

Linneus remarks, that the three marginal florets of each umbellet are larger or radiate.—Native of Italy in Apulia.

5. Root annual, tapering. Stems erect, three or four feet high, branched, leafy, flexuose, furrowed, rough with minute rigid bristles, bent down close, hollow within. Leaves unequally pinnate, rough with bristles: leaflets of the lowermost ovate-oblong, lobed and notched; of the rest lanceolate, narrow, coarsely but regularly serrate. Umbels on long solitary rough stalks, opposite to the leaves. General and partial involucres bristle-shaped, rough. Central partial umbels nearly sessile. Flowers white or rose-coloured, with the outer petals larger and radiant. Seeds bristly all over, with a circular pale or reddish edge, rugged but not so beautifully notched as in some other species<sup>q</sup>.

Native of Germany, Switzerland, Austria, France, Italy and England. On the north side of the Parks, Oxford; the only spot in Britain now known to produce it. Morison (umb. 40.) clearly mentions its growing about London in his time; but if Petiver's authority be of any weight, the Isleworth plant must be *T. officinale*. It flowers from June to August<sup>r</sup>. Miller sets it down as a biennial plant; according to others the species, as far as we know, are all annual.

6. Stem a foot high, simple, furrowed, almost naked. Leaves unequally pinnate: lower ones half a foot long, embracing the stem with their membranaceous sheaths, villose: leaflets two pairs, oblong, half-cordate, sessile, toothed: the lower pair often two-

lobed at the base; the end-leaflet larger and trifid half way. General involucre of one or two leaflets. General umbel of from seven to nine rays. Partial involucre spreading, linear, many-leaved. Petals red, one of them very large in the outer florets. Fruit ovate, margined, hispid. Native of Carniola\*.]

7. The bottom leaves are double pinnate, each leaf having four pairs, and an odd one at the end. The pinnæ have seven ovate leaflets, standing alternately, and deeply jagged, of a yellowish green colour and a little hairy. The stalks are taper and not channelled; they rise two feet and a half high, have a few small hairs scattered over them, and have one smaller pinnate leaf at each joint: they send out one or two short branches towards the top, and are terminated by large umbels of yellow flowers, composed of ten umbellets, the rays of which are alternately longer; these spread open wide from each other. The seeds are ovate and compressed, shaped like those of Parsneps, and of a yellowish colour. It flowers in June, and the seeds ripen in August.

Native of Syria, especially about Aleppo, where it is known by the name of Secacul, and is eaten crude by the inhabitants.

[*TORDYLIUM Anthriscus*, latifolium, nodosum. See *Caucalis*.

**TORENIA.** (So named by Linneus from Olof Toreen, a Swedish clergyman, who discovered this with other plants in China. His voyage to Suratte, China, &c. from 1750 to 1752, is printed with Osbeck's voyage to China.)

*Lin. gen. n.* 754. *Reich. n.* 812. *Schreb. n.* 1011. *Juss.* 122.

*Class.* 14. 2. Didynamia Angiospermia.

*Nat. order of* *Personatae*. *Scrophulariæ* *Juss.*

#### GENERIC CHARACTER.

*CAL.* Perianth one-leaved, tubular, angular, permanent, bifid: upper lip three-cusped; lower narrower, quite entire.

*COR.* one-petalled, ringent: upper lip entire; lower trifid, the middle segment more produced.

*STAM.* Filaments four: the two upper simple; the two lower two-parted, the lower branchlet shorter and barren. Anthers twin, contiguous by pairs.

*PIST.* Germ oblong. Style filiform, thicker above. Stigma bifid, acute.

*PER.* Capsule oblong, two-celled.

SEEDS very many.

#### ESSENTIAL CHARACTER.

*Cal.* two-lipped: upper lip three-cusped. *Filam.* the lower with a sterile branchlet. *Caps.* two-celled.

#### SPECIES.

1. *Torenia asiatica.* Smooth *Torenia*.

*Lin. spec.* 862. *Juss.* 559. *Reich.* 3. 143. *Willd.* 3. 265. *amoen.* 3. 25. *Osbeck.* it. 210. *ed. angl.* 1. 337. *Lamarck illustr. gen. t.* 523. *f.* 1.

*Euphrasiæ affinis pusilla planta.* *Pluk. amaltb.* 85. *t.* 373. *f.* 2.

*Afarinæ foliis et facie capsula bivalvi lignosa.* *Pluk. amaltb.* 40.

*Hederæ terrestris species.* *Comm. mal.* 35.

*Kaka-pu.* *Rheed: mal.* 9. 103. *t.* 53.

Smooth, stem creeping, leaves ovate emarginate on long petioles.

2. *Torenia hirsuta.* Hairy *Torenia*.

*Lin. spec. ed. Willd.* 3. 266. *Lamarck illustr. gen. t.* 523. *f.* 1.

Hirsute, stem erect, leaves very short petioled.

3. *Torenia cordifolia.* Heart-leaved *Torenia*.

*Roxb. corom.* 2. 32. *t.* 161.

Somewhat hairy, erect, leaves heart shaped on short petioles.

#### DESCRIPTIONS, &c.

1. The whole plant is smooth. Flowers larger than in the next species<sup>s</sup>.

Native of India and China: where it grows, says Osbeck in the rice-fields, in the Danish island. It may serve now as a monument of the discoverer Mr. Toreen, and remind his friends of their loss.

\* Scopoli

• Willdenow.

\* Hort. kew.

<sup>n</sup> Smith.

<sup>o</sup> Linn. spec.

<sup>p</sup> Jacquin.

<sup>q</sup> Smith brit. & engl. bot.

<sup>r</sup> Engl. bot.



2. The whole plant is hirtute. Flowers smaller on one-flowered axillary and terminating peduncles; whereas for the most part solitary peduncled terminating flowers are observed in the preceding.—Native of the East Indies<sup>1</sup>.

3. This is a small herbaceous plant. Stem from six to eight inches high: branches cruciate, ascending, purplish, a little hairy, leaves ferrate, little hairy, an inch long and three quarters of an inch broad. Flowers axillary, solitary, pedicelled, large in proportion to the plant. Calyx large, bellied, five-angled; upper lip slightly three-toothed, under simply pointed. Corolla blueish purple; upper lip slightly emarginate. Nectary cup-form, surrounding the base of the germ. Filaments simply approaching arch-wise: anthers double, one above the other, united by pairs. Capsule hid in the calyx.

Native of Coromandel; in moist pasture lands about Samulcotah. It flowers during the cold season<sup>2</sup>.]

**TORMENTILLA.** (*Dimin. from tormenta or tormina; being supposed to cure the diseases of the bowels.*)

*Lin. gen. n. 635. Reich. n. 691. Tournef. t. 153. Juss. 337.*

Class. 12. 5. Icosandria Polygynia.

Nat. order of *Senticosæ*. *Rosaceæ* Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, flat, eight-cleft: the alternate segments smaller and more acute.

**COR.** *Petals* four, obcordate, flat, spreading, inserted by their claws into the calyx.

**STAM.** *Filaments* sixteen, awl-shaped, shorter by half than the corolla, inserted into the calyx. *Anthers* simple.

**PIST.** *Germes* eight, small, converging into a head. *Styles* filiform, length of the stamens, inserted into the side of the germ. *Stigmas* obtuse.

**PER.** none. *Receptacle of the seeds* very small, loaded with seeds, inclosed within the calyx.

**SEEDS** eight, roundish, naked.

**OBS.** *Tormentilla differs from Potentilla in number only: hence the two genera might be combined: and accordingly are so by Schreber and others.*

#### ESSENTIAL CHARACTER.

*Cal.* eight-cleft inferior. *Pet.* four. *Seeds* roundish naked, wrinkled, fastened to a small juiceless receptacle.

#### SPECIES.

1. *Tormentilla erecta.* *Common Tormentil.*

*Lin. spec. 716. syst. 479. Reich. 2. 550. Willd. 2. 1112. fl. lapp. n. 213. suec. n. 459. mat. med. 132. Woodv. med. bot. 27. t. 9. Hudf. angl. 225. Lightf. scot. 272. Fl. dan. t. 589. Hoffm. germ. 180. Roth. germ. 1. 220. 2. 566. Pollich pal. n. 500. Ludw. ed. t. 174. Krock. filef. n. 805. Villars dauph. 3. 576. Allion. pedem. n. 1072. Pallas it. 2. 655. Blackw. t. 445. Kniph. cent. 6. n. 93. Knorr. del. 2. t. 1. 1. Regnault bot.*

*Tormentilla officinalis.* *Curt. lond. 5. t. 35. 337. Wither. arr. ed. 3. 476. Smith brit. 552. engl. bot. t. 863. Relb. cant. ed. 2. n. 432.*

*T. sylvestris.* *Bauh. pin. 326.*

*Tormentilla.* *Camer. epit. 685. Matth. 947. Dod. pempt. 118. Brunf. herb. 1. 85. Ger. 840. emac. 992. Bauh. hist. 2. 398. 2. Raii hist. 617. syn. 257. Petiv. brit. t. 41. f. 9.*

*T. vulgaris.* *Park. theat. t. 394. f. 1.*

*Potentilla Tormentilla.* *Sibth. oxon. n. 468. Abbot, bedf. n. 381.—erecta. Scop. carn. n. 620.*

*P. sylvestris.* *Neck. gallob. 222.*

*Fragaria.* *Hall. herb. n. 1117.*

*F. Tormentilla officinarum.* *Crantz austr. 80.*

*Pentaphyllum dictum Tormentilla.* *Mor. hist. 2. 190. f. 2. t. 19. f. 13.*

*Stem somewhat upright branched, leaves sessile.*

2. *Tormentilla reptans.* *Trailing Tormentil.*

*Lin. spec. 716. Reich. 2. 550. Willd. 2. 1112. Wither. arr. ed. 3. 476. Smith brit. 553. engl.*

<sup>1</sup> Willdenow.

<sup>2</sup> Roxburgh.

*bot. t. 864. Hoffm. germ. 180. Roth. germ. 1. 220. 2. 567. Krock. filef. n. 805. Raii syn. 257. Petiv. brit. t. 41. f. 10.*

*Potentilla procumbens.* *Sibth. oxon. n. 467.*

*Pentaphyllum reptans, alatum, foliis profundius serratis.* *Plot oxf. t. 9. f. 5. p. 146. Raii hist. 618.*

*P. minus viride flore aureo tetrapetalo, radículas in terram e geniculis demittens.* *Mor. hist. 2. 190. n. 12.*

*Stem prostrate simple, leaves petioled.*

#### DESCRIPTIONS, &c.

1. [Root remarkably large and woody, brown on the outside, red within. Stems weak, slender, wiry, naturally procumbent unless supported by surrounding plants; the flowering-branches only erect or ascending; they are branched, leafy, round, clothed with short soft erect hairs, a span or more in length. Leaves alternate, sessile or nearly so, ternate, lanceolate, marked with lines, deeply serrate, hairy: accompanied by a pair of stipules deeply divided into two, three or more lobes. Flowers on long capillary solitary peduncles, placed opposite to a leaf, or rather in the forks of the branches, supporting one flower. Segments of the calyx ovate, hairy, alternately larger and smaller, the latter exterior. Petals obcordate, of a golden yellow, frequently having an orange-coloured blotch at the base; claws very short. Stamens about sixteen, or from fourteen to eighteen. Pistils from six to sixteen. Germs hairy. Seeds few, wrinkled. Receptacle villose.

Native of Europe, in dry pastures, especially on heaths, among small shrubs; flowering in June and July<sup>\*</sup>.

Some flowers are occasionally found with five petals and ten segments of the calyx; yet this happens so rarely, and the two species of *Tormentilla* accord so well in habit, that we are not convinced of the propriety of considering them as *Potentillæ*.

Miss Johnes observed one plant at Hafod, in which all the flowers were double<sup>†</sup>.

*Tormentil* is a plant of considerable importance in œconomy and medicine. The roots are used in most of the Western Isles of Scotland, and in the Orkneys, for tanning leather; for which they are superior even to oak-bark. They are first boiled in water, and the leather is then steeped in the cold liquor. In the islands of Tirey and Col the inhabitants have destroyed so much ground by digging them up, that they have been prohibited the use of them. They are also used for dying of a red colour<sup>‡</sup>. And Mr. Young informs us, that many swine are reared with them on the mountains of Killarney.

The root of *Tormentil* has been long held in great estimation by physicians, as a very useful astringent; and as the resin it contains is very inconsiderable, it seems more particularly adapted to those cases where the heating and stimulating medicines of this class are less proper; as phthical diarrhœas, diarrhœa cruenta, &c. Dr. Cullen thinks it has been justly commended for every virtue that is competent to astringents; and says, I myself have had several instances of its virtues in this respect; and particularly I have found it, both by itself and as joined with gentian, cure intermittent fevers; but it must be given in substance, and in large quantities. Ruttie also recommends it in old putrid ulcers, in sores of the mouth, throat and jaws, and in bleeding gums; and to restore the tone of the stomach. There is no vegetable, says he, of more efficacy in fluxes, fluor albus, &c.

This root may be given in powder from half a dram to one dram or more in a dose, but it is more generally given in decoction. An ounce and half of the powdered root is boiled in three pints of water to a quart, adding, towards the end of the boiling, a dram of cinnamon: of the strained liquor, sweetened with an ounce of any agreeable syrup, two ounces or more may be taken four or five times a day. *Tormentil* is

<sup>\*</sup> Smith brit. & engl. bot. Curt. lond. Withering.

<sup>†</sup> Engl. bot.

<sup>‡</sup> Lightf. Curtis, Withering.



ordered in *pulvis e creta compositus* of the London Pharmacopœia<sup>a</sup>.

Farmers find the root very efficacious in the dysenteries of cattle<sup>b</sup>.

2. Root perennial, small and slender. Stems few (one or two) eighteen or twenty inches long, simple, or sometimes divided at top, flagelliform, pubescent, leafy, entirely prostrate, but not taking root. The whole herb hairy, and of a light green. Radical leaves in fives, on long foot-stalks; stem-leaves in threes, on shorter foot-stalks; all obovate and deeply ferrate: floral leaves sessile, narrow and almost entire. Stipules lanceolate, commonly undivided. Peduncles solitary, longer than the leaves, opposite to a leaf or axillary. Corolla bright yellow, twice as large as in the common fort: petals obcordate-roundish. Segments of the calyx ovate-lanceolate, unequal, hairy. Seeds wrinkled<sup>c</sup>.

In English Botany, the stipules are said to be more or less cut; and by Dr. Withering, that they are entire, with two or three clefts.

Native of Germany and England: with us it occurs about hedges and the borders of fields in dry places, but is by no means common. Ray remarked it in the borders of the corn-fields between Hockley and Shotover-woods, and elsewhere in Oxfordshire. Dr. Sibthorp found it in the wood under Shotover-hill, and at Headington. Mr. Ray says it was found also in Braintree parish, Essex: and in Gibson's edition of Camden's Britannia, it is said to grow in a ditch between the Boarded-river and Islington-road. From Lightfoot's herbarium it appears that it was found in Surrey. Mr. Woodward observed it at Berkhamstead in Hertfordshire; Mr. Crowe, at Lakenham near Norwich; Dr. Smith at Brighthouse near Halifax, Yorkshire; Mr. Caley about Manchester<sup>d</sup>; Dr. Pulteney, in Purbeck, in the closes at New Bridge between Ringwood and Wimbourne, under Hod-hill. Mr. Templeton assures me that it is not uncommon in Ireland.

Dr. Smith doubts whether Mr. Hudson ever saw this plant; for if he had he could not have made it a variety of *Potentilla reptans*, though it sometimes bears a corolla with five petals in the beginning of its flowering. The habit and appearance are as little like that species of *Potentilla*, as can well be, if accurately examined<sup>e</sup>.

Mr. Afzelius remarked to Dr. Withering, that this plant differs from *Potentilla reptans* in having a trailing stem, not striking root at the joints; whilst that has a creeping stem, which takes root at every joint.—Here then, if we must change, is a better reason for changing the trivial name from *reptans* to *procumbens*, than in the case of the other species, from *erecta* to *officinalis*; for the stem is absolutely not creeping in this; whereas it is often erect in the other, at least the flowering-stems are ascending. I have therefore left the trivial names as Linneus gave them. I have also, on better grounds, retained the generic distinction of *Tormentilla* from *Potentilla*. Haller joined them both with *Fragaria*: and we may thus at any time croud an entire natural order into one genus.

TORMENTILLA. See *Alchemilla*.

TORNOBONIA. See *Nicotiana*.

TORTULA. A genus of Mosses, in Hedwig's fundam. 2. 92. comprehending some species of *Mnium* and *Bryum*. Schreb. gen. n. 1647.

TOTA-PIVI. See *Trichosanthes*.

TOUCHIROA. See *Crudia*.

TOUCH ME NOT. See *Impatiens* and *Momordica*.

TOULICIA. See *Penæa*.

TOUNATEA. See *Swartzia*.]

TOURNEFORTIA. (So named by Linneus, in memory of Joseph Pitton Tournefort, the famous author of an elegant Arrangement of Plants, under the title of Institutiones Rei Herbariæ. 1694, 8vo. and 1700. in three vols. qu. with figures of all the genera.—Corollarium Instit. &c. 1703.—Catalogue of the plants about Paris, 1698.—Voyage du Levant, 1717. &c.)

Lin. gen. n. 192. Reich. n. 205. Schreb. n. 253.

Gærtn. t. 76. Juss. 129. Pittonia. Plum. 3.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*. *Borraginæ* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, small: segments awl-shaped, permanent.

COR. one-petalled, funnel-form: tube cylindrical, globular at the base: border half-five-cleft, spreading; segments acuminate, horizontal, gibbous in the middle.

STAM. Filaments five, awl-shaped, at the throat of the corolla. Anthers simple, in the throat, converging, acuminate.

PIST. Germ globular, superior. Style simple, length of the stamens, club-shaped. Stigma circumscised, entire.

PER. Berry globular, two-celled, perforated by two pores at top.

SEEDS four, subovate, separated by pulp.

#### ESSENTIAL CHARACTER.

Berry two-celled, two-seeded, superior, perforated at top by two pores.

#### SPECIES.

[1. *Tournefortia ferrata*. *Serrate-leaved Tournefortia*.

Lin. spec. 201. Reich. 1. 405. Willd. 1. 791.

Pittonia arborescens chamædrifolia major. Plum. gen. 5. ic. 228. f. 1.

β. P. arb. chamædrif. minor. Plum. gen. 5. ic. 228. f. 2.

Leaves ovate ferrate, petioles spinescent, spikes terminating recurved.]

2. *Tournefortia hirsutissima*. *Hairy Tournefortia*.

Lin. spec. 201. Reich. 1. 405. Willd. 1. 791.

Swartz obs. 56. Brown. jam. 169. n. 1.

Pittonia hirsutissima & ramosissima, baccis albis. Plum. gen. 5. ic. 209.

Heliotropii flore frutex baccifer ramosus, &c. Sloan. jam. 2. 108. t. 212. f. 1. Raii dendr. 75.

Leaves ovate-petioled acuminate, stem hirsute, spikes branched-terminating, berries hirsute.

3. *Tournefortia volubilis*. *Climbing Tournefortia*.

Lin. spec. 201. Reich. 1. 405. Willd. 1. 791.

hort. cliff. 48. Gærtn. fruct. 1. 365.

Pittonia scandens, baccis niveis nigris maculis notatis. Plum. gen. 5. sec. Gærtn.

Bryonia nigra fruticosa, racemi ramulis varie implicatis. Sloan. jam. 1. 234. t. 143. f. 2.

Virga aurea americana frutescens glabra, foliis subtus cæsiis. Pluk. phyt. t. 235. f. 6. Raii suppl. 348.

Leaves ovate acuminate smooth, petioles reflexed, stem twining.

[4. *Tournefortia syringæfolia*. *Lilac-leaved Tournefortia*.

Lin. spec. ed. Willd. 1. 793. Vahl symb. 3. 23.

Leaves subcordate-ovate acuminate smooth, spikes branched.]

5. *Tournefortia foetidissima*. *Fetid Tournefortia*.

Lin. spec. 201. Reich. 1. 405. Willd. 1. 792.

hort. cliff. 48.

Pittonia racemosa, nicotianæ foliis foetidissimis. Plum. gen. 5. ic. 220.

Heliotropium maximum jamaicense, limonii mali folio; &c. Pluk. alm. 182. Mor. hist. 3. 452.

Leaves ovate-lanceolate rough-haired, peduncles branched, spikes pendulous.

6. *Tournefortia humilis*. *Dwarf Tournefortia*.

Lin. spec. 202. Reich. 1. 406. Willd. 1. 792.

Heliotropium fruticosum. Lin. spec. 187. Mill. dict. n. 9. dict. nostr. n. 8.

Pittonia humilis. Plum. gen. 5. ic. 227. f. 2.

Leaves lanceolate sessile, spikes simple recurved lateral.

[7. *Tournefortia bicolor*. *Two-coloured Tournefortia*.

Lin. spec. ed. Willd. 1. 793. Swartz prodr. 40. descr. 1. 344.

Leaves ovate acuminate smooth somewhat wrinkled above, spikes cymed erect recurved.

8. *Tournefortia cymosa*. *Broad-leaved Tournefortia*.

Lin. spec. 202. Reich. 1. 406. Willd. 1. 793.

Gærtn. fruct. 1. 365. Jacqu. collect. 1. 96. ic.

rar. 1. t. 31. Swartz obs. 57. Brown. jam.

169. n. 2.

Pittonia scandens, baccis niveis nigris maculis notatis.

Plum. gen. 5?

17 O

I Heliotropii

<sup>a</sup> Woodville. <sup>b</sup> Withering. <sup>c</sup> Smith brit. and engl. bot.

<sup>d</sup> Smith brit. and Withering. <sup>e</sup> Engl. bot.



*Heliotropii flore frutex, folio maximo oblongo acuminato glabro. Sloan. jam. 2. 109. t. 212. f. 2. Raii dendr. 76.*

*Leaves ovate quite entire naked, spikes cymed.*

9. *Tournefortia argentea. Silvery Tournefortia. Lin. syst. 191. Willd. 1. 793. suppl. 133. Forst. prodr. n. 64.*

*Buglossum lanuginosum. Rumph. amb. 4. 119. t. 55.*

*Leaves ovate obtuse tomentose-silky, spikes terminating compound.*

10. *Tournefortia sericea. Silky Tournefortia. Lin. spec. ed. Willd. 1. 794. Vahl ecl. 1. 17. Frutex. Marcgr. hist. 78.*

*Leaves ovate-lanceolate beneath tomentose-silky, spikes lateral and terminating dichotomous-panicled.]*

11. *Tournefortia suffruticosa. Hoary-leaved Tournefortia. Lin. spec. 202. Reich. 1. 406. Willd. 1. 794. Brown. jam. 170. n. 5. Sloan. jam. 2. 29. t. 162. f. 4. Raii dendr. 96. (Thymelæa.)*

*Leaves sub lanceolate hoary, stem suffruticose.*

#### DESCRIPTIONS, &c.

[1. This, and most of the other species are natives of South America. Many of them were first discovered by Father Plumier, who gave them the name of Pittonia, which Linneus changed to Tournefortia.

2. Stem shrubby, somewhat scandent, branched, covered with a ferruginous shagginess. Leaves oblong, entire, nerved, hairy all over, but extremely so beneath. Spikes or racemes very much branched, stiff and straight, spreading a little: flowers white, directed all one way. Filaments very short. Anthers blackish green. Germ ovate. Stigma headed. Berry rugged-hirsute, when ripe white, two-celled with two seeds in each cell<sup>f</sup>.

Browne says, this plant raises itself generally by the help of the neighbouring trees, and shoots sometimes to a considerable height in the woods.]

According to Miller, it rises to the height of eight or ten feet; the leaves are about four inches long, and two inches and a half broad, having many transverse veins running from the midrib to the sides; they are of a deep green on their upper side, and stand on short hairy foot-stalks. The branches are terminated by very branching spikes of flowers; which are succeeded by small, roundish, succulent fruit.—Native of the islands in the West Indies.

[Cultivated by Mr. Miller in 1739.]

3. This has a twining woody stalk, which twists about the neighbouring trees for support, and rises to the height of ten or twelve feet, sending out several slender woody branches. The flowers are produced in branching spikes from the side and top of the branches; they are small and white; and are succeeded by small white succulent berries, having one or two black spots on each.

[Gærtner describes the berry as superior, pulpy, globular flattened a little, subdiaphanous, one-celled, four-seeded, white with dark round spots corresponding in number and situation with the seeds. Stones distant, subglobular narrowing downwards, tubercled and wrinkled, two-celled. Seed one in each cell, curved inwards, brittle, pale.

Native of Jamaica. Cultivated in 1739 by Mr. Miller. It flowers in July and August<sup>g</sup>.

4. Branches, petioles, midrib of the leaves on both sides, nerves beneath, and peduncles villose. Leaves petioled, alternate, two inches long, lower ones of the branches smaller, almost like those of Lilac, (*Syringa vulgaris*) nerved, veinless, quite entire, very smooth except on the nerves. Peduncle terminating, erect, several times divided dichotomously. Spikes pubescent, two inches long, reflexed as in the other species. Flowers alternate, approximating. Corollas somewhat villose on the outside; the segments of the border very narrow and somewhat bristle-shaped. Found in Cayenne by von Rohr<sup>h</sup>.]

<sup>f</sup> Swartz.

<sup>g</sup> Hort. kew.

<sup>h</sup> Vahl.

5. Stems shrubby, ten or twelve feet high, sending out many branches. Leaves alternate, five inches long, two inches and a half broad in the middle, hairy on their under side, standing upon short foot-stalks. The branches are terminated by long branching spikes of flowers, ranged on one side like those of the Heliotrope or Turnsol. Some of the foot-stalks sustain two, others three, others again four spikes of flowers, near five inches in length, reflexed at the top. The flowers are of a dirty white colour, small, and closely set. They are succeeded by small succulent fruit, inclosing four oblong seeds.

Native of Jamaica and other islands of the West Indies. Cultivated by Mr. Miller in 1739.

6. This plant has low shrubby stalks, which seldom rise more than three feet high, sending out a few slender woody branches. Leaves rough, dark green on their upper, but pale on their under surface. The flowers come out in single axillary spikes; they are white, and are succeeded by small succulent berries.

Native of South America: found at Campeachy by Dr. Houstoun; [and therefore cultivated by Mr. Miller, not only in 1739, but probably before 1733.]

This plant is repeated in Linneus's species under the name of *Heliotropium fruticosum*, and has been already described in this work from Miller, Swartz and Browne, under that title.

7. This is a shrub, a fathom in height. Trunk round, branched, even: branches alternate, almost upright, round, smooth. Leaves alternate, entire, nerved, veined, smooth on both sides, somewhat wrinkled above and sometimes but very seldom rough-haired, even beneath and pale; hence the trivial name of *bicolor* or two-coloured: petioles of a middling length and even. Spikes terminating, branched; branchlets recurved, rough-haired, many-flowered. Calyx even. Corollas greenish-white, with a hirsute hoary tube.

It differs from *fetidissima*, in having smaller leaves, somewhat smooth; and spikes in cymes, reflexed, upright:—from *cymosa*, in its leaves, and in the spikes not being pendulous, loose: from *hirsuta*, in the leaves not being hirsute; the spikes less branched, with the flowers more crowded together.

Native of Jamaica, in coppices<sup>i</sup>.

8. Stem a fathom in height. Branches herbaceous, angular, grooved, smooth. Leaves ovate-lanceolate, long, petioled, smooth, wrinkled beneath. Flowers sessile, on one side, disposed in two rows. Corollas longer, five-cornered, greenish-white. Stigma headed. Berry roundish, white, with one pore at the top, two-celled, with two seeds in each cell<sup>k</sup>.

Gærtner describes the berry (when old and dry) to be transversely oblong, acuminate at both ends, resembling a double cone, grooved, of a smoky reddish colour. Stones irregularly conical, grooved, three-celled; the two inner cells fertile, the third outer constantly empty. Seeds oblong, narrowing downwards, slightly curved, snow-white.

Gærtner remarks, that the radicle in Tournefortia being inferior, it approaches nearer to the Verbenæ of Adanson, than the Asperifoliæ. He says that he never could discover the double pore in the top of the berry; and therefore concludes that the character is erroneous, or at least not general. Perhaps this may be owing to his having examined none but dry berries. Swartz, as we have seen, describes one pore in this species. This author observes that the whole plant is fetid.

Native of Jamaica; where Browne says it is sometimes observed in the woods; that it generally rises from five to seven or eight feet in height, and is remarkable for the thickness of its upper branches, and the length of its pendulous flower-spikes: the leaves are very large, sometimes a foot or more in length.

It was cultivated in 1777, by Mr. William Malcolm; and flowers in July<sup>l</sup>.

9. This is a shrub, scarcely the height of a man. Trunk very short, covered with a deeply cloven bark. Branches spreading very much, hirsute. Leaves at

<sup>i</sup> Swartz, descr.

<sup>k</sup> Swartz, obs.

<sup>l</sup> Hort. kew.



the ends of the branches, alternate approximating into a rose as in *Sempervivum canariense*, ovate or tongue-shaped, (being narrowed into the petiole,) sessile, rounded at the end, white all over with a silky hairiness pressed close to them. Panicle large, divided into spikes, directed one way, and rolled back. Flowers snow-white; tube short; border recurved. Berries not perforated. It is the handsomest species of the genus.

Native of the shores of the sea of Ceylon<sup>m</sup>. Also of the Friendly Isles<sup>n</sup>.

10. This has the appearance of *T. volubilis*. Branches slender, round, smooth below, villose-ash-coloured above. Leaves petioled, alternate, an inch and half long, little attenuated, acute, quite entire, above simply veined, smooth, beneath somewhat silvery, with veins a little branched. Peduncles flexuose, villose, ash-coloured, with spreading branches. Flowers small, distinct, alternate. Corolla villose on the outside; with bristle-shaped segments. Found in Montserrat by Ryan<sup>o</sup>.]

11. This has woody stalks which rise five or six feet high, from which spring out many slender woody branches. Leaves about two inches long, and an inch broad in the middle, rounded at each end but having acute points; of a dark green on their upper surface, but having a white down on their under side, and sitting close to the branches. Flowers terminating and axillary, in slender branching spikes, which are recurved; and the flowers are ranged on one side of them; they are white, and are succeeded by small succulent berries, which contain two or three seeds.

[Native of Jamaica. Dr. Browne says it is found by the sea-side, near the borough in St. James's; and seldom rises above three or four feet. According to Mr. Miller, it was discovered by Mr. Robert Millar near Carthage in New Spain.—He cultivated it in 1768<sup>p</sup>, and probably much sooner, if it was sent him by Robert Millar.

Mr. Miller has three other species, one found by Houstoun, a second by Robert Millar, and a third by Plumier.]

1. *Tournefortia scandens*. n. 4.

*Pittonia scandens racemosa*, flore fusco. *Houst. MSS.*  
Leaves cordate hirsute, spikes racemed reflexed, stem twining.

Stems shrubby, branching, rising to the height of ten or twelve feet. Leaves near three inches long, and an inch and half broad near the base, ending in acute points; they are of a thinner texture than in *T. volubilis*, and stand upon short foot-stalks. The flowers come out at the ends of the branches in very slender branching spikes; they are small, and of a dirty brown colour, ranged along the upper side of the peduncle. Berries small, pulpy, containing four seeds. Discovered in Jamaica by Dr. Houstoun, who sent the seeds to England.

2. *Tournefortia tomentosa*. n. 5.

*Pittonia scandens racemosa*, foliis subrotundis subtus incanis. *Houst. MSS.*

Leaves cordate tomentose beneath, spikes racemed short, stem twining.

This has climbing stalks, which twine about any neighbouring support, and rise to the height of ten or twelve feet. Leaves two inches long, and an inch and quarter broad near their base, on very short foot-stalks. Spikes axillary. Flowers of a dirty white colour, small; succeeded by small succulent berries, inclosing two, three and sometimes four seeds. Found by Mr. Robert Millar near Carthage in New Spain.

3. *Tournefortia carnosifolia*. n. 6.

*Pittonia frutescens*, folio carnosifolio hirsuto & obtuso. *Plum. gen.* 5.

Leaves ovate wrinkled petioled, spikes racemed axillary, stem shrubby.

This has a strong woody stalk, which rises near twenty feet high, sending out several strong woody branches, covered with a light-brown rough bark.

Leaves thick, four inches long and three broad, very rough and of a dark green colour on their upper surface, but pale and smoother on their under side, standing upon pretty long foot-stalks. Flowers in branching axillary spikes, small and white; succeeded by small succulent berries, inclosing two or three oblong seeds. Found by Mr. Robert Millar, near Carthage in New Spain.

[Loureiro has a species which he names *Tournefortia montana*. Willdenow doubts whether it may not be a *Messerschmidia*.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be procured from the countries where they grow naturally; these should be sown in small pots filled with light earth, and plunged into a hot-bed of tanners bark. These seeds sometimes grow the first year, but they often remain in the ground a whole year; therefore, if the plants should not come up the same season, the pots should be plunged in autumn into the tan-bed in the stove, where they should remain all the winter, and in the spring they should be removed out, and plunged into a fresh tan-bed, which will soon bring up the plants if the seeds were good. When these are fit to remove, they should be each planted in a small pot, and plunged into a tan-bed, where they must be shaded from the sun till they have taken new root, and then they must be treated in the same way as other tender plants from the same countries, which require to be kept constantly in the bark-stove. They may also be increased by cuttings.

[TOURNEFORTIA. See *Anthospermum*, *Heliotropium*, *Messerschmidia*.

TOURNEFORTIA. See *Robinsonia*.

TOURRETTIA. (So named by Dombey from *Mons. de la Tourrette*, author of *Chloris Lugdunensis*, & *botanicæ Scholæ Veterinariæ Lugd. prælectiones*.)

*Lin. gen. Schreb. n.* 1009. *Juss.* 139. *Dombey.* Dombeya. *L'Herit. t.* 17.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Bignoniæ* *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, before flowering coloured; two-lipped: upper lip acute; lower indistinctly four-toothed, having a membrane internally: permanent.

COR. one-petalled: tube compressed, length of the calyx: upper lip galeate, compressed, with the margins converging: lower lip none, but in place of it a double toothlet.

STAM. Filaments four, filiform, concealed under the upper lip, two of them shorter. Anthers two-lobed.

PIST. Germ oblong, somewhat four-cornered, tubercled. Style filiform, length and situation of the lip. Stigma bifid.

PER. Capsule oblong, coriaceous, muricate with spines, (some of which are hooked,) four-celled, two-valved.

SEEDS few (four to six) in each cell, subtriquetrous, ovate, girt with a membranaceous margin, emarginate and crenulate at the base, covered with a common membrane.

ESSENTIAL CHARACTER.

Cal. two-lipped. Cor. lower lip none, but two toothlets instead of it. Caps. echinate, four-celled, two-valved.

SPECIES.

1. *Tourettia lappacea*.

*Lin. spec. ed. Willd.* 3. 263.

Dombeya lappacea. *L'Herit. stirp. nov.* 1. 33. t. 17.

DESCRIPTION, &c.

Root annual. Stem two cubits high scandent four-cornered fistulous, branched. Leaves opposite the primordial ones ternate, lateral leaflets two-parted, at the next knot double-ternate without a tendril, at the upper knots of the stem ternate-decompound or pedate, with the common petiole growing out into a convoluted branched tendril. Flowers in a naked terminating raceme, of a dusky violet colour. At the base of the peduncles, which are alternate and very short, there is a bristle-shaped bracte<sup>a</sup>.

<sup>m</sup> Linn. suppl. <sup>n</sup> Forster. <sup>o</sup> Vahl, ecl. <sup>p</sup> Hort, kew.

<sup>a</sup> Willdenow.



Native of Peru, where it was found by Dombey, and the seeds sent over by him to the Paris garden, where it flowered in 1784, but so late, that it was killed by the frost.

TOWER-MUSTARD. See *Turritis*.

TOXICODENDRON. See *Rhus*.

TOZZIA. (So named by Micheli in honour of Bruno Tozzi, Abbot of Vallumbrosa, F.R.S. and Soc. Florent. Micheli's companion in his botanical excursions, in one of which he found this plant.)

Lin. gen. n. 745. Reich. n. 803. Schreb. n. 1002. Mich. t. 16. Juss. 97.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Lyfimachie* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, very short, five-toothed, permanent.

COR. one-petalled, ringent: tube cylindrical, longer than the calyx: border spreading: upper lip bifid: lower trifid: segments all nearly equal, rounded.

STAM. Filaments four, concealed beneath the upper lip. Anthers roundish.

PIST. Germ ovate. Style filiform, situation and length of the stamens. Stigma headed.

PER. Capsule globular, one-celled, one-valved.

SEED single, ovate.

#### ESSENTIAL CHARACTER.

Cal. five-toothed. Caps. one-celled, globular, one-seeded.

#### SPECIES.

##### 1. *Tozzia alpina*.

Lin. spec. 844. Juss. 551. Reich. 3. 114. Willd. 3. 202. Hall. helv. n. 298. Crantz austr. 305. Jacq. austr. 2. t. 165. Villars dauph. 2. 412. Allion. pedem. n. 202.

T. alp. lutea, alpine folio, radice squamata. Mich. gen. 20. t. 16.

Euphrasia lutea alpinefolia, radice squamata. Baub. pin. 234. prodr. 111. Park. theat. 1329. Raii hist. 773.

Dentaria buguloides, radice globosa, squamulis myontoideis, alpina. Mentz. pug. t. 9. f. 3, 4.

Orobanche buglossoides, radice rotunda, squamulis myontoideis, alpina. Mor. hist. 3. f. 12. t. 16. f. antepenult.

Anonyma f. Gregorii, radice dentariae. Col. ephr. 2. 49. t. 50.

#### DESCRIPTION, &c.

Root formed of roundish scales. Stem square, branched. The whole habit tender and succulent. Leaves round, bluntly notched, pale. Peduncles axillary, short, one-flowered. Flowers yellow, with the three lower segments spotted of a deeper yellow, ferrate. Fruit globular drawn out into a conical point.

Native of the mountains of Switzerland, Austria, South of France, Italy, and the Pyrenees, in rough moist places.

TRACES, Ladies. See *Ophrys*.]

TRACHELIUM. (From *τραχηλος*, the neck.)

Lin. gen. n. 221. Reich. n. 234. Schreb. n. 293. Tournef. t. 50. Juss. 165. Gertn. t. 31.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanaceae*. *Campanulaceae* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, very small, superior.

COR. one-petalled, funnel-form: tube cylindrical, very long, very slender: border patulous, small, five-parted; segments ovate, concave.

STAM. Filaments five, capillary, length of the corolla. Anthers simple.

PIST. Germ three-sided-roundish, inferior. Style filiform, twice as long as the corolla. Stigma globular.

PER. Capsule roundish, obtusely three-lobed, three-celled, opening by three holes at the base.

SEEDS numerous, very small.

#### ESSENTIAL CHARACTER.

Cor. funnel-form. Stigma globular. Caps. three-celled, inferior.

\* L'Heritier.

\* Haller.

#### SPECIES.

##### 1. *Trachelium caeruleum*. Blue Throatwort.

Lin. spec. 243. Juss. 212. Reich. 1. 472. Willd. 1. 926. vir. cliff. 17. hort. cliff. 66. upf. 41. suppl. 143. Kniph. cent. 10. n. 89. Gertn. fruct. 1. 155. t. 31.

Valeriana caerulea urticae folio. Barr. ic. 683, 684.

Cervaria valerianoides caerulea. Baub. pin. 95.

Branched, erect, leaves ovate serrate flat.

##### [2. *Trachelium diffusum*. Spreading Throatwort.

Lin. Juss. 212. Willd. 1. 926. suppl. 143. Thunb. prodr. 38.

Very much branched, diffused, branches divaricating recurved, leaves awl-shaped.

##### 3. *Trachelium tenuifolium*. Fine-leaved Throatwort.

Lin. Juss. 212. Willd. 1. 927. suppl. 143. Thunb. prodr. 38.

Nearly upright, leaves linear ciliate hispid.]

#### DESCRIPTIONS, &c.

1. Root perennial, fleshy, tuberous, sending out many fibres which spread wide on every side. Leaves about two inches long, and one inch broad in the middle, ending in acute points. The stalks rise a foot and half high, with leaves on them shaped like those at the bottom. Sometimes there are two pretty large leaves, and one or two smaller from the same point, or one large and three smaller; these come out alternate, and the upper part of the stalk, immediately under the umbel, is naked, except two or three narrow leaves, which are close to the foot-stalks of the flowers: these are disposed in form of an umbel composed of many small ones. The flowers are small, and of an azure blue colour, appearing in June and July. The seeds ripen in September.

[Capsule inferior, crowned with a short calyx, small, subglobular, rounded-three-cornered, and flattened at the sides, as it were three-lobed, triple-nerved at the lobes. Receptacle ovate-globular, small, excavated, fastened to the internal angle of each cell about the middle. Seeds of an oblong elliptic form, compressed like a lens, smooth, shining, of a pale rust-colour.

Native of Italy and the Levant, in shady places. Cultivated by Mr. Miller in 1739. Biennial.

It has the name of *Trachelium* and *Throatwort* from the length of the neck, throat or tube of the corolla.

2. The branches are frequently so divaricated as to be recurved.

3. This and the preceding are natives of the Cape of Good Hope, where they were found by Thunberg\*.]

#### PROPAGATION AND CULTURE.

1. This plant is propagated by seeds, which should be sown in autumn when they are ripe, for when they are kept out of the ground till spring, they frequently fail, or if they do grow, it is not before the following spring. When the plants come up, they should be kept clean from weeds, and as soon as they are big enough to remove, they should be transplanted on an east-aspected border of light undunged earth, placing them in rows six inches apart, and four inches distant in the rows, shading them from the sun till they have taken new root; after which they require no other care but to keep them clean from weeds till autumn, when they may be transplanted into the borders of the flower-garden, where they will flower the following summer.

But as these plants will thrive better on old walls, when by accident they have arisen from seeds, so their seeds, when ripe, may be scattered on such walls as are old, or where there is earth lodged sufficient to receive the seeds; where the plants will come up and resist the cold much better, and continue longer than when sown in the full ground; and when a few of the plants are established on the walls, they will shed their seeds, so that they will maintain themselves without any farther care. I have observed some plants of this kind, which have grown from the joints of a wall, where there has not been the least earth to support them, which have resisted the cold, though they

\* Gartner.

\* Hort. kew.

\* Linn. suppl.



have been greatly exposed to the winds, when most of those in the full ground were killed; so that these plants are very proper to cover the walls of ruins, where they will have a very good effect.

[TRACHELIUM. See *Campanula*, *Lobelia*, *Phyteuma*.]

TRADESCANTIA. (So named by Ruppianus, in his *Flora Jénensis* from John Tradescant, who first introduced it in Europe. There were two Tradescants, father and son: the former (about 1629) gardener to Charles I.; the latter went to Virginia, and returned with many new plants. They had a famous Museum, the catalogue of which was printed in 1656, with heads of both by Hollar. The son died in 1662, and gave the Museum to Ashmole, from whom it came to the University of Oxford, bearing his name.)

Lin. gen. n. 398. Reich. n. 430. Schreb. n. 543.

Gärtn. t. 15. Juss. 45. Ephemerum. Tournef. t. 193.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Ensatæ*. Junci Juss.

#### GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets ovate, concave, spreading, permanent.

COR. Petals three, orbicular, flat, spreading very much, large, equal.

STAM. Filaments six, filiform, length of the calyx, erect, villose, with jointed hairs. Anthers kidney-form.

PIST. Germ ovate, obtusely three-cornered. Style filiform, length of the stamens. Stigma three-cornered, tubulous.

PER. Capsule ovate, covered by the calyx, three-celled, three-valved.

SEEDS few, angular.

OBS. The form of the style varies. Some of the species (8. 10. 11. 12. 19.) have naked filaments. T. monandra has only one stamen, and cordifolia three.

#### ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. three. Filam. equal, with jointed hairs. Caps. three-celled.

#### SPECIES.

1. Tradescantia virginica. Common Virginian Spiderwort.

Lin. spec. 411. syst. 314. Reich. 2. 10. Willd. 2. 16. hort. cliff. 127. upf. 73. Gron. virg. 36.

Gärtn. fruct. 1. 51. t. 15. Kniph. cent. 6. n. 96.

Curt. magaz. t. 105.

Ephemerum phalangoides tripetalum non repens virginianum gramineum. Mor. hist. 3. 606. f. 15. t. 2. f. 4.

E. virginianum. Tournef. inst. 367. 368.

Phalangium Ephemerum virginianum. Park. parad. 152. n. 5. t. 151. f. 4.

P. virginianum Tradescanti. Ger. emac. 49. f. 5. Raii hist. 1193.

Allium f. Moly virginianum. Baub. pin. 506.

Erect, leaves lanceolate smooth, flowers heaped in an umbel terminating.

[2. Tradescantia crassifolia. Thick-leaved Spiderwort.

Lin. spec. ed. Willd. 2. 17. Cavan. ic. 1. 54. t. 75.

Erect, leaves ovate woolly at the edge and beneath, flowers heaped in umbels terminating.

3. Tradescantia erecta. Upright Spiderwort.

Lin. spec. ed. Willd. 2. 17. Cavan. ic. 1. 53. t. 74. Jacqu. collect. 4. 114. ic. rar. 2. t. 354.

T. undulata. Vahl act. soc. hist. nat. hafn. 2. p. 2. 27. t. 3.

T. bifida. Roth. catal. bot. 1. 42.

Erect, leaves ovate narrowed at the base smooth, peduncle terminating naked bifid racemed.]

4. Tradescantia Zanonia. Gentian-leaved Spiderwort.

Lin. spec. ed. Willd. 2. 17. Swartz prodr. 57. descr. 1. 604.

Commelina Zanonia. Lin. spec. 61. Mill. dict. and Dict. nostr. n. 7.

Periclymenum rectum herbaceum gentianæ folio, foliis pediculo caulem ambiente. Sioan. jam. 1. 243. t. 147. f. 1.

Erect, leaves broad-lanceolate, peduncles lateral solitary jointed in the middle many-flowered, bractes in pairs.

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[5. Tradescantia discolor. Purple-leaved Spiderwort. Lin. spec. ed. Willd. 2. 18. L'Herit. fert. angl. 8. t. 12. Swartz descr. 1. 607. Smith ic. rar. t. 10. Ait. kew. 1. 403.

T. spathacea. Swartz prodr. 57.

Stemless even, bractes equitant compressed, leaves lanceolate coloured underneath.

6. Tradescantia malabarica. Grass-leaved Spiderwort.

Lin. spec. 412. Reich. 2. 11. Willd. 2. 18.

Ephemerum tripetalum non repens malabaricum, porraceis foliis, purpureo-ceruleum. Mor. hist. 3. 606?

Ephemeris f. Phalangii virginiani species, floribus sparsis. Raii suppl. 564?

Tali-pulli. Rheed. mal. 9. 123. t. 63.

Erect even, peduncles solitary very long.

7. Tradescantia nervosa. Nerve-leaved Spiderwort.

Lin. syst. 315. Reich. 2. 11. Willd. 2. 18. mant. 223.

Scape one-flowered.

8. Tradescantia divaricata. Straddling Spiderwort.

Lin. spec. ed. Willd. 2. 18. Vahl ecl. 1. 34.

Commelina hexandra. Aubl. guian. 1. 35. t. 12.

Stem dichotomous, leaves ovate-lanceolate smooth, sheaths villose, flowers paniced, filaments smooth.

9. Tradescantia geniculata. Knotted Spiderwort.

Lin. spec. 412. syst. 315. Reich. 2. 11. Willd. 2.

19. Jacqu. amer. 94. t. 64. piët. 49. t. 95.

Ranunculus f. Damasonium repens, parnassæ foliis villosis. Plum. ic. 116. f. 2.

Procumbent hirsute.

10. Tradescantia monandra. One-stamened Spiderwort.

Lin. spec. ed. Willd. 2. 19. Swartz prodr. 57. descr. 1. 597.

Diffused, leaves ovate-acuminate, peduncles axillary many-flowered, flowers one-stamened.

11. Tradescantia multiflora. Many-flowered Spiderwort.

Lin. spec. ed. Willd. 2. 19. Swartz prodr. 57. descr. 1. 599.

Erect branched, leaves cordate ciliate on the edge and sheaths, peduncles clustered axillary, flowers three-stamened.

12. Tradescantia cordifolia. Heart-leaved Spiderwort.

Lin. spec. ed. Willd. 2. 19. Swartz prodr. 57. descr. 1. 601.

Creeping filiform, leaves cordate, peduncles terminating solitary many-flowered.

13. Tradescantia procumbens. Trailing Spiderwort.

Lin. spec. ed. Willd. 2. 19.

T. multiflora. Jacqu. collect. 3. 226. ic. rar. 2. t. 355.

Stem procumbent rooting, leaves ovate ciliate at the base sheathing, peduncles cymed axillary, stamens unequal.

14. Tradescantia axillaris. Axillary Spiderwort.

Lin. syst. 315. Reich. 2. 11. Willd. 2. 20. mant. 321. Roxb. corom. 2. 5. t. 107.

Commelina axillaris. Lin. spec. 62.

Ephemerum phalangoides maderaspatanum minimum, secundum caulem quasi ex utriculis floridum. Pluk. phyt. t. 174. f. 3.

E. malabaricum, flore tripetalo in foliorum alis sessili. Raii suppl. 567.

Nir-pulli. Rheed. mal. 10. 28. t. 13.

Stem branched, flowers sessile lateral.

15. Tradescantia formosa. Handsome Spiderwort.

Lin. spec. ed. Willd. 2. 20.

T. speciosa. Lin. syst. 315. suppl. 192.

T. nodiflora. Lamarck, encycl. 2. 367.

Commelina speciosa. Thunb. prodr. 59.

Leaves opposite connate.

16. Tradescantia cristata. Crested Spiderwort.

Lin. syst. 315. Reich. 2. 12. Willd. 2. 21.

Jacqu. hort. 2. 64. t. 137.

Commelina cristata. Lin. spec. 62. fl. zeyl. n. 32.

Ephemerum zeylanicum procumbens inflatum. Herm. parad. 148. Raii hist. 566.

Creeping even, spathe two-leaved imbricate.

17. Tradescantia papilionacea. Papilionaceous Spiderwort.

Lin. syst. 315. Reich. 2. 12. Willd. 2. 21. mant. 61. 513. Burm. ind. 17. t. 7. f. 1. Vahl symb.

1. 27.

17 P

Tillandsia



*Tillandsia decumbens.* *Forsk. descr. 72. n. 23. β.*

*Creeping even, spathes three-leaved imbricate.*

18. *Tradescantia tuberosa.* *Tuberous-rooted Spiderwort.*

*Roxb. corom. 2. 5. t. 108.*

*Roots tuberous, joints of the stem radical, bractes in two rows, falcate, ciliate.*

19. *Tradescantia paniculata.* *Panicked Spiderwort.*

*Roxb. corom. 2. 6. t. 109.*

*Stems creeping, panicle terminating many-flowered.]*

DESCRIPTIONS, &c.

1. Roots composed of many fleshy fibres. Stalks smooth, rising a foot and half high. Leaves long, smooth, keeled, embracing. Flowers in clusters, composed of three large spreading purple petals: they appear early in June; and though each flower continues but one day, whence this plant had the name of *Ephemerum*, yet such is the profusion, that there is a succession of them through the greater part of the summer. [Some authors have named it *Phalangium*, from its supposed property of curing the bite of a spider.

Capsule superior, wrapped up in the permanent corolla, small, marked with three grooves; the valves bearing the partition in the middle. Seeds two in each cell, of which one only usually comes to maturity; this is elliptic, plano-convex, ash-coloured: the belly flat, with a slender ridge, near which are transverse wrinkles on each side; the back is convex, wrinkled radiately at the periphery, and having a little teat, which bears the embryo, in the middle<sup>f</sup>.

Gärtner remarks, that *Tradescantia* and *Commelina* form but one natural genus.

The fine blue of the corolla, with the hairy filaments of the same colour in the middle, tipped with the large yellow anthers, would render this a favourite flower if it were not so common.

Native of Virginia and Maryland. Introduced before 1629, by Mr. John Tradescant Senior<sup>g</sup>. The Spider-wort, says Parkinson, is of late knowledge, and for it the Christian world is indebted unto that painful industrious searcher, and lover of all nature's varieties, John Tradescant, (sometimes belonging to the Right Honourable Lord Robert Earle of Salisbury, Lord Treasurer of England in his time, and then unto the Right Honourable the Lord Wotton at Canterbury in Kent, and lastly unto the late Duke of Buckingham,) who first received it of a friend, that brought it out of Virginia. Johnson, the editor of Gerard's herbal adds: this Virginian is in many of our English gardens, as with Mr. Parkinson, Mr. Tradescant, and others.]

There are two varieties, one with a deep blue, and the other with a white flower, but they vary from one to another when raised from seeds.

[2. The whole plant is villose or woolly; the stem is branched, and a foot and half high; the leaves are thick ovate acute cowed at the base or very shortly sheathing nerved, smooth above, but woolly beneath and at the edge: the flowers are among the largest of the genus<sup>h</sup>: the petals being above half an inch in diameter, orbicular and curled at the edge: the filaments are blue-bearded, and the anthers very dark blue.—Native of Mexico<sup>i</sup>. Cavanilles saw it flowering in the royal garden of Madrid in October.

3. Stems herbaceous, thick, round, jointed, three feet high, branched; branches axillary, and while tender villose. Leaves alternate, broad-ovate, acuminate at both ends, terminating at the base in an embracing sheath. Both common and partial peduncles villose; as are also the calyx-leaves on the outside. Corolla purple-violet, a little bigger than the calyx, petals orbicular with short claws. Filaments red; the three lower ones longer; the lowest beardless, the rest bearded with little jointed bristles: those of the upper ones of a golden colour, of the two lateral ones purple: anthers on the longer filaments violet, loaded with pollen; on the shorter ones yellow, seeming to have no pollen. Germ superior, white, oblong-three-sided: style red, somewhat

bowed. Seeds rough with tubercles, three or four in each cell.—It varies with violet-coloured corollas and stamens in the same umbel.—This is an annual plant, whereas the preceding is perennial. Native of Mexico<sup>k</sup>.—Cavanilles saw it flowering and fruiting in the royal garden at Madrid in October.

4. Plant herbaceous, two feet high. Stem simple, jointed, round, sheathed, almost naked below, smooth, succulent. Leaves subsessile, attenuated at the base, sheathing, alternate, acuminate, entire, nerved longitudinally, smooth above, pubescent or villose beneath, almost a foot long: sheaths ovate, half an inch long, distant from the stem, membranaceous, nerved, shrivelling, at the edge hirsute, ciliate. Peduncles opposite to a leaf, round, elongated, length of the leaves, surrounded at the base with a sheath, which is cowed, membranaceous, retuse; they are jointed in the middle, and at the joint there is an acuminate sheath. Flowers terminating, from six to eight, on very short pedicels, which are clustered, thickened, and unequal; they gradually erect themselves as they flower, and are again turned back as the flowers go off. Under each pedicel is a two-leaved involucre, or two bractes, which are opposite, ovate, acuminate, entire, nerved, reflexed, smooth. Calyx somewhat pitcher-shaped, trifid at the base: leaflets ovate, acute, concave, inclosing the corolla. Petals a little bigger than the calyx-leaves, ovate-acute, erect, waved at the edge, white or hyaline. Filaments length of the petals, villose in the middle, equal. Anthers double, three-cornered, uniform. Germ oblong, placed on the middle of the calyx. Capsule berried, oblong, three-cornered, when ripe very dark purple, placed obliquely on the pedicel. Native of the southern parts of Jamaica, in mountain woods; flowering in the spring months<sup>l</sup>. Also found in Guiana. See farther under *Commelina Zanonia*.

5. Root perennial, vertical, fleshy, knotty. Leaves radical, numerous, embracing each other, spreading, a foot long, sharpish, entire, fleshy, slightly ribbed, smooth on both sides, a little downy at the edges of the base, green above, bright purple on the margins and under side, the younger ones somewhat channelled. Stipules none. Stalks axillary, four times shorter than the leaves, solitary, erect, simple, rarely divided, a little compressed, smooth, whitish. External bractes sheath-like, slightly ribbed, purplish, smooth, polished on the inside; of which the lowest are the smallest, thinnest, embracing the stalk, and alternate; the uppermost scarcely ever more than two, very large, formed like a boat, somewhat heart-shaped at the base, embracing each other, ending in a point: internal bractes scaly, membranous, white and pellucid, three times shorter than the outer ones. Flowers numerous, between the uppermost external bractes, which they scarcely rise above, separated and enfolded in distinct clusters by the internal ones, pedicelled, white, short-lived and scentless. Pedicels simple, single-flowered, roundish, a little swelled in the upper part, whitish sometimes green at the top, smooth, polished, curved after flowering. Calyx corolla-like, whitish, pellucid, smooth: leaflets equal, obtuse. Petals a little longer than the calyx, and alternate with its leaflets, broad-oval, obtuse, waved at the margin, when faded rolled inward. Filaments as long as the corolla, nearly equal, almost erect, white, clothed a little above the base with numerous very slender white pellucid hairs, which are most beautifully jointed like a *Conferva*, and are somewhat shorter than the stamen, standing nearly erect. Anthers wedge-shaped, vertical, yellow, smooth, entire at the top, bearing pollen at their orange-coloured edges. Germ superior, roundish, triangular, smooth, white. Style erect, cylindrical, white and smooth. Stigma small, obtuse, rough. Capsule scarcely so large as a pea, smooth, turning red. Seeds solitary, somewhat kidney-shaped.

Native of South America, on the Mosquito shore; whence it was brought by a ship to Jamaica, where it was observed and described by Masson<sup>m</sup>; and sent

<sup>f</sup> Gartner.

<sup>g</sup> Hort. kew.

<sup>h</sup> Willdenow.

<sup>i</sup> Cavanilles.

<sup>k</sup> Cavanilles.

<sup>l</sup> Swartz descr.

<sup>m</sup> Smith.



to Europe in 1783, by Matthew Wallen, Esq. It flowers most part of the summer.

6. Native of the East Indies. Introduced in 1776, by John Fothergill, M.D. It flowers in July and August<sup>a</sup>.

7. Stems a hand high, diffused. Leaves lanceolate, sheathing, short or an inch long, clustered. Peduncle terminating, filiform, long, one or two-flowered. Bracte obsolete, remote from the flower. Flower large. Calyx-leaves lanceolate, scarious, five-nerved, shorter than the corolla. Petals ovate, broad, many-nerved. Filaments with violet-coloured hairs. Style hooked at the end. Supposed to be a native of Suratte. From Mutis<sup>b</sup>.

8. Stem dichotomously branched. Branches round, divaricating, broken in at bottom, jointed: joints two inches and more, gradually shorter upwards, smooth below, little villose above, sheathed. Sheaths tubular, shorter by half than the joint, membranaceous, dry in summer, ciliate at the edge with long hairs, more villose on the alternate sides. Leaves from the margin of the sheaths, alternate, subpetioled, two inches long or more, the lower ones a little smaller, attenuated, acute, quite entire, flat, marked with about fifteen very fine nerves. Panicle terminating, erect, two inches long. Pedicels short, three or four-flowered, reflexed, villose. Bractes lanceolate, membranaceous, villose, length of the pedicels. Calyx inferior: leaflets oblong, obtuse, appearing a little villose under the magnifier, equal. Petals equal, ovate, acute, longer than the calyx, blue. No nectary. Filaments inserted at the base of the petals, short, very smooth. Anthers erect, awl-shaped, twice as long as the filaments, but shorter than the corolla. Germ smooth, subglobular-three-sided, with obtuse angles. Style permanent, a little shorter than the anthers. Stigma simple, obtuse. Capsule rounded-three-cornered, twice as large as a pea, mucronated on the outside with small scattered tubercles: valves membranaceous, oblong, mucronate, flattened longitudinally at the back in the part corresponding with the partition within: partition ventral. Seeds two, seldom three in each cell, arilled, all coming to maturity, ovate-subtriangular, flat where they touch each other, blunt at the other end, convex at the back, flat at the belly on each side. Aril loosely covering the whole seed, membranaceous and somewhat pulpy, when the seed is dry collapsing and assuming the shape with the inequalities of the seed, but easily separating from it. Seed itself oblong, plano-convex, ferruginous, dry, brown, flattish on the belly, transversely wrinkled on both the sides, having in the middle a small excavation with a teatlet, to which the aril adheres; convex on the back, with a navel-shaped excavation in the middle, and wrinkled at the sides, as on the belly.—It differs therefore both from *Commelina* and *Tradescantia* in having an aril or loose membranaceous coat adhering to the umbilicus: and since it has no nectaries, and the filaments are not bearded, might it not constitute a genus separate from both<sup>c</sup>?

Found on the banks of rivers in Guiana and Cayenne by Aublet, and in the island of Trinidad by Ryan.

9. This is a tender plant, with herbaceous round jointed stems, creeping at bottom, otherwise nearly upright. Leaves cordate, acuminate, embracing, sheathing, quite entire, alternate, hirsute especially at the edges. Panicles dichotomous, terminating and axillary, erect. Flowers small, with white corollas.—In Plumier's figure, the plant is represented too hairy, which is a common fault in his plates<sup>d</sup>.

Native of South America—Martinico, in moist hedges.

10. Root annual. Radicles very long, whitish. Stem herbaceous, ascending, jointed, putting out fibres, half a foot high, loose, round, pellucid, smooth, spotted: branches nearly upright, loose, round, spotted. Leaves subpetioled, alternate, en-

tire, very thin, longitudinally and very finely nerved, very smooth. Petioles (or the base of the leaf attenuated) sheathed: sheaths short, cowed, or distant from the stem, membranaceous, whitish, rough-haired or ciliate at the edge. Peduncles principally from the sheaths of the terminating leaves, often longer than the leaves, loose; flowers in umbellets, eight or ten together: involucrets or little bractes three or four-leaved: leaflets minute ovate acute whitish villose. Pedicels shorter than the peduncle, capillary pubescent one-flowered. Flowers minute, whitish. Calyx-leaves lanceolate, after flowering upright, rough-haired. Petals lanceolate, less by half than the calyx-leaves, whitish and diaphanous, caducous. Filament one, length of the petals: anther roundish, twin, yellow. Style very short and thick, diaphanous. Stigma villose (perhaps three). Capsule roundish-three-cornered, retuse, size of a mustard-seed: cells two-seeded. Seeds roundish, shining:—Native of the western part of Hispaniola, in mountain woods.

11. Plant from one to two feet high. Stem herbaceous, somewhat jointed; round, striated, smooth. Branches from the sheaths of the leaves, shortish, erect. Leaves alternate, sessile, sheathing at the base, cordate-ovate acute, an inch long, somewhat striated with longitudinal nerves, smooth on both sides, somewhat ciliate at the edge. Sheaths short, subcylindric or ovate, somewhat ventricose, membranaceous, striated, ciliate at the edge. Peduncles from the sheaths of the terminating leaves, two or three together, commonly shorter than the leaves, erect, many-flowered, rough-haired. Flowers ten to twelve, in little umbels, pedicelled, small: pedicels unequal, shorter than the peduncles. There are a few little ciliate bractes at the base of the pedicels. Calyx-leaves acute, brownish-green, pubescent. Petals less than the calyx, or equal to it, ovate, white, caducous. Filaments three, shorter than the petals. Anthers cordate. Germ roundish-three-cornered. Style thick, very short. Stigmas three, white-villose. Capsule roundish, acuminate, placed on the permanent calyx. Seeds solitary? roundish, flattened a little, umbilicate, hollow-dotted, black. Native of Jamaica, in mountain woods.

12. This is a small herbaceous annual plant. Radicles numerous, whitish. Stem tender, sheathed, jointed at the base, round, succulent: branchlets short, coming out below the sheaths of the leaves, depressed, ascending, rooting. Leaves subsessile, sheathing at the base, alternate, small, cordate-ovate, with a very short point, entire, nerveless, netted-veined, bright green, subdiaphanous. Sheaths short, surrounding the stem, ciliate at the jaws. Peduncles longer than the leaves, erect, flowering at the top: flowers three to five, minute, on short pedicels, clustered in umbellets; with two or three very minute ovate bractes, ciliate at the edge, under their base: pedicels bent down after flowering. Calyx-leaves pubescent, green except the base which is brown. Petals bigger than the calyx-leaves, cordate-ovate acute, white, caducous. Nectaries none. Filaments very short, uniform, naked at the base, not hairy. Anthers twin, pellucid, with roundish cells. Germ roundish-three-cornered, pellucid. Style thickish. Stigma subcapitate, trifid, pubescent. Capsule three-cornered, opening at the top: cells two-seeded. Seeds roundish.—Native of Jamaica, in moist shady grassy parts of high mountains; flowering in autumn<sup>e</sup>.

13. This, which is the multiflora of Jacquin, seems to be distinct from that of Swartz, in having a procumbent stem, and six stamens to the flowers, three of which are longer and bearded.—Native of the Caraccas. Perennial<sup>f</sup>.

14. Stem creeping at the base, ascending. Leaves linear, acute, spreading, having coloured sheaths ciliate with long hairs. Flowers axillary, solitary. Calyx three-parted, keeled, ciliate at the ends. Corolla one-petalled, funnel-form, of a deep blue purple:

<sup>a</sup> Hort. kew.

<sup>b</sup> Linn. mant.

<sup>c</sup> Vahl.

<sup>d</sup> Jacquin.

<sup>e</sup> Swartz.

<sup>f</sup> Willdenow.



tube twice as long as the calyx: segments three, shorter, blue. Filaments with jointed hairs. Style club-shaped. *Koenig*.—*Rheede* and other authors erroneously describe the corolla as three-petalled. Native of the East Indies; where cattle are very fond of it. Annual<sup>t</sup>.

15. Stem a foot high, even, woolly under the joints. Flowers in several remote whorls. Leaves under the whorls ensiform-lanceolate, a little woolly at the edge. Petals six; outer three lanceolate more rigid; inner three, more tender. Filaments length of the corolla, woolly at top: anthers erect. Germ superior, three-sided. Style length of the corolla, bearded at the tip. Stigma oblong, three-sided.—Native of the Cape of Good Hope. *Thunberg*<sup>u</sup>.

16. Root annual. Stems round, even, branched, diffused, creeping. Leaves lanceolate, recurved, even, sheathed at the base with striated sheaths. Spathes two-flowered with the flowers sessile, crescent-shaped, six pairs, directed all the same way. Calyx shorter than the corolla. Petals ovate, sessile, blue. Filaments hairy on the outside with blue jointed hairs. Style club-shaped. Stigma tubular, crenate<sup>x</sup>.—Native of Ceylon. Introduced in 1770, by *Monf. Richard*. It flowers from July to September<sup>y</sup>.

17. Root annual, fibrous. Stems three inches long, jointed, rooting at the joints. Leaves linear-lanceolate, hairy underneath, erect, sessile, subciliate at the base: sheath widish, very short. Spathe terminating, cordate, folded downwards, subciliate at the edge; under which are two lanceolate-crescented leaflets, the upper one shorter; between these is the flower; instead of a keel, between the above two leaflets, another spathe comes out afterwards, which is also short, and together with its leaflets not yet visible; and thus the spathe resembles a papilionaceous flower. Corolla violet-coloured (not blue). Filaments blue, with jointed hairs globular at the tip, longer at the top. Stem green, not rufescent; in other respects so like to *T. cristata*, that it may be considered as a variety of that; but this differs from it in having the stamens longer than the corolla<sup>z</sup>.

*Vahl* remarks, that the flowers are not only terminating but axillary.

Native of the East Indies.

18. Root tuberous, perennial. Stems several, creeping, round, jointed, from six to thirty-six inches long; besides a tuft of three or four liliaceous, sword-form leaves issuing immediately from the heads of tuberous roots, or rather their sheaths, form a head, from which issue the roots and procumbent stems. Leaves on the stem linear-lanceolate, sheathing, striated, under side tinged with purple, downy. Spikes terminating, or from the exterior axils, one or two together, peduncled, beautifully imbricate, as in *T. cristata*, with two rows of falcate, ciliate bractes. Flowers one in the axil of each bracte, small, blue-purple. Corolla, stamens and pistils as in *T. axillaris*.

19. Root fibrous, annual. Stems creeping, with their extremities erect, jointed, smooth. Leaves lanceolate, sheathing; mouth of the sheath woolly. Panicle terminating, globular, many-flowered, hairy. Flowers small, blue. Calyx three-leaved, hairy. Corolla three-parted; the two upper divisions large and ovate, the third lanceolate. Filaments simple, inserted round the germ, as long as the petals, without hairs or swelling.—It is called *Conda Amadicada* by the *Telingas*. Both are natives of *Coromandel*, in moist vallies<sup>a</sup>.

*Swartz* observes, that *T. cordifolia* much resembles *Callisia*; and he would bring *C. repens* into this genus, under the name of *Tradescantia Callisia*.]

#### PROPAGATION AND CULTURE.

1. *Virginian Spiderwort* multiplies so fast by its roots, as also from the seeds, if permitted to fall, that it must be yearly reduced, to keep it within bounds. The best time to remove and part the roots is in the autumn.

<sup>t</sup> Linn. mant.

<sup>x</sup> Linn. syst.

<sup>u</sup> Linn. suppl. et syst. and *Roxb. corom.*

<sup>y</sup> Hort. kew.

<sup>z</sup> *Roxburgh.*

<sup>a</sup> Linn. mant.

[2. to 14. and 16. to 19. The other species, from the East and West Indies, require the heat of a stove, in which some of them may be abundantly increased both by seeds and offsets. Some of the species are annual, and can be propagated only by seeds; but the greater part is perennial.

N. 15. being a native of the Cape of Good Hope, requires only the protection of the dry stove.

TRAGACANTHA, and *Tragacanthæ* affinis. See *Astragalus*.]

TRAGIA. (So named by *Plumier*, in memory of *Hieronymus Tragus*, whose real name was *Jerome Bock*. A German Divine and Physician. He published *Kreuterbuch*, or a history of plants with wooden cuts, in folio, 1539, (without figures) 1550 and 1553, figures alone: 1546, 1551, 1556, 1560, 1572, 1577. &c. and *Nomenclatura Stirpium*, Argent. 1552. 4°. He died in 1554.)

*Lin. gen. n.* 1048. *Reich. n.* 1140. *Schreb. n.* 1410.

*Plum. gen.* 12. *Jacqu. amer.* 245. *Juss.* 390.

*Class.* 21. 3. Monoecia Triandria.

*Nat. order of* *Tricoccæ*. *Euphorbiæ* *Juss.*

#### GENERIC CHARACTER.

\* Male flowers.

CAL. Perianth three-parted: segments ovate, acute, flat, spreading.

COR. none.

STAM. Filaments three, length of the calyx. Anthers roundish.

OBS. *Plumier* calls the calyx a funnel-form petal.

\* Females on the same plant.

CAL. Perianth five or six-parted: leaflets ovate, concave, acute, permanent.

COR. none.

PIST. Germ roundish, three-grooved. Style single, erect, longer than the calyx. Stigma trifid, spreading.

PER. Capsule tricoccous, roundish, three-celled, hispid: each cell marked on the outside at the base with two dots.

SEEDS solitary, globular.

#### ESSENTIAL CHARACTER.

MALE. Cal. three-parted. Cor. none.

FEM. Cal. five-parted. Cor. none. Style trifid. Caps. tricoccous, three-celled. Seeds solitary.

#### SPECIES.

1. *Tragia volubilis*. Twining *Tragia*.

*Lin. spec.* 1390. *Reich.* 4. 118. *Loefl. it.* 233.

*Burm. ind.* 264. *Swartz obs.* 353. *Brown. jam.*

336. 1. *Plum. gen.* 14. *ic.* 252. *f.* 2.

*Urtica racemosa scandens angustifolia*, fructu tricocco. *Sloan. jam.* 1. 123. *t.* 82. *f.* 1. *Raii suppl.* 105.

*Funis urens*. *Rumph. amb.* 5. 13. *t.* 9.

β. *Tragia scandens*, longo betonicæ folio. *Plum. gen.* 14. *ic.* 252. *f.* 1.

Leaves cordate-ovate acuminate, stem twining.

[2. *Tragia cordifolia*. Heart-leaved *Tragia*.

*Vahl symb.* 1. 76.

*Jatropha pungens*. *Forsk. descr.* 163.

Leaves cordate, stem twining, female bractes five-leaved pinnatifid.]

3. *Tragia involucrata*. Involucrated *Tragia*.

*Lin. spec.* 1391. *Reich.* 4. 119. *fl. zeyl. n.* 34.

(*Acalypha*.) *Burm. zeyl.* 202. *t.* 92. (*Ricinoscarpos*.)

*Schorigeram*. *Rheed. mal.* 2. 72. *t.* 39. *Raii hist.* 160.

Leaves lanceolate, female bractes five-leaved pinnatifid.

[4. *Tragia Mercurialis*. Ovate-leaved *Tragia*.

*Lin. spec.* 1391. *syst.* 847. *Reich.* 4. 119. *fl. zeyl.*

*n.* 334. *amoen.* 5. 409. *Swartz obs.* 534. *Pluk.*

*phyt. t.* 205. *f.* 4. (*Mercurialis*.)

*Pee-cupameni*. *Rheed. mal.* 10. *t.* 82. *Raii suppl.* 205.

β. *Croton foliis cordatis ferratis petiolatis*, floribus spicatis. *Gron. virg.* 153.

*Manihos minima chamædrifolia*. *Plum. spec.* 20. *ic.* 172. *f.* 2.

Leaves ovate.



5. *Tragia urens*. *Stinging Tragia*.  
*Lin. spec.* 1391. *Reich.* 4. 120. *Pluk. phyt. t.*  
 107. f. 5. (Ricinus.)  
*Leaves lanceolate obtuse somewhat toothed.*
6. *Tragia Chamælea*. *Lance-leaved Tragia*.  
*Lin. spec.* 1391. *Reich.* 4. 120. *fl. zeyl. n.* 335.  
*Burm. zeyl.* 59. t. 25. (Chamælea.)  
*Codi avanacu. Rheed. mal.* 2. 63. t. 34. *Raii hist.*  
 1170.  
*Tithymalus tenuifolius aquaticus, foliis raris. Burm.*  
*zeyl.* 225. ind. 205. *sec. Reich.*  
*Leaves lanceolate obtuse quite entire.*
7. *Tragia cannabina*. *Hemp-leaved Tragia*.  
*Lin. syst.* 847. *suppl.* 415.  
*Croton hastatum. Lin. syst. ed.* 13. 722.—item.  
*C. urens. Lin. syst. ed.* 13. 722.  
*Leaves three-parted.*
8. *Tragia corniculata*. *Horn-fruited Tragia*.  
*Vahl ecl.* 2. 55.  
*Leaves subcordate-ovate attenuated almost quite entire,*  
*valves of the capsules two-horned.*

## DESCRIPTIONS, &amp;c.

1. Stem suffrutescent, loose, round, stinging with its bristles: branches filiform, all directed one way, simple. Leaves petioled, alternate, serrate, bent down, nerved, hispid with bristles. Stipules lanceolate, opposite by the side of the petioles; which are long and hispid. Racemes peduncled, axillary, solitary, longer than the leaves, filiform, loose, composed of numerous very small male flowers, on very short pedicels; with minute awl-shaped bractes under the pedicels: and females at the base, pedicelled, solitary, larger. Calyx of the male three-leaved; leaflets coloured of a dark purple; filaments very short, contiguous:—calyx of the female, five-parted; germ hirsute, style trifid, stigmas revolute<sup>b</sup>.

Linneus remarks, that the stem twines in a direction contrary to the sun's apparent motion; that the leaves are cordate, oblong-acuminate, sharply serrate, with stiff hairs scattered over the surface; that the male flowers are green and trifid, the female axillary, solitary, on a long, jointed, incurved peduncle; and that the capsule is covered with stiff stinging bristles, each cell marked on the outside at the base with two calluses.

Native of the East and West Indies. It is very common in Jamaica, and is well known there on account of its sharp stinging hairs, with which the whole plant is covered. The root is looked upon as a good aperient and diuretic; both the decoction and juice are frequently used among the negroes for those purposes<sup>c</sup>.

Cultivated by Mr. Miller in 1739.

2. Stem shrubby, twining, hispid as is the whole plant. Leaves cordate, serrate, acuminate, paler underneath. Spikes terminating.—The preceding species differs from this in having the leaves grossly serrate, and the bractes entire. The next succeeding species is distinguished by the leaves being sharp at both ends<sup>d</sup>.]

3. This rises with an erect woody stem about three feet high, and rarely sends out any side branches. Leaves oblong-lanceolate running out in very long acute points, sharply serrate, alternate, closely covered with yellowish stinging hairs. Flowers in small axillary clusters, standing several together upon the same foot-stalk; the upper ones all male, and the under female; the latter succeeded by roundish capsules, with three cells, each inclosing one seed. Native of the East Indies.

[Cultivated by Mr. Miller in 1759.

4. The American plant, here considered only as a variety of the East Indian, is probably a distinct species. Sloane's synonym, given by Linneus, belongs to *Acalypha reptans*<sup>e</sup>.

5. This is an annual plant, native of Virginia. Introduced in 1778, by John Fothergill, M.D. It flowers in august<sup>f</sup>.

6. Stem erect, divided into long erect branches.

Leaves narrower at the base. Above the divisions of the stem a spike arises, with a single female flower having no involucre, and many male flowers forming a small spike<sup>g</sup>.

Root annual, very slender, fibrous, blackish. Stem round, dark green. Leaves alternate, on short petioles, smooth, long, paler underneath, very finely and slightly serrate. Capsule echinate or covered with unarmed spinules. Seeds oblong ash-coloured<sup>h</sup>.—The leaves in Burman's figure are rather linear than lanceolate, and he says they are *perfecte linearia*. He finds fault with the figure in *Hortus Malabaricus*, for having the teeth at the edges of the leaves too large: and in his figure they are not discoverable.—Native of the East Indies.

7. Stem erect, round, hispid. Leaves alternate, petioled, three-parted, hispid: segments lanceolate, sinuate. Stipules two, lanceolate, short. Peduncles lateral, solitary, one-flowered, length of the leaves. Female calyx six-leaved, pectinate.—Native of Malabar. Koenig.

Two *Crotons*, supposed in the 13<sup>th</sup> edition of *Systema Vegetabilium* to be distinct species, are here united, being mere varieties<sup>i</sup>.

8. Root annual, fibrous. Stem herbaceous, erect, a foot and half high, hairy, round: branches alternate, spreading, simple. Leaves alternate, from an inch to two inches in length, entire except that they have sometimes an obscure tooth or two at the base, pubescent, veinless, indistinctly nerved: petiole half an inch in length. Male flowers a little below the petiole or lateral, in a filiform spike, peltate half an inch in length, very small: calyx three-parted; segments erect, converging, obovate: one filament hanging out between each segment of the calyx, anther globular. Female flowers below the male spike, nearer to the antecedent leaf, solitary, peduncled: calyx six-parted, deciduous; segments ovate, minute: Germ oblong; style trifid; stigmas simple. Capsule three-sided, oblong, truncate at each end, smooth; valves above and below two-horned. Found in the island of Trinidad by Ryan.]

## PROPAGATION AND CULTURE.

These plants, being of no great beauty, are seldom preserved except in the stoves of botanic gardens. Sow the seeds on a hot-bed early in the spring: when the plants are in a proper state transplant each into a separate pot, plunge the pots into a hot-bed of tanner's bark, and treat them in the same manner as other tender plants, which require to be kept in the bark stove.

[TRAGIUM. See *Hypericum hircinum*.

TRAGODES. See *Fagara*.]

TRAGOPOGON (of Pliny. *Τραγοπωγων* of Dioscorides. From *τραγος* a goat, and *πωγων*, a beard. On account of the large down to the seed.)

*Lin. gen. n.* 905. *Reich. n.* 984. *Schreb. n.* 1229:  
*Vaill. art. gall.* 1721. 44. 13. 21. 14. *Tournef.*  
*t.* 270. *Juss.* 170. *Gartn. t.* 159. *Tragopo-*  
*gonoides. Vaill. art. gall.* 1721. 43. 15. 14.

*Class.* 19. 1. *Syngenesia Polygamia Æqualis*.

*Nat. order of Compositæ Semisflosculosa. Cichoraceæ*  
*Juss.*

## GENERIC CHARACTER.

CAL. Common simple, eight-leaved: leaflets lanceolate, equal, alternately interior, all united at the base.

COR. Compound imbricate, uniform: corollets hermaphrodite, many, exterior ones a little longer.

Proper one-petalled, ligulate, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubulous.

PIST. Germ oblong. Style filiform, length of the stamens. Stigmas two, revolute.

PER. none. Calyx converging, acuminate, length of the seeds, ventriculose, at length reflexed.

SEEDS solitary, oblong, attenuated to both ends, angular, rugged, terminated by a long awl-shaped down-bearing stipe. Down feathered, flat, with about thirty-two rays.

REC. naked, flat, rugged.

<sup>b</sup> Swartz.

<sup>c</sup> Browne.

<sup>d</sup> Vahl.

<sup>e</sup> Swartz obs.

<sup>f</sup> Hort. kew.

<sup>g</sup> Linn. zeyl.

<sup>h</sup> Burm. zeyl.

<sup>i</sup> Linn. suppl.

<sup>k</sup> Vahl ecl.



OBS. Tragopogon. Vaill. has the seeds straight, and the calyx longer than the corolla.

Tragopogonoides Vaill. has the seeds covered inwards, and the calyx shorter than the corolla.

## ESSENTIAL CHARACTER.

Cal. simple. Down feathered. Recept. naked.

## SPECIES.

1. Tragopogon pratensis. Common yellow Goat's-beard.  
*Lin. spec.* 1109. *Reich.* 3. 611. *hort. cliff.* 382.  
*fl. suec.* n. 684. *mat. med.* 178. *Gærtn. fruct.* 2. 368. *Huds. angl.* 335. *Wither. arr. ed.* 3. 672.  
*Smith brit.* 812. *engl. bot. t.* 434. *Hull.* 172.  
*Lightf. scot.* 426. *Relb. cant. ed.* 2. n. 626.  
*Sibth. oxon. n.* 657. *Abbot bedf. n.* 551. *Fl. dan. t.* 906. *Hall. belv. n.* 8. *Pollich pal. n.* 722. *Scop. carn. n.* 946. *Neck. gallob.* 322.  
*Krock. files. n.* 1238. *Villars dauph.* 3. 68.  
*Allion. pedem. n.* 841. *Gmel. fib.* 2. 1. *Ludw. eß. t.* 49. *Knorr. del. 2. t.* T. 3. *Kniph. cent.* 9. n. 91.  
*Tragopogon. Fuchs. hist.* 821. *Matth.* 537. 490.  
*Dod. pempt.* 256. 2. *Camer. epit.* 312. *Park. par.* 514.  
*T. luteum. Ger.* 595. 2. *emac.* 735. 2. *Raii hist.* 252. *syn.* 171. *Petiv. brit. t.* 15. f. 6, 7.  
*T. flore luteo. Bauh. hist.* 2. 1059. 1.  
*T. pratense luteum majus. Bauh. pin.* 274. *Mor. hist. f. 7. t. 9. f. 1.*  
*T. minus. Mill. dict. n.* 2.  
*Barbula hirci. Trag. hist.* 280.  
*Hirci barba. Cord. hist.* 156.  
*Calyxes nearly equal to the ray of the corollas, leaves entire keeled acuminate dilated at the base, peduncle round.*
- [2. Tragopogon mutabilis. Changeable Goat's-beard.  
*Lin. syst.* 709. *Jacqu. misc.* 2. 316. *icon. rar.* t. 20.  
*Calyxes eight-leaved equalling the ray of the corolla, leaves entire stiff lanceolate-acuminate.*
3. Tragopogon undulatus. Wave-leaved Goat's-beard.  
*Lin. syst.* 709. *Jacqu. misc.* 2. 317. t. 20.  
*Calyxes equalling the ray of the corolla, leaves entire sub-linear, those on the stem waving very much.*
4. Tragopogon orientalis. Oriental Goat's-beard.  
*Lin. spec.* 1109. *Reich.* 3. 612. *hort. ups.* 243.  
*Gmel. it.* 2. 198. *Krock. files. n.* 1241.  
*T. orient. angustifolium, flore maximo luteo. Tournef. cor.* 36.  
*Barba hirci. Camer. epit.* 312. fig.  
*Calyxes shorter than the ray of the corolla, leaves entire somewhat waved.]*
5. Tragopogon major. Great yellow Goat's-beard.  
*Lin. syst.* 710. *Jacqu. austr.* 1. 19. t. 29. *Ait. kew.* 3. 111. *Krock. files. n.* 1239.  
*T. pratense. Mill. dict. n.* 1.  
*Calyxes longer than the ray of the corolla, leaves entire stiff, peduncles thickened at top, corollets rounded at the end.*
6. Tragopogon porrifolius. Purple Goat's-beard.  
*Lin. spec.* 1110. *syst.* 710. *Reich.* 3. 612. *hort. ups.* 243. *Jacqu. collect.* 1. 99. *ic. rar.* 1. t. 159.  
*Huds. angl.* 335. *Wither. arr. ed.* 3. 672.  
*Smith. brit.* 813. *engl. bot. t.* 638. *Hull.* 172.  
*Fl. dan. t.* 797. *Hall. belv. n.* 9. *Krock. files. n.* 1240. *Villars dauph.* 3. 69. *Kniph. cent.* 7. n. 93.  
*T. purpureum. Ger.* 595. 1. *emac.* 735. 1. *Park. par.* 302. t. 297. f. 7. t. 511. f. 8. *theat.* 412.  
*Raii hist.* 252. *syn.* 171. *Petiv. brit. t.* 15. f. 8.  
*Dod. pempt.* 256. f. 1.  
*T. flore purpureo. Bauh. hist.* 2. 1059.  
*T. alterum. Matth.* 491. 538.—f. *Barba hirci. Dalech. hist.* 1079.  
*T. purpureo-cæruleum, porri folio, quod Artefi vulgo. Bauh. pin.* 274. *Mor. hist.* 3. 8. f. 7. t. 9. f. 5.  
*Barba hirci altera. Camer. epit.* 313.
- β. Tragopogon folio oblongo sinuato. *Bauh. pin.* 274.  
*Calyxes half as long again as the ray of the corollas, leaves entire stiff, peduncle thickened at top.*
- [7. Tragopogon crocifolius. Crocus-leaved Goat's-beard.  
*Lin. spec.* 1110. *syst.* 710. *Reich.* 3. 612. *mant.*

456. *Gouan monsp.* 405. *illustr.* 52. *Villars dauph.* 3. 70. *Allion. pedem. n.* 842.  
*T. purpureo-cæruleum crocifolium. Bauh. pin.* 275.  
*Raii hist.* 253. *Mor. hist. f. 7. t. 9. f. 8.*  
*T. croci folio montanum, flore nigro-purpureo. Col. ecphr.* 1. 229. t. 230.  
*T. crocifolium purpureum. Park. theat.* 412. n. 8.  
*Calyxes longer than the ray of the corolla, leaves entire, root-leaves and peduncles villose at the base.*
8. Tragopogon villosus. Hairy Goat's-beard.  
*Lin. spec.* 1110. *syst.* 710. *Reich.* 3. 613. *Pallas it.* 2. 332. *Krock. files. n.* 1242.  
*T. caule tomentoso. Hall. goett.* 418.  
*Calyxes half as long again as the ray of the corolla, stem and leaves villose.]*
9. Tragopogon Dalechampii. Great-flowered Goat's-beard.  
*Lin. spec.* 1110. *Reich.* 3. 613. *hort. cliff.* 382.  
*ups.* 224. *Sauv. monsp.* 295. *Gouan hort. monsp.* 404. *Villars dauph.* 3. 70. *Gærtn. fruct.* 2. 369. *Desfont. atlant.* 218. *Allion. pedem. n.* 843.  
*Hieracium asperum, flore magno dentis leonis. Bauh. pin.* 127.  
*H. foliis et floribus dentis leonis bulbosi. Lob. ic.* 238. *Park. theat.* 788.  
*H. magnum. Dalech. hist.* 569. *Tournef. inst.* 470.  
*H. sulphureum, incis foliis, montanum. Barr. rar.* 1043. t. 209.  
*Hedypnois monspessulana. Bauh. hist.* 2. 1036. *Raii hist.* 228.  
*Tragopogonoides perennis, calthæ folio, magno flore. Vaill. acad.* 1721. 204.  
*Calyxes one-leaved shorter than the corolla unarmed, leaves runcinate.*
10. Tragopogon picroides. Prickly-cupped Goat's-beard.  
*Lin. spec.* 1111. *Reich.* 3. 613. *hort. cliff.* 382. *Gouan hort. monsp.* 405. *illustr.* 52. *Villars dauph.* 3. 72. *Gærtn. fruct.* 2. 369. *Allion. pedem. n.* 844.  
*Picris. Lin. hort. ups.* 241. *Sauv. monsp.* 295.  
*Sonchus asper laciniatus creticus. Bauh. pin.* 124. *prodr.* 60.  
*Hieracium majus, folio sonchi, femine incurvo. Bauh. pin.* 127.  
*Chondrillæ creticæ nomine missa, femine crispo. Bauh. hist.* 2. 1022. *Raii hist.* 229.  
*Calyxes one-leaved shorter than the corolla prickly, leaves runcinate toothletted.*
- [11. Tragopogon asper. Rough Goat's-beard.  
*Lin. spec.* 1111. *Reich.* 3. 614. *Sauv. monsp.* 82. *Gouan monsp.* 405. *illustr.* 52.  
*Sonchus asper, subrotundo folio, major et minor. Bauh. pin.* 124. *prodr.* 60.  
*Calyxes shorter than the corolla hispid, leaves entire, stem-leaves oblong.*
12. Tragopogon Dandelion. Dandelion Goat's-beard.  
*Lin. spec.* 1111. *syst.* 710. *Reich.* 3. 614. *Gron. virg.* 114. (*Leontodon*.)  
*Leaves ensiform entire even, scapes radical.*
13. Tragopogon lanatus. Woolly Goat's-beard.  
*Lin. spec.* 1111. *Reich.* 3. 614. *amoen.* 4. 287. (*Leontodon*.)  
*Leaves ensiform waved villose, scapes radical.*
14. Tragopogon virginicus. Virginia Goat's-beard.  
*Lin. spec.* 1111. *Reich.* 3. 614. *Gron. virg.* 1. 91. 2. 113.  
*Radical leaves lyrate rounded, stem-leaves undivided.*

## DESCRIPTIONS, &amp;c.

1. Root biennial, fusiform or fleshy tapering, abounding with milk, which is sweet not acrid. Whole herb smooth and very even. Stems several, branched, eighteen inches or two feet high, leafy, round, often tinged with purple. Branches elongated into a simple naked peduncle. Leaves alternate, sessile, some radical, others embracing the stem and branches, all broad and somewhat inflated at the base, but terminating in a long narrow point, which is flaccid or apt to hang down; very generally the margin towards the bottom is more or less waved or curled. Peduncles terminating, solitary, one-flowered, not swelling out at top, but of an equal thickness throughout.



out. Flowers large and handsome, opening at day-break, and closing before noon, (between nine and ten, *Linn.*) unless, as Mr. Relhan observes, the weather be cloudy. Calyx-leaves lanceolate, acuminate, flat, equal though ranged alternately or in two rows. Florets yellow with brownish nerves, especially on the upper side, five-toothed, the outermost row much larger than the rest, varying in length, but generally as long as or longer than the calyx. Anthers brown or purplish. Germ pencilled or having a tuft of hairs at the summit. Receptacle dotted. Seed crooked, furrowed, and rugged. Seed-down radiated and feathered, standing on an awl-shaped stipe or footstalk<sup>1</sup>.

Such, says Dr. Smith, is our English plant, which in so many respects agrees with the character, and even with the specimen of Linneus's *T. orientale*, that we are not sure of their being distinct; yet there can be still less doubt of ours being his *T. pratense*. In fact, the length of the outer florets is very variable<sup>m</sup>. Mr. Woodward says, that in specimens gathered in Huntingdonshire the calyx was always exactly equal with the outer florets, but that in Norfolk it invariably exceeded them. Mr. Stackhouse also remarks, that the calyx in Cornish plants is always much longer than the florets<sup>n</sup>. According to Reichard, the corolla is often shorter than the calyx; and that it is sometimes so is observed by Mr. Relhan. Pollich makes the florets shorter than the calyx or equal to it; and Scopoli on the contrary affirms, that the calyx is equal to the ray, or shorter than it. May not the proportion between their lengths vary at different periods of the flowering?

The whole plant, according to Withering, is smooth, stiff, strong, upright: leaves very long and narrow, tapering: calyx-leaves purplish at the edge: anthers purple, with yellow pollen: seeds crooked: in the receptacle there are glandular substances in the little hollows at the base of each floret, which, when the florets fall, turn brown, the receptacle remaining white.

Gärtner remarks, that the receptacle is at first flat, but becomes a little convex. He describes the seeds as very long, fusiform-club-shaped, striated, smooth or rugged with acute dots, whitish, ending in the stipe; the seed-down white and caducous, the rays chaffy, unequal, the length of the stipe, which is of a subulate-fetaceous form, solid, and nearly equal to the seed in length.

Native of Europe and Siberia. Not unfrequent in Britain among grass; flowering in June.

In some parts of England it is called Buck's-beard, from the German; and Go-to-bed at noon, from the circumstance of the flowers closing about that time:—Gerarde has Joseph's flower, from the Dutch, and Star of Jerusalem.

Before the stems shoot up, the roots, boiled like Asparagus, have the same flavour, and are nearly as nutritious<sup>o</sup>. Villars relates, that the children in Dauphiné universally eat the stems and leaves of the young plant before the flowers appear, with great avidity: that the fresh juice of these tender herbs is the best dissolvent of the bile: and that both animals and children invite us to make use of this remedy, which relieves the stomach without danger, and without introducing into the blood an acrid corrosive stimulant, as is frequently done by salts, soaps, and resins, which are used for this purpose.

Mr. Miller names our common Goat's-beard *T. minus*, and comparing it with his *pratense*, which is the *major* of Jacquin, he says that] the lower leaves are almost as long as in that, but not more than a third of the breadth, of a deep green colour, and ending in acute points; that the stalks rise about a foot high, and sustain one yellow flower at the top, not more than half so large as the other; that the calyx is longer than the ray of the corolla, and the seeds much smaller than those of the other.

[2. Root biennial. The whole plant smooth and

milky. Stem round, upright, branched at all the axils from the very root. Leaves sessile, having innumerable very small teeth along the edge, scarcely waved; the lower and larger stem-leaves two inches wide at the base, and near a foot in length. The subdivisions of the branches are terminated in one-flowered peduncles. Flowers spreading very much, nod towards the sun; they open nearly at sun-rise, and close about ten o'clock, and so continue for three days, during which the florets successively expand: the first day, the outer row of florets only is expanded, and thus at first the flower is composed of a single ray, with the interior florets converging into an upright cone. The whole corolla during this time is augmented; so that if we are to determine the species by the relative length of the calyx and corolla, we should wait till the flower is in perfection, that is, when all the florets are expanded: for this is the case in all the species. Corollas five-lined, five-toothed, for the most part white on both sides: but some are rose-coloured with red streaks, others yellow with purple streaks, and of different shades. Hence the trivial name of *mutabilis*. Anthers yellow with streaks brown at top. Stigmas yellow. Seeds smooth, ash-coloured. Down stiped, like a spider's web, with five longer bristles. It flowers from the end of May to July. Jacquin had the seeds from Pallas, it is probably therefore a native of Siberia.

3. Root fusiform, biennial, the thickness of a finger. The whole plant is milky. Stem erect, from four to seven feet high, clothed with a short wool, which falls off, and it is then smooth. Lower stem-leaves a foot long and more, scarcely an inch wide at the base, not waved; those on the branches are very much waved, and are often rolled back at the ends: all lanceolate-linear, acute, rugged at the edges, sessile or embracing: the branchlets end in one-flowered peduncles. Calyx-leaves from eight to thirteen. Corollas sulphur-coloured on both sides, often paler. Anthers brownish. Styles yellow. Seeds appear extremely muricate when examined with a magnifier, and are ash-coloured. Seed down cobwebbed, with five longer bristles, on a very short stipe. It flowers in June and July. Jacquin has often had the seeds under the name of *T. orientalis*; but Tournefort attributes a very large flower and deep yellow colour to that, and Linneus says it is larger than that of the common sort<sup>p</sup>.

4. This differs from *T. pratensis* in having a larger flower; the calyx where it is turned back as it were broken; the ray of the corolla yellow underneath, not brown striated; and the anthers yellow, not brown.—Native of the Levant<sup>q</sup>.

5. Root biennial, long, tapering or round-fusiform, that and the whole plant abounding with a sweet milky juice, which soon turns to a brown resin, from the evaporation of its watery particles. Herb smooth, glaucous, about four feet high. Stem round, erect, branching, leafy. Leaves lanceolate, scarcely waved, ending in a tapering straightish point. Flowers solitary, terminating, the stalk which supports them tapering from the calyx downwards. Calyx-leaves equal, linear-lanceolate, almost twice as long as the corolla; which is of a dull purple hue. Anthers darker. A few hairs may be observed at the orifice of the tube of each floret. The feathery crown of the seed, at first sessile, is soon raised on a long taper stalk, as in the other species<sup>r</sup>.

Mr. Woodward remarks that the leaves on the stem are shorter than in the *pratensis*, being scarcely longer than the internodial spaces:—and Dr. Smith, that the flowers close early in the day.

Native of several parts of Europe. In England not very common. Gerarde says, it grows only in Lancashire, upon the banks of the river Chalders, two miles from Whawley. Dr. Gunthorp found it in many parts of Cornwall. *Merret's pinax*.—Mr. Nicholson in fields about Carlisle and Rose Castle in Cumberland.—Mr. Blackstone in marshes below Woolwich, and near Edmonton.—Mr. Sowerby and

<sup>1</sup> Smith brit. & engl. bot.

<sup>m</sup> Withering.

<sup>n</sup> Engl. bot.

<sup>o</sup> Idem.

<sup>p</sup> Jacquin.

<sup>q</sup> Linn. spec.

<sup>r</sup> Smith brit. and engl. bot.



Mr. Dawson Turner, in meadows below St. Vincent's rocks, Bristol.—According to Mr. Woodward, it is not unfrequent in upland pastures<sup>a</sup>.]

It is cultivated in gardens by the name of Salsafy. The roots boiled or stewed, have a mild sweetish flavour. Some persons cultivate it for the stalks, which are cut in the spring, when they are four or five inches high, which are dressed like Asparagus, in the same manner as the common sort. The stalks of this are much longer and more tender than that. [It is not much cultivated for the table at present. Neither Gerarde nor Parkinson hint that this plant was kept in our gardens in their times for any other purpose but for the flowers: but they recommend the common yellow sort as excellent for the table.

7. This resembles the preceding, but is scarcely a foot high, whereas that sometimes attains six feet. The leaves are villose at the base, but become smooth by age. Calyx five-leaved. Flowers violet, of two rows only, but in the middle rather yellow.—Native of Italy and the South of France. Biennial<sup>c</sup>.

Villars says, the stems are short and little branched, the leaves narrow, procumbent, and villose at the base, the flowers small, blue with a little yellow at the end of the rays, the seeds a little flattened, toothed on the sides, terminated by a support widened at its upper part, where the seed-down is inserted on a brown depressed circle. Biennial.

Gouan found it a cubit in height, and observes that the calyxes have from five to seven leaves.

It was cultivated in 1739 by Mr. Miller<sup>a</sup>.

8. Root biennial. Size of *T. porrifolius*, but the whole plant is pubescent with white villose hairs, especially the stem, and the leaves underneath more copiously. Peduncles cylindrical. Calyx nine-leaved, not imbricate. Corolla paler yellow than the rest, eighteen-rayed. Anthers brownish. The plant finally puts forth flowering branches its whole length from the axils of all the leaves, whence it becomes corymbed. The flower when expanded nods a little.—Native of Spain and Siberia<sup>x</sup>: and according to Krock, of Silesia.

9. Root perennial, thick and succulent. Stems about a foot high, sometimes less. Leaves large, thick, villose, toothed and sinuated; the upper ones often entire. From the centre of the root-leaves, which spread in a rose, rises a naked thick flower-stalk, villose and thicker in the upper part, where it terminates in a very large flower, of a pale yellow or sulphur colour. Calyx of one piece, cut at the upper part into several segments. Florets large, pale yellow above, red or purple underneath. Seeds rugged, flattened, supported on a small pedicel, and terminated by a seed-down, on a long, round stipe swollen at the base and jointed with the seed<sup>y</sup>.

According to Linneus, the stem is very short, the leaves tomentose and rugged, not toothletted, the corolla purple underneath, the florets yellow with purplish tips.]

Mr. Miller says, the leaves are six or seven inches long and two broad, indented on their sides, and the flower-stalk arising immediately from the root is a foot in length, and supports one large sulphur-coloured flower.

[Gærtner describes the seeds as short in proportion to the stipe, oblong, compressed, muricated with three or four rows of acuminate tubercles, and whitish: the stipe thicker than the seed and three times as long, awl-shaped, indistinctly striated and wrinkled, compressed, hollow within, not crustaceous as in *T. picroides*: seed-down caducous, rufous or red-purple.

Native of Spain, the South of France, and Barbary.—Cultivated in 1739 by Mr. Miller. It flowers from June to October<sup>z</sup>.

10. This is an annual plant, with hollow tender stems little branched. Leaves rude, of a dark green, covered with long stiff hairs. Calyx of one piece like the preceding, but rude and rough with hairs.

<sup>a</sup> Smith brit. and Withering.

<sup>b</sup> Hort. kew.

<sup>x</sup> Linn. spec.

<sup>z</sup> Hort. kew.

<sup>c</sup> Linn. mant.

<sup>y</sup> Villars.

Flowers yellow. Seeds jointed, on one stipe terminated by another, as in the preceding species<sup>a</sup>.]

Mr. Miller says, it is very like the Sowthistle in stalk and leaf, but that the calyx is prickly.

[Gouan remarks, that this species varies in shady places, like the Sowthistle, with the leaves entire or runcinate, the root-leaves often obovate and entire; the stem scarcely branched and low, so that it might easily be taken for the asper; but it differs manifestly in having the stem-leaves always dilated at the base.

Gærtner describes the seeds as differing somewhat in shape; those of the ray being curved inwards, those of the disk straightish: both compressed at the base, either muricated on both sides with a triple row of scalelets spreading horizontally, or crenulate only at the upper margin. Stipe much thicker than the seed, curved, inflated below, hollow, attenuated and filiform above, rugged all over with sharp points, together with the seed itself of a red rust colour. Seed down silky white, caducous.

From this singularity of a double or jointed stipe, Scopoli has separated this and the preceding species from the Tragopogons, under the name of *Urospermum*<sup>b</sup>.

Native of the South of Europe. Cultivated in 1683, by Mr. James Sutherland. It flowers in July and August<sup>c</sup>.

11. According to Gouan, this species varies so much in open exposed situations, as to have the appearance of a different species; from which it differs especially in having the stem-leaves wider at the end, narrower at the base; which in *T. picroides* are more dilated, embracing and toothed, wider at the end. The calyxes are prickly with hispid hairs in both<sup>d</sup>.

Native of Montpellier. Introduced in 1774. by Mons. Richard. It flowers in July and August. Annual<sup>e</sup>.

12. Leaves long, smooth, quite entire. Scapes one-flowered, entirely leafless, pubescent at the top. Seed-down hairy.—Native of Virginia.

13. The scapes in this have a leaflet in the middle, but scarcely apparent; and they bear a single flower. The figure in Rauwolff (it. 217.) rather represents this plant than *Erigeron tuberosum*.—Native of Palestine.

14. Root-leaves very many, smooth. Stems almost naked, upright, stiff, with one or two lanceolate embracing leaves on them; and few branches: these are terminated by three peduncles, at the base of which are two lanceolate opposite leaves, with one smaller. Calyx divided into twelve leaves to the base: equal, shorter than the corolla. Florets deep yellow. It has the habit of *Arnica Gerberia*. The seed-down is not feathered, but simple, nor is it stiped. It has the stature of *Hyoseris*; the calyx of *Tragopogon*, and the seeds of *Hieracium*.—Native of Virginia and Canada<sup>f</sup>.]

#### PROPAGATION AND CULTURE.

These plants are propagated from seeds, which should be sown in April upon an open spot of ground, in rows about nine or ten inches distance, and when the plants are come up, they should be hoed out, leaving them about six inches asunder in the rows. The weeds should also be carefully hoed down as they are produced, otherwise they will soon overbear the plants and spoil them. This is all the culture required, and if the soil be light and not too dry, the plants will have large roots before winter, at which time the Salsafy, whose roots are eaten at that season, will be fit for use, and may be taken up any time after their leaves begin to decay; but, when they begin to shoot again, they will be sticky and not fit for use; but many persons cultivate this sort for the shoots.

The common yellow sort, whose shoots are sold in the market, will be fit for use in April or May, according to the forwardness of the season. The best time to cut them is, when their stems are about four inches long, for if they stand too long, they are never so tender as those which are cut while young.

<sup>a</sup> Villars.

<sup>d</sup> Gouan illustr.

<sup>b</sup> Gærtner.

<sup>e</sup> Hort. kew.

<sup>c</sup> Hort. kew.

<sup>f</sup> Linn. spec.



Some people, in cultivating these plants, sow their seeds in beds pretty close, and when they come up, they transplant them out in rows at the before-mentioned distance; but, as they form a tap-root, which abounds with a milky juice, when the extreme part of their roots are broken by transplanting, they seldom thrive well afterward; therefore, it is by far the better way to make shallow drills in the ground, and scatter the seeds therein, as before directed, whereby the rows will be at a due distance; and there will be nothing more to do than to hoe out the plants when they are too thick in the rows, which will be much less trouble than the other method of transplanting, and the plants will be much larger and fairer.

[TRAGOPOGON. See *Geropogon*, *Scorzonera*.

TRAGOPOGONOIDES. See *Tragopogon*.

TRAGOPYRON. See *Polygonum*.

TRAGORCHIS. See *Orchis*.

TRAGORIGANUM. See *Thymus*.]

TRAGOSELINUM. See *Pimpinella*.

[TRAGUM. See *Ephedra* and *Salsola*.

TRAGUS. See *Cenchrus* and *Salsola*.

TRAILING ARBUTUS. See *Epigæa*.

TRAPA. (From *trapes* or *trapetum*, an oil-mill, from *τραπέζω*, *calco*. So named from the fruit.)

Lin. gen. n. 157. Reich. n. 165. Schreb. n. 208.

Gært. t. 26. 95. Juss. 68. *Tribuloides*.

Tournef. t. 431.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Hydrocharides* Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, four-parted, acute, permanent, growing to the base of the germ: *leaflets* two lateral and two at the angles of the germ.

COR. *Petals* four, obovate, larger than the calyx.

STAM. *Filaments* four, length of the calyx. *Antlers* simple.

PIST. *Germ* ovate, two-celled. *Style* simple, length of the calyx. *Stigma* headed, emarginate.

PER. none.

SEED. *Nut* ovate-oblong; one-celled, armed with four *spines*, in the middle of the side, opposite, spreading, (which were the leaves of the calyx,) acute, thick.

#### ESSENTIAL CHARACTER.

Cal. four-parted. Cor. four-petalled. Nut girt with four opposite spines, which were the leaves of the calyx.

#### SPECIES.

1. *Trapa natans*. Four-horned Water Caltrops.

Lin. spec. 175. syst. 163. Reich. 1. 341. Willd.

1. 681. mant. 332. suppl. 128. hort. cliff. 483.

fl. suec. n. 140. mat. med. 52. Gært. fruct.

1. 127. Roth. germ. 1. 68. 2. 192. Hoffm.

germ. 55. Pollich pal. n. 166. Hall. herb. n.

527. Krock. files. n. 246. Villars dauph. 2.

340. Allion. pedem. n. 872. Gmel. fib. 4. 116.

Thunb. jap. 65. Plenck ic. t. 66.

*Tribulus aquaticus*. Bauh. pin. 194. Camer. epit.

715. Bod. a Stapel in Theophr. l. 4. c. 11. p. 455.

Raii hist. 1321. Bauh. hist. 3. 775. Dod. pempt.

581.

*Tribuloides vulgare aquis innascens*. Tournef. inst.

655.

*Panover Tsjerava*. Rheed. mal. 11. 65. t. 33.

Nuts four-horned, spines spreading.

2. *Trapa biconis*. Two-horned Water Caltrops.

Lin. syst. 162. Willd. 1. 681. suppl. 128. Gært.

fruct. 2. 84. t. 95.

*Silique fusca chinensis*. Plum. ic. 56. t. 67. f. inf.

Nuts two-horned.

#### DESCRIPTIONS, &c.

1. The immersed leaves are multifid and capillary, like those of *Myriophyllum*: the floating leaves are rhomb-shaped, with bladdery petioles. The four leaves of the calyx surround the germ, two at the sides and two at the angles of it, whence the horns of the fruit<sup>2</sup>.

Root round, very long, brown, putting forth opposite, round, green roots, which have opposite round fibrils, closely placed, so as to resemble pinnate

leaves, (and they are the immersed leaves of Linneus.) Petioles round, long, near the leaves inflated into a tumour, and then again round. From the axils of the leaves a single peduncle: this and the petioles villose. Calyx-leaves at first converging, afterwards spreading. The floescence is completed within the converging calyx. Petals white, pellucid, gashed and emarginate, with very short purple claws below the nectary; which is a permanent yellowish; then white, finally green membrane, plaited like a star, with eight angles. Anthers yellow, twin, large. Stigma hollow, round, red, perforated<sup>1</sup>. Nut inferior, coriaceous, hard, subtrubinate, rhombed, armed in the middle with four very strong spines curved in upwards, indistinctly grooved, not opening, but germinating through a hole in the top, which is closed by a thin pellicle and converging bristles. Receptacle of the ripe seed none, but the two young germs have a very short umbilical chord descending from the upper part of the partition, and keeping them suspended. Seed single, fleshy, large, the size and form of the internal cavity of the nut. It has two cotyledons, one very large and thick, forming almost the whole bulk of the embryo; the other very small, in shape of a roundish scalelet at the base of the radicle: so that this plant, like the *Nelumbo*, is in a sort of middle station between the monocotyledones and dicotyledones; for though there be a second lobe in the embryo, it is very minute, and does not make its appearance in the germination<sup>1</sup>.

The nuts are esteemed farinaceous, nourishing and pectoral. The skin with the spines being removed, there is a white sweet kernel within, somewhat like a chestnut. They are sold in the market at Venice under the name of Jesuits nuts. At Vercelli they are called *Galarin*, and are much eaten there by the children and common people<sup>2</sup>. Pliny says (l. 22. c. 10.) that the Thracians made them into bread. According to Thunberg, the roots are commonly boiled in broth in Japan, though the taste is by no means pleasant.

Native of Europe and Asia.—Introduced in 1781, by Daniel Charles Solander, L.L.D. It flowers from June to August, and is annual<sup>1</sup>.

Villars condemns the figures of *Tragus*, *Cordus*, *Lobel*, *Dodonæus*, *Matthiolum*, &c.

This singular plant was called by old writers *Tribulus*, but this name being assigned to another genus, Tournefort altered it to *Tribuloides*; but that not being a legitimate name, according to Linneus's idea, he entitled it *Trapa*.

2. The nut of this is woody-coriaceous, black-brown, inversely pyramidal, rhombed; below beautifully areolated with ribs and grooves, branched, ocellated, and variously confluent, terminated at top with a four-cornered head, radiantly striated, having a round hole punched through it, armed on each side with a very thick horn, spreading horizontally and moderately curved back. Cell one, corresponding in form to the body of the nut<sup>m</sup>.

Though the preceding species varies with three and even two horns, yet this is not a variety of it, for in that the horns are always acuminate, whereas in this they are obtuse and have quite a different appearance<sup>n</sup>. —Native of China.

Loureiro has given two species of *Trapa*, which he names *cochinchinensis* and *chinensis*. They are certainly distinct from the European plant; but the latter is probably the same with our second species, and he himself allows that the former may be only a variety of the latter.

The Chinese cultivate the plant in their most barren marshes for the food of the inhabitants<sup>o</sup>.

TRAVELLER'S JOY. See *Clematis*.

TREACLE-MUSTARD. See *Clypeola*.

TREE CELANDINE. See *Bocconia*.

TREE GERMANDER. See *Teucrium*.

TREE MALLOW. See *Lavatera*.

TREE PRIMROSE. See *Oenothera*.

TREFOIL. See *Trifolium*.

<sup>1</sup> Allioni.

<sup>2</sup> Hort. kew.

<sup>1</sup> Gærtner.

<sup>m</sup> Gærtner.

<sup>o</sup> Linn. amoen.

<sup>2</sup> Villars & Allioni.

<sup>n</sup> Willdenow.

<sup>2</sup> Linn. mant. & syst.



- TREFOIL. Bean. See *Anagris*.  
 — Bird's-foot. See *Lotus*.  
 — Marsh. See *Menyanthes*.  
 — Moon. See *Medicago*.  
 — Shrubby. See *Ptelea*.  
 — Snail. See *Medicago*.  
 — Strawberry. See *Trifolium*.  
 — Thorny. See *Fagonia*.  
 TREMATE. See *Baccharis*.  
 TREMELLA. (*Dimin. from tremo, to tremble.*)  
*Lin. gen. Schreb. n. 1669. Dill. musc. 41.*  
 Cryptogamia Algæ.

## GENERIC CHARACTER.

Substance uniform, membranaceous, gelatinous, pellucid.

Eleven species are enumerated in the fourteenth edition of *Systema Vegetabilium*: nine by Relhan: and nineteen by Withering.

Tremella Nostoc is not uncommon after rain in grass fields, and on gravel walks; and is vulgarly supposed to be the remains of a meteor or fallen star. It is somewhat gelatinous, consisting of several leaves variously lobed and waved, slightly adhering to the ground by a central root; the substance very thin. It varies in colour, but is usually some shade of olive. When dry, it is of a dark brown and brittle. Micheli describes the seeds as lying in the form of little strings of beads coiled up within the folds of the plant, and only to be discovered by the microscope<sup>p</sup>.

This and three other species, viz. *granulata*, *mesenterica*, and *Sabinæ* are figured in English Botany.

TRETORRHIZA. See *Gentiana Cruciata*.

TREWIA. (*So named by Linneus in honour of Christ. Jac. Trew, physician at Nuremberg: born 1695, died 1769. Author of numerous papers in the German Aëtis, and of a splendid work entitled Plantæ Selectæ, with coloured figures from Ehret's drawings, 1750, &c.*)

*Lin. gen. Reich. n. 712. Schreb. n. 890. Juss. 442.*

Class. 13. 1. Polyandria Monogynia,—rather Monœcia Polyandria.

## GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets ovate, reflexed, coloured, permanent.

COR. none, unless the calyx be taken for it.

STAM. Filaments numerous, capillary, length of the calyx. Anthers simple.

PIST. Germ inferior. Style simple, length of the stamens. Stigma simple.

PER. Capsule turbinate, three-sided, crowned, three-celled, three-valved.

SEEDS solitary, convex on one side, angular on the other.

## ESSENTIAL CHARACTER.

Cal. three-leaved, superior. Cor. none. Caps. tricoecous.

## SPECIES.

1. *Trewia nudiflora*.  
*Lin. spec. app. 1661. Juss. 492. Reich. 2. 581.*  
*Arbor racemosa malabarica, fructu triquetra. Comm. mal. 3.*  
*Canschi. Rheed. mal. 1. 76. t. 42. Burm. ind. 298.*

## DESCRIPTION, &amp;c.

This is a lofty tree, with a trunk as thick as a man can embrace, covered with an ash-coloured bark. Leaves on long round petioles, a span and more in length, and almost two hands wide, oblong-ovate, cordate, attenuated at the point, thin and soft, dusky green on the upper surface, but brighter on the lower. Flowers on round pale-green peduncles, axillary, of an herbaceous colour, void of smell<sup>p</sup>.—Native of the East Indies.]

TRIANTHEMA. (*Three-flowered.*)

*Lin. gen. n. 537. Reich. n. 606. Schreb. n. 762. Sauv. 127. Juss. 314. Gertn. t. 128. Portulacastrum. Jussieu.*

Class. 10. 2. Decandria Digynia.

Nat. order of Succulentæ. *Portulacæ* Juss.

<sup>p</sup> Withering, 4. 80. ed. 3.

<sup>p</sup> Rheed. mal.

## GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong, coloured within, mucronate below the tip, permanent.

COR. none: unless the calyx formed of a calyx and corolla together be so called.

STAM. Filaments ten, (in some five to twelve,) capillary, length of the calyx. Anthers roundish.

PIST. Germ rather superior, oblongish, retuse. Style one or two, filiform, length of the stamens, hispid on one side. Stigmas simple.

PER. Capsule oblong, truncate, retuse, cut round: cells two superior, and two inferior.

SEEDS solitary or two, subovate.

OBS. The number of stamens and styles in distinct species is different.

## ESSENTIAL CHARACTER.

Cal. mucronate below the tip. Cor. none. Stam. five or ten. Germ retuse. Caps. cut round.

## SPECIES.

1. *Trianthema monogyna*.  
*Lin. Juss. 410. Reich. 2. 506. Willd. 2. 635. mant. 69.*  
*T. Portulacastrum. Lin. spec. 325. Sauv. meth. 117. Kniph. orig. 4. præf.*  
*T. procumbens. Mill. dict. n. 1.*  
*Portulaca curassavica, &c. Herm. par. t. 213. Raii suppl. 506.*  
*Portulacæ affinis, folio subrotundo, flore pentapetalo dilute purpureo. Sloan. jam. 1. 205. Raii suppl. 506.*  
*Kali curassavicum procumbens, foliis subrotundis. Pluk. phyt. t. 95. f. 4.*  
*Flowers five-stamened one-styled.*
2. *Trianthema crystallina*.  
*Lin. spec. ed. Willd. 2. 635. Vahl symb. 1. 32.*  
*Papularia crystallina. Forsk. descr. 69.*  
*Flowers five-stamened one-styled heaped, leaves oval, stem shrubby.*
3. *Trianthema pentandra*.  
*Lin. Juss. 410. Reich. 2. 306. Willd. 2. 636. mant. 70. Gertn. fruct. 2. 213.*  
*Racoma. Forsk. ægypt. 71.*  
*Portulacæ affinis polygonoides, bliti folio & facie maderaspatensis. Pluk. phyt. t. 120. f. 3.*  
*Flowers five-stamened two-styled.*
4. *Trianthema fruticosa*.  
*Lin. spec. ed. Willd. 2. 636. Vahl symb. 1. 32.*  
*Gymnocarpus decandrum. Forsk. descr. 65. t. 10. Desfont. atlant. 1. 203.*  
*Shrubby one-styled, alternate filaments anther-bearing.*
5. *Trianthema humifusa*.  
*Lin. spec. ed. Willd. 2. 636. Thunb. prodr. 80.*  
*One-styled, leaves lanceolate, stem frutescent round.*
6. *Trianthema anceps*.  
*Lin. spec. ed. Willd. 2. 636. Thunb. prodr. 80.*  
*One-styled, leaves lanceolate, stem frutescent ancipital.]*
7. *Trianthema decandra*.  
*Lin. Juss. 410. Reich. 2. 307. Willd. 2. 636. mant. 70.*  
*T. diffusa. Mill. dict. n. 2.*  
*Zaleia decandra. Burm. ind. 110. t. 31. f. 3.*  
*Flowers ten-stamened two-styled.*

## DESCRIPTIONS, &amp;c.

1. This sends out many trailing branches which lie flat on the ground, spreading two feet or more each way, and having much the appearance of Purslane; with fleshy succulent leaves almost oval: the flowers come out from the joints of the stalks, they are somewhat of a purple colour, not much unlike those of Purslane, and are succeeded by capsules having two horns, with one cell inclosing eight or ten seeds.

[Stems depressed, subdichotomous, jointed, even, pubescent on the upper side. Leaves opposite, petioled, oval, obtuse, quite entire with a red margin; one of the leaves always less than the other. Petioles two-toothed, shorter than the leaf. Flowers axillary, sessile, five-leaved, oval, composed as it were of calyx and corolla together; under them two awl-shaped, permanent bractes. Filaments six to ten, shorter than the calyx. Anthers oval, twin. Germ half inferior, retuse, two-horned. Style length of the flower. It is



is an annual plant, native of Jamaica and Curassao<sup>1</sup>.] Mr. Miller says, it grows naturally in most of the islands in the West Indies, and is often a troublesome weed there.

[Linneus remarks, that there is scarcely any genus more irregular than this: so it is, according to his arrangement; and so it must be when we aim at forming natural genera in an artificial system.

2. Stems branched, procumbent, diffused: branches filiform, smooth, round, jointed. Leaves opposite, oval, quite entire, veinless, thickish, shorter on one side, one of them smaller than the other, as in the congeners. The stem and leaves are beset with pellucid bladders. Petiole length of the leaf, two-toothed at the base. Flowers alternate, small. Calyx five-cleft<sup>2</sup>.—Native of Arabia and the East Indies.

3. This is an annual plant, with the stem a foot high, round, erect, somewhat rugged. Leaves opposite, petioled, elliptic, bluntish, quite entire, from upright spreading, oleraceous. Branches alternate, shorter. Flowers axillary, from every other axil, between the branch and the stem: subsessile, many, heaped; pale within, greenish without. Calyx bell-shaped, five-parted, purplish within, permanent; segments lanceolate. Filaments five, bristle-shaped, erect, distant, length of the corolla. Germ superior, very blunt, red. Styles two, length of the germs, recurved, longitudinally pubescent above<sup>3</sup>. Capsule ovate, retuse at top and defended by two compressed distant horns, having a longitudinal groove on each side, two-celled, cut round a little above the base, the upper valve much longer than the lower. Seeds in each cell two, rounded kidney-form or beaked, lenticular or indistinctly angular, wrinkled, dark-coloured; fastened one above the other in a vertical position to the partition on each side. Linneus speaks of many seeds, but perhaps that is in some other species; in this certainly there are not always even two<sup>4</sup>. Gærtner never could observe four cells, as mentioned by Adanson, or a single one only as Linneus, in his genera, describes.—Native of Arabia.

4. This is a branched and very smooth little shrub: branches spreading, jointed: joints a little thickened at top, dotted with brown, ash-coloured below. Leaves opposite, sessile, fleshy, round, marked with two lines; the point pungent: sometimes there is a bundle of leaves in the axils. Stipule on each side ovate, acute, three times shorter than the leaves, pellucid. Flowers terminating the branchlets, four or five, sessile, with pellucid bractes interposed between them. Calyx five-cleft, tubulous: segments linear, membranaceous at the edge, obtuse. Filaments ten at the base of the segments, five only alternately antheriferous. Germ oblong: only one style: stigma acute<sup>5</sup>. Vahl had an opportunity of seeing only the unripe fruit, in which he observed that the seed was covered with a membrane separating with the style; there is therefore another covering besides the indurated calyx. The calyx also and stipulation being the same as in the other species of *Trianthemum*, he has rightly reduced this plant to that polymorphous genus. He remarks, that there may also sometimes be two seeds one above the other, for although in the fruit which he examined there was only one, yet it filled only half the cavity, the remainder being empty.

Native of the kingdom of Tunis:—found in the desert near Calsa by Desfontaines; who adopts Forskal's name, and separates it from the *Trianthemas*, notwithstanding Vahl's reasons given above. He marks it as annual, which must be a mistake.

5. 6. Natives of the Cape of Good Hope; where they were found by Thunberg<sup>6</sup>.

7. Annual. Herb the stature of *Glinus*. Stem herbaceous, diffused alternately. Leaves opposite, petioled, elliptic, quite entire, smooth. Petioles membranaceous on each side. Bractes membranaceous. Flowers axillary, on short peduncles. Calyx five-leaved, permanent; leaflets oval, membranaceous

at the edge. Filaments ten or thereabouts, the length of the calyx. Anthers roundish. Germ superior, retuse. Styles two, filiform, patulous. Stigmas obtuse.—Native of the East Indies<sup>7</sup>.

Is this *Trianthema diffusa*, n. 2. of Miller's Dictionary, which he says,] grows in the East Indies, and has succulent diffused stalks, near two feet long, with oval leaves, less succulent than those of the first. The flowers are white, and are produced in clusters sitting close to the stalks: they are succeeded by capsules containing several seeds.

#### PROPAGATION AND CULTURE.

Sow the seeds on a good hot-bed in the spring, and when the plants are fit to remove, plant them on another hot-bed, to bring them forward, otherwise the seeds will not ripen. In June they may be transplanted into a warm border, where they will grow until the frost in autumn kills them.

TRIBULOIDES. See *Trapa*.

TRIBULUS. (Τριβύλος of Dioscorides. *Tribulus* of Virgil: a triplici cuspide: οτι τρεις βολας εχει, from its having three spikes to the fruit.)

Lin. gen. n. 532. Reich. n. 580. Schreb. n. 732.

Tournef. t. 141. Juss. 296. Gærtner. t. 69.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Grinales*. *Rutaceae* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, acute, a little shorter than the corolla.

COR. Petals five, oblong, obtuse, spreading.

STAM. Filaments ten, awl-shaped, very small. Anthers simple.

PIST. Germ oblong, length of the stamens. Style none. Stigma headed.

PER. roundish, prickly, of five or ten Capsules, gibbous on one side, often armed with three or four dagger-points, angular on the other, converging, with transverse cells.

SEEDS many, turbinate, oblong.

OBS. *T. cistoides* has ten wrinkled fruits without lateral spines.

#### ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five, spreading. Style none.

Caps. five, gibbous, spiny, many-seeded.

#### SPECIES.

1. *Tribulus maximus*. Great Caltrops.

Lin. spec. 553. Reich. 2. 277. Willd. 2. 566. hort. cliff. 160. Loeffl. it. 208. Jacqu. collect. 4. 110. ic. rar. 3. t. 462. Brown. jam. 220. n. 2. t. 21. f. 3.

*T. terrestris major*, flore maximo odorato. Sloan. jam. 1. 209. t. 132. f. 1. Raii suppl. 650.

*T. terrestris fructu turbinato, foliis lanuginosis*. Plum. spec. 7. ic. 254. f. 1.

Leaves about four-paired, outer leaflets larger, pericarps ten-seeded awnless.

[2. *Tribulus lanuginosus*. Woolly Caltrops.

Lin. spec. 553. syst. 401. Reich. 2. 277. Willd. 2. 566. mant. 380. fl. zeyl. n. 168. Burm. zeyl. 226. t. 106. f. 1.

Leaves about five-paired, leaflets almost equal, seeds two-borned.]

3. *Tribulus terrestris*. Small Caltrops.

Lin. spec. 554. Reich. 2. 278. Willd. 2. 567. hort. cliff. 160. upf. 103. Sauv. monsp. 227. Brown. jam. 220. 1. Gmel. it. 1. 172. Desfont. atlant. 1. 339. Lour. cochinch. 270. ed. Willd. 331. Hall. herb. n. 947. Gærtner. fruct. 1. 335. Kniph. cent. 6. n. 95. Krock. filef. n. 620. Villars dauph. 3. 584. Allion. pedem. n. 1624.

*T. terrestris*. Lob. ic. 2. 84. Dod. pempt. 557. Camer. epit. 714. Matth. 692. Dalech. hist. 513.

Ger. 1066. emac. 1246. Park. theat. 1097. Baub. hist. 2. 352. Raii hist. 1344. Mor. hist. f. 2. t. 8. f. 9.

*T. terr. Ciceris folio fructu aculeato*. Baub. pin. 350. Zanich. ist. t. 222.

*T. terr. Cic. folio, seminum integumento aculeato*. Tournef. inst. 266.

*T. terr. minor hispanicus*. Barrel. t. 558.

<sup>1</sup> Linn. mant.

<sup>2</sup> Vahl.

<sup>3</sup> Linn. mant.

<sup>4</sup> Gærtner.

<sup>5</sup> Vahl.

<sup>6</sup> Thunb. prodr.

<sup>7</sup> Linn. mant.



Leaves six-paired almost equal, seeds four-horned.

4. *Tribulus cistoides*.

*Lin. spec.* 554. *Reich.* 2. 278. *Willd.* 2. 567.

*Jacqu. hort. Schoenbr.* 1. 54. t. 103. *collect. suppl.*

109. *Swartz obs.* 171. *Brown. jam.* 220. 1.

*T. terrestris major curassavicus.* *Herm. par. t.* 136.

*T. terr. americanus, argemones flore flavo.* *Pluk.*

*phyt. t.* 67. f. 4. *Raii suppl.* 649.

Leaves eight-paired, leaflets almost equal.

DESCRIPTIONS, &c.

1. This is an annual plant, with pretty thick, compressed, channelled stalks, which trail upon the ground, and are near two feet long. Leaves pinnate, opposite; of three or commonly four pairs of smooth sessile leaflets; the outer of which are largest. Flowers axillary: petals large, yellow. They have an agreeable odour; and are succeeded by roundish prickly fruit, ending in a long point.—Native of Jamaica, and some of the other islands in the West Indies.

[Browne says, it grows in all the pastures of Jamaica, is frequently gathered with other fodder-plants, and fed upon indiscriminately by all sorts of cattle.

It was cultivated by Mr. Miller in 1739, and flowers in June and July<sup>a</sup>.

2. Stems ascending, long, round, hairy, jointed. Leaves opposite, (except the uppermost, which are alternate,) petioled, one smaller than the other: leaflets oval-oblong, sharpish, hairy on each side. Petioles also hairy. Each leaf is accompanied by a lanceolate shrivelling stipule. Peduncle from the alternate axils, or that of the smaller leaf, (together with a branchlet,) one-flowered, hairy, shorter than the leaves. Fruit angular, hairy. Native of Ceylon<sup>b</sup>.]

3. This has a slender, fibrous, annual root, from which spring four or five slender stalks, spreading flat on the ground; they are hairy, and extend two feet and a half in length. At each joint are pinnate leaves, composed of six pairs of narrow hairy leaflets, almost of equal size, those on the lower part of the stalk stand alternately, but towards the top they are opposite. Flowers axillary, on short peduncles, composed of five broad obtuse yellow petals. They appear in June and July; and are succeeded by roundish, five-cornered, prickly fruit, which, when ripe, divides into five cells, each containing one or two seeds, which ripen in August and September.

[Leaves opposite, abruptly pinnate: leaflets ten to fourteen, ovate-oblong, quite entire, obliquely cut out at the base. Stipules in fours, small, lanceolate, deciduous. Flowers solitary, on short pedicels. Calyx villose, deciduous: segments ovate-lanceolate. Petals obovate. Style none or very short. Stigma obtuse, thickish, five-grooved. Capsules five, aggregate, crustaceous, bony, wedge-shaped on one side, convex on the other, muricate with rigid, awl-shaped, unequal, diverging prickles, commonly four in number; three or four-feeded, in as many obliquely transverse parallel cells. Seeds small, oblong, subcylindrical, obtuse in front, very acute behind<sup>c</sup>.

Gærtner describes the fruit as composed of five nuts, united into a subglobular whorl, wrinkled and tubercled, armed above the base with four rigid prickles, which are straight and bent down; thence cuneiform-compressed, and merely wrinkled: they are of a pale straw colour, and four-celled, but valveless: the cells are transverse, disposed in a longitudinal row. Seeds solitary, of a paralleliped form, flattened a little, remarkably acuminate in front, but truncate behind, marked with a little brown spot like a wart, pale straw-coloured; they are fastened to the central angle of the cells.

Native of most of the hot and temperate parts of the world; as the South of Europe, Barbary, Siberia, the coast of Coromandel, China, CochinChina, and the West Indies. Browne says, it is common about Kingston in Jamaica; and is planted in many gardens there for the sake of its flowers, which have an agreeable smell. The fowls are observed to feed much on them, and it is thought to heighten their flavour, as

<sup>a</sup> Hort. kew.

<sup>b</sup> Linn. syst. and mant.

<sup>c</sup> Desfontaines.

well as to contribute to fatten them. They call it Turkey Blossom. See n. 4. The name in French is *la Croix de Chevalier*.] Our English appellation of *Caltrops* is taken from the form of the fruit, which resembles the machines that are cast in the way to obstruct an enemy's cavalry. [The Greek and Latin names have the same origin. The *tribula* or *tribulum*, which was used for threshing, or rather rubbing out corn, is derived from *τριβω*, *tero*, and has the first syllable long; whereas the name of this plant has that, as well as the second, short.

The common *Caltrops* was cultivated by Gerarde in 1596<sup>d</sup>. He says that he found it growing in a moist meadow adjoining to the wood or park of Sir Francis Carew near Croyden; but it is not indigenous of England.] In the South of France, Spain and Italy, it is a common weed on arable land, and is troublesome to cattle, by the prickly fruit running into their feet.

4. This has a perennial woody root, from which spring out many hairy, jointed, trailing stalks, near two feet long. At each joint are two pinnate leaves, which differ greatly in size, one being composed of eight, and the other only of four pairs of leaflets. Peduncles axillary, hairy, near two inches long, sustaining one pale-yellow flower, composed of five large petals, with narrow tails, but very broad and rounded at their points. Fruit roundish, armed with very acute spines.

Native of South America, and the West India islands. Houston found it at the Havanna. [Mr. Miller cultivated it before 1733. According to Swartz, the plant which Browne supposed to be the *terrestris*, is this species. Perhaps the same mistake may have been made by other writers; for it rarely happens that any plant grows so generally wild as that is said to do.]

PROPAGATION AND CULTURE.

3. Sow the seeds in autumn on an open bed of fresh light earth, where the plants are designed to remain; for they do not bear transplanting very well, unless whilst they are very young. In the spring carefully clear them from weeds; and thin them where they come up too close. In June they will begin to flower; and their seeds will ripen in August and September. If these be permitted to scatter, the plants will come up the following spring, and maintain their place, if they be not overborne with weeds.

1, 2, 4. The other sorts being natives of hot countries, are very tender, and the seeds must be sown on a hot-bed early in the spring. When the plants come up, transplant each into a separate pot, filled with rich light earth, plunge them into the tan-pit, and treat them in the same manner as other tender exotic plants; being careful to bring them forward as early as possible in the summer, otherwise they will not perfect their seeds in this country.

4. The last sort will live through the winter, if it be plunged in the bark stove. The following summer it will flower earlier, and there will be more time for the seeds to ripen.

[TRICERA. (From *τρις* and *κερας*, a horn. Three-horned. So named from its capsule.)

*Lin. gen. Schreb. n.* 1416. *Swartz descr. t.* 7.

*Crantzia ejusd. prodr.* 38.

Class. 21. 4. Monoecia Tetrandria.

Nat. order of *Tricocceæ*. *Euphorbiæ* Juss.

GENERIC CHARACTER.

Umbel simple: with the male florets peduncled; and a female in the middle sessile.

Involucre none.

\* Males.

CAL. Perianth one-leaved, four-parted to the base: segments lanceolate, acute, erect, permanent, coloured.

COR. none.

STAM. Filaments four, erect, longer than the calyx, ovate! Anthers sitting on the top of the filaments lanceolate, acute, channelled in the middle, after flowering recurved.

<sup>d</sup> Hort. kew.



\* Female.

CAL. Perianth five-leaved: leaflets ovate, acute, erect, coloured.

COR. none.

PIST. Germ subtrigonal. Styles three, short, roundish, conical, after flowering bipartite. Stigmas longer than the styles, recurved, patulous, channelled, permanent.

PER. Capsule oblong, trigonal, three-horned, three-celled, three-valved.

SEEDS in pairs, oblong, obtuse.

## ESSENTIAL CHARACTER.

MALE. Cal. four-leaved. Cor. none. Filam. ovate.

FEM. Cal. five-leaved. Cor. none. Styles conical. Caps. three-horned, three-celled.

## SPECIES.

1. *Tricera lævigata*.

Swartz descr. 1. 333.

*Crantzia lævigata*. Swartz prodr. 38. Vahl symb. 2. 99.

## DESCRIPTION, &amp;c.

This is a branching shrub, two or three feet high. Branches almost simple, long, spreading, four-cornered, leafy, even. Leaves on short round petioles, opposite, distich, ovate-lanceolate, acute, convex, quite entire, veined above, marked with lines at the edge, veinless beneath, stiffish, very smooth. Flowers in simple, axillary, opposite umbels; the common peduncle four-cornered, three times shorter than the leaves. Of the males there are from four to eight opposite pedicels, approximating in form of an umbel, a quarter of an inch long, one-flowered, deciduous. There are two very small whitish bractes at the base and in the middle of the pedicels. Female flower larger: styles three, sometimes but rarely four. Capsule the size of a large pea; the valves bursting with a spring. Seeds black, shining, girt with a membranaceous whitish aril.

This genus should be placed between *Cicca* and *Buxus*. It is very nearly allied to the latter; but differs in having no corolla, in the form of the filaments and stigmas, and in the aril of the seed; also in its peculiar inflorescence.

Native of Jamaica, in mountain coppices in the western parts of the island; flowering in the spring months<sup>c</sup>.

TRICHIA. See *Clatrus* and *Mucor*.

## TRICHILIA.

Lin. gen. n. 528. Reich. n. 573. Schreb. n. 721.

Brown. 279. Loebl. 188. Gartn. t. 95. Juss.

265. Portesia. Cavan. diff. 7. Juss. 265.

Quivisia. Cavan. diff. 7? Juss. 264?

Class. 10. 1. Decandria Monogynia.

Nat. order of *Tribilatae*. *Meliæ* Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, mostly five-toothed, short.

COR. Petals five, lanceolate, spreading.

Nectary cylindrical, tubular, with a ten-toothed mouth, shorter than the petals, connate of ten filaments.

STAM. Filaments none. Anthers ten, erect, rising from the margin of the tube of the nectary, deciduous.

PIST. Germ obovate, subtrilobate. Style short. Stigma headed, three-toothed.

PER. Capsule roundish, subtrigonal, three-celled, three-valved.

SEEDS solitary, berried.

## ESSENTIAL CHARACTER.

Cal. mostly five-toothed. Pet. five. Nect. toothed, cylindrical, bearing the anthers at the top of the teeth. Caps. three-celled, three-valved. Seeds berried.

## SPECIES.

1. *Trichilia hirta*.

Lin. spec. 550. Willd. 2. 552. Swartz. obs. 171.

Brown. jam. 278. Sloan. jam. 2. 128. t. 220.

f. 1. Raii suppl. dendr. 43. n. 7. (Pruno affinis.)

<sup>c</sup> Swartz descr.

Leaves pinnate, leaflets fewer elliptic acuminate smooth, racemes clustered.]

2. *Trichilia spondioides*.

Lin. spec. ed. Willd. 2. 553. Swartz prodr. 67.

descr. 2. 730. Jacq. amer. 128. pict. 64. hort.

Schoenbr. 1. 54. t. 102.

*Euonymus pinnatus*. Mill. dict. n. 4. Sloan. jam. 2.

103. t. 210. f. 2. Raii suppl. dendr. 70. n. 13.

Leaves unequally pinnate subhirsute, pinnae numerous, the lower ones larger, racemes axillary.

[3. *Trichilia emetica*.

Lin. spec. ed. Willd. 2. 553. Vahl. symb. 1. 31.

Elcaja. Forsk. descr. 127.

Leaves pinnate villose underneath, leaflets elliptic.

4. *Trichilia glabra*.

Lin. syst. 399. Reich. 2. 270. Willd. 2. 553.

*T. havanensis*. Jacq. amer. 129. n. 2. t. 175. f. 38.

pict. 65, t. 260. f. 35.

Leaves pinnate smooth, outermost leaflets larger.

5. *Trichilia pallida*.

Lin. spec. ed. Willd. 2. 553. Swartz. prodr. 67.

descr. 2. 733.

*Portesia ovata*. Cavan. diff. 7. 369. t. 215.

Leaves unequally pinnate membranaceous, racemes axillary and terminating, flowers eight-stamened, capsules two-valved.

6. *Trichilia moschata*.

Lin. spec. ed. Willd. 2. 553. Swartz. prodr. 67.

descr. 2. 735.

Leaves alternately pinnate, racemes axillary, flowers subdecandrous one-petalled, capsules one-seeded.

7. *Trichilia spectabilis*.

Lin. spec. ed. Willd. 2. 554. Forst. prodr. n. 188.

Leaves pinnate, leaflets obovate, racemes axillary compound.

8. *Trichilia alliacea*.

Lin. spec. ed. Willd. 2. 554. Forst. prodr. n. 189.

Leaves pinnate, leaflets lanceolate acute, racemes axillary superdecompound.

9. *Trichilia heterophylla*.

Lin. spec. ed. Willd. 2. 554.

*Portesia mucronata*. Cavan. diff. 7. 570. t. 216.

Leaves pinnate and ternate, leaflets ovate acuminate, racemes axillary, flowers eight-stamened.

10. *Trichilia trifoliata*.

Lin. spec. 551. syst. 399. Reich. 2. 270. Willd.

2. 554. Jacq. amer. 189. t. 82. pict. 65. t.

123. Vahl. symb. 1. 31. Gartn. fruct. 2. 87.

*T. Halesia*. Loebl. it. 188.

Leaves ternate, leaflets obovate shining.

11. *Trichilia nervosa*.

Lin. spec. ed. Willd. 2. 554. Vahl symb. 1. 31.

*Melia Koetjape*. Burm. ind. 101.

Leaves ternate, leaflets ovate.

12. *Trichilia spinosa*.

Lin. spec. ed. Willd. 2. 554.

*Turraea virens*. Hellenius act. holm. 1788. p. 294. t.

10. f. 1.

Leaves simple ovate emarginate, branches thorny.

## DESCRIPTIONS, &amp;c.

1. This tree rises about twenty feet high, with a straight trunk, covered with an almost smooth grayish or light brown bark, having some white spots on it. About seven feet or more from the ground it sends forth several branches, the ends of which have a few unequally pinnate leaves, the rachis of which is about three inches long: leaflets opposite, an inch and three quarters broad near the pedicel, which is an eighth of an inch in length; they are almost an inch asunder, of a dark green colour and smooth. The ends of the twigs are branched into several green stalks, two inches long, which, just at the bottom are branched into others, sustaining several whitish-green flowers, with purple-headed stamens.—Native of Jamaica; plentifully between Passage-Fort and St. Jago de la Vega<sup>f</sup>.

2. This is a small tree, ten feet high, or much lower, with an upright stem, and divided into very few branches. (Sloane says it has several trunks as thick as one's arm, by which it rises to twenty feet in

<sup>f</sup> Sloane.



height; without any branches, and is covered with a reddish-brown smooth bark.) Leaves smooth or somewhat hairy, a foot long, scattered alternately at the ends of the branches: leaflets about ten on each side, the end one sometimes wanting, lanceolate-ovate, bluntly acuminate, quite entire, petioled, two inches long, the intermediate ones gradually larger. Racemes axillary, solitary, three inches long whilst in flower, but often lengthening to half a foot when fruiting: peduncles simple or branched. Flowers inodorous, small, about thirty in a raceme. Calyx half-five-cleft, spreading flat, very small. Petals whitish, spreading. Filaments hairy internally. Germ villose: style thick. Capsule brownish, three-grooved. Seeds in the larger fruit sometimes two in the same cell, lying one upon the other, or side by side<sup>e</sup>. According to Sloane, the leaflets are at an inch distance from each other, opposite with an odd one at the end, an inch and half long, and an inch broad in the middle, pointed at both ends, smooth, dark green, on pedicels an eighth of an inch in length. Fruit round, first green, then purplish, when ripe as big as a great garden pea, breaking into three membranes, expanding themselves, each having a crest or rising in the middle, and showing three almost triangular distinct kernels, covered over with a thin scarlet pulp.

This species was not distinguished from the preceding. Mr. Miller has it under the name of *Euonymus pinnatus*.

Gærtner, under the name of *Trichilia hirta*, describes the capsule as subglobular, rounded-three-cornered, three-celled, opening into three parts at the top, quite entire at the base, spreading out horizontally when it opens. Seeds solitary, or very rarely two together, ovate, beaked at top, somewhat berried, scarlet, fastened to the central margin of the partitions, and hanging from it.

Native of Jamaica, St. Domingo and Carthagen, flowering there principally in november. The French in the West Indies call it *Mombin batard*<sup>h</sup>.

3. Branches villose, round. Leaflets mostly opposite, on very short petioles, elliptic, villose underneath, the outer ones larger, two inches long. Peduncles from the uppermost axils, several times shorter than the petioles. Flowers corymb-panicled, twice as large as in the preceding species. Bractes ovate, minute. Calyx five-cleft; segments rounded, villose. Petals oblong, a little narrower at the base, villose, obtuse, twice as long as the calyx. Filaments connected into a tube, the length of the corolla, in the perfect flower easily separating without tearing them: tube smooth below, above along the filaments and within villose. Anthers erect, oblong. Style length of the tube of the filaments. Stigma headed, as in the preceding<sup>i</sup>.—Native of Arabia Felix, on mountains.

4. This is a tall, branching tree, with an unpleasant fetid smell. Leaves pinnate, shining, alternate, numerous; rachis round, very slightly winged on each side, five inches long: leaflets three or two on each side, with an odd one, obovate, attenuated at the base, quite entire, very blunt, scarcely petioled, the outer ones gradually bigger. Racemes axillary, very short. Capsules globular, green. Native of the Havannah, in mountain woods<sup>k</sup>.

5. This is a tree of about twelve or fifteen feet in height, smooth, and branchy: branches horizontal: leaves pinnate with an odd one: leaflets trijugous with a seventh terminal: they are ovate-lanceolate, veiny, nerved, and smooth: racemes triennial, axillary, opposite, erect, short, and many-flowered: petals pale or whitish: germ roundish, villose: capsule roundish, bilocular: seeds roundish, with a viscid scarlet aril. Native of the West Indies, flowering in february and march.

6. A tree of twenty feet high: branches subdivided, with a smooth striated bark: leaves alternately pinnate, entire, smooth, glossy, with parallel nerves: racemes axillary, solitary, upright, many-flowered, striated: flowers numerous, small, of a pale colour,

with a short tube, and ovate, sharp, spreading divisions: nectary tubular, shorter than the corolla: filaments none: anthers subsessile: germ ovate: style short, cylindric: stigma obtuse, cornered: capsule ovate, three-valved, single-seeded. Native of Jamaica, where it is called by the title of Musk-wood, on account of the smell of every part of the plant when rubbed. Flowers in may<sup>l</sup>.

7. Native of New Zealand.

8. Native of the island of Namoka<sup>m</sup>.

9. Doubtful whether a shrub or a tree: boughs alternate; bark gray, variegated by fissures: leaves alternate, ternate, or pinnate-bijugous with an odd one: leaflets ovate, smooth, terminated by a sharp point: flowers clustered, racemes axillary and terminal: flowers yellowish. Native of Madagascar<sup>n</sup>.

10. This is a tree fifteen feet in height, upright, having an unpleasent smell in all its parts. Wood whitish. Bark grayish brown. Branches numerous, round, irregular, spreading, often from the very ground. Leaves alternate, numerous, on a petiole scarce an inch long: leaflets wedgeform at the base, quite entire, very blunt, sessile, the middle one much longer than the two at the sides. Racemes axillary, very short, six-flowered or thereabouts. Flowers small: calyx bell-shaped, erect: petals whitish, erect, three times as long as the calyx. Capsules green with brownish gray dots, at first perfectly globular, but afterwards three-grooved. Seeds solitary, convex on one side, angular on the other, with a scarlet pellicle. The negresses use a decoction of the roots to procure abortion. In Curaçao it is called *Kerse-boom* or Cherry-tree, though it has nothing in common with that tree. The Spaniards also call it *Ceraso macho* or male Cherry. It bears a great affinity to *T. glabra*.

Native of Curaçao, in dry pastures, and on the neighbouring continent; flowering in april and may<sup>o</sup>.

11. Branches villose-tomentose at the end. Leaves on a petiole the length of the leaflets, villose-tomentose, channelled above. Leaflets on short pedicels, quite entire, acute, villose along the nerves underneath, above smooth and veinless; two inches long. Peduncles axillary, erect, longer than the petiole. Flowers in short panicles, clustered; with a lanceolate leaflet at the base of each. Calyx villose, with the teeth rounded. Corolla villose, twice as long as the calyx. Native of Java<sup>p</sup>.

12. The fruit of this plant is a three-celled berry, with one seed in each cell: it holds a middle rank therefore between this genus and *Limonia*. The branches are thorny. Native of the East Indies<sup>q</sup>.]

#### PROPAGATION AND CULTURE.

These trees and shrubs being natives of hot countries, cannot be preserved in England but in a stove. They may be propagated by seeds sown in pots, and plunged into a hot-bed: when the plants are fit to remove, plant each in a separate small pot, plunged again into the hot-bed, and shade them until they have taken new root. They may also be increased by cuttings during any of the summer months. [In their native countries they thrive best in a dry gravelly soil.

TRICHILIA GAURA. See *Guarea*.

TRICHLIS. See *Pharnaceum* and *Polycarpon*.

TRICHOCARPUS. (From *τριχός*, *τριχος*, a hair, and *καρπος*, a fruit. Hairy-fruited.)

Lin. gen. Schreb. n. 923. Ablania. Aubl. t. 234.

Juss. gen. 440.

Class. 13. 2. Polyandria Digynia.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leaved, four or five-parted: segments ovate, acute, spreading, permanent.

COR. none.

STAM. *Filaments* very many (sixty to seventy), capillary, longer than the calyx, inserted into the receptacle. *Anthers* small, roundish.

PIST. *Germ* ovate, villose. *Styles* two, long, bifid at the top. *Stigmas* obtuse.

<sup>e</sup> Jacquin, amer.

<sup>h</sup> Idem.

<sup>i</sup> Vahl.

<sup>k</sup> Jacquin.

<sup>l</sup> Swartz.

<sup>o</sup> Jacquin.

<sup>m</sup> Forster.

<sup>p</sup> Vahl.

<sup>n</sup> Cavanilles.

<sup>q</sup> Willdenow.



PER. Capsule ovate-four-cornered, bristly: bristles long, rigid, deciduous; one-celled, four-valved.  
SEEDS numerous, small, fastened to a free, ovate-oblong receptacle, involved in a viscid membrane.

## ESSENTIAL CHARACTER.

Cal. four or five-parted. Cor. none. Styles two, bifid. Caps. bristly, four-valved, many-seeded.

## SPECIES.

1. *Trichocarpus laurifolia*.

Lin. spec. ed. Willd. 2. 1224.

Abiana gujanensis. Aubl. guian. 1. 585. t. 234.

## DESCRIPTION, &amp;c.

This is a tree growing to the height of fifty feet. Leaves scattered, coriaceous, oblong, acute, quite entire, veined, smooth, petioled. Corymbs few-flowered, subdichotomous, lateral. Native of the woods of Guiana\*.

TRICHOMANES. (*Τριχομανής* of Dioscorides. From *τριχ*, *τριχος* hair, and *μανα*, madness. From the hairiness of the Fern, and its supposed efficacy in mania.)

Lin. gen. n. 1181. Reich. n. 1298. Schreb. n. 1635. Juss. 16.

Class. 24. 2. Cryptogamia Filices.

Nat. order of Filices or Ferns.

## GENERIC CHARACTER.

Frustrifications inserted into the margin of the frond, separate.

Involucres urn-shaped, undivided, opening outwards.

Columns extending beyond the involucres, like styles.

Obs. Habit membranaceous, semitransparent<sup>a</sup>.

## SPECIES.

\* With a simple frond.

1. *Trichomanes membranaceum*.

Lin. spec. 1560. Reich. 4. 434.

*Darea americana* lichenoides. Pet. mus. 763.

*Phyllitis scandens minima*, musci facie, foliis membranaceis subrotundis. Sloan. jam. 1. 74. t. 27. f. 1. Mor. hist. 3. 558. Raii suppl. 53.

*Adiantum membranaceum* lichenoides. Pet. fil. 101. t. 13. f. 5.

*A. muscosum* lichenis petræi facie. Plum. amer. 34. t. 50. fil. 83. t. 101. A.

Fronde simple oblong lacerated.

2. *Trichomanes pusillum*.

Swartz prodr. 136.

Fronde simple linear gashed, shoot creeping.

3. *Trichomanes crispum*.

Lin. spec. 1560. Reich. 4. 435. hort. cliff. 476.

*Polypodium crispum* calyciferum. Plum. fil. 67. t. 86.

*Darea filicis maris* facie. Pet. fil. 103. t. 11. f. 8.

Fronde pinnatifid lanceolate: pinnae parallel subserrate.

4. *Trichomanes reptans*.

Swartz prodr. 136.

Fronde cuneate-ovate, gash-pinnatifid, shoot creeping.

5. *Trichomanes asplenoides*.

Swartz prodr. 136.

*Hymenophyllum*. Smith dorisf. 256.

Fronde pendulous lanceolate pinnatifid very smooth, segments two-lobed, lobes obtuse, fructifications two-valved.

6. *Trichomanes polypodioides*.

Lin. spec. 1561. Reich. 4. 435.

Fronde lanceolate pinnatifid repand, flowers solitary terminating.

\*\* With a compound frond.

7. *Trichomanes crinitum*.

Swartz prodr. 136.

Fronde subpinnate hairy, pinnae ovate pinnatifid, segments bifid, subdivisions blunt, fructifications bristle-bearing on an upright rough-haired stipe.

8. *Trichomanes lucens*.

Swartz prodr. 136.

Fronde bipinnatifid pendulous lanceolate hirsute shining, pinnae parallel, segments roundish subserrulate, stipe extremely hirsute.

9. *Trichomanes hirsutum*.

Lin. spec. 1561. Reich. 4. 435. Thunb. jap. 339.

Lour. cochinch. 681. ed. Willd. 837.

\* Willdenow.

<sup>a</sup> Smith, dorisf.

Filicula digitata. Plum. spec. 13. fil. t. 50. B.

*Darea americana* major pubescens. Pet. mus. 762.

*Darea affinis* digitata. Pet. fil. 105. t. 15. f. 5.

Fronde pinnate, pinnae alternate pinnatifid hairy.

10. *Trichomanes sericeum*.

Swartz prodr. 136.

*T. pendulum* sericii instar molle. Plum. fil. t. 73.

Fronde bipinnatifid pendulous lanceolate tomentose, pinnae alternate, segments linear obtuse entire, the lower ones bifid, fructifications terminating hirsute.

11. *Trichomanes pyxidiferum*.

Lin. spec. 1561. Reich. 4. 435.

*Filix pyxidifera*. Plum. fil. 74. t. 50. E.

Fronde subbipinnate, pinnae alternate clustered lobed linear.

12. *Trichomanes tunbrigense*.

Lin. spec. 1561. Reich. 4. 435. Hudf. angl. 461.

Wither. arr. ed. 3. 781. Bolton 2. 7. Fl. dan.

t. 954. Lightf. scot. 681.

*Hymenophyllum tunbridgense*. Engl. bot. t. 162.

*Adiantum petraeum* perpusillum anglicum foliis bifidis vel trifidis. Raii syn. 123. Pluk. phyt. t. 3. f. 5, 6.

*Darea tunbrigensis* minor. Pet. mus. 761.

*Muscus montanus italicus*, adianthi foliis. Boëc. mus. 2. 24. t. 2. f. 1.

Fronde pinnate, pinnae oblong dichotomous decurrent toothed.

13. *Trichomanes adiantoides*.

Lin. spec. 1561. Reich. 4. 436. fl. zeyl. n. 385.

Pluk. phyt. t. 123. f. 6. (*Adiantum*.)

*Filix non ramosa zeylanica*, foliis adianthi in modum ferratis. Burm. zeyl. 97. t. 43.

Fronde pinnate, pinnae ensiform acuminate gash-serrate, serratures bifid.

14. *Trichomanes fucoides*.

Swartz prodr. 136.

*Hymenophyllum*. Smith dorisf. 257.

Fronde bipinnatifid ovate smooth, pinnae ovate, segments two-parted, subdivisions serrate obtuse, fructifications two-valved, inserted above the base of the pinnae.

15. *Trichomanes ciliatum*.

Swartz prodr. 136.

*Hymenophyllum*. Smith dorisf. 257.

Fronde erect bipinnatifid deltoid, pinnae ovate, segments linear obtuse ciliate, fructifications terminating bi-valved rough-haired, stipe margined.

16. *Trichomanes lineare*.

Swartz prodr. 137.

*Hymenophyllum*. Smith dorisf. 257.

Fronde subbipinnate, pendulous lanceolate smooth, leaflets remote, pinnules linear two-parted, fructifications terminating two-valved, stipe capillary.

17. *Trichomanes strigosum*.

Lin. syst. 941. Thunb. jap. 339.

Fronde bipinnate, pinnules rhomboid hairy serrate, fructifications solitary below the serratures.

\*\*\* With a superdecompound frond.

18. *Trichomanes undulatum*.

Swartz prodr. 137.

*Hymenophyllum*. Smith dorisf. 257.

Fronde tripinnatifid or bipinnatifid pendulous lanceolate, leaflets and pinnae alternate decurrent, segments linear retuse crenulate-waved, fructifications terminating two-valved.

19. *Trichomanes scandens*.

Lin. spec. 1562. Reich. 4. 436. Brown. jam. 86. 3.

*Adiantum ramosum* scandens, &c. Sloan. jam. 1. 96. t. 58.

*A. scandens* ramosissimum, laciniis retusis dissectum. Plum. fil. 76. t. 93.

*Darea ramosissima* scandens. Pet. fil. 102. t. 12. f. 5.

Fronde superdecompound, leaflets alternate, pinnae alternate oblong serrate.

20. *Trichomanes chinense*.

Lin. spec. 1562. Reich. 4. 436. Osb. it. 222.

t. 6. Retz. obs. 6. 40. n. 91.

*Davallia chinensis*. Smith dorisf. 247.

*Adiantum nigrum* chinense tenuiter divisum pinnis minimis obtusis plerumque bifidis. Pluk. phyt. t. 4. f. 1.



- Frond superdecompound, leaves and pinnae alternate lanceolate, segments of the pinnae wedge-shaped.*
21. *Trichomanes rigidum.*  
*Swartz prodr.* 137.  
*Fronds four times pinnatifid erect deltoid, leaflets spreading, pinnae lanceolate, segments linear gashed at the end, fruit-bearing cups pedicelled axillary.*
22. *Trichomanes polyanthos.*  
*Swartz prodr.* 137.  
*Hymenophyllum.* *Smith dorisf.* 257.  
*Fronds four times pinnatifid deltoid erect, pinnae and pinnules decurrent, segments linear obtuse, fructifications two-valved numerous, stipe margined.*
23. *Trichomanes clavatum.*  
*Swartz prodr.* 137.  
*Hymenophyllum.* *Smith dorisf.* 257.  
*Fronds four times pinnatifid oblong-lanceolate loose, pinnae and pinnules decurrent, segments linear emarginate, fructifications terminating two-valved roundish, stipe roundish.*
24. *Trichomanes canariense.*  
*Lin. spec.* 1562. *fyst.* 941. *Reich.* 4. 437. *Jacqu. collect.* 1. 121.  
*Davallia canariensis.* *Smith dorisf.* 246.  
*Filix ramosa canar, &c.* *Pluk. phyt.* t. 2. f. 2.  
β. *Polypodium lusitanicum.* *Lin. spec.* 1556.  
*Filix lusit. polypodii radice.* *Magnol hort.* 79. ic.  
*Fronds superdecompound three-parted, leaflets alternate, pinnae alternate pinnatifid.*
25. *Trichomanes japonicum.*  
*Lin. fyst.* 941. *Thunb. jap.* 340.  
*Fronds superdecompound, pinnules gash-trifid acute.*
26. *Trichomanes capillaceum.*  
*Lin. spec.* 1562. *Reich.* 4. 437.  
*Adiantum capillaceum.* *Plum. fil.* 83. t. 99. *Pet. fl.* 96. t. 10. f. 7.  
*Fronds superdecompound, pinnae filiform linear one-flowered.*
27. *Trichomanes aculeatum.*  
*Swartz prodr.* 137.  
*Acrostichum aculeatum.* *Lin. Diæt. nostr.* n. 31.  
*Frond superdecompound scandent very much branched, leaflets palmate, segments linear obtuse, stipe prickly.*

## DESCRIPTIONS, &amp;c.

1. Stalk flat, black, covered with hair, applying itself to rocks, stones or trees, and rising seven or eight feet high, putting out at more or less distance, small roundish membranaceous yellowish-green leaves. They grow sometimes longer, having incisures on their edges. The plant looks somewhat like a Moss<sup>b</sup>.—Native of South America and Jamaica.

2. Native of Jamaica.

3. Native of Martinico.

4. Native of Jamaica.

5. Native of Jamaica<sup>c</sup>.

6. Frond the length and breadth of a finger, pinnatifid almost to the midrib, with the lobes lanceolate, bluntly ferrate, sharp at the end, having a single flower at the end of each lobe. The frond moreover is pellucid, with alternate veins.—Native of the East Indies<sup>d</sup>.

7. 8. Natives of Jamaica<sup>e</sup>.

9. The frond with the whole stipe hirsute with dense very short hairs, a span high. Pinnae alternate, lanceolate, bluntish, gradually shorter, pinnatifid: pinnules lanceolate, crenate. Fructifications solitary in the notches of the pinnules<sup>f</sup>.

According to Loureiro, it is ten inches high: pinnae oblong, obtuse, with the upper margin obtusely many-cleft and fruiting: fructifications marginal, solitary, lenticular, bristle-shaped at the tip.—Native of America, Japan and CochinChina.

10. Native of Jamaica.

11. Native of America. Mr. Hudson has set this down as indigenous of England; and Linneus himself has referred to Ray's *Filix humilis*, &c. as a synonym to this species. That plant however is a variety of the next species, which see.

12. Roots slender, wiry, spreading very far, throwing out fibres here and there, and producing numerous upright fronds, which, when dried up in summer, curl backwards: their substance is extremely membranous and pellucid, appearing finely reticulated under a microscope; their segments linear, obtuse, sharply ferrate, and having a strong simple central rib. The fructifications, when they occur, take place of the first segment of each pinna or general division of the frond, each terminating its appropriate nerve, and pointing upwards. The involucre is of two slightly concave valves, arising from the substance of the leaf, irregularly notched and ferrate on the margin. Between these is a short column, beset with small round bivalve capsules, each embraced with an elastic ring as in the more common ferns<sup>g</sup>.

Mr. Bolton remarks, that the pinnules are not always ferrate or scolloped.—Mr. Griffith observes, that all the leaves produce fructifications in an open exposure, but that in chinks of shady rocks they become luxuriant, assuming the appearance of *T. pyxidiferum*, and never bearing fructifications<sup>h</sup>.

The bivalve involucre and short column, so distinct from the urn-shaped undivided involucre, and long column or style of the true *Trichomanes*, induced Dr. Smith to establish a new genus under the name of *Hymenophyllum* or *Filmy-leaf*, in his *Dissertation on Ferns*, printed by the Academy of Turin<sup>i</sup>. Several other species here recited belong properly to that genus.

It was first discovered by Mr. Dare near Tunbridge, in moist clefts of rocks and stony places. It was first shewn to Mr. Ray by Mr. Newton, who in company with Mr. Lawson, found it on Buzzard rough Cragg near Wrense, Westmoreland, among the Moss. Dr. Richardson found it near Settle in Yorkshire, and upon moist rocks in Wales. Found plentifully by Mr. Rand in company with Mr. Sherard, among the pebbles at Cockbush, on the coast of Suffex<sup>k</sup>. On Dartmore, Devonshire. On high mountains at the head of Winandermere, Westmoreland, by Dr. Smith. On rocks in a shady dell, very near Llanberris, by Mr. Aikin<sup>l</sup>. Mr. Lightfoot mentions it as common in Scotland.

There are two varieties of this: one mentioned by Mr. Bolton, with the fructifications on naked fruitstalks. Its habit, as represented by Mr. Bolton is considerably different from that in English Botany; and though the latter has indeed fruitstalks springing from the midrib, they are not naked, but pass within the substance to the edge of the leaf. Mr. Bolton found it under Dolbadon-castle near the lake of Llanberris, and on the rock called Foal-foot on Ingleborough, Yorkshire.

The other variety found by Dr. Richardson at Belbank, scarce half a mile from Bingley, at the head of a remarkable spring, and figured in Ray's synopsis, t. 3. f. 3, 4: is described there by Dillenius as having the root woolly and hairy; the stems winged, brownish black below, but green above; the leaves thin, pellucid, shining, deep green; no fructifications were observable. Figure 4. is a young plant.

Mr. Griffith remarks, that the leaves are indistinctly waved or scolloped on their edges; that it is probably only a luxuriant variety of *T. tunbrigense*, their figure, texture, and whole habit, being the same, and differing only in size; that in cavities excluded from the sun he has found specimens partaking equally of *T. pyxidatum* and *tunbrigense*, which are figured by Bolton t. 2. f. 7.; and that he has seen specimens according exactly with Mr. Bolton's figure, from a root which produced other smaller leaves, bearing fructifications.—Dr. Withering adds, that in the foreign specimens which he has seen of the true *pyxidiferum*, the substance of the leaf is strong and opaque, not at all like the silky transparency of our plant; and the fructifications are large, urn-shaped, sessile, and brown-orange.—Our plant is the *pyxidiferum* of Hudson and Bolton, but not of Linneus. Mr. Bolton found it in a little

<sup>b</sup> Sloane.<sup>c</sup> Swartz.<sup>d</sup> Linn. spec.<sup>e</sup> Engl. bot.<sup>h</sup> Withering.<sup>i</sup> Engl. bot.<sup>f</sup> Swartz.<sup>g</sup> Thunberg.<sup>k</sup> Ray syn.<sup>l</sup> Withering.



dark cavern under a dripping rock, a little below the spring of Elm Cragg Well<sup>m</sup>.

13. This high and upright species of Fern rises with a single, firm, smooth, purplish stem. Pinnae of the leaves very smooth, gradually attenuated, very long, lacinate towards the base, each jag serrate-toothed, and each tooth bifid or sometimes trifid: the top of the pinnae, which is very sharp and slender, entire for the space of an inch. The pinnae, the nearer they are to the root, the closer they are to each other, and on the lower part of the plant they are almost opposite, whereas the rest are alternate, on the middle of the stem they are most remote, and closer again towards the top<sup>n</sup>.—Native of the East Indies and of Africa.

14. 15. 16. These are natives of Jamaica, and belong to Dr. Smith's genus of *Hymenophyllum*.

17. Stipe tomentose-strigose. Frond wholly covered with thin hairs: pinnae ensiform: pinnules rhomboid, serrate. It is very nearly allied to the *Polypodium*; and differs from *Adiantum villosum* in its solitary fructifications below the serratures.—Native of Japan<sup>o</sup>.

18. Native of Jamaica.

19. This is a large Fern, and its numerous foliage often shoots above a foot from the climbing root or trunk of the plant<sup>p</sup>.

The stalk is not so big as a goose-quill, roundish, black, covered towards the top with a ferruginous moss, and having very many filaments or clavicles, by which it takes firm hold of the bark of trees, and rises to fifteen or twenty feet high, turning itself round. It puts forth leaves at the distance of an inch from each other, about a foot long, and having about two inches of the foot-stalk naked. Pinnae sometimes opposite, but mostly alternate. Pinnules long, deeply cut in on the edges, very thin, pellucid, of a yellowish green colour, having some dark opaque ribs running through them, and a woolly hairy on them. Fructification at the end of the segments in a little cup<sup>q</sup>.

Native of America; common in the woods of Jamaica.

20. Root scarcely villose. Stipe smooth, somewhat channelled in front, but with a blunt edge, not margined as in *T. canariense*. Frond lanceolate, a foot long, composed of alternate lanceolate leaves. Pinnae alternately pinnatifid, with wedge-shaped alternate segments, mostly two-flowered<sup>r</sup>.

Dr. Smith has inserted this and the *canariense*, together with some *Adiantums* of Linneus, and several new species of Ferns, in a genus which he has named *Davallia*, from Edmund Davall a Swiss botanist, no less indefatigable than acute. The fructifications are in roundish separate spots, near the margin of the frond, and are with respect to the veins always terminating, by no means lateral. The involucres are like scales, from the surface, distinct, separating outwards. The habit is firm, polished and compact, far unlike the tender, membranous, expansive appearance of *Trichomanes* and *Adiantum*<sup>s</sup>.—Native of China, where it was found by Osbeck.

21. 22. 23. Natives of Jamaica. The two last belong to Dr. Smith's genus of *Hymenophyllum*.

24. Frond in three divisions, alternately thrice compounded; its ultimate divisions lanceolate and single-flowered. It is a species of *Davallia*; native of the Canary islands, and also of the sides of mountains in Portugal<sup>t</sup>. Cultivated in 1741 by Archibald, Duke of Argyle<sup>u</sup>.

25. Fronds smooth, with a twisted grooved stipe. Fructifications solitary on the last segments, within the margins; the covered membrane very thin, white.—Native of Japan, on the mountains, flowering from September to March<sup>x</sup>.

26. Native of South America.

27. Native of Jamaica.

Forster (in prodr.) has fifteen new species of *Trichomanes*, natives of the South Sea islands.

The only species mentioned by Mr. Miller is the officinal *Trichomanes*, which does not belong to this genus, but to that of *Asplenium*.

#### PROPAGATION AND CULTURE.

See *Acrostichum* and *Adiantum*. Most of the species are stove plants.

**TRICHOMANES.** See *Adiantum*, *Asplenium*, *Polypodium*, *Pteris*.]

**TRICHOSANTHES.** (From *τριχ* hair, and *ανθος* a flower.)

Lin. gen. n. 1089. Reich. n. 1190. Schreb. n. 1476.

Juss. 396. Anguina. Mich.

Class. 21. 9. Monoecia Syngenesia.

Nat. order of *Cucurbitaceae*.

#### GENERIC CHARACTER.

##### \* Male flowers.

CAL. Perianth one-leafed, club-shaped, very long; smooth: mouth five-toothed, reflexed, small.

COR. five-parted; growing to the calyx, flat, spreading: segments ovate-lanceolate, ciliate; with very long branching hairs.

STAM. Filaments three, very short, at the top of the calyx. Anther a cylindrical erect body, covered on all sides with a fariniferous line creeping up and down.

PIST. Styles three, very small, growing to the tube of the calyx.

##### \* Females on the same plant with the males.

CAL. Perianth as in the male, superior, deciduous.

COR. as in the male.

PIST. Germ oblong, slender, inferior. Style filiform; length of the calyx. Stigmas three, oblong, awl-shaped, gaping.

PER. Pome oblong, three-celled; cells remote.

SEEDS many, compressed, obtuse, coated.

#### ESSENTIAL CHARACTER.

CAL. five-toothed. COR. five-parted, ciliate.

MALE. Filaments three.

FEM. Style trifid. Pome oblong.

#### SPECIES.

1. *Trichosanthes Anguina*. Snake Gourd.

Lin. spec. 1432. Juss. 867. Reich. 4. 199. mant. 497. hort. cliff. 450. Lour. cochinch. 588. ed. Willd. 722.

Anguina. Mill. fig. 21. t. 32.—sinensis; flore albo elegantissimo, fructu oblongo intorto. Mich. gen. 12. t. 9.

Cucurbita sinensis fructu longo anguino vario, flore candido capillamentis tenuissimis ornato. Tilli pisan. 49. t. 22. Sabb. hort. rom. 1. t. 71.

Pomes round oblong curved in.

2. *Trichosanthes nervifolia*.

Lin. spec. 1432. Reich. 4. 199.

Tota-piri. Rheed. mal. 8. t. 17. Raii suppl. 337.

Pomes ovate acute, leaves cordate-oblong three-nerved toothed.

3. *Trichosanthes cucumerina*.

Lin. spec. 1432. Reich. 4. 199. Thunb. jap. 322.

Lour. cochinch. 588. ed. Willd. 722. Burm. ind. 208.

Pada-valam. Rheed. mal. 8. t. 15.

Pomes ovate acute, leaves cordate angular.

4. *Trichosanthes amara*.

Lin. spec. 1432. Reich. 4. 200.

Colocynthis flore albo fimbriato, fructu oblongo.

Plum. amer. 86. t. 101. Raii suppl. 332.

Pomes turbinate-ovate.

5. *Trichosanthes pilosa*.

Lour. cochinch. 588. ed. Willd. 723.

Stem and leaves hairy, spikes axillary, bractes lanceolate serrate, pomes ovate acute.

6. *Trichosanthes tricuspida*.

Lour. cochinch. 589. ed. Willd. 723.

Pomes ovate acute, leaves three-cusped smooth many-nerved, stipules roundish thick crenate, spikes axillary.

7. *Trichosanthes scabra*.

Lour. cochinch. 589. ed. Willd. 723.

Pomes roundish, leaves roundish rugged very much wrinkled, peduncles one-flowered.

#### DESCRIPTIONS, &c.

1. Stem obtusely five-cornered, rough-haired, climbing by tendrils. Petioles thicker than the stem, rough-haired, subhispid. Leaves cordate, sublobed, repand, tooth-

<sup>m</sup> Withering. <sup>n</sup> Burman. <sup>o</sup> Thunberg. <sup>p</sup> Browne.  
<sup>q</sup> Sloane. <sup>r</sup> Linn. spec. <sup>s</sup> Smith dorris. 245.  
<sup>t</sup> Idem. <sup>u</sup> Hort. kew. <sup>x</sup> Thunberg.



toothletted, pubescent, with pedate nerves underneath. Peduncles axillary, in pairs, besides the trifid tendril. Female peduncle shorter, one-flowered: male peduncle longer, subpanicled. Corolla white with white ciliæ, simple at the base, the rest alternately branched, longer than the corolla. Seeds like those of *Momordica*<sup>7</sup>. Pome long, slender, acuminate at both ends, smooth, twisted and convoluted, with alternate longitudinal green and white stripes<sup>2</sup>.]

It is an annual; the stalks run to a great length, and if they are not supported, trail upon the ground, as Cucumbers and Melons. The leaves are angular and rough. The flowers come out from the side of the stalk, are white, and cut into many small threads. The fruit is taper and near a foot long.

Native of China [and Cochinchina.—Cultivated in 1755, by Mr. Miller. It flowers in may and june<sup>2</sup>.

2. Stems slender, twisted and a little angular. Leaves on twisted petioles with tendrils, ending in a point, ciliate at the edge, brown above, pale beneath. Flowers on oblong greenish peduncles, white within, with long white threads twisted together at the edges, on the outside pale green with brownish veins.—Native of the East Indies<sup>6</sup>.

3. Stem very long, climbing, herbaceous, branched. Leaves wide-cordate, crenate, the lower ones three-lobed, the upper palmate. Flowers white, ciliate, axillary. Pomes smooth, red or orange-coloured, five-celled, two inches long<sup>5</sup>, the size of a pear. Seeds subtriangular, gibbous, with a tumid margin. The seeds are sometimes used in disorders of the stomach and bowels<sup>4</sup>: and the plant is celebrated for its virtues in *Hortus malabaricus*.

Native of the East Indies, Japan and Cochinchina.

4. Stems very slender, smooth, green, angular, flexile: joints about two inches distant, with very slender long tendrils, a leaf, and often a flower at each. Leaves not more than an inch in length, cut, roughish, with small ash-coloured spots and numerous dots scarcely visible on the upper surface, on petioles an inch in length. Flowers white, fringed. Fruit in form of a pear, four or five inches long, about an inch and half thick, smooth, greenish with longitudinal stripes of somewhat a brighter colour: pulp very white and bitter. Seeds abundant, longish, narrow, of a dusky sooty ash-colour.

Native of the island of Dominica; annual, flowering there in december<sup>2</sup>.

5. Stem suffruticose, very long, grooved, hairy, climbing with bifid tendrils. Leaves cordate, toothletted, veined; the lower ones palmate, the upper three-lobed. Flowers white, in long lateral spikes. Corolla ciliate with long curling threads. Pomes red, one-celled; with rhomboid, compressed, lobed, dusky seeds.

6. Stem shrubby, climbing with trifid tendrils. Leaves cordate, toothletted, smooth, ending in three points. Flowers white, in axillary spikes: with large, toothed bractes. Corolla fringed. Pomes small, yellow, two-celled, two-seeded.

7. Stem shrubby, many-grooved, climbing with bifid tendrils. Leaves cordate, very much wrinkled, petioled, alternate. Flowers white, with short threads. Pomes small, red, twelve-lobed, five-celled; with many flat, oblong seeds.

The three last species are natives of Cochinchina<sup>1</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed early in the spring; and treat the plants in the same way as Cucumbers and Melons.

[*TRICHOSANTHES PUNCTATA*. See *Feuillea*.]

*TRICOSTEMA*. (From *τριχος* hair, and *στέμνω*, stamen. Hairy-stamened.)

*Lin. gen. n. 733. Reich. n. 791. Schreb. n. 988. Gronov. Juss. 116.*

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ* or *Labiata*.

<sup>7</sup> Linn. mant.

<sup>2</sup> Hort. malab.

<sup>6</sup> Ray from Plumier.

<sup>2</sup> Loureiro.

<sup>6</sup> Loureiro.

<sup>4</sup> Hort. kew.

<sup>4</sup> Thunberg.

<sup>1</sup> Loureiro.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, two-lipped: upper lip twice as large, trifid, equal, acute; lower two-parted acute.

COR. one-petalled, ringent: tube very short: upper lip compressed, sickle-shaped; lower three-parted, the middle segment very small oblong.

STAM. Filaments four, capillary, very long, curved in: two of them a little shorter. Anthers simple.

PIST. Germ four-cleft. Style capillary, length and figure of the filaments. Stigma bifid.

PER. none. Calyx larger, reflexed so that the upper lip becomes the lower, ventricose, converging.

SEEDS four, roundish.

#### ESSENTIAL CHARACTER.

Cor. upper lip sickle-shaped. Stam. very long.

#### SPECIES.

1. *Trichostema dichotoma*.

*Lin. spec. 834. Reich. 3. 96. Willd. 3. 170. hort. cliff. 493. Gron. virg. 90.*

*Scutellaria cærulea, majoranæ folio, americana. Raii suppl. 311.*

*Cassida mariana, majoranæ folio. Petiv. ficc. 243.*

*Stamens very long, standing out.*

2. *Trichostema brachiata*.

*Lin. spec. 834. Reich. 3. 96. Willd. 3. 170.*

*Teucrium virginicum, origani folio. Dill. elth. 380. t. 285. f. 369.*

*Scutellaria cærulea majoranæ folio americana Banisteri. Pluk. alm. 358. amaltb. 191. t. 441. f. 8.*

*Stamens short, included.*

[3. *Trichostema spiralis*.

*Lour. cochinch. 371. ed. Willd. 451.*

*Stamens very long, spiral.]*

#### DESCRIPTIONS, &c.

1. This is an annual plant, which rises about six or eight inches high, dividing into small branches. Leaves small, roundish, not unlike those of Sweet Marjoram, and covered with small, fine, downy hairs. Flowers axillary, small, purple; appearing late in august; so that unless the season proves warm, the seeds will not ripen in England.

[Native of Virginia and Pennsylvania. Cultivated in 1759, by Mr. Miller<sup>2</sup>.]

2. This has an herbaceous branching stalk, which rises from nine inches to a foot high. The leaves are shaped like those of the Wild Marjoram, are a little hairy, and sessile. The flowers are produced at the top of the branches, are small, and of a purple colour. The flowers not appearing till the end of summer, the seeds seldom ripen here.—Native of Virginia.

[Cultivated in Sherard's garden at Eltham before 1732, from seeds communicated by Charles Dubois, Esq. Treasurer of the East India Company<sup>4</sup>.]

3. Stem herbaceous, four feet high, erect. Leaves ovate, acute, quite entire, tomentose. Flowers white-violet, in long terminating spikes. Stamens very long, but being twisted in a spiral, they are retained within the corolla. It approaches to the next preceding species, but the stamens cannot be called short, or even of a middling length.—Native of Cochinchina<sup>1</sup>.]

#### PROPAGATION AND CULTURE.

1. 2. Sow the seeds in autumn, in pots filled with light earth: in winter place the pots under a frame, to shelter them from severe frost, but expose them to the open air at all times when the weather is mild. In the spring transplant them on to a bed of light earth; shading them from the sun till they have taken new root, and keep them clean from weeds.

*TRICHOSTOMUM*. (*Hairy-mouthed*.) One of Hedwig's genera of Mosses, including some of Linneus's Bryums. One of them, namely *T. capillaceum*, is figured in t. 1152 of English Botany.

*TRICOLOR*. See *Amaranthus*.]

*TRIDAX*. (*Θρίδαξ* is the name of some pot-herb in *Dioscorides, Athenæus and Pliny*.)

*Lin. gen. n. 972. Reich. n. 1054. Schreb. n. 1314. Juss. 190.*

<sup>2</sup> Hort. kew.

<sup>4</sup> Dill. elth.

<sup>1</sup> Loureiro.



# T R I

Class. 19. 2. Syngenesia Polygamia Superflua.  
Nat. order of *Compositæ Oppositifoliæ*. *Corymbifera* Juss.

## GENERIC CHARACTER.

CAL. Common cylindrical, imbricate: scales ovate-oblong, obscurely acute, erect.

COR. Compound radiate: Corollets hermaphrodite, tubular in the disk: female in the ray.

Proper in the Hermaphrodites funnel-form, five-toothed, erect:—in the Females, ligulate, three-parted; segments equal, the middle one narrower.

STAM. in the Hermaphrodites, Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. in the Hermaphrodites: Germ oblong. Style bristle-shaped, length of the stamens. Stigma obtuse:—in the Females, Germ oblong. Style filiform, length of the corollet. Stigma obtuse.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites solitary, oblong: down many-rayed, simple, a little longer than the calyx:—in the Females, very like the others.

REC. chaffy, flat: chaffs lanceolate, shorter than the seed.

## ESSENTIAL CHARACTER.

Cal. imbricate, cylindrical. Corollets of the ray three-parted. Down many-rayed, simple. Recept. chaffy.

## SPECIES.

1. *Tridax procumbens*.

Lin. spec. 1268. Reich. 3. 372. hort. cliff. 418.

After americanus procumbens, foliis laciniatis & hirsutis. Houtt. mss.

## DESCRIPTION, &c.

Stalks trailing and emitting roots at the joints, herbaceous and hairy. Leaves placed by pairs, rough, hairy, about an inch and half long, and three quarters of an inch broad, ending in acute points, and acutely jagged on the edges. The flowers are produced upon long naked peduncles which terminate the branches. The florets are of a pale copper colour, inclining to white.

This plant was discovered by Dr. Houftoun, growing naturally by the road-side leading to old La Vera Cruz, in America.

## PROPAGATION AND CULTURE.

Sow the seeds in pots plunged into a hot-bed. When the plants are fit to remove put each into a small pot, filled with light earth: plunge the pots into the tan-pit; shading them from the sun till they have taken new root, and then treating them as other tender plants from the West Indies, placing them in autumn in the bark-stove, where they should constantly remain.

As it rarely perfects seeds here, this plant may be increased, by planting pieces of the stalks, which put forth roots at the joints.

[TRIENTALIS. (So named from its small size.)

Lin. gen. n. 461. Reich. n. 496. Schreb. n. 626.

Gartn. t. 50. Juss. 96.

Class. 7. 1. Heptandria Monogynia.

Nat. order of *Rotaceæ*. *Lyfimachie* Juss.

## GENERIC CHARACTER.

CAL. Perianth seven-leaved: leaflets lanceolate, acuminate, spreading, permanent.

COR. stellate, flat, one-petalled, equal, seven-parted, very slightly cohering at the base: segments ovate-lanceolate.

STAM. Filaments seven, capillary, inserted into the claws of the corolla, patulous, length of the calyx. Anthers simple.

PIST. Germ globular. Style filiform, length of the stamens. Stigma headed.

PER. Berry capsular, juiceless, globular, one-celled, covered with a very thin crust, opening by various sutures.

SEEDS some, angular. Receptacle very large, hollowed out for the seeds.

OBS. Seven is the most common number in this plant, though it sometimes varies.

The fruit is a dry Berry, not opening by valves, as the capsule does.

# T R I

## ESSENTIAL CHARACTER.

Cal. seven-leaved. Cor. seven-parted, equal, flat. Berry juiceless.

## SPECIES.

1. *Trientalis europæa*. Chickweed Winter-green.

Lin. spec. 488. fyst. 352. Reich. 2. 136. Willd.

2. 282. fl. lapp. n. 139. succ. n. 326. Gartn.

fruct. 1. 227. Hudf. angl. 160. Wither. arr.

ed. 3. 363. Smith brit. 406. engl. bot. t. 15.

Lightf. scot. 194. Fl. dan. t. 86. Gumm. norv.

80. n. 230. Roth. germ. 1. 164. 2. 431.

Roemer fl. europ. 1. 11. ic. Krock. files. n. 580.

t. 53. Villars dauph. 3. 365. Kalm. canad. 2.

263. Gmel. sib. 4. 116. Pallas it. 2. 192.

Kniph. cent. 4. n. 94.

Alpine alpina Swenkf. files. 117.

Alsinanthemos. Thal. sylv. 15. Annm. in comm.

petrop. 9. 310. t. 13. Raii syn. 286. Petiv. brit.

t. 62. f. 13.

Herba Trientalis. Baub. hist. 3. 536.

Pyrola alpinæ flore major. Baub. prodr. 100.

P. alpinæ flore europæa. Raii hist. 1101. Mor. hist.

f. 12. t. 10. f. 6.

P. brasiliæ alpinæ flore major & minor. Park.

theat. 509. f. 5.

## DESCRIPTION, &c.

Root perennial, somewhat tuberous, creeping. Stem simple, erect, a span high, almost naked at bottom, leafy at top. Leaves clustered, spreading; lanceolate, quite entire, smooth, veined. Peduncles terminating, aggregate, one-flowered, spreading. Flowers snow-white, very elegant. Leaflets of the calyx awl-shaped. Corolla divided almost to the base, permanent. Stamens varying in number (from five to seven, most frequently six, with the same number of segments to the calyx, Pallas), filiform. Anthers purple. Germ superior. Stigma emarginate. Berry membranaceous. Seeds numerous (about eight G.) gibbous, dotted, fastened to a globular, central receptacle<sup>\*</sup>; which is very large, honey-combed and fungous. The seeds are subovate, flattened a little, very slightly convex on one side, and angular on the other, hollow-dotted, and of a dark colour; they have a very small white navel in the middle of the belly<sup>†</sup>.

Native of the northern parts of Europe, Canada and Siberia, in woods on the sides of mountains, and on turfy heaths. Thomas Willifell first showed it to Mr. Ray, in Yorkshire and Northumberland. It is more plentiful in Scotland.

Linneus, in his Flora Lapponica, appears to have been quite enchanted with this plant, possibly from its being the only Lapland genus of his seventh class. It must be confessed however that the number of its stamina is very inconstant<sup>‡</sup>.

It is found also in Norway, some parts of Germany, Silesia, &c. Villars sets it down as having been discovered in Dauphiné; but he had not seen it himself. It flowers here from may to july.

TRIENTALIS CAPENSIS. See Septas.

TRIFOLIASTRUM. See Trifolium.

TRIFOLIUM AFFINIS. See Urena.]

TRIFOLIUM. (Τριφύλλον of Hippocrates and Dioscorides. From τρεις three, and φύλλον a leaf.)

Lin. gen. n. 896. Reich. n. 968. Schreb. n. 1211.

Tournef. t. 228. Juss. 355. Gartn. t. 153.

Trifolium. Mich. 25. Melilotus. Tournef.

t. 229. Lupinaster. Buxb.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

## GENERIC CHARACTER.

CAL. Umbellet or Head with the common receptacle.

Perianth one-leaved, tubular, five-toothed, permanent.

COR. papilionaceous, commonly permanent, shriveling.

Banner reflected. Wings shorter than the banner.

Keel shorter than the wings.

STAM. Filaments diadelphous (simple and nine-cleft.)

Anthers simple.

<sup>\*</sup> Smith brit.

<sup>†</sup> Gertner.

<sup>‡</sup> Engl. bot.



**PIST.** Germ subovate. Style awl-shaped, ascending. Stigma simple.  
**PER.** Legume scarcely longer than the calyx, one-valved, not opening, deciduous.  
**SEEDS** very few, roundish.

**OBS.** It is very difficult to give a complete character of this genus, with its true and essential mark.

The appearance and various attributes of the species prove this genus to be natural: nor have they discovered the limits who have attempted to divide it.

*Triphylloides* of *Pontedera*, has the corolla monopetalous, the banner wings and keel being united into one.

*Trifolium* of *Micheli*, has the Legume longer than the calyx, and the Florets collected in a head.

*Lupulinum* of *Rivinus*, has the corolla permanent, with a flat inflexed banner.

*Lagopus* of *Rivinus*, has the calyx the length of the corolla and villose.

*Melilotus* of *Tournefort* has the Legume longer than the calyx.

*Lupinaster* of *Buxbaum* has the Legumes many-seeded, and the Leaves quinate.

#### ESSENTIAL CHARACTER.

Flowers in a head. Legume scarcely longer than the calyx, not opening, deciduous.

#### SPECIES.

1. *Melilots*. Legumes naked, many-seeded.
1. *Trifolium cæruleum*. Blue Melilot Trefoil.  
*Lin. spec.* 1077. *Reich.* 3. 546. *hort. cliff.* 375. *Gært. fruct.* 2. 335. *Blackw. t.* 284. *Kniph. cent.* 5. n. 92. *Regnault bot. Krock. files. n.* 1199.  
*Melilotus cærulea.* *Rivin. tetr. t.* 9.  
*Lotus hortensis odorata.* *Baub. pin.* 331.  
*L. sylvestris.* *Camer. epit.* 724.  
*Racemes* ovate, legumes half naked mucronate, stem erect, spikes oblong.
- [2. *Trifolium indicum*. Indian Melilot Trefoil.  
*Lin. spec.* 1077. *Reich.* 3. 546. *hort. upf.* 223. *fl. zeyl. n.* 552. *Gært. fruct.* 2. 335. *Lour. cochinch.* 444. *ed. Willd.* 541. *Kniph. cent.* 10. n. 90. *Pluk. phyt. t.* 45. f. 4.  
*Melilotus indica.* *Allion. pedem. n.* 1121. *Raii hist.* 953.  
*Melilotus minima.* *Rivin. tetr. t.* 8.  
*β. Pluk. phyt. t.* 45. f. 5.—*γ. Baub. hist.* 2. 371. *pin.* 331. *prodr.* 144.—*δ. Mor. hist.* 2. 161. *Raii hist.* 951. *M. parviflora.* *Desfont.* 192.  
*Legumes* racemed naked one-seeded, stem erect.
3. *Trifolium massanense*. Sicilian Melilot Trefoil.  
*Lin. syst.* 687. *Reich.* 3. 563. *suppl.* 339. *mant.* 275.  
*Melilotus messanensis.* *Allion. pedem. n.* 1124. *Desfont. atlant.* 2. 192. *Raii hist.* 952. *Tournef. inst.* 407.  
*M. minima recta lutea*, filiquis crassis, curtis in capitulum congestis radiatis, femine *Fœnugræci*. *Mor. hist.* 2. 162. f. 2. t. 16. f. 9. et t. 15. f. 9.  
*Trifolium fructu racemoso.* *Bocc. mus. t.* 124.  
*Legumes* racemed naked one-seeded bow-striated semioval acute, stem erect.
4. *Trifolium polonicum*. Polonian Melilot Trefoil.  
*Lin. spec.* 1078. *Reich.* 3. 546. *Gært. fruct.* 2. 335. *Rcyg. ged.* 2. 119. *Gmel. it.* 1. 139.  
*Legumes* racemed naked two-seeded lanceolate, stem erect.]
5. *Trifolium officinale*. Common Melilot Trefoil.  
*Lin. spec.* 1078. *Reich.* 3. 547. *hort. cliff.* 376. *upf.* 223. *fl. succ. n.* 663. *mat. med.* 175. *Huds. angl.* 323. *Wüher. arr. ed.* 3. 645. *Smith brit.* 781. *Hull.* 162. *Lightf. scot.* 402. *Relh. cant. ed.* 2. n. 602. *Sibth. oxon. n.* 635. *Abbot bedf. n.* 528. *Fl. dan. t.* 934. *Pollich pal. n.* 697. *Neck. gallob.* 315. *Crantz austr.* 404. *Scop. carn. n.* 935. *Krock. files. n.* 1198. *Villars dauph.* 3. 476. *Affo arag. n.* 718. *Gmel. sib.* 4. 23. t. 7. *Kniph. cent.* 7. n. 95. *Blackw. t.* 80. *Rivin. tetr. t.* 6. *Regnault bot. Fl. rust. t.* 72. *Bulliard herb. t.* 255.

- T. odoratum* f. *Melilotus*. *Dod. pempt.* 567.—*vulgaris flore luteo.* *Baub. hist.* 2. 370.  
*Melilotus officinalis.* *Desfont. atlant.* 2. 191. *Hall. helv. n.* 362. *Dodart. ic. Allion. pedem. n.* 1122.  
*M. officinarum Germaniæ.* *Baub. pin.* 331. *Tournef. inst.* 407.  
*M. germanica.* *Lob. ic.* 2. 43. 2. *obs.* 501. 1. *Ger.* 1034. 4. *emac.* 1205. 4.  
*M. vulgaris.* *Trag.* 591. *Park. theat.* 719. *Raii hist.* 951. *syn.* 331.  
*M. filiculis pendentibus curtis lutea vulgaris officinarum.* *Mor. hist. f.* 2. t. 16. f. 2.  
*Lotus sylvestris.* *Tabern. ic.* 508.  
*L. urbana.* *Matth.* 1162.  
*Saxifraga lutea.* *Fuchs. hist.* 749.
- β. *Melilotus officinarum Germaniæ flore albo.* *Tournef. inst.* 407.
- γ. *M. vulgaris altissima frutescens, flore albo, f. luteo.* *Raii suppl.* 461.  
*Legumes* racemed naked two-seeded wrinkled acute, stem erect.
- [6. *Trifolium italicum*. Italian Melilot Trefoil.  
*Lin. spec.* 1078. *Reich.* 3. 547. *Gært. fruct.* 2. 336.  
*Melilotus italica.* *Rivin. tetr. t.* 7. *Camer. hort.* 29. *Park. theat.* 719. 3. *Allion. pedem. n.* 1123. *Desfont. atlant.* 2. 192.  
*M. ital. folliculis rotundis.* *Baub. pin.* 331. *Tournef. inst.* 407.  
*M. magno femine rotundo rugoso.* *Baub. hist.* 2. 371. *Raii hist.* 951.  
*Legumes* racemed naked two-seeded wrinkled obtuse, stem erect, leaflets entire.
7. *Trifolium creticum*. Cretan Melilot Trefoil.  
*Lin. spec.* 1078. *Reich.* 3. 548. *Gært. fruct.* 2. 336.  
*T. peltatum creticum.* *Baub. pin.* 339. *prodr.* 142. *Baub. hist.* 2. 381. *Mor. hist. f.* 2. t. 14. f. 3.  
*Melilotus cretica.* *Desfont. atlant.* 2. 193.—*fructu maximo.* *Tournef. inst.* 407.  
*Legumes* racemed naked two-seeded membranaceous, stem nearly upright.
8. *Trifolium ornithopodioides*. Bird's-foot Melilot Trefoil.  
*Lin. spec.* 1078. *syst.* 687. *Reich.* 3. 548. *Huds. angl.* 324. *Wüher. arr. ed.* 3. 645. *Smith brit.* 782. *engl. bot. t.* 1047. *Hull* 162. *Lightf. scot.* 403. *Curt. lond.* 2. t. 53. *Fl. dan. t.* 368. *Pluk. phyt. t.* 68. f. 1.  
*Fœnugræcum humile repens, Ornithopodii filiquis brevibus erectis.* *Raii syn.* 331. t. 14. f. 1.  
*Legumes* naked eight-seeded about three together twice as long as the calyx, stems declined.  
2. *Lotoid.* *Legumes* covered, many-seeded.
9. *Trifolium Lupinaster*. Bastard Lupine or Trefoil.  
*Lin. spec.* 1079. *syst.* 687. *Reich.* 3. 548. *hort. upf.* 223. *Thunb. jap.* 290. *Gmel. sib.* 4. 19. t. 6. f. 1. *Fl. rust. t.* 16.  
*Lupinaster.* *Buxb. act. petrop.* 2. 345. t. 20. *Anm. ruth.* 144. 144.  
*Heads* halved, leaves quinate sessile, legumes many-seeded.
10. *Trifolium reflexum*. Reflex-headed Trefoil.  
*Lin. spec.* 1079. *syst.* 687. *Reich.* 3. 548. *Gron. virg.* 1. 84. 2. 110. *Pluk. mant.* 285.  
*Fruiting* heads bent back, legumes three-seeded.
11. *Trifolium strictum*. Upright Trefoil.  
*Lin. spec.* 1079. *Reich.* 3. 549. *Mich. gen.* 29. t. 25. f. 7. *Allion. pedem. n.* 1092.  
*Heads* globular, legumes two-seeded, calyxes length of the corolla, leaflets serrulate, stipules rhomboid.
12. *Trifolium hybridum*. Mule Trefoil.  
*Lin. spec.* 1079. *syst.* 687. *Reich.* 3. 549. *fl. succ. n.* 664. *Retz. obs.* 6. 33. *Hall. helv. n.* 368. *Pollich pal. n.* 698. *Desfont. atlant.* 2. 195. *Krock. files. n.* 1200.  
*Trifolium.* *Mich. gen.* 27. t. 25. f. 2, 6.
- β. *T. orientale altissimum, caule fistuloso, flore albo.* *Vaill. par. t.* 22. f. 5.  
*T. flore albo.* *Rivin. tetr. t.* 127. t. 2.  
*Heads* umbelled, legumes four-seeded, stem ascending.]
13. *Tri-*



13. *Trifolium repens*. *Creeping White Trefoil*. Dutch Clover.  
*Lin. spec.* 1080. *Reich.* 3. 549. *fl. lapp. n.* 274. *suec. n.* 665. *mat. med.* 175. *hort. cliff.* 375. *Afzel. in Lin. transf.* 1. 227. *Huds. angl.* 324. *Wither. arr. ed.* 3. 646. *Smith brit.* 783. *Hull.* 163. *Lightf. scot.* 404. *Curt. lond.* 3. t. 46. *Relb. cant. n.* 603. *Sibth. oxon. n.* 636. *Abbot bedf. n.* 529. *Fl. dan. t.* 990. *Hall. helv. n.* 367. *Pollich pal. n.* 699. *Neck. gallob.* 315. *Crantz austr.* 405. *Scop. carn. n.* 934. *Krock. files. n.* 1201. *Villars dauph.* 3. 477. *Allion. pedem. n.* 1093. *Gron. virg.* 85. *Rivin. tetr. t.* 14. f. 2. *Kniph. cent.* 7. n. 96. *Fl. rust. t.* 34.  
*T. pratense.* *Lob. ic.* 2. 29. *Dod. pempt.* 565. *Ger. emac.* 1185. *ic. non descr.*—vulgare purpureum. *Park. theat.* 1110. 1.  
*T. prat. album.* *Baub. pin.* 327. *Raii hist.* 942. *syn.* 327. *Mor. hist. f.* 2. t. 12. f. 2.  
*T. prat. flore albo minus & foemina glabrum.* *Baub. hist.* 2. 380. 3.  
*Trifoliastrum.* *Mich. gen. t.* 25. f. 3. 4.  
*Melilotus parisiensis humifusus, foliis ferratis glabris.* *Vaill. par. t.* 22. f. 1.  
*Heads umbelled, legumes four-seeded, stem creeping.*
- [14. *Trifolium comosum*.  
*Lin. spec.* 1080. *Reich.* 3. 550.  
*Lagopus americanus, floribus majoribus comosis.* *Petiv. mus.* 214.  
*Heads globular-umbelled imbricate, banners bent down permanent, legumes four-seeded.*
15. *Trifolium alpinum*. *Alpine Trefoil*.  
*Lin. spec.* 1080. *Reich.* 3. 550. *hort. cliff.* 499. *Pallas it.* 2. 123. *Hall. helv. n.* 369. *Sauv. monsp.* 185. *Villars dauph.* 3. 478. *Allion. pedem. n.* 1094.  
*T. alpinum, flore magno, radice dulci.* *Baub. pin.* 328. *prodr.* 143.  
*T. angustifolium alpinum.* *Pon. bald.* 340. *ic.* *Park. theat.* 1104. f. 4. *Ger. emac.* 1207. f. 2.  
*T. alpinum rheticum astragaloides.* *Baub. hist.* 2. 376. *Raii hist.* 956.  
*Heads umbelled, scape naked, legumes two-seeded pendulous, leaflets linear-lanceolate.*  
3. *Lagopus*: with villose calyxes.
16. *Trifolium subterraneum*. *Subterraneous Trefoil*.  
*Lin. spec.* 1080. *synt.* 688. *Reich.* 3. 550. *hort. cliff.* 374. *ups.* 222. *Huds. angl.* 328. *Wither. arr. ed.* 3. 647. *Smith brit.* 783. *engl. bot. t.* 1048. *Hull.* 163. *Curt. lond.* 2. t. 54. *Relb. cant. ed.* 2. n. 604. *Sibth. oxon. n.* 637. *Abbot bedf. n.* 530. *Dalib. par.* 224. *Ger. prov.* 510. n. 15. *Allion. pedem. n.* 1095. *Rivin. tetr. t.* 14. f. 1. *Affo arag. n.* 721.  
*T. pumilum supinum, flosculis longis albis.* *Raii hist.* 942. *syn.* 327. t. 13. f. 2.  
*T. blesense.* *Dodart mem.* 4. 313.  
*T. subterraneum tricoccum Galtonium.* *Mor. hist. f.* 2. t. 14. f. 5.  
*T. pratense supinum &c.* *Barr. ic. t.* 881.  
*Heads villose four-flowered or thereabouts, with a central reflexed rigid stellate involucre wrapping up the fruit.*
17. *Trifolium globosum*. *Globular Trefoil*.  
*Lin. spec.* 1081. *Reich.* 3. 551. *hort. cliff.* 374. *Lour. cochinch.* 444. *ed. Willd.* 542.  
*T. orientale, capitulo lanuginoso.* *Tournef. cor.* 27.  
*Heads villose globular, upper calyxes destitute of a floret.*
18. *Trifolium Cherleri*. *Hairy Trefoil*.  
*Lin. spec.* 1081. *synt.* 683. *Reich.* 3. 551. *mant.* 451. *amoen.* 4. 286. *Ger. prov.* 509. 13. *Sauv. monsp.* 184. *Desfont. atlant.* 197. *Allion. pedem. n.* 1096. *Mill. fig. t.* 267. f. 1?  
*T. globosum repens.* *Baub. pin.* 329. *prodr.* 143. *Tournef. inst.* 405.  
*T. glomerulis personatae Cherleri.* *Baub. hist.* 2. 377. *Mor. hist. f.* 2. t. 13. f. 11. *Raii hist.* 945.  
*Lagopus minor supinus, molli & compresso capite, flore albo.* *Barr. ic. t.* 859.  
*Heads villose globular terminating solitary, all the calyxes fertile, stems procumbent, leaves obcordate.*
19. *Trifolium lappaceum*. *Burr Trefoil*.  
*Lin. spec.* 1082. *synt.* 688. *Reich.* 3. 552. *Ger. prov.* 508. n. 12. *Allion. pedem. n.* 1102. *Affo arag. n.* 724.  
*T. globosum f. capitulo lagopi rotundiore.* *Baub. pin.* 329. *prodr.* 143.  
*T. capitulo glomerato rigido.* *Baub. hist.* 2. 377. *Raii hist.* 948.  
*T. globoso capite.* *Park. theat.* 1108.  
*Spikes subovate, calycine teeth setaceous hispid, stem patulous, leaves ovate.]*
20. *Trifolium rubens*. *Long-spiked Trefoil*.  
*Lin. spec.* 1081. *synt.* 688. *Reich.* 3. 552. *mant.* 451. *hort. cliff.* 375. *Hall. helv. n.* 375. *Pollich pal. n.* 700. *Krock. files. n.* 1202. *Sauv. monsp.* 184. *Villars dauph.* 3. 479. *Crantz austr.* 406. *Jacqu. austr.* 4. 44. t. 385. *Scop. carn. n.* 925. *Allion. pedem. n.* 1097. *Affo arag. n.* 722. *Desfont. atlant.* 196. *Kniph. cent.* 5. n. 93. *Afzel. in Lin. transf.* 1. 211. *Fl. rust. t.* 9.  
*T. montanum spica longissima rubente.* *Baub. pin.* 328. *Tournef. inst.* 405.  
*T. purpureum majus, folio & spica longiore.* *Baub. hist.* 2. 375. *Raii hist.* 944.  
*Trifolii majoris 3 altera species.* *Clus. hist.* 2. 246  
*Lagopus major alter.* *Dod. pempt.* 578.  
*L. altera folio pinnato.* *Lob. ic.* 2. 40.  
*L. major spica longiore.* *Ger. emac.* 1192. f. 2.  
*L. major folio pinnato.* *Park. theat.* 1106.  
β. *Trifolium spica oblonga rubra.* *Baub. pin.* 328.  
*T. majus flore purpureo.* *Ger. emac.* 1186. f. 4.  
*T. montanum majus purpureum.* *Park. theat.* 1103. 1.—item, 1104. 1, 2. *ic.*  
*T. purp. mont. majus spica oblonga.* *Mor. hist.* 2. 139. n. 1.—item.  
*T. lagopoides montanum, 3.* *Clus. hist. Mor. f.* 2. t. 12. f. 1.  
*Spikes villose long, corollas one-petalled, stem erect, leaves serrulate.*
21. *Trifolium pratense*. *Common Purple Trefoil, or Honey-suckle Trefoil*.  
*Lin. spec.* 1082. *Reich.* 3. 552. *fl. lapp. n.* 273. *suec. n.* 666. *hort. cliff.* 375. *Afzel. in Lin. transf.* 1. 240. *Huds. angl.* 325. *Wither. arr. ed.* 3. 651. *Smith brit.* 785. *Hull.* 163. *Lightf. scot.* 404. *Relb. cant. ed.* 2. n. 606. *Sibth. oxon. n.* 638. *Abbot bedf. n.* 531. *Pollich. pal. n.* 701. *Leers herb. n.* 574. *Krock. files. n.* 1203. *Neck. gallob.* 315. *Hall. helv. n.* 377. *Crantz austr.* 407. *Scop. carn. n.* 923. *Villars dauph.* 3. 483. *Allion. pedem. n.* 1100. *Kniph. cent.* 1. n. 91. *Desfont. atlant.* 2. 194. *Affo arag. n.* 723. *Regnault. bot.—Lonic.* 1. 104. 4. *Trag. hist.* 586. *Matth.* 835. 609. *Camer. epit.* 582. *Tabern. ic.* 523. *Dalech. hist.* 1354. *Ger.* 1017. 1.  
*T. pratense purpureum.* *Baub. pin.* 327. *Fuchs. hist.* 817. *Raii hist.* 943. *syn.* 328.  
*T. purpureum vulgare.* *Baub. hist.* 2. 374.  
*T. vulgare.* *Blackw. t.* 20.  
*Trifolium.* *Rivin. tetr. t.* 11. f. 1.  
*T. medium.* *Fl. rust. t.* 2.  
β. *fativa.* *Cultivated, Common or Broad Clover.*  
*Trifolium pratense.* *Fl. dan. t.* 989. *Fl. rust. t.* 3. and 36.  
*T. pratense γ.* *Huds. angl.* 325. *With.* 632. *var.* 3. *Hall. n.* 377. β.  
*T. purpureum majus sativum pratensi simile.* *Raii syn.* 328.  
γ. *alba.* *White-flowered Clover.*  
*T. flore albo.* *Afzel. in Lin. transf.* 1. 243. *Wither. arr.* 652. *var.* 4. *Hall. n.* 377. γ.  
δ. *T. prat. purp. minus, foliis cordatis.* *Raii syn.* 328. t. 13. f. 1.  
*Spikes dense, stems ascending, corollas unequal, calycine teeth four equal, stipules awned.*
- [22. *Trifolium medium*. *Zigzag Trefoil*.  
*Lin. faun. suec. ed.* 2. 558. *Huds. angl. ed.* 1. 284. *Afzel. in Linn. transf.* 1. 237. *Wither. arr. ed.* 3. 650. *Smith brit.* 786. *engl. bot. t.* 190. *Hull.*



- Hull. 163. Relb. cant. ed. 2. n. 607. Sibth. oxon. n. 639. Dicks. hort. succ. 4. 10.  
 T. flexuosum. Jacqu. austr. 4. 45. t. 386. Retz. prodr. 174. Allion. pedem. n. 1105. Fl. rust. t. 13.  
 T. alpestre. Crantz austr. 407. Scop. carn. n. 924. Leers herb. n. 575. Pollich pal. n. 702. Fl. dan. t. 662. Retz. prodr. 141. n. 819. Hudf. angl. ed. 2. 326. Lightf. scot. 406. Relb. cant. ed. 1. n. 539.  
 T. n. 376. Hall. belv.  
 T. pratense purpureum majus. Raii hist. 944.  
 T. purp. majus, foliis longioribus & angustioribus, floribus saturatoribus. Raii syn. 328.  
 Spikes loose, stems flexuose branched, corollas nearly equal, stipules subulate-linear.  
 23. Trifolium alpestre. Alpine Trefoil.  
 Lin. spec. 1082. syst. 688. Reich. 3. 553. mant. 451. Afzel. in Linn. trans. 1. 234. Jacqu. obs. 3. 14. t. 64. fl. austr. 5. 15. t. 433. Allion. pedem. n. 1101. Fl. rust. t. 1.  
 T. majus purpureo flore 2. Clus. pann. 760.  
 T. majus 2. Clus. hist. 2. 245.  
 T. majus Clusii secundum, non album, sed rubrum. Bauh. hist. 2. 375.  
 T. montanum purpureum majus. Bauh. pin. 328? Raii hist. 944. 6. Tournef. inst. 404. Boerb. lugdb. 2. 30. n. 1.  
 T. fol. long. fl. purp. Rivin. tetr. t. 12. fig. fin.  
 Spikes dense, corollas nearly equal, stipules setaceous diverging, leaflets lanceolate, stem stiff and quite simple.  
 24. Trifolium pannonicum. Hungarian Trefoil.  
 Lin. spec. 1082. syst. 688. Reich. 3. 553. mant. 276. Jacqu. obs. 21. t. 42. Afzel. in Linn. trans. 1. 213.  
 T. alpestre. Gouan illustr. 52?  
 Spikes villose long, corollas one-petalled, leaves quite entire, stem erect, both extremely villose.]  
 25. Trifolium squarrosum. Round-leaved Trefoil.  
 Lin. spec. 1082. syst. 689. Reich. 3. 554.  
 T. purpureum lagopoides hirsutum annuum rotundifolium, spica dilute rubente. Mor. hist. 2. 140. f. 2. t. 13. f. 1.  
 T. hispanicum angustifolium, spica dilute rubente. Bauh. pin. 328.  
 Spikes oblong somewhat hairy, the lowest teeth of the calyxes reflexed, stem herbaceous erect.  
 26. Trifolium incarnatum. Crimson Trefoil.  
 Lin. spec. 1083. syst. 689. Reich. 3. 554. hort. upf. 222. Gouan illustr. 51. Gertn. fruct. 2. 334. Hall. belv. n. 374. Dalib. par. 225. Allion. pedem. n. 1103. Desfont. atlant. 2. 196. Mill. fig. t. 267. f. 2. Curt. magaz. t. 328. Retz. obs. 3. 41. n. 88.  
 T. latifolium. Rivin. tetr. t. 77. sec. Reich.  
 T. spica subrotunda rubra. Bauh. pin. 328. Tournef. inst. 405.  
 T. albo-incarnatum spicatum, f. Lagopus maximus. Bauh. hist. 2. 376. Raii hist. 948.  
 T. alopecurum latifolium, spica rotunda rubra. Barr. ic. 697.  
 Lagopus maximum folio & facie Trifolii pratensis. Lob. ic. 2. 39.  
 Lagopus maximus Lobelii. Clus. hist. 2. 246. Ger. emac. 1192.—flore rubro. Park. theat. 1106. f. 1.  
 L. major folio Trifolii. Dod. pempt. 577.  
 L. maxima. Dalech. hist. 442.  
 Spikes villose oblong obtuse leafless, leaflets roundish crenate.  
 27. Trifolium ochroleucum. Pallid or Sulphur-coloured Trefoil.  
 Lin. spec. 1083. syst. 689. Reich. 3. 554. Gouan illustr. 51. Afzel. in Linn. trans. 1. 229. Hudf. angl. 325. Wither. arr. ed. 3. 653. Smith brit. 784. engl. bot. t. 1224. Hull. 164. Relb. cant. ed. 2. n. 605. Abbot bedf. n. 533. Curt. lond. 6. t. 49. Jacqu. austr. t. 40. Hall. belv. n. 378. Krock. siles. n. 1208. Villars dauph. 3. 485. Allion. pedem. n. 1098. Fl. rust. t. 35. Dicks. hort. succ. 3. 9.  
 T. pratense hirsutum majus, flore albo-sulphureo. Raii hist. 943. 8. syn. 328. 3.

- T. montanum majus flore albo-sulphureo. Merr. pin. 121.  
 T. pratense album. Fuchs. hist. 818.  
 T. lagopoides annuum hirsutum pallide luteum. Mor. hist. 2. 141. n. 12. f. 2. t. 12. f. 12.  
 Head villose, stem erect pubescent, lowest leaflets obcordate, lowest calycine tooth very long.  
 28. Trifolium angustifolium. Narrow-leaved Trefoil.  
 Lin. spec. 1083. syst. 689. Reich. 3. 555. hort. cliff. 375. upf. 222. Leers herb. n. 576. Scop. carn. n. 929. Villars dauph. 3. 485. Allion. pedem. n. 1104. Affo arag. n. 725. Desfont. atlant. 2. 198.  
 T. montanum angustissimum spicatum. Bauh. pin. 328. Tournef. inst. 403.  
 T. angustifolium spicatum. Bauh. hist. 2. 376. Raii hist. 949.  
 T. alopecurum angustifolium elatius. Barr. ic. 698.  
 T. lagopoides angustif. Mor. hist. f. 2. t. 13. 6. ord. 1.  
 Lagopus hispanicus. Rivin. tetr. t. 16.  
 L. altera angustifolia. Ger. emac. 1193.  
 L. major angustifolius. Park. theat. 1106. n. 3.  
 Spikes villose comic-oblong, calycine teeth setaceous almost equal, leaflets linear.  
 29. Trifolium arvense. Hare's-foot Trefoil.  
 Lin. spec. 1083. syst. 689. Reich. 3. 555. hort. cliff. 375. fl. succ. n. 668. Gertn. fruct. 2. 335. Hudf. angl. 326. Wither. arr. ed. 3. 649. Smith brit. 787. engl. bot. t. 944. Hull. 163. Lightf. scot. 406. Curt. lond. 6. t. 50. Relb. cant. ed. 2. n. 608. Sibth. oxon. n. 640. Abbot bedf. n. 534. Fl. dan. t. 724. Hall. belv. n. 373. Pollich pal. n. 703. Crantz austr. 405. Scop. carn. n. 930. Krock. siles. n. 1207. Villars dauph. 3. 486. Allion. pedem. n. 1106. Desfont. atlant. 2. 198. Dicks. hort. succ. 3. 8.  
 T. Lagopus. Neck. gallob. 315.  
 T. arvense humile spicatum, f. Lagopus. Bauh. pin. 328. Tournef. inst. 405. Raii syn. 330.  
 T. lagopoides arvense humile. Mor. hist. f. 2. t. 13. f. 8.  
 Lagopus. Fuchs. hist. 494. Matth. 983. Camer. epit. 724. Dod. pempt. 577. 1. Rivin. tetr. t. 16. Blackw. t. 450.  
 L. pes leporis. Lob. ic. 2. 39. 1. obs. 498. 4.  
 L. vulgaris. Dalech. hist. 441. Park. theat. 1107. 6. Raii hist. 948.  
 L. trifolius quorundam. Bauh. hist. 2. 377.  
 L. angustifolia minor erectior. Barr. ic. 901.  
 Lagopus Lagopus. Tabern. ic. 524.  
 L. pes leporis. Ger. 1023. 2. emac. 1193. 3.  
 Lotus campestris. Trag. 595.  
 β. Lagopus perpusillus supinus perelegans maritimus. Dill. in Raii syn. 330. t. 15. f. 2.  
 Spikes extremely villose subcylindrical, calycine teeth setaceous longer than the corolla, leaflets obovate-linear.  
 [30. Trifolium maritimum. Teasel-headed Trefoil.  
 Hudf. angl. ed. 1. 284. Wither. arr. ed. 3. 633. Smith brit. 786. engl. bot. t. 220. Hull. 164. Dicks. hort. succ. 7. 8.  
 T. stellatum. Hudf. angl. ed. 2. 326. Wither. ed. 2. 799.  
 T. stell. glabrum. Ger. emac. 1208. Raii hist. 945. syn. 329. Pluk. phyt. t. 113. f. 4.  
 T. spicatum minus, flore minore dilute purpureo. Mor. hist. f. 2. t. 14. f. 1. ord. 1.  
 Spikes hairy globular, calycine teeth leafy finally spreading, stipules lanceolate, leaflets obovate.  
 31. Trifolium stellatum. Star-headed Trefoil.  
 Lin. spec. 1083. syst. 689. Reich. 3. 556. hort. cliff. 375. Gertn. fruct. 2. 333. Murr. prodr. 174. Scop. carn. n. 926. Sauv. monsp. 184. Villars dauph. 3. 486. Allion. pedem. n. 1107. Desfont. atlant. 2. 199.—Bauh. pin. 329. prodr. 143. Raii hist. 945. Tournef. inst. 405. Fl. rust. t. 94.  
 T. stellatum monspeliensium. Park. theat. 1108. 1.  
 T. stell. purpureum monsp. Bauh. hist. 2. 376. Mor. hist. f. 2. t. 13. f. 9.  
 Lagopus latifolius. Rivin. tetr. t. 17.  
 L. minor



- L. minor erectus, capite globofo stellato, flore purpureo. *Barr. ic.* 860.  
*Spikes hairy, calyxes spreading, stem diffused, leaflets obcordate.*
32. *Trifolium clypeatum*. *Oriental Trefoil*.  
*Lin. spec.* 1084. *Reich.* 3. 556. *hort. cliff.* 373.  
*Gärtn. fruct.* 2. 333. *Allion. pedem. n.* 1109.  
*T. clypeatum argenteum*. *Alp. exot.* 307. t. 306. v.  
*Raii hist.* 945. 12.  
*Spikes ovate, calyxes patulous, lowest segment largest lanceolate, leaflets ovate.*
33. *Trifolium scabrum*. *Rough Trefoil*.  
*Lin. spec.* 1084. *Reich.* 3. 556. *hort. cliff.* 373.  
*Huds. angl.* 327. *Wither. arr. ed.* 3. 648.  
*Smith brit.* 788. *engl. bot. t.* 903. *Hull.* 163.  
*Lightf. scot.* 407. *Curt. lond.* 6. t. 48. *Relb.*  
*cant. ed.* 2. n. 609. *Sibth. oxon. n.* 641. *Abbot*  
*bedf. n.* 535. *Hall. belv. n.* 371. *Pollich pal.*  
*n.* 704. *Scop. carn. n.* 927. *Sauv. monsp.* 183.  
*Villars dauph.* 3. 488. *Allion. pedem. n.* 1110.  
*Desfont. atlant.* 2. 199.  
*T. capitulo oblongo aspero*. *Bauh. pin.* 329. *prodr.*  
*140. Park. theat.* 1109. n. 11. *Raii hist.* 946.  
*Tournef. inst.* 406.  
*T. flosculis albis, in glomerulis oblongis asperis cauliculis proxime adnatis*. *Bauh. hist.* 2. 378. 4.  
*Raii hist.* 946. *syn.* 329. *Vaill. par. t.* 33. f. 1.  
*Mor. hist. f.* 2. t. 13. f. 10.  
*T. minus capite subrotundo parvo albo et echinato*.  
*Barrel. ic. t.* 870.  
*Heads sessile lateral ovate, calycine teeth unequal permanent rigid recurved.*
34. *Trifolium glomeratum*. *Round-headed Trefoil*.  
*Lin. spec.* 1084. *syft.* 689. *Reich.* 3. 557. *hort.*  
*cliff.* 363. *Murr. prodr.* 174. *Gärtn. fruct.* 2.  
*334. Huds. angl.* 327. *Wither. arr. ed.* 3.  
*648. Smith brit.* 789. *engl. bot. t.* 1063. *Hull.*  
*163. Curt. lond.* 4. t. 51. *Sauv. meth.* 183.  
*Allion. pedem. n.* 1111. *Desfont. atlant.* 2. 200.  
*T. cum glomerulis ad caulum nodos rotundis*. *Raii*  
*syn. ed.* 2. 194. 9. *ed.* 3. 329. 10. *hist.* 948. 24.  
*Pluk. phyt. t.* 113. f. 5. *Tournef. inst.* 406.  
*T. arvense supinum verticillatum*. *Barrel. ic. t.* 882.  
*Heads hemispherical sessile lateral smooth, calycine teeth cordate reflexed veined.*
35. *Trifolium striatum*. *Soft Knotted Trefoil*.  
*Lin. spec.* 1085. *syft.* 689. *Reich.* 3. 557. *fl. suec.*  
*n.* 669. *Gouan illustr.* 51. *Huds. angl.* 327.  
*Wither. arr. ed.* 3. 649. *Smith brit.* 790. *Hull.*  
*163. Lightf. scot.* 408. *Relb. cant. ed.* 2. n.  
*610. Sibth. oxon. n.* 642. *Abbot bedf. n.* 536.  
*Leers herb. n.* 578. *Krock. fles. n.* 1209.  
*Allion. pedem. n.* 1112.  
*T. parvum hirsutum, floribus parvis dilute purpureis, in glomerulis mollioribus et oblongis, semine magno*. *Raii syn.* 329. t. 13. f. 3. *Vaill. par. t.* 33. f. 2.  
*Heads sessile lateral and terminating ovate, calyxes elliptic hirsute grooved, teeth setaceous.*
36. *Trifolium suffocatum*. *Suffocated Trefoil*.  
*Lin. syft.* 690. *Reich.* 3. 563. *mant.* 276. *Wither.*  
*arr. ed.* 3. 656. *Smith brit.* 790. *engl. bot. t.*  
*1049. Hull.* 164. *Jacq. hort. vind. t.* 60.  
*T. minimum supinum, flosculorum & seminum globulis plurimis confertim ad radicem nascentibus*.  
*Raii hist.* 942.  
*T. epithymi capitulis, inter genicula, annuum*. *Cupan. cathol.*  
*T. vernum repens*. *Buxb. cent.* 3. 18. t. 31. f. 2?  
*Heads sessile lateral roundish smoothish, calycine teeth lanceolate acute recurved longer than the corolla.*
37. *Trifolium alexandrinum*. *Egyptian Trefoil*.  
*Lin. spec.* 1085. *syft.* 689. *Reich.* 3. 558. *amoen.*  
*4. 286.*  
*Heads oblong peduncled, stem erect, leaves opposite.*
38. *Trifolium uniflorum*. *One-flowered Trefoil*.  
*Lin. spec.* 1085. *syft.* 689. *Reich.* 3. 558. *amoen.*  
*4. 285.*  
*T. vernum repens purpureum*. *Buxb. cent.* 3. 17. t.  
*31. f. 1.—item, flore albo exiguo. f. 2.*  
*Melilotus cretica humillima humifusa, flore albo magno*.  
*Tournef. cor.* 28?

- Spica trifolia*. *Alp. exot.* 169. t. 168.  
*Stemless, peduncles trifid and subtriflorous shorter than the stipule.*
4. *Bladdery, with inflated ventricose calyxes.*
39. *Trifolium spumosum*. *Bladdered Trefoil*.  
*Lin. spec.* 1085. *syft.* 689. *Reich.* 3. 558. *hort.*  
*cliff.* 373. *Gärtn. fruct.* 2. 334.  
*T. capitulo spumoso lævi*. *Bauh. pin.* 329. *prodr.*  
*140. Raii hist.* 947. 21.  
*T. caule nudo, glomerulis glabris*. *Bauh. hist.* 2.  
*379. Raii hist.* 947. 20.  
*T. vesicarium læve*. *Park. theat.* 1109. n. 9.  
*Spikes ovate, calyxes inflated smooth five-toothed, general involucre five-leaved.*
40. *Trifolium resupinatum*.  
*Lin. spec.* 1086. *Reich.* 3. 558. *hort. cliff.* 373.  
*Gärtn. fruct.* 2. 334. *Gort. gelr.* 429. *Neck.*  
*gallob.* 314. *Krock. fles. n.* 1210. *Villars*  
*dauph.* 3. 489. *Allion. pedem. n.* 1113?  
*T. pratense folliculatum*. *Bauh. pin.* 329. *Raii hist.*  
*947. 19.—flore inverso. Barrel. ic. t.* 872.  
*T. follic. f. vesicarium minus purpureum*. *Bauh. hist.*  
*2. 379.*  
*T. pratense Salmanticum Clusii*. *Park. theat.* 1111.  
*f. 3. Mer. hist. f.* 2. t. 13. f. 12.  
*T. salmanticum*. *Ger.* 1021. f. 3. *emac.* 1189. f. 3.  
*Spikes subovate, corollas turned upside down, calyxes inflated gibbous at the back, stems prostrate.*
41. *Trifolium tomentosum*. *Woolly Trefoil*.  
*Lin. spec.* 1086. *syft.* 690. *Reich.* 3. 559. *Sauv.*  
*monsp.* 175. *Ger. prov.* 510. *Allion. pedem. n.*  
*1114. Gron. orient.* 96. *Desfont. atlant.* 2.  
*200.*  
*T. fragiferum tomentosum*. *Magn. monsp.* 265. t.  
*264.*  
*T. glomerulis tomentosus per caulium longitudinem*.  
*Bauh. hist.* 2. 379. *Raii hist.* 947. n. 23.  
*Spikes sessile globular tomentose, calyxes inflated obtuse.*
42. *Trifolium hispidum*. *Shaggy Trefoil*.  
*Desfont. atlant.* 2. 200. t. 209. f. 1.  
*Heads involucred terminating, calycine teeth setaceous villose, shorter than the corolla; leaflets obovate.*
43. *Trifolium sphærocephalon*. *Globular Trefoil*.  
*Desfont. atlant.* 201. t. 209. f. 2.  
*Villose, heads round involucred, segments of the calyx setaceous longer than the corolla; leaflets obcordate.]*
44. *Trifolium fragiferum*. *Strawberry Trefoil*.  
*Lin. spec.* 1086. *Reich.* 3. 559. *hort. cliff.* 373.  
*fl. suec. n.* 670. *Huds. angl.* 328. *Wither. arr.*  
*ed.* 3. 654. *Smith brit.* 791. *Hull.* 164. *Relb.*  
*cant. ed.* 2. n. 611. *Sibth. oxon. n.* 643.  
*Abbot bedf. n.* 537. *Curt. lond.* 2. 55. *Dicks.*  
*hort. sicc.* 4. 11. *Fl. dan. t.* 1042. *Hall. belv.*  
*n.* 370. *Pollich pal. n.* 705. *Neck. gallob.* 314.  
*Crantz austr.* 412. *Scop. carn. n.* 933. *Krock.*  
*fles. n.* 1211. *Villars dauph.* 3. 489. *Allion.*  
*pedem. n.* 1115. *Affo arag. n.* 728.—*Ger. emac.*  
*1208. Raii hist.* 946. *syn.* 329. *Mor. hist. f.*  
*2. t. 13. f. 14.*  
*T. fragiferum friscum*. *Bauh. pin.* 329. *Clus. cur.*  
*app.* 38. n. 39. *Park. theat.* 1109. 5.  
*T. fragif. folio oblongo*. *Vaill. par. t.* 22. f. 2.  
*Heads roundish, calyxes inflated two-toothed reflexed, stems creeping.*
5. *Hop Trefoils, with the banner of the corolla bent in.*
- [45. *Trifolium montanum*. *Mountain Trefoil*.  
*Lin. spec.* 1087. *syft.* 690. *Reich.* 3. 560. *fl. suec.*  
*n.* 667. *Gouan illustr.* 52. *Hall. belv. n.* 372.  
*Scop. carn. n.* 932. *Pollich. pal. n.* 706. *Crantz*  
*austr.* 408. *Villars dauph.* 3. 490. *Krock. fles.*  
*n.* 1212. *Allion. pedem. n.* 1116. *Affo arag. n.*  
*729. Afzel. in Lin. trans.* 1. 231.  
*T. album*. *Crantz austr.* 408.  
*T. montanum album*. *Bauh. pin.* 328.  
*T. pratense album*. *Fuchs. hist.* 818. *Bauh. hist.*  
*Raii hist.* 943. 7.  
*T. folio longiore, flore albo*. *Rivin. tetr. t.* 12.  
*T. pratense 2. Durante herb.* 1014.  
*Spikes subimbricate about three, banners awl-shaped shrivelling, calyxes naked, stem erect.*
46. *Trifolium*



46. *Trifolium agrarium*. Upright Hop Trefoil.  
*Lin. spec.* 1087. *syft.* 690. *Reich.* 3. 560. *fl. succ.*  
*n.* 671. *hort. cliff.* 374. *Fl. dan. t.* 558. *Hall.*  
*helv. n.* 363. *Pollich. pal. n.* 707. *Neck. gallob.*  
*313.* *Scop. carn. n.* 931. *Villars dauph. 3.*  
*492.* *Allion. pedem. n.* 1117. *Krock. files. n.*  
*1213.*  
*T. strepens.* *Crantz austr. 411. n.* 8.  
*Spikes oval imbricate, banners bent down permanent, calyces naked, stem erect.*
47. *Trifolium spadiceum*. Bay-flowered Trefoil.  
*Lin. spec.* 1087. *Reich.* 3. 561. *fl. succ. n.* 672.  
*Hall. helv. n.* 365. *Neck. gallob. 313.* *Villars*  
*dauph. 3. 491.* *Allion. pedem. n.* 1118. *Krock.*  
*files. n.* 1214. *Pallas it. 1. 72.* *Kniph. cent. 9.*  
*n. 92.* *Curt. magaz. t.* 557.  
*T. montanum lupulinum.* *Baub. pin. 328. prodr.*  
*140.* *Park. theat. 1105. f. 6.* *Raii hist. 950. 3.*  
*T. mont. spadiceum ex monte Pilati.* *Tournef. herb.*  
*ficc.*  
*T. pratense flore rufescente.* *Vaill. par. 196.*  
*Lupulinum montanum, capitulis spadiceis.* *Rupp.*  
*jen. 207.*  
*Lotus montanus aureus, amplo lupuli capitulo, annuus.*  
*Barr. ic. 1024.*  
*Spikes oval imbricate, banners bent down permanent, calyces hairy, stem erect.]*
48. *Trifolium procumbens*. Procumbent Hop Trefoil.  
*Lin. spec.* 1088. *syft.* 690. *Reich.* 3. 561. *fl. succ.*  
*n.* 673. *Schreb. spicil. 25.* *Wither. arr. ed. 3.*  
*654.* *Smith brit. 792. engl. bot. t. 945.* *Hull.*  
*164.* *Relb. cant. ed. 2. n. 612.* *Sibth. oxon. n.*  
*644.* *Abbot bedf. n. 538.* *Pollich. pal. n. 709.*  
*Leers herb. n. 582.* *Hall. helv. n. 364.*  
*Neck. gallob. 313.* *Villars dauph. 3. 493.*  
*Allion. pedem. n. 1119.* *Krock. files. n. 1215.*  
*Fl. dan. t. 796.*  
*T. agrarium.* *Huds. angl. 328.* *Curt. lond. 3. t. 45.*  
*Fl. rust. t. 121.* *Lightf. scot. 409.* *Mill. dict.*  
*n. 3.*  
*T. pratense luteum, capitulo Lupuli, vel agrarium.*  
*Raii syn. 330.*  
*T. agr. lut. cap. Lupuli majus.* *Mor. hist. 2. 142. f.*  
*2. t. 13. f. 1. ord. 2.*  
*T. lupulinum.* *Rivin. tetr. t. 10. f. 1.*  
*Melilotus agraria.* *Desfont. atlant. 2. 193.*  
*M. qui Trifolium pratense luteum, capitulo Lupuli*  
*vel agrarium.* *Vaill. par. t. 22. f. 3.*  
*Spikes oval many-flowered, banners grooved, stems pro-*  
*cumbent, common petiole elongated at the base.*
49. *Trifolium filiforme*. Leafy Trefoil.  
*Lin. spec.* 1088. *Reich.* 3. 562. *fl. succ. n.* 764.  
*Huds. angl. 329.* *Wither. arr. ed. 3. 655.*  
*Smith brit. 793.* *Hull. 164.* *Lightf. scot. 410.*  
*Relb. cant. n. 614.* *Sibth. oxon. n. 646.* *Abbot*  
*bedf. n. 540.* *Leers herb. n. 593.* *Neck.*  
*gallob. 314.* *Krock. files. n. 1216.* *Allion.*  
*pedem. n. 1120.*  
*T. lupulinum minimum.* *Mor. hist. 2. 142. 2.*  
*Tournef. inst. 404.* *Dill. in Raii syn. 331. t. 14.*  
*f. 4.*  
*Spikes few-flowered loose, peduncles flexuose, banners*  
*smooth, stems prostrate, all the leaflets subsessile.*
50. *Trifolium minus*. Small Yellow Trefoil.  
*Relb. cant. n. 613.*  
*T. procumbens.* *Huds. angl. 328.* *Curt. lond. 5. t.*  
*53. 307.*  
*T. dubium.* *Sibth. oxon. n. 645.* *Abbot bedf. n. 539.*  
*T. lupulinum alterum minus.* *Raii hist. 949. 2. syn.*  
*330. t. 14. f. 3.*  
*T. luteum minimum.* *Ger. emac. 1186.*  
*Spikes in hemispherical heads, peduncles stiff, banners*  
*smoothish, stems prostrate, common petiole very short at*  
*the base.*
- [51. *Trifolium biflorum*. Two-flowered Trefoil.  
*Lin. spec.* 1088. *Reich.* 3. 562. *Gron. virg. 1.*  
*84. 2. 109.*  
*Anonis mariana lutea, foliis angustioribus.* *Petiv. sic.*  
*84.*  
*Spikes two-flowered sessile, involucre hispid funnel-form,*  
*leaves lanceolate.]*

## DESCRIPTIONS, &amp;c.

1. This is an annual plant, with large hollow, channelled stalks, that rise about a foot high, and send out many branches. Leaves ternate, with ovate leaflets, slightly ferrate, standing upon pretty long foot-stalks. The flowers are collected in oblong spikes, which stand upon very long foot-stalks, springing from the axils at every joint of the stalk the whole length of it: they are of a pale blue colour, and shaped like those of the common Melilot. [The legume is not much longer than the awl-shaped teeth of the calyx, obovate, terminated by the awl-shaped style, membranaceous, loosely netted with longitudinal nerves running into one another, one-celled, valveless. Seeds two or four, (Miller says two or three,) of a rounded kidney shape, smooth, yellow<sup>a</sup>.

Native of Germany. Cultivated in England before 1562, by William Turner, M.D. It flowers in august and september<sup>b</sup>.] Mr. Miller says, that the flowers appear in june and july, and that the seeds ripen the beginning of september; that the whole plant has a very strong scent like that of Fenugreek, and perishes soon after the seeds are ripe.

[2. This has the appearance of common Melilot, (n. 5.) but is very tender, only two feet high, and upright. Branches from the axils shorter. Stipules entire, acuminate. Leaves obversely subcordate oblong, toothletted, ternate. Flowers white or yellow, but so small that their parts can scarcely be distinguished by the naked eye. Fruiting spike long. Legumes roundish, wrinkled, surrounded by the calyx at the base only, nodding<sup>c</sup>.

Loureiro describes the stem as annual, a foot and half high, round, with diffused branches: the leaves ternate, ovate, quite entire: the flowers purple, terminating, in short racemes: the legumes lanceolate-ovate, compressed, one-seeded, naked. According to Gartner, they are membranaceous, very thin, closely netted, obtuse, with a very short calyx at the base: seeds one or two, ovate or angular kidney-shaped, ferruginous.

Native of the East Indies, China, Africa and Italy, if the plant be the same in all these countries.

There are several varieties, which according to Linneus scarcely possess sufficient marks to distinguish them. The last is separated by Desfontaines, who found it among corn in Algiers, under the name of *Melilotus parviflora*. It differs, says he, from *M. officinalis*, in having a shorter stem, and flowers three or four times smaller.

Morison describes the stems as straight, from a foot to eighteen inches high; leaves smaller and more rounded at the ends; flowers yellow, very small, in very close spikes; legumes very small, brown.

Ray compares it with *M. italica*, than which, says he, it is smaller in all its parts; stems eighteen inches and more in height, erect, round, green, never red: leaves much smaller, less glaucous; lower ones broad and almost cordate, entire; upper ones long, narrow, crenate, obtuse and as it were cut off at the end: flowers honey-coloured but smaller, in spikes from the axils of the upper leaves, more frequent than in the *italica*: legumes round, wrinkled. Native of Dauphiné; whence seeds were sent by Bernhard to Morison, who cultivated it at Oxford before 1672.

It was cultivated by Mr. Miller in 1739<sup>d</sup>: but is omitted in the later editions of his Dictionary.

3. This also is an annual plant as well as the two former, and has the appearance of the common sort. Leaves ternate, fleshy, subserrate. Flowers yellow, small. Legumes rather oblong, whitish, wrinkled with semicircular streaks. Seeds bigger than in *M. officinalis*<sup>e</sup>.

Stem erect, round. Leaves obovate, serrulate. Racemes axillary, short, erect. Legumes semiovate; gibbous, with bowed parallel streaks<sup>f</sup>.

Peduncles axillary, shorter than the leaf. Flowers small, yellow, raceme-headed. Legumes one or two-seeded, subcompressed, pendulous, oblong, at-

<sup>a</sup> Gartner.<sup>d</sup> Hort. kew.<sup>b</sup> Hort. kew.<sup>e</sup> Linn. mant.<sup>c</sup> Linn. zeyl.<sup>f</sup> Linn. suppl.



tenuated to both ends, acute, slightly curved in on one side<sup>g</sup>.

Native of Sicily, Italy and Barbary. Ray gathered it on the point of land lying between the Sicilian straits and the port of Messina<sup>h</sup>. Morison had the seeds of this also from Bernhard the Apothecary, whom he calls, rei herbariae callentissimus. It flowered in the Oxford garden in 1672<sup>i</sup>.

4. This differs from the next species, in having the stem altogether round; the leaves smaller, acuminate, acutely serrate at top; the flowers in the raceme remote and on longer pedicels; the peduncles round, not grooved; the banners of the flowers folded back, and with the wings not outwardly and longitudinally converging at their edges, but obliquely divaricating; the legumes two-seeded, little wrinkled, lanceolate-acuminate, longer. The stature and odour are the same. The flowers are of a very pale yellow colour<sup>k</sup>.

Gärtner describes the legume as coriaceous, of a lanceolate-sickle shape, turgid, beautifully netted with bowed anastomosing streaks, one-celled, two-valved, but scarcely opening spontaneously. Seeds two, inserted into the concave suture, three-cornered-globular, smooth, rufescent.

Native of Poland. Introduced in 1778, by Mr. Thouin. It flowers here from June to August<sup>l</sup>.

5. Root annual, strong, woody. Stem upright, grooved, yellowish-green, two feet high or more, with spreading alternate branches. Leaves ternate, petioled, alternate: leaflets smooth, lanceolate-obovate, or according to Mr. Woodward, the lower ones oblong wedge-shaped, the upper elliptical; they vary indeed much in form, and are commonly serrate, but sometimes nearly entire. Flowers small, drooping, varying in colour, but with us almost always of a golden yellow colour: they grow in long, peduncled, axillary spikes, very close together, on short capillary pedicels, each having a small awl-shaped bracte. Calyx bell-shaped, hairy, one-third of the length of the corolla, divided half way down, into five nearly equal acute teeth. Legume pendulous, elliptic, very short, turgid, sharp at both ends, wrinkled transversely, hairy; containing one or two, yellowish, roundish, smooth seeds<sup>m</sup>.

Common Melilot grows wild in most parts of Europe, in corn-fields, pastures, and by way sides. Mr. Miller marks Cambridgeshire, and Gerard Essex, for abundance of it. There cannot be a worse weed among bread-corn, for a few of the seeds ground with it spoil the flour, by communicating their peculiarly strong taste. It flowers in June and July, and the seeds ripen with the corn.

The whole plant has a peculiar scent, which becomes more fragrant in a dry state, then having some resemblance to that of Anthoxanthum. The flowers are sweet; a water distilled from them possesses little odour in itself, but improves the flavour of other substances. In medicine it was esteemed emollient and digestive, and was used in fomentations and cataplasms, particularly in blister-plasters; but it is now laid aside, as being rather acrid and irritating than emollient.

Notwithstanding its strong smell and bitter acrid taste, it does not appear to be disagreeable to any cattle; and horses are said to be extremely fond of it. Hence it is called by some Italian writers *Trifolium caballinum*.

Mr. Ray affirms that it is sometimes sown in England for the food of kine and horses. We do not know that it is now ever cultivated among us. Bees are very fond of the flowers<sup>n</sup>.

The first variety differs only in having white flowers; but the last has a biennial root, a higher suffrutescent stem, and smaller flowers, with the banner bent down at the sides<sup>o</sup>.

6. Leaflets obovate, smooth, rounded at the end, toothletted. Peduncles striated. Flowers small, yellow, in racemes. Legumes nodding, round, thickish,

scored with little pits<sup>p</sup>: according to Gärtner, coriaceous, subglobular, very shortly mucronate, tortuously wrinkled on the sides, but having a smooth prominent suture at the edges, not opening. Seed one or two, kidney-shaped, rufescent.

Native of Italy. Cultivated in 1596, by Gerard. It flowers from June to August<sup>q</sup>.

Desfontaines has another species, which he names *Melilotus fulcata*, and says it is allied to this and the third; but differs in having a procumbent stem, and legumes striated in a bow not porous as in *M. italica*, nor acute as in *M. messanensis*. It is a native of Algiers, in corn-fields.

7. This has the habit of *Melilotus italica*, with thick leaves, scarcely serrate, fleshy, inodorous, obtuse<sup>r</sup>. Flowers in racemes, nodding. Legumes membranaceous, flat, ovate-orbicular, pendulous, containing one or two seeds<sup>s</sup>: netted with transverse parallel capillary vessels, pale straw-coloured, submarginate, not opening. Seed kidney-shaped, covered with very minute raised dots, flattened a little, ferruginous. When there are two seeds, they are placed transversely<sup>t</sup>.

Native of Candia and Algiers.—Cultivated here in 1713, and flowering from June to August<sup>u</sup>.

8. The fibrous root is furnished with small fleshy knobs, as in *Vicia lathyroides* and some others of this class, apparently to resist accidental drought during summer. Stems from two to five inches long, forming a circle round the root, and lying close to the ground, smooth and mostly unbranched. Leaves on long slender foot-stalks, with each a pair of lanceolate, pointed, united stipules, large in proportion to the plant. Leaflets sessile, mostly obcordate, smooth, ribbed, more or less acutely and distantly serrate. Peduncles axillary, much shorter than the leaf-stalks, bearing usually two, but sometimes one, three or even four slender pale-red flowers, growing parallel to each other. Calyx more than half as long as the corolla, pale veined with deeper green, divided half way down into five nearly equal setaceous segments. Petals with long claws. Pods oblong, transversely rugged, almost twice as long as the calyx, thick, blunt but terminating in a short point turned downwards, which gives them something the appearance of a bird's claw, whence the trivial name. They contain about eight seeds<sup>x</sup>.

Linneus remarks that this plant is an intermediate species between the *Trifoliums* and the *Trigonellas*.

Native of Denmark, France and Britain, on dry gravelly heaths and pastures, among short grass, flowering in June and July. Thomas Willisel found it among corn, half a mile from Tadcaster toward Sherborn; also near Oxford in the like grounds. Mr. Newton in company with Mr. Ray found it on the sandy banks by the sea-side at Tolesbury in Essex: and Mr. Doody in Tuthill-fields, Westminster<sup>y</sup>. Mr. Curtis found it there, and on Blackheath. Mr. Pitchford on Moushold-heath, near Norwich. Mr. Hudson about Marazion and Penzance in Cornwall. At Maitland-bridge between Musselburgh and Edinburgh. But probably the small size and prostrate position of this Trefoil, may have caused it to be thought more rare than it really is. It is annual, as are all the preceding species.

9. Root perennial. Stems several, from a foot to eighteen inches in height, round, with several (seven or eight) joints, green or purplish; at each joint is a sheath terminating in a digitate leaf, the number of leaflets varying from three to six or seven, but the extreme numbers are rare, and five is the most common: the leaves have more resemblance to those of a Lupin than of a Trefoil, and hence the names of *Lupinaster* and Bastard Lupin. The leaflets are lanceolate, finely serrate, and unequal in size. There are usually several heads at the end of the stem, of a roundish form, with the flowers pretty thickly set: the three lower teeth of the calyx are nearly the length of the keel, the two upper ones are shorter: the banner of the corolla is oblong, near half an inch in

<sup>g</sup> Desfontaines.

<sup>h</sup> Ray hist.

<sup>i</sup> Mor. hist.

<sup>k</sup> Linn. spec.

<sup>l</sup> Hort. kew.

<sup>m</sup> Woodw. Mss. Fl. rust. Smith brit.

<sup>n</sup> Fl. rust. Withering.

<sup>o</sup> Linn. spec.

<sup>p</sup> Desfontaines.

<sup>q</sup> Hort. kew.

<sup>r</sup> Linn. spec.

<sup>s</sup> Desfontaines.

<sup>t</sup> Gärtner.

<sup>u</sup> Hort. kew.

<sup>x</sup> Woodw. Mss. and Engl. bot.

<sup>y</sup> Ray syn.



length, and purple; the wings are broadish, and pale purple; the keel is pale, and of the same length with the wings. The pod is longer than the calyx, pale brown, and contains four or five seeds. The circumstance of having more than three leaflets, usually five, is sufficient to distinguish this species<sup>z</sup>.

Native of Siberia. Cultivated in 1763 by Mr. James Gordon. It flowers in July and August<sup>a</sup>. Thunberg found it in Japan, but in a state of cultivation.

Desfontaines has a species, which he names *levigatum*, and figures in t. 208. It is the same which Poirer has given, vol. 2. p. 219. This has the habit of *T. lupinaster*, but differs in having concave stipules toothed at the end and solitary, the head of flowers peduncled, and the corollas, which are pale yellow, shorter than the calyx. The leaflets, which are three only, are lanceolate and ferrate. He found it in meadows near La Calle in Barbary.

10. Leaves soft. Seeds two or three<sup>b</sup>.—Native of Virginia.

11. Root annual. Stem branched at bottom, pappulous, even. Leaves on long petioles; leaflets smooth, striated, the lower obovate, the upper elliptic, finally lanceolate. Stipules very wide, rhomboid with an awl-shaped point. Peduncles grooved, axillary, shorter than the petiole. Spikes with an oblong or subglobular rachis. Calyx naked, with awl-shaped teeth; the two upper ones longer than the corolla, after flowering bent back with the teeth spreading. Corolla very small. Between the flowers linear acuminate bractes, scarcely the length of the corolla<sup>c</sup>.—Native of Italy and Spain, in pastures.

12. Root perennial. Stem branched, grooved, a foot high, ascending, not creeping. Stipules lanceolate acute, ending in a hair. Leaflets ovate-acute, ferrate-toothletted. Peduncles not very long, but yet jointed, as in the species next following. Receptacle ovate, concave. Chaffs lanceolate, linear, very acute. Corollas gaping<sup>d</sup>.

Desfontaines describes a plant under this name, but he doubts whether it be the *hybridum* of Linneus, the pod having only two seeds or thereabouts. The corolla is of a pale rose-colour; whereas in the true *hybridum* it is white turning brown, as in *repens*. Retzius however says it is always tinged with red. This author suspects that Vaillant's plant is a different species; that being annual, and much taller, with white flowers.

Native of several parts of Europe. Linneus thinks it was at first produced, by the pollen of *Tr. pratense* impregnating the germ of *Tr. repens*.

The *hybridum* of Hudson is only a more branching and upright variety of the *repens*, and quite distinct from the *hybridum* of Linneus<sup>e</sup>.

13. Root perennial, fibrous. Stems numerous, prostrate, creeping, extending wide, branched at the base, leafy, smooth. Leaves on long petioles. Leaflets nearly sessile, ovate or obcordate, toothletted, smooth, most commonly having a brown and white arch or crescent in the middle. Stipules lanceolate-ovate, in pairs, lengthened out into an awn, veined with purple. Petioles and peduncles very long, ascending or upright. Flowers many, as far as sixty, in a close head, very large in the cultivated plant, and of a round shape: each flower is on a short pedicel, and has a small awl-shaped bracte. Calyx smooth, and generally reddish, marked with ten streaks; the teeth nearly equal, only the two upper ones rather longer than the others. Corolla white or tinged with purple, permanent. The flowers stand upright till they are withering, and then they hang down. Legumes oblong, round, smooth, covered with the corolla, containing from two to four (commonly three or four) seeds.

White Clover is common in pastures through the greater part of Europe; flowering from the end of May to September. There are many varieties, depending on richness or poverty of soil. Haller has noticed no less than eleven. Mr. Curtis has observed

two more remarkable: one with leaves of a deep purple colour, cultivated in gardens as an ornamental plant; the other proliforous, or having small heads of leaves growing out of the flowers. In a fertile moist soil, as Dr. Smith remarks, it has a more upright branching stem, but it is still sufficiently distinct from *T. hybridum*.

On all our good lands it seems to come spontaneously; but however this may be, the growth of it is much encouraged by spreading of ashes or other manure. It does not come early, neither is it of a tall growth; but it forms an excellent bottom in pastures, and produces great abundance of succulent stalks and leaves, affording late feed in dry summers, when grasses are mostly burnt up. Mr. Curtis affirms that a single seedling, in his garden, covered more than a yard square of ground, in one summer.

It does not seem to be ascertained when this White Trefoil came first into cultivation here, but it seems to be of late date: for it is not mentioned by Gerard, Parkinson, or Ray, as an agricultural plant in this country, nor by any of the writers on husbandry of the 17th century; as far as we have been able to discover.

Gerard however says, that there is a Trefoil of this kind, which is sown in fields of the Low Countries in Italy, &c. that cometh up ranker and higher than that which groweth in meadows, and is an excellent food for cattle, both to fatten them, and cause them to give great store of milk. *Herball*, p. 1018. edit. 1597<sup>f</sup>.

14. Native of America.

15. Root very large. Leaflets hard, bright green, entire, smooth. Flowers on a scape or naked stem two or three inches in length, purple or bright red. Segments of the calyx very long, the upper ones wider, the lowest capillary. Banner very long, striated, flesh-coloured with purple lines, keel very short, wings longer. Legume short, turgid, containing two seeds. Native of the Alps, Pyrenees, Monte Baldo, &c.<sup>g</sup> Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers from June to August<sup>h</sup>.

It is called *Reglisse des Alpes*, from the taste of the root, and because it is used instead of Liquorice in the Alps<sup>i</sup>.

16. Root annual, fibrous, furnished with knobs. Stems prostrate, about three inches in length, or longer, spreading close to the ground, almost concealed by the broad sheathing stipules of the numerous leaves. Leaflets obcordate, hairy on both sides, entire. Peduncles bearing three or four flowers, at first erect, but before the fruit ripens they are bent to the ground, producing from their extremities, little white thick fibres, star-like at their tips, which become recurved and rigid, enveloping the fruit: these look so like roots, that till Mr. Curtis explained their economy, they were mistaken for such, and Dillenius, aware that the plant being an annual, did not propagate itself by these supposed roots, conjectured they might draw moisture to nourish the seed. The long slender milk-white petals render this species conspicuous, though when first seen, they are seldom taken for the flowers of a Trefoil. The calyx-teeth are long and hairy. Pod thin, covered by its calyx, containing one dark-brown seed<sup>k</sup>.

Native of France, Italy, Spain, and England, in exposed gravelly situations, and particularly in heaths, as Blackheath, Hyde Park, Greenwich Park, &c. where its flowers are visible among the short grass in May, and through the summer to August. Gamlingay by the windmills, and near White-wood, Cambridgeshire. Between Eltham and Deptford, Kent. Bath-hills, near Bungay, Suffolk. Mangotsfield-common near Bath. Salt-marsh at Lymington. Shotover-hill, by the road to Cuddesdon, Oxfordshire. Ampthill and Claphill, Bedfordshire.

17. Root annual. Stems filiform, a foot long, decumbent. Heads lateral, globular, villose, peduncled.

<sup>z</sup> Fl. ruft.

<sup>c</sup> Linn. spec.

<sup>a</sup> Hort. kew.

<sup>d</sup> Linn. succ.

<sup>b</sup> Linn. syst.

<sup>e</sup> Smith brit.

<sup>f</sup> Fl. ruft. Smith brit. Curt. lond.

<sup>g</sup> Hort kew.

<sup>i</sup> Villars.

<sup>h</sup> Haller and Villars.

<sup>k</sup> Engl. bot.



The lower florets only corolled and fertile; the rest mutilated and drying away into a woolly substance, fill the head, bend back to the sides and conceal the fertile calyxes<sup>1</sup>.

Loureiro describes the stem as annual, a foot and half long, nearly upright, branched; the leaflets oblong; the flowers pale, axillary and terminating, in a globular head, furrounded with many white villose hairs, the upper ones without petals and barren. Legumes ovate, one-seeded.

Native of Arabia, Syria and China.

Loureiro has another species, which he names *Trifolium cuspidatum*. It has a perennial, suffruticose stem, four feet high, hirsute, erect, with ascending branches: leaflets linear, quite entire, with a sharp cusp having a rounded tip growing to them; flowers lateral on subcapitate peduncles, few together; calyxes hairy; banner of the corolla ovate, white with a purple spot: legume naked, one-seeded.

Native of Cochinchina.

He has also a third species, which he names *Tr. volubile*, which has an herbaceous, slender, round, long, procumbent stem, frequently becoming twining: the leaflets roundish, quite entire, tomentose: flowers yellow, in axillary many-flowered heads: legumes oblong, acute, naked, smooth, two-seeded. Native of the eastern coast of Africa.

18. This is allied to the next, but the whole calyxes are hairy. Stemlets tomentose. Bractes three, very large, cordate, coloured at the edges. Stipules the size of the leaves<sup>m</sup>. Annual.

Stems many, villose, procumbent. Leaves the size of *T. agrarium*, villose, obcordate. Stipules membranaceous, ovate, acuminate, sheathing. Flowers in terminating, sessile, solitary heads. Involucres three to five-leaved, large, concave, orbicular, coloured at the edge, embracing the hemispherical head, one three-leaved. Flowers dense, heaped. Calyx-teeth setaceous, equal, very villose. Corolla small, shorter than the calyx<sup>n</sup>.

Native of France, Italy, and the hills about Algiers. —Introduced in 1768, by Monsr. Richard. It flowers in may and june<sup>o</sup>.

19. Plant annual. Stems diffused. Lower leaves perioled, upper subsessile: leaflets obtuse, indistinctly ferrulate. Stipules linear-subulate. Heads terminating, ovate-rounded. Calyxes after flowering elongated. The calyx-teeth have a few stiff hairs at the end, which render the head hispid<sup>p</sup>.

Leaves cordate, nerved, ciliate at the edge. Spikes terminating, ovate, hispid<sup>q</sup>.

Native of France, Spain and Italy.

20. This is a large elegant Trefoil. Stalks one or more, simple, upright, strong, round except that they are a little flattened towards the top, coloured, from a foot to near two feet in length. Leaves oblong, elliptic, or lanceolate, three or four inches in length, not unlike those of *Trifolium alpestre*, naked or void of hairs on both sides, finely ferrate round the edge by means of the veins running out into small curved points directed towards the top, shorter and longer alternately. The stipules with their sheaths are very large, in a manner covering the stalk, and are not hairy: the former are sometimes obscurely ferrulate, and the latter, especially the upper ones, are much inflated. There is usually only one spike of flowers to a stalk, but in gardens there are sometimes two. The spike is at first sessile, and concealed within the floral sheaths, with a leaf on each side of it; but as it advances becomes peduncled: it is of an oblong oval or cylindric form, blunt at the top, two or three inches in length, upright, and the flowers are very close set; with leaflets or bractes between them. Calyx in reality smooth, but the teeth having long white hairs on them, which spread very much, the whole has the appearance of being hairy: the four upper teeth are very short, but the fifth tooth is as long as the whole corolla, and at least three times as long as the other teeth. Corolla one-petalled, of a dark red

purple: tube long; banner ovate and sharp; wings bluntish, spreading or rolled back, of the same length with the banner, but of a paler colour; keel shorter, and of a darker purple<sup>r</sup>. Legume roundish, flat, one-seeded<sup>s</sup>.

Native of the South of Europe, and about Algiers in Africa. As far as we know, it has not been cultivated for cattle: it seems to be of a good quality, and to be sufficiently productive. Linneus marks this Trefoil as annual, but there is no doubt of its being perennial.

Jacquin's figure is drawn from a tall plant, and thus bears some resemblance to *Tr. alpestre*. The spike varies much in length, from one inch to four inches: hence Caspar Bauhin's two species—*spica oblonga rubra* and *longissima rubente*<sup>t</sup>.

This is a larger plant than the *alpestre*, the leaves are free from hairs on both sides, and the edges are finely serrated, as in *Tr. montanum*; both sheaths and stipules are much larger, and not hairy, the former swelling, the latter ferrulate; spikes at first sessile, but afterwards peduncled; calyx smooth, the teeth only hairy or ciliate, and the lowest tooth as long as the whole flower<sup>u</sup>.

I have seen this, says Johnson, (1633) in the gardens of some of our florists. It flowers in may and june<sup>x</sup>.

21. Root perennial, striking almost right down, and scarcely creeping, branching, granulated, ash-coloured. Stems ascending, a foot high and more, below flattened a little on one side (when dried three-cornered) otherwise round, above striated and somewhat villose, usually somewhat branched, branches spreading, without any axillary tumour; green or tinged with brownish red. Stipules wide-ovate, connate, pale, ending in a short capillary awn hairy especially towards the tip, having purple nerves branching towards the edge and anastomosing, sheaths very wide, embracing, bowed on each side at the edge, smooth or sometimes a little hairy. Petioles unequal, mostly very long, many times longer than the stipules, spreading. Leaflets unequal, ovate or oval, obtuse, those of the lower leaves much smaller, almost orbicular, retuse, all with depressed veins on the upper surface, and with raised ones on the lower, for the most part marked on the upper surface with a central pale subagittate spot; they are subciliate, and mostly quite entire, but sometimes slightly and acutely crenulate. Spikes of flowers terminating, ovate, obtuse, solitary, (very seldom two,) sometimes peduncled, but commonly sessile between two opposite erect floral leaves. Flowers many in a spike, closely imbricate, erect, having a peculiar smell. Calyx silky, hairy, pale, sometimes tinged with purple, with ten streaks dark green or red, seldom brown: teeth awl-shaped, green, often more or less tinged with red; the four upper ones equal, the length of the tube of the calyx, the lowest a little longer, (twice as long *Sm.*) yet shorter than the tube of the corolla, erect when the seed is ripe, whereas the others spread very much. Corolla purple, one-petalled: banner longer than the wings, truncate and often emarginate, with streaks of deeper purple; wings paler, longer than the keel. Legume one-seeded<sup>y</sup>.

On comparing carefully the purple Clover as cultivated, with our perennial Trefoil as it grows in our dry pastures, I found that the stalks were much smaller, stiffer, and more pubescent in the latter, and that they were not grooved; the leaf-stalks were very long and pubescent; the leaflets smaller and much more pubescent, even the upper surface as much so as the lower surface of the other, with white hairs closely pressed to the surface; the sheaths narrower, not pubescent, but ending in much longer points, which are set with long white hairs standing out; spikes or heads of flowers more lengthened out than in the cultivated plant, having fewer flowers, and varying in colour from the palest to full purple; on each side of the spike was a leaf as in the other, but smaller, extremely pubescent, and not always sessile,

<sup>1</sup> Linn. spec.    <sup>m</sup> Gouan, Linn. mant.    <sup>n</sup> Desfontaines.  
<sup>o</sup> Hort. kew.    <sup>p</sup> Ger. prov.    <sup>q</sup> Affo.

<sup>r</sup> Fl. rust.    <sup>s</sup> Affo.    <sup>t</sup> Fl. rust.    <sup>u</sup> Afzelius.  
<sup>x</sup> Ger. emac.    <sup>y</sup> Afzelius and Smith brit.



the involucre sheath from which these floral leaves rise was very hairy about the edge; the spike was more villose, and when young extremely so; tube of the calyx greenish white with purple lines, ending in five long purplish segments, having many white hairs standing out, and disposed as in the cultivated Clover, but the first and second pair more different in their lengths; tube of the corolla white or pale purple; wings much longer than the keel, but much shorter than the banner, which is marked with lines of a deeper purple; the keel purple, but the wings usually white, at least in the middle within<sup>2</sup>.

This was erroneously set down in *Flora rustica*, for the *Trifolium medium* of Hudson's first edition, and alpestre of the second edition, of the *Flora anglica*; but I can vouch for the accuracy both of the description and figure given in *Flora rustica*. Most of the differences between this wild and the cultivated Clover, may be accounted for from soil and culture; and the varieties even of the wild *Trifolium pratense* are numerous. It is common in pastures all over Europe, and is found in Siberia, Barbary and North America; so that it is indigenous of the four continents. It flourishes most in fertile moistish soils, and open situations, but does not reject drier, and even barren soil, and shady places: flowering from may to september.

*Trifolium pratense* is very distinct from the next species, with which it has been confounded. The root is much smaller; the stems are not flexuose, in the wild plant they are lower, more procumbent, often solitary, less branched, and not unfrequently quite simple; the stipules are small and differently shaped; the sheaths much larger, not ciliate, and commonly veined with red or brown; there are always two floral leaves; the leaflets are shorter, for the most part ovate, blunter, commonly spotted with white, and more indistinctly veined, the veins on the upper surface in the living plant depressed, but in the dried one raised; the spike is smaller, much less frequently peduncled or double, and not flattened at the top; the calyx never quite smooth; the corolla smaller, much more unequal, for the most part of a paler purple, or at least with the wings not deeper coloured at the end, as in *Trifolium medium*; the banner also is narrower, and it flowers earlier.

β The cultivated purple Trefoil, commonly known by the name of Broad Clover, is much larger and smoother than the wild plant, and has more stems, the leaflets are sharper, the spike is mostly peduncled, and not so unfrequently double, the calyx is for the most part more villose, with the lower tooth longer in proportion, the banner and wings of the corolla are more diverging, the style is frequently shorter, and the legume two-seeded. In this state, the stems being diffused and having a tendency to bend, it looks so like *Trifolium medium* at a distance, that it might easily be taken for it, but on a nearer inspection it may be easily distinguished by the stipules, and particularly by the calyx-teeth, which are very different<sup>2</sup>.

Mr. Woodward and Dr. Stokes are of opinion that this differs from the wild plant in nothing but size. Mr. Swayne on the contrary thinks it specifically different, the heads of that being globular, of this oval. It seldom remains in the ground more than two years<sup>b</sup>.]

Mr. Miller also asserts, that he has often sown the seeds of the cultivated red Clover, and the wild red meadow Trefoil in the same bed, and that they constantly produced the two species without varying. He observes, that the stalks of the Meadow Trefoil are weak and hairy, the stipules, which embrace the foot-stalks of the leaves are narrow and very hairy; the heads of flowers are rounder and not so hairy as those of the red Clover, the stalks of which are strong, almost smooth, furrowed, and rise twice the height of the other; the heads of flowers are large, oval and hairy, the corolla opens much wider, and the tube is shorter than that of the wild sort. Clover

has been so much cultivated in England for near a hundred years past<sup>c</sup>, that the seeds have been scattered over most of our pastures, and this has deceived the botanists into an opinion that the Meadow Trefoil is improved into Red Clover by culture.

[In a cultivated plant, raised from Dutch seed, I found the stalk brownish red in places, grooved, white near the head of flowers with hairs pressed close to it: leaflets ovate, blotched with white on the upper surface, covered with hairs pressed close to it on the under surface, the edge not serrate, but set with hairs: the sheaths very broad, membranaceous with strong ribs: the heads of flowers globular, with a sessile leaf on each side, rising from a very broad sheath, forming involucre to the head, which, when young, appears villose: the calyx whitish, ending in five long green segments, having a few long white hairs on them standing out, the second pair is very little longer than the upper pair, but the lowest single one is much longer: the tube of the corolla is white; the wings are very little longer than the keel; and the banner is longer than the wings.

Red or Broad Clover has been long under culture in Flanders and other countries on the continent of Europe, and it has at length nearly surmounted inveterate prejudice in Britain. Though it was strongly recommended and shewn experimentally to be excellent in the sixteenth century, yet at the close of the seventeenth it was asked, what could be the reason why the great advantage got in Staffordshire and Worcestershire by sowing of Clover, can scarce prevail with any in Cheshire and Lancashire to sow an handful upon the same sort of land<sup>d</sup>.

Sir Richard Weston in 1645 gives an account of its culture in Flanders, and says that he saw it cutting near Antwerp on the first of June 1644, being then two feet long and very thick; that he saw it cut again on the 29th of the same month, being twenty inches long; and a third time in August, being eighteen inches long; and all this upon heath ground. At the end of the pamphlet, which was published by Hartlib, is an advertisement, that if any desire to have the great Clover of Flanders, they may enquire at Mr. James Long's shop at the Barge on Billingsgate. Whence we may conclude, that it was then cultivated in England, at least by some curious persons.

Walter Blith, in 1653, is very copious in his directions for planting Trefoyle or great Claver Grass, as he calls it; we may presume therefore that the culture of it had made some progress at that time.

These are the first notices that I find of the culture of Red Clover in this country.

Gerarde, in 1597, says there is a Trefoil, which is sown in fields of the Low Countries, in Italy, and divers other places beyond the seas, that cometh up ranker and higher than that which groweth in meadows, and is an excellent food for cattle, both to fatten them, and cause them to give great store of milk. But he gives no hint of its being then introduced into England. Nor does his editor, Johnson in 1633, or Parkinson in 1640. Worlidge, in 1681, has very little but what he copies from Sir Richard Weston, Hartlib and Blith. Ray, in 1686, distinguishes accurately the greater purple Meadow Trefoil from the common; and says that it is sown in fields, "pro boum & jumentorum pabulo," under the name of Common Clover-grass. Lastly, at the beginning of the eighteenth century, Mr. Lisle speaks of it as then commonly cultivated in Hampshire, Wiltshire, Gloucestershire, Leicestershire, &c.

Besides the principal use to which Clover is applied, for feeding cattle, it may be mentioned that the heads are used in Sweden to dye woollen green. With alum they give a light, and with copperas a dark green<sup>e</sup>. The seeds also yield a dye.

γ. Common Purple Trefoil varies sometimes with a white flower. And Mr. Swayne found a single plant with yellowish-white or cream-coloured flowers,

<sup>a</sup> Fl. rust. 2.

<sup>a</sup> Afzelius in Linn. trans. 1. 245.

<sup>b</sup> Withering.

<sup>c</sup> This was said in 1759.

<sup>d</sup> Houghton's Collections, vol. 4. p. 53. Fl. rust. 3.

<sup>e</sup> Linn. succ. and Withering.



like that of the *ochroleucum*, but resembling the *pratense* in every thing else<sup>f</sup>.

g. This is commonly supposed, by English botanists, to be a variety of the *pratense*, on account of its having a similar, though starved appearance; the stipules being in like manner awned, and the teeth of the calyx nearly equal. But it differs in other respects very materially; having the leaves opposite, the leaflets small, short and obcordate, the peduncle very long, and destitute of floral leaves. Haller places it as a variety of his n. 378, which is the *ochroleucum*<sup>g</sup>. It was observed by Mr. Rand between Peckham and Camberwell.

Other varieties have been frequently obtruded upon the public, under the names of Cow-grass and Marle-grass.

Mr. Lisle, in his Observations on Husbandry (p. 250.) says: "the broad-clover grass, which of late years (1707) had obtained some credit as a longer-living grass than the common broad-clover, and is sown under the name of Cow-grass, I find to be the common purple Trefoil, or honeysuckle Trefoil, as described by Mr. Ray (hist. 944.) distinguished from the great purple meadow Trefoil, which has always hitherto been sowed by the farmers, and I doubt not but always will; for by experience I find the other not to yield half the burden, nor indeed in poor ground to be a longer liver than the common sort."

The Cow-grass however has again been much spoken of. The late Mr. Curtis had some plants sent him out of Hampshire, Mr. Lisle's country, and from one of these it was exactly figured in the Flora Rustica, t. 36. They appeared to be large, succulent, coarse and very hairy; on comparing them with specimens of the wild broad Clover, which Mr. Curtis had collected from different parts of Battersea-field, the chief distinctions seemed to be, that in the latter the heads of flowers were smaller, the stalks green and without hairs till they approached the heads, and that the flowers opened earlier. Those who cultivate the Cow-grass will judge from the figure given in Flora Rustica, whether theirs be the same plant, or whether different varieties may not be cultivated under the same name<sup>h</sup>.

Marle-grass has by some been supposed to be a variety of *Tr. medium*, but Mr. Swayne assures us that it is the native *Tr. pratense*<sup>i</sup>. It has the name from being the production of marl land, which would induce one to think that it is rather a variety of the next species than of this. It was first noticed and collected fifty or sixty years ago by Mr. James, who lived on a farm belonging to the Marquis of Bath, in the parish of Chilcompton. By his assiduity in preserving and propagating the seed, in the course of a few years it became common, and has been considered as a valuable substitute for red or broad Clover, to which it bears rather a striking analogy, with this difference, that it will continue much longer in the land<sup>k</sup>. Dr. Stokes relates, on the information of a farmer, that cattle are not fond of it, till it is touched by the frost: but that is on supposition that the Marle-grass is *Tr. medium*<sup>l</sup>.

22. Root perennial, descending, creeping, brownish ash-coloured. Stems somewhat inclining to be shrubby, at bottom oblique and subtrigonal (exactly three-cornered when dry), above nearly upright, round, flexuose from joint to joint, branched, branches springing from a callose axillary tumour, deep green tinged here and there with red. Stipules long awl-shaped, from three to five-nerved, smooth, ciliate, diverging from the stem but converging one to another, sheathing; sheaths narrowed, somewhat embracing, straight at the edge on each side, at first villose, but afterwards smooth and ciliate. Petioles unequal, the lower much longer than the stipules, the upper commonly shorter, all somewhat diverging. Leaflets unequal, at the beginning and below ovate, next and in

the middle oblong, finally and above almost lanceolate and often somewhat attenuated, in the lower leaves much smaller very obtuse and sometimes re-tuse, in the rest larger and more acute, all more obscurely veined on the upper surface, more evidently on the lower, frequently marked above with two pale longitudinal crescents contiguous at the tips, towards the edges somewhat striated with concurrent veins, furnished at the edge with many longish oppressed villose hairs; they are scarcely rugged to the touch, to the naked eye they appear quite entire, but are very finely toothletted when examined by a magnifier, especially the upper leaves. The spike at first is spheroidal, but afterwards globular or oval; sometimes there are two spikes, and then one flowers later than the other: one or both are sessile or peduncled; in the latter case the peduncles are unequal, and there are either one or two floral leaves, which for the most part hang down. The flowers are diverging and loosely imbricate. Calyx compressed a little, smooth or very seldom hairy, pale and often here and there tinged with purple, especially at the top of the spike; with dark green and sometimes purple streaks; teeth green and mostly red in some parts, the two upper ones equal and shorter than the tube of the calyx, the two lower ones also equal but longer than the upper ones, and equal to or a little longer than the tube of the calyx, the lowest as long as the tube of the corolla, and much longer than the next teeth, but not twice as long. Corolla odorous: banner scarcely longer than the wings, with a short point, and streaks of a deeper purple, wings paler a little longer than the keel.

This differs from *Tr. alpestre* in being larger in most of its parts, and of a darker colour, the root more woody, and more firmly fixed in the ground, the stems diffused and scarcely ever solitary, the stipules wider, as are also the sheaths, which have more frequent veins and more commonly purple, the petioles somewhat hairy and not villose, commonly one floral leaf only, the leaflets much wider and most of them oblong, glaucous underneath and furnished with a smaller nerve, more indistinctly striated towards the edges, the spike till it wholly flowered flattened at top, and smaller than that of the cultivated plant, the streaks of the calyx more raised and remote, the teeth less hairy and the lowest tooth shorter in proportion, the corolla of a paler purple, especially in the wings, in size and shape very like those in *Tr. rubens*<sup>m</sup>.

It differs from *T. pratense* or common Clover in its lax heads of flowers, longer and narrower stipules, and more unequal calyx: from both by its remarkably flexuose or zigzag stem<sup>n</sup>.

The figure in Flora Rustica, though it differs from that in English Botany, is a representation no less exact than elegant of a specimen gathered in a dry elevated pasture in a clayey soil among bushes; it is found also in chalk and in gravel with a clay bottom; in many parts of Europe, in Great Britain, Sweden, Denmark, Austria, Carniola, Piedmont, Holland, Switzerland, and many parts of Germany. It flowers here in July, later than the common Clover.

In a good loose soil it is said to grow more slender, and the spikes to become smaller: but it might perhaps be worth cultivating on stubborn hungry clay, like its natural soil.

23. Root perennial descending obliquely, creeping, brown. Stems stiff and straight, quite simple, round, pale green. Stipules long, bristle-shaped, one-nerved, villose, approaching to the stem but diverging one from the other, sheathing; sheaths narrowed, half embracing, straight at the edge on both sides, at first villose and ciliate, afterwards smooth and scarcely ciliate except in the sinuses between the stipules and the petiole. Petioles almost equal, very short, the length of the stipules, erect. Leaflets almost equal, and of the same form, which is linear-lanceolate, sharpish and terminated by a little bundle of hairs, more apparently veined on the upper, more obscurely on the

<sup>f</sup> Withering.

<sup>g</sup> Afzelius.

<sup>h</sup> Flora Rustica.

<sup>i</sup> Withering.

<sup>k</sup> Billingsley's View of the Agriculture of Somersetshire, p. 136.

<sup>l</sup> Withering.

<sup>m</sup> Afzelius.

<sup>n</sup> Engl. bot.



lower surface, striated as it were towards the edges with more frequent and larger concurrent veins, rugged to the touch at the margin, where they are so finely toothed that the teeth are hardly visible without a glass, a few short hairs are scattered round. Spike oval, either solitary and sessile hanging down within the floral leaf, or else, as more frequently happens, two together, and then the second on a short peduncle issues from its own leaf, flowers later, and depresses the first. Flowers erect, closely imbricate. Calyx very villose, pale yellow with streaks a little darker: teeth pale green, the two upper equal and shorter than the tube of the calyx, the two lower also equal but a little longer than the two upper ones, and for the most part equalling the tube of the calyx, the lowest as long as the tube of the corolla, twice as long as the next teeth and sometimes longer. Corolla inodorous, the whole dark purple: wings scarcely shorter than the banner, but a little longer than the keel.

It agrees in stature and habit most with the *rubens*, *montanum* and *pannonicum*. But the first has the sheaths inflated and the stipules subserrate and much bigger; the leaflets spinulose, the veins running out into little hooks, turned towards the tip of the leaflet, alternately smaller; spikes long and peduncled; calyx smooth, with the four upper teeth dilated at the base and very short, the lower pair a very little longer than the upper, the lowest filiform, the length of the whole corolla, and at least three times as long as the next.

*Tr. montanum* has the stems angular-streaked and many-flowered; leaflets the same as in the *rubens*; spikes peduncled; calyx smoothish, with the four upper teeth equal, and the lowest a little longer; corollas four-petalled and white, with an awl-shaped banner.

*Tr. pannonicum* has the stems somewhat angular, and often branched; stipules awl-shaped and ciliate; leaflets villose on both sides, obscurely veined; spikes larger, peduncled; the four upper teeth of the calyx almost equal, or the two lower a little longer; corollas whitish.—*Tr. ochroleucum*, which resembles *pannonicum* very much, differs, among others, in the same circumstances<sup>o</sup>.

Clusius is the first who mentions the *Trifolium alpestre*, in his history of Hungarian and Austrian plants. But we are indebted to professor Jacquin for a just idea of it from his figures and descriptions. Mr. Afzelius has extricated the confusion of synonyms, in his elaborate treatise on this species, *Tr. medium* and *pratense*<sup>p</sup>.

*Tr. alpestre* is not a native of Britain, but is found in dry mountainous woody places, in Hungary, Austria, Bohemia, Moravia, Stiria and Piedmont<sup>q</sup>.

It is not cultivated, nor can it be recommended for that purpose, since it affords few leaves, and does not branch.

24. Root perennial, woody, brown. Leaflets oval-oblong, narrow, quite entire, pointed or blunt emarginate, on a petiole springing from a ventricose, striated, embracing stipule. Spike elegant, terminating, close, ovate-oblong, composed of numerous flowers: tube of the calyx ten-streaked, yellowish except the teeth which are green, these are awl-shaped, and the lowest is much longer than the rest: corolla whitish, monopetalous; banner oblong, flat, upright, much longer than the wings, which are spreading, and the keel. Spike peduncled. Stem, calyx and leaves covered with a white close soft shining down of villose hairs. In habit it agrees with the *rubens*, from which it differs in being so extremely villose, in having no leaves sessile in the stipule, and in the leaflets being quite entire. It is easily distinguished from the *montanum* by the form of the flowers and spike<sup>r</sup>. For the difference between this and the *alpestre* see that species.

Native of Lower Hungary, in the neighbourhood of Schemnitz, in moist meadows; flowering in July

<sup>o</sup> Afzelius, in Linn. trans. 1. 235.

<sup>q</sup> Idem, p. 235.

<sup>p</sup> Idem, ibid. 205.

<sup>r</sup> Jacquin obs.

and August.—Introduced in 1775, by Joseph Nicholas de Jacquin, M. D.<sup>s</sup>

25. Root annual. Habit of *Tr. pratense*. Uppermost leaves opposite, somewhat hairy, lanceolate or oval, emarginate. Spikes terminating, ovate. Calyxes not very villose, five-toothed; teeth naked, bristle-shaped, four erect, the fifth three times as long as the rest and bent back, whence the spike becomes squarrose and hooked. It varies with oval and lanceolate leaves<sup>t</sup>.

Native of Spain. Introduced in 1778, by Mons. Thouin. It flowers here in July<sup>a</sup>.

26. Stem from a foot to eighteen inches in height, erect, villose. Stipules membranaceous, striated. Leaflets roundish, villose, frequently emarginate or retuse, from the base to the middle entire, and thence to the end finely notched. Spike ovate-oblong, soft and silky: when the seeds are ripe bent in on one side. Calyx villose, shorter than the corolla; teeth awl-shaped, nearly equal, feathered. Corolla a little longer than the calyx, red, with a long, narrow, obtuse banner. Ray says that he observed it about Naples with beautiful red flowers almost scarlet, but that about Geneva they were of a pale flesh-colour. According to Desfontaines they are rose-coloured, varying to a pale red. Mr. Curtis describes them of a bright crimson; but observes that they are doubtless found with different shades of colour, and sometimes wholly white<sup>x</sup>. Legume in the belly of the calyx, ovate, membranaceous, very thin, compressed at the top. Seed one, elliptic-kidney-form, yellowish<sup>y</sup>.

This is an annual Trefoil, and one of the largest and most showy. It flowers with us in July. Ray says that the seed is ripe and falls in July and August, in Italy, where it grows naturally. It is also a native of the South of France, and of Barbary about Algiers. Haller reports that it has been looked for in vain near Geneva<sup>z</sup>.

The *rubens* of Miller cannot be the *rubens* of Linnæus. Retzius supposes it to be a variety of the *incarnatum*; and describes it as having the leaves by no means crenulate, but entire and rather wedge-shaped than obcordate (as in Curtis's figure), the corolla monopetalous, of the same colour as in *Amaryllis formosissima*; the calyx hispid all over, the filaments thickened at top, especially the lowest, which is also longer.

It appears from Parkinson that *Tr. incarnatum* was cultivated here in 1640<sup>a</sup>.]

Mr. Miller says it will make good food for cattle, but being an annual, will not suit with the common practice of farmers.

27. [Root perennial, branching at top so as to bear several stems, each of which is upright, stiff, from a foot to eighteen inches in height, round, hairy, branched but not much, often tinged with purple. Leaves remote, the uppermost or floral ones only opposite, with the leaflets linear-oblong, those on the stem large, ovate-oblong, on long petioles, the lower ones short and obcordate; all the leaflets sessile, quite entire, hairy on both sides, soft, often purple at the edges. Stipules large, combined, embracing, sharp-pointed, downy, ribbed with simple nerves. Heads of flowers terminating, solitary, peduncled, erect, roundish or ovate. Calyx slender, furrowed, hairy, permanent, whitish; teeth bristle-shaped, the lowest thrice as long as the four others, which are equal, tipped with purple, and sometimes wholly of that colour. Petals narrow, joined at the base: banner very long, lanceolate, straight; wings and keel much shorter, equal, of a pale buff or faint sulphur-colour, by which this species is known at once from all others of British growth. Legume membranaceous, thin, tender, one-seeded, covered with the calyx.

Native of France, Switzerland, Austria, Silesia, Italy and England, in dry pastures, thickets and bushy places in a gravelly or calcareous soil. It is common near Cambridge, and in some parts of Essex, as about Dunmow, and Castle Hedingham, in Hert-

<sup>s</sup> Hort. kew.

<sup>t</sup> Linn. spec.

<sup>u</sup> Hort. kew.

<sup>x</sup> Fl. rust. Desfont. Linn. spec.

<sup>y</sup> Gartner.

<sup>z</sup> Fl. rust.

<sup>a</sup> Hort. kew.



fordshire, Bedfordshire, about Clapham, near Stamford, about Bungay in Suffolk, Dupper's-hill near Croydon, about Barnet, &c. flowering in June and July.

This Trefoil is harsh, stiff and hairy; and not abounding either in stalks or leaves, can hardly be sought for cultivation, when there are so many species superior to it. Mr. Curtis recommends it to the notice of the experimental agriculturist, and thinks it may be a good substitute for the *repens* or *pratense*, in certain soils and situations. I rather agree with the author of English Botany, that it is in no respect worthy of attention as an object of culture. It appears how much this species is attached to a dry soil, from Mr. Curtis's information, that he never could keep it in his garden at Lambeth marsh<sup>b</sup>.

Mr. Miller has unaccountably confounded this, with what is commonly sown under the name of Trefoil or Nonesuch, *Medicago lupulina*.

28. Root annual, woody, hard. Stems numerous, erect, stiff, villose and silky, a foot high, branched or sometimes simple. Leaflets linear or linear-lanceolate, an inch long or three times as long as the peduncle, white and silky, acute, springing from a widened membranous petiole, which ends in two long bristle-shaped stipules. Spike terminating, oblong, shorter than the leaves, dense with small pale purple flowers, almost concealed by the divisions of the calyx, except the banner which is erect. Calyx villose and silvery with the lowest division longer than the rest<sup>c</sup>.

Leers compares it with the *arvense*; from which he says it differs in having a higher and more upright stem, somewhat four-cornered, smooth not pubescent; branches much shorter than the stem; stipules nerved and more acuminate; leaflets narrower, smooth on both sides, striated beneath; heads subcylindrical, narrower, longer; calyxes striated, with the teeth purple and naked not feathered, the three lower a little longer than the two upper; corollas shorter than the calyx, pale or whitish, without the blood-red spot in the wings. Receptacle naked not villose.

According to Linneus it varies in Palestine with corollas double the common size, and more deeply coloured; the lower tooth of the calyx longer, and all of them straight, not bent in.

Native of Germany, the South of France, Italy, Spain, Carniolia, Barbary, and the island of Madeira. —Cultivated in 1739 by Mr. Miller. It flowers from June to August<sup>d</sup>.

29. Root small and annual. The whole plant villose. Stem mostly erect, much branched, round, firm, changing its direction from joint to joint. Leaves on short petioles: leaflets nearly sessile, linear-obovate, the lower ones elliptical, the upper nearly linear, somewhat emarginate, and the midrib lengthened into a short point. Stipules lanceolate, often striated with red veins, and tapering into a bristle-like point. Heads or rather spikes cylindrical, blunt, various in length, dense, consisting of numerous pale-reddish flowers, the long tapering equal prominent striated very hairy calyx-teeth of which give the whole spike a downy appearance. Corolla much shorter than these teeth, and almost concealed by them. Pod very small<sup>e</sup>; membranaceous, ovate, equal to the belly of the calyx. Seed one, elliptic-globular, of a yellowish green colour<sup>f</sup>.

Native of Europe and Barbary, in barren sandy pastures and fields; flowering in July and August.

Far from being worthy of cultivation for fodder, like most of the genus, this appears to be altogether a weed, nor are we acquainted with any animals that prefer it as food.

β. In maritime situations the herbage sometimes becomes quite silky<sup>g</sup>. Dillenius, who figured it in his edition of Ray's synopsis, says that the root runs deep, that the stems are procumbent, from one to three inches long, that the heads are numerous

roundish soft and shining; on very short peduncles; and that the flowers are white or pale flesh-coloured.

Mr. Woodward remarks, that the leaflets are rather elliptical and blunter than in the common sort; the stipules more villose, the flowering heads nearly spherical and containing fewer flowers, and the bristles of the calyx green. Dillenius's figure has the flowering heads too numerous, and too large for the proportion of the figure, the leaves are also too pointed.

Lobel first found it near South-Sea Castle, Dillenius near Brackelsham in Sussex, Mr. Woodward on Yarmouth Danes, at Lowestoft, &c.

30. Root annual. Stems many, spreading, often decumbent, or erect only when they grow in a tuft; varying in height, but commonly near a foot high, round, striated, a little hairy, branched. The uppermost or floral leaves only opposite; all on footstalks: leaflets obovate, almost quite entire, being minutely notched at the tip only, of a darkish green, hairy. Stipules linear, very narrow, the point awl-shaped; elongated and hairy. Flowering spike terminating, solitary, commonly peduncled, small, close, short; blunt, oval or almost globular. Calyx tubular, hairy especially at the top of the tube; divided almost to the base into five segments, which are slightly unequal in the flower, but more so in the fruit, and then become broad and spreading. Corolla nearly equal, pale purple. Legume turbinate, one-seeded<sup>h</sup>.

Mr. Woodward remarks, that the stipules are lanceolate, lengthened into a very long point, striated, and fringed with long hairs; the lower leaflets oblong wedge-shaped, the upper between that form and lanceolate; the fruitstalks longer than the leafstalks; the segments of the calyx between lanceolate and tubulate, as long as the corolla, fringed with long hairs; banner lanceolate, keeled, longer than the wings, which are hooked very near the base, and equal to the keel.

It grows in salt-marshes and meadows near the sea in various parts of England, from Norfolk all along the south and west coast to Wales. Mr. Wigg sent it from Yarmouth, and Sir Thomas Gery Cullum from Weymouth<sup>i</sup>. Dartford Saltmarsh. Leigh and Little Holland, Essex. Tilbury Fort. Sheerness. Between Greenhithe and Northfleet. Between Bristol and the Hot-wells, observed by Mr. Swayne<sup>k</sup>, near Weymouth, Poole, &c. in Dorsetshire by the late Dr. Pulteney. Dr. Johnson, the editor of Gerard's herball, first found it on Dartford Saltmarsh in Kent, the tenth of June, 1633.

Mr. Hudson rightly published it as new in the first edition of his Flora Anglica, and sent it to Linneus, in whose herbarium it now is marked Hudson's *T. maritimum*, without referring it to any of his own plants, and yet he neglected to insert it in any of his subsequent works. It is difficult to guess why Mr. Hudson afterwards took this plant for *T. stellatum*, a very different species<sup>l</sup>, as will evidently appear from comparing the figure of the *maritimum* in English Botany, t. 220, with that of the *stellatum* in Flora Rustica, t. 94.

Ray says that he observed this Trefoil about Messina in Sicily; and that Balam sent it from Tangiers in Africa.

31. Root annual. The whole plant villose. Stem erect, branching. Leaves on long petioles: leaflets obcordate, toothletted, nerved. Stipules large, netted-veined, ovate, toothed. Heads or rather spikes of flowers ovate, peduncled. Calyxes villose, soft; teeth very long, awl-shaped, nearly equal, silky, when the seeds are ripe spreading. Corolla pale rose-colour, shorter than the calyx<sup>m</sup>. Legume within the belly of the calyx, ovate, membranaceous, very thin. Seed one, elliptic-kidney-shaped, rufescent<sup>n</sup>.

Native of the South of France, Carniolia, Italy, Sicily, Barbary. Ray observed it growing abundantly

<sup>b</sup> Smith brit. and Engl. bot. Curt. lond. Fl. rust.

<sup>c</sup> Villars, Scopoli, Desfontaines.

<sup>e</sup> Engl. bot. and Woodw. Mfs.

<sup>g</sup> Engl. bot.

<sup>d</sup> Hort. kew.

<sup>f</sup> Gärtner.

<sup>h</sup> Smith brit. and Engl. bot. Woodw. Mfs.

<sup>k</sup> Withering.

<sup>l</sup> Engl. bot.

<sup>n</sup> Gärtner.

<sup>i</sup> Engl. bot.

<sup>m</sup> Desfontaines.



at the foot of Mount Vesuvius, in Sicily about Messina, and near Montpellier in France.

32. Root annual. Colour of the plant white or silvery. Named *clypeatum* by Alpinus from the form of the fruiting calyx spread out like a shield.

The Legume lies hid in the furrowed belly of the five-rayed-peltate closed calyx; it is ovate, compressed, truncate at the top, and there headed with a whitish spongy callus, membranaceous, very thin, one-celled, not opening. Seed one, ovate, compressed, somewhat gibbous, smooth, ferruginous<sup>o</sup>.

Native of Italy and the Levant. Cultivated here in 1711. It flowers in July and August.

33. Root annual, small. Stems several, prostrate, rigid, often a little flexuose, round, rugged, leaflets obovate or obcordate, toothed, veiny, hairy. Stipules scarious, lanceolate, connate, hairy. Heads axillary and terminating, solitary, sessile, ovate, hairy, composed of many thick-set; white or pale blush-coloured flowers. Calyx hairy, with a pale furrowed base, and green sharp lanceolate teeth, erect at first, but soon spreading, and at length recurved, hard, and rigid. Corolla longer than the calyx. Pod membranous, whitish, inclosed in the calyx. Seed one, elliptic, shining, yellowish<sup>p</sup>.

Native of several parts of Europe, as Germany, Switzerland, Carniola, South of France, Italy, Britain; also of the hills about Algiers in Barbary. With us it is found occasionally on chalky ground, or in dry sandy fields that lie over a calcareous soil, where it flowers in May and June, and then soon dries up and is blown about, scattering its seeds against the autumnal rains, when they produce young plants which flower the following spring. It occurs between Northfleet and Gravesend, near Chatham and in the Isle of Sheppey; about Croydon in Surrey; on Newmarket-heath, about Chippenham and Gamlingay in Cambridgeshire, and near Cambridge on the Hill of Health, and Trinity Conduit-head. Near Oxford, by Jericho, on the road side going to Port Meadow. Potton, Sandy and Ampthill, Bedfordshire, by Dr. Abbot. Near Bungay, by Mr. Woodward. On Caister common near Norwich, on Cromer cliffs, on Snettisham beach and near Wells, by Mr. Crowe. On Wick cliffs, by Mr. Swayne. Near Edinburgh, by Dr. Parsons.

34. Root annual, small, fibrous with oval fleshy knobs. Whole plant quite smooth. Stems prostrate, striated, of various lengths, not much branched. Leaves remote, alternate, on petioles which are grooved above: leaflets obovate or oblong-wedge-shaped, often marked with a transverse white or yellowish spot, strongly nerved, the branches from the midrib terminating in neat acute serratures, scarcely distinguishable by the naked eye, and in the younger leaves the midrib only is lengthened into a projecting point. Stipules membranous, broad-ovate, pointed, divaricated, united at the base. Heads axillary, solitary, sessile, hemispherical, many-flowered. Calyx swelling, pale with ten red ribs, shorter than the corolla; teeth heart-shaped, pointed, smooth, veiny, which become at length reflexed and enlarged, sufficiently discriminating the species. Corolla pale red or rose-coloured: banner lanceolate, somewhat keeled, longer than the wings; they and the keel are equal. Pod round, small, holding a single seed<sup>q</sup>. According to Gærtner it contains two seeds, of an ovate-globular form, and of a pale sulphur-colour: the pod is oblong, compressed a little, membranaceous and diaphanous, involved in the corolla.

Mr. Curtis remarks, that it may be distinguished from the *striatum*, to which it bears some affinity, by being in every part smooth, in having its heads much rounder, and the teeth of the calyx spreading backward; its flowers also are of a brighter red colour.

Native of England, Spain, Italy, and Barbary about Algiers. With us it does not appear to be very common. Ray found it about Saxmundham in Suffolk, and Thomas Willisel brought it him from the

<sup>o</sup> Gærtner.

<sup>p</sup> Engl. bot. and Smith brit.

<sup>q</sup> Smith brit. and Engl. bot. Woodw. Mss.

neighbourhood of London. Mr. Doody gathered it about Blackheath and near Greenhithe, Mr. Hudson, in the Isle of Sheppey. Mr. Rose and Dr. Smith, near Norwich. Mr. Woodward, on the Bath hills near Bungay in Suffolk. Mr. Turner, at Yarmouth. Dr. Goodenough, on Kew-green and Hanwell-heath. Mr. Curtis observed it on Blackheath for several years, and says it is fond of a gravelly soil, with some degree of moisture. It flowers about midsummer.

35. Root annual. Stems procumbent, branched, round, villose: according to Mr. Woodward, from six to eighteen inches high, mostly erect, but if reclining not prostrate, as in the two foregoing species. Leaflets obovate or obcordate, hairy. Stipules broad-ovate, acuminate, nerved, membranous. Heads mostly terminating, ovate. Calyx elliptic, somewhat swelling, ten-grooved, villose; teeth awl-shaped, green, finally elongated, spreading, ciliate. Corolla scarcely the length of the calyx, pale purple. Pod membranaceous. Seed elliptic, compressed, three times as large as in the foregoing<sup>r</sup>.

Mr. Woodward describes the leaves as distant, the upper on short, the lower on long footstalks, those beneath the heads sessile or nearly so: leaflets sessile, lower ones oblong-wedge-shaped, upper lanceolate, downy on both surfaces; the nerves not strongly marked, and the serratures scarcely distinguishable even with a glass. Stipules ovate, but terminated with a point, striated and very downy. Flowering-heads sessile or on short peduncles, axillary or terminating, the latter mostly in pairs. Calyx little shorter than the corolla, marked with ten streaks, almost hid with numerous long soft hairs; teeth nearly equal, straight, awl-shaped, not rigid. Corollas pale red: banner lanceolate, longer than the wings; they and the keel equal. The flowering heads appear quite woolly from the numerous long hairs of the calyx.

Native of Britain, Germany, France, Spain and Italy, in dry barren pastures. In several places near Cambridge, and about Gamlingay. Biddenham and Aspley in Bedfordshire, Dr. Abbot. Jericho, Bullington-green, and Whichwood-forest in Oxfordshire, Dr. Sibthorp. Bath-hills, Bungay, Suffolk, Mr. Woodward. Wick Cliffs, Mr. Swayne. In Edinburgh-park, abundantly, Mr. Lightfoot. It flowers in June.

36. Root annual, tapering, without any tuberous swellings. Stems horizontal, short and twisted, mostly under ground. Leaves on very long footstalks; leaflets obovate or wedge-shaped, smooth and finely toothed. Stipules membranous, broad, with remarkably spreading points. Flowers in sessile axillary round heads. Body of the calyx a little hairy: teeth bent back, broad, acute, scarcely enlarged after flowering. Corolla much shorter than the calyx-teeth, closed so as to protect the organs of fructification, which therefore perform their functions though buried in sand. The exclusion of light often renders the petals whitish, otherwise they are rose-coloured. Pod oblong, containing two yellowish seeds, which are lens-shaped, and rugged at the edge.

This, more truly a subterraneous plant than the species so named by Linneus, grows in the loose blowing sand of the sea-shore, beneath which its stems and flowers are often entirely buried, the leaves only peeping above the surface. Hence the trivial name, and hence perhaps it has been overlooked, as some common species not yet in flower.

It has been long known as a native of Sicily, where Ray observed it about Messina. Mr. Wigg first detected it on the beach at Yarmouth: and since that Miss Temple has found it at Lowestoft, and the late Mr. W. R. Notcutt, and Sir Thomas Gery Cullum at Landguard-fort. It flowers in June and July.

Linneus placed this species in the last section of the genus, among his *lupulina*; but I have followed Dr. Smith in putting it in the third section, with the *glomeratum*, *striatum*, &c. to which it is evidently allied<sup>s</sup>.

37. Heads ovate. Lowest segment of the calyx a little longer than the others<sup>t</sup>. Native of Egypt.

<sup>r</sup> Smith brit.

<sup>s</sup> Smith brit. and Engl. bot.

<sup>t</sup> Linn. syst.



38. Leaves toothletted. Pedicels long, with the flowers remote. Calyxes with long tubes, ten-streaked, equal<sup>a</sup>. Native of Syria, Judea, Arabia, abundant about Constantinople, Candia<sup>x</sup>.

39. Calyxes terminated with five bristles. Corollas red. Legumes longer than the calyx, awl-shaped at the end, filling the calyx, four-seeded<sup>y</sup>.

Fruiting-calyx ovate-oblong, swelling, membranaceous, netted, terminated with five bristle-shaped teeth, recurved and spreading. Corolla shrivelling, lacerate, permanent, involving the legume; which is oblong, membranaceous, very thin; and ends in the bristle-shaped style. Seeds four (or two larger), subglobular, covered with very minute raised dots, sulphur-coloured, or deep yellow, or ferruginous<sup>z</sup>.

Native of France and Italy. Introduced in 1771 by Monf. Richard. It flowers in june and july<sup>a</sup>.

40. The corolla is turned upside-down, so that the banner respects the periphery, and the keel the centre. Calyx inflated, ovate-oblong, terminated with two bristles, having a very short one between them, and gaping longitudinally on the lower side. Legumes two-seeded, roundish, very small, in the bottom of the calyx<sup>b</sup>.

Fruiting-calyx ovate-beaked, inflated, gibbous, membranaceous, netted, terminated with two bristle-shaped hooked teeth, quite entire at the back, but having a longitudinal cleft in the belly. Legume very small, obovate, membranaceous, very thin. Seeds two (sometimes, but seldom, one), ovate, smooth, of a yellow bay colour<sup>c</sup>.

Native of Belgium, Silesia, the South of France and Italy. Dr. Smith observed it the second of april on the steps of Trinita de' Monti, at Rome; and says he knows not on what authority Linneus has made it a native of England<sup>d</sup>.

41. Root perennial. Stems decumbent all round, not creeping. Leaves obovate, toothletted, obtuse, smooth, with acuminate stipules. Peduncles axillary, very short. Heads small. The three upper teeth of the calyx elongated, the two lower small. Calyx involved in so thick a nap as not to be visible. General involucre twelve-leaved. Corollas almost resupinate<sup>e</sup>.

Native of the South of Europe, and of Barbary. Cultivated in 1640, by Mr. John Parkinson. It flowers in june and july<sup>f</sup>.

42. The whole plant is hirsute. Stems erect. Stipules ovate, ending in an awl-shaped point. Leaflets toothletted, nerved. Head of flowers roundish. Involucres three or four, rounded, involving the base of the head, one of them three-leaved. Calyx-teeth long, equal. Corolla rose-coloured: banner awl-shaped. Native of Barbary near Mascara.

43. Plant villose. Stipules ovate. Leaflets obcordate or obovate, nerved. Involucre four-leaved, pressed close; leaflets rounded, striated; one of them three-leaved. Segments of the calyx long, villose. Corolla very small, white. Native of Barbary near Mascara<sup>g</sup>.

44. Root perennial, fibrous with little tubers. Stems prostrate, rooting, extending to a considerable length, often tinged with purple, branched, round, and smooth. Leaves on long petioles: leaflets obovate, toothletted, smooth; the younger ones sometimes hairy. Stipules ovate-lanceolate, drawn out into a long point, smooth. Peduncles solitary, axillary, naked, round, smooth, ascending, longer than the petioles. Heads globular, many-flowered. Involucre consisting of many bristle-shaped leaflets. Calyx tubular, villose, gibbous above; the three lower teeth equal, with long green points, the two upper a little longer, with tapering rigid reddish points; the gibbous part at length increases, swells, becomes reticulated, and covers the pericarp, still retaining its teeth. Corolla purple: banner longer than the wings, flat and streaked with rose-coloured lines; wings short and small; keel still shorter: each

floret is attended by a small, awl-shaped, concave chaff. Legume ovate, flattened, containing two seeds, of an ovate kidney shape and shining, covered by the calyx<sup>h</sup>.

The singular Strawberry-like appearance of the heads, arising from the inflation of the calyx after flowering, strikingly distinguishes this species from the *repens*, to which in its general habit it is nearly allied: the whole plant also of the *fragiferum* is smaller, the corolla is purple, and it usually occurs in moist situations<sup>i</sup>.

Native of all parts of Europe, flowering in july and august.

45. Root perennial, running down deep. Stem upright, eight inches or a foot and more in height, hardish, round, whitish-green, pubescent, somewhat rugged, simple except that at the end it breaks into two or three branches, sustaining flowers. Lower leaves on longer, upper on shorter petioles and almost sessile: leaflets lanceolate, acuminate, nerved, hard, very finely serrulate, transversely striated, bright green, villose beneath, somewhat rugged. Stipules lanceolate, striated, awl-shaped, pubescent. Peduncles axillary, thick, grooved, pubescent. Flowering heads large, ovate, obtuse, the same size as in the *alpestre* but white, and composed of an hundred or more sessile florets. In *systema vegetabilium* the head is called a raceme, which is squeezed close, and has very small awl-shaped bractes between the florets. Calyx smooth or subpubescent; teeth almost equal. Corolla white, of four distinct petals: banner lanceolate, obtuse, slightly emarginate, twice as long as the wings and keel; wings obtuse, spreading, a little longer than the keel, which is straight and obtuse. Legume from orbicular inclining to ovate, flattish, smooth, sharp at the edge, involved in both calyx and corolla. Seed one, small, roundish-ovate, blunt at both ends, yellowish-brown, smooth<sup>k</sup>.

Native of many parts of Europe, on very dry hills, from Sweden to Spain; but not of England, which Linneus remarks as a singularity, it being so common in Sweden.—It was introduced here in 1786, by William Pitcairn, M.D. and flowers in july<sup>l</sup>.

Scopoli relates, that he has gathered a variety, which was more villose, with the teeth at the edges of the leaves ending in a kind of spinule, and the flowers of a whitish yellow colour.

46. Root annual. Stems nearly upright, solitary. Calyx before flowering scarce apparently hairy, having only a hair or two at the tips. Corollas yellow not bay-coloured<sup>m</sup>: the flowers are permanent, and when dry make a rustling noise, whence Crantz's name of *strepens*.

Native of many parts of Europe, in pastures. Dr. Smith observed it on the top of Mount Cenis. It is not a native of England. What has been taken for it is the *procumbens*, n. 48.

47. This has the appearance of the species immediately preceding, but the stem is more erect and solitary: the banner of the florets becomes ferruginous after flowering; the two upper teeth of the calyx are indistinct in this, whereas in the preceding they are of the same length with the others<sup>n</sup>.

Native of several parts of Europe, in dry pastures, but not of England.—Introduced in 1778, by Mr. Thouin. It flowers from june to august<sup>o</sup>. In the Kew Catalogue it is marked as perennial; and Monf. Villars says, it has always appeared to him to be so. This author has adopted Pollich's *Tr. aureum*, n. 708. which is nearly allied to the *spadiceum*, but the stem is more slender, higher, and more branched.

48. Root annual, small but strong. Stems spreading widely and naturally procumbent, though sometimes supported by other plants, and indeed generally ascending at their extremities; they are a little branched, leafy and hairy, often purplish. Leaflets obovate, emarginate, toothed, smooth. Stipules half-ovate, acute, entire, strongly ribbed, often ciliate.

<sup>a</sup> Lin. syst.

<sup>x</sup> Linn. spec.

<sup>y</sup> Idem.

<sup>z</sup> Gartner.

<sup>a</sup> Hort. kew.

<sup>b</sup> Linn. spec.

<sup>c</sup> Gartner.

<sup>d</sup> Tour. 2, 294.

<sup>e</sup> Linn. spec.

<sup>f</sup> Hort. kew.

<sup>g</sup> Desfontaines.

<sup>h</sup> Curt. lond. and Smith brit.

<sup>i</sup> Curtis.

<sup>k</sup> Pollich, Scopoli, Villars.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. succ. and spec.

<sup>n</sup> Idem.

<sup>o</sup> Hort. kew.



Flowering-heads peduncled, a little spicate, frequently reaching beyond the leaves, elliptical, obtuse, dense, many-flowered. Peduncles most hairy upwards. Calyx-teeth unequal, taper, hairy. Corolla lemon-coloured, permanent, at length brown and membranous: banner broad, furrowed, plaited. Pod small, elliptic, pointed? Seed single, shining, of a brown or orange colour.

The name of Hop Trefoil is, with much propriety, bestowed on this plant, the heads being larger and more resembling the hop than any of our English species. It is by no means uncommon in dry pastures, on the borders of fields, and in gravelly soils. In some meadows it forms a considerable part of the crop, and makes excellent fodder. It flowers in June and July, and perhaps merits the attention of the husbandman<sup>1</sup>: where its lasting only one year is no objection.

According to Linneus, the *procumbens* differs from the *agrarium* and *spadiceum* in having smaller flowers, but especially because its long stalks are altogether decumbent. It resembles the *filiforme*, but is larger, and has often ten or twelve flowers. The leaves are not striated. On being sown it was also different from that<sup>2</sup>. Leers says, there are often two seeds in a pod.

The synonyms given by Linneus to the *agrarium* belong to this species, except that of Dodonæus, which is *Medicago lupulina*. The *procumbens* of English authors is considered by Linneus only as a variety of the *filiforme*<sup>3</sup>. Dr. Smith however says, he is now convinced that the *procumbens* of Hudson is improperly confounded with *filiforme* in Flora Britannica.

49. Root annual, small, fibrous. Stems prostrate, filiform, somewhat hairy. Leaflets obcordate, toothed, striated. Stipules subovate, nerved, ciliate. Peduncles axillary, capillary, hairy, (in  $\alpha$  scarcely four-flowered, in  $\beta$  many-flowered), flowers erect, in a sort of head, pedicelled, yellow, finally bent back. Calyx smooth, with unequal teeth. Corolla permanent, scarious, brownish, with the banner keeled, narrower than in the preceding, neither bent in nor grooved. Legume elliptic, pedicelled, one-seeded<sup>4</sup>.

50. When this grows luxuriantly it bears a near resemblance to the *agrarium*, but in that the spikes are not only much larger, but also much more closely imbricated; the *procumbens* is found only in certain spots, whereas there is scarcely a dry hilly pasture or grass plat on which this may not be found<sup>5</sup>.

This, says Dr. Withering, is the most common sort of Hop Trefoil, and may be found in almost every dry sandy or gravelly pasture, especially where the turf is fine, but varying greatly in size, according to the richness or poverty of the soil, and flowering from May to August.

51. Stem nearly upright. Leaflets lanceolate, on short petioles. Stipules sheathing, with two acuminate teeth, the length of the sheath. Heads axillary, funnel-form, sessile, wrapped up in several leaves which are slightly trifid, the middle segment longer than the others. Flowers two, coming out alternately. Native of Virginia, and Canada<sup>6</sup>.

In this extensive genus the following distinctions may be of use in distinguishing the species.

Respecting the inflorescence, the following species are

Racemed: 1 to 8 and 45 to 49.

Umbelled: 9, 10, 12 to 15.

Fascicled: 16, 17, 50.

Headed: 18, 19, 32 to 44.

Spiked: 11, 20 to 31.

All the species, as the name implies, have ternate leaves, except the ninth, in which they are usually quinate or five together.

More species are annual than perennial:

Annuals are from 1 to 8, 11, 16 to 19, 25, 26, 28 to 36, 46 to 50.

Perennials: 9, 12 to 15, 20 to 24, 27, 41, 44, 45.

The predominant colours of the flowers are yellow and purple.

<sup>1</sup> Engl. bot.

<sup>2</sup> Fl. succ. and spec. plant.

<sup>3</sup> Smith brit.

<sup>4</sup> Curtis lond.

<sup>5</sup> Afzelius in Withering.

<sup>6</sup> Curt. lond.

<sup>7</sup> Linn. spec.

Yellow. 3, 4, 5, which varies to white; 6, 7, 18? 41, 46 to 50.

Yellow or White. 2.

Pale Brimstone. 27.

White. 11, 12? 13, 16, 43, 45.

Whitish. 24, 33.

Purple. 9, 10, 15, 19? 20 to 23, 25, 28, 40.

Red. mostly pale. 8, 26, 29, 30, 31, 34, 35, 36, 42.

Blue. 1.

Most of the flowers have one seed only in each legume or pod.

Seed one: 16, 17, 20 to 33, 35, 45 to 50.

Seeds one or two: 2, 5, 6, 7, 34.

Seeds two: 4, 11, 36, 40, 44.

Seeds two or three: 10.

Seeds two to four: 1, 13.

Seeds four, 12, 14, 39.

Seeds four or five: 9.

Seeds eight: 8.

Some of the legumes which have naturally one seed only, have occasionally two seeds.

Several of the species have the banner, wings and keel connected at the base, and are therefore called monopetalous by Linneus.

This is the proper place to acknowledge the assistance of Mr. Afzelius in clearing up the confusion of synonyms in some of the species: as also to confess and correct the errors committed in the Flora Rustica. —What was supposed in that work to be *Trifolium medium*, is *Trif. pratense* in its wild state. What is there named *Tr. flexuosum* is the *Tr. medium*. *Tr. alpestre* is not a native of Scotland. The figure of *Tr. stellatum* is a very good one, but the description does not belong to it.]

#### PROPAGATION AND CULTURE.

1 to 8. If the seeds of the Melilots, which are annual plants, be permitted to scatter, the plants will rise without care, and require no other culture but to be kept clean from weeds, and to be thinned where they grow too close.

There are few worse weeds among corn than common Melilot, for the seeds being ripe about the same time with the corn, they are threshed out with it, and being heavy are difficult to separate from it. A few of the seeds, as is well known, give the flour a strong nauseous taste.

[But as a food for cattle Melilot may have its value. It has been recommended by some French writers, as succeeding well in a sandy soil for this purpose. Particularly the White Siberian Melilot, which is considered by Linneus as a variety of the common sort. It grows in Siberia, in deep light dry land, and rises from three to nine feet in height. It dies to the ground in winter, but shoots again early in spring, and lasts from two or three to six years. It begins to flower about the middle of June, and is in full bloom the middle of July.

Although the stems and leaves of Siberian Melilot are twice as large as those of the common sort, the flowers are but half the size, and are constantly white. It has been sown twenty years by the side of common Melilot, in the Paris garden, without varying. Sown in the field, on a light soil, but wet, it grew above eight feet high, and produced a great quantity of seed; it was given to cattle both green and dry, and they preferred it to every other food, especially when fresh cut. In a loose dry soil it will rise to six feet high. In such land it may be sown in autumn, upon one earth; but in wet land it is safer to sow it in spring, at which time the land must have two earths and be well broken with the harrow. The seed being smaller than that of Clover, and the plant spreading more, half the quantity of seed usually sown of Clover will be sufficient.

Siberian Melilot sown in autumn, may sometimes be mowed in November, then in May, again in July, and lastly in November: the first cuttings may be made into hay, but the last must be given to the cattle green. By means of regular cuttings, this plant may be preserved several years; but if it be left to ripen its



its seed, it soon becomes weak, and may be considered as a biennial.

This Melilot, cultivated by itself, seems to be more productive than Clover; but the produce becomes much more considerable, when cultivated with the Siberian Vetch: for these plants possess all the qualities which can make their union desirable: they last the same time—they shoot at the same period—they flower and seed together—they extend their roots to different depths—one produces a thin and tender food, the other more solid and substantial—lastly, the warm quality of the one is tempered by the watery quality of the other.

Mr. Young, having been favoured with some of the seed of Siberian Melilot, by Monsr. Thouin, on the 11th of April 1791, sowed a piece partly in drills at two feet six inches, and one square perch broadcast; the latter with an ounce and half of seed, or fifteen pounds an acre. The soil a moist loam, on a cold marley bottom. On the 22d of September it was mowed, being a full and beautiful crop: One square perch drilled weighed one hundred and five pound. The perch broadcast, eighty-four pound. The drilled received a small manuring, at the time of sowing, of ashes, to the amount perhaps of about ten bushels to the acre. But the rows were too far asunder; and the crop in each row would probably have been as great, if the distance had been only eighteen inches.—A hundred and sixty-five pound to the perch is seven tons and a half on an acre; and eighty-four pounds is six tons to the acre.

Either of these crops is enough to pay the loss by not sowing barley or oats, and to prove that the plant will pay amply for culture; the one is equal probably to above two tons of hay to the acre, and the other more than one and a half.

The season was a severe drought. It was given to cows, working oxen, calves and horses, and they all eat it very readily, some even greedily.

In strong lands, which will bear Clover, this plant may not be found an object of culture; but in poor sands and all soils not adapted to Clover, it may be sown to advantage, as hardly any other plant seems to flourish so well there, and sheep are very fond of it.<sup>z</sup>

13. White or Dutch Clover grows naturally in most of the pastures in England, and is generally known among the country people by the title of white Honeyfuckle.

This is an abiding plant, whose branches trail upon the ground, and send out roots from every joint, so that it thickens and makes the closest sward of any of the sown Grasses; and it is the sweetest feed for all sorts of cattle yet known; therefore when land is designed to be laid down for pasture, with intent to continue so, there should always be a quantity of the seeds of this plant sown with the Grass seeds. The usual allowance of this seed is eight pounds to one acre of land, but this should never be sown with Corn; for if there is a crop of Corn, the Grass will be so weak under it, as to be scarce worth standing: but such is the covetousness of most farmers, that they will not be prevailed on to alter their old custom of laying down their grounds with a crop of Corn, though they lose twice the value of their Corn by the poorness of the Grass, which never will come to a good sward, and one whole season is also lost; for if this seed is sown in the spring without Corn, there will be a crop of hay to mow by the middle or latter end of July, and a much better after-feed for cattle the following autumn or winter, than the Grass which is sown with Corn will produce the second year. The seed of this sort may also be sown with Grass seeds in autumn, in the manner hereafter directed for the common red Clover; and this autumnal sowing, if the seeds grow kindly, will afford a good early crop of hay the following spring; and if, after the hay is taken off the land, the ground is well rolled, it will cause the Clover to mat close upon the ground, and become a thick sward.

The seed of this white Dutch Clover is annually

imported from Flanders, by the way of Holland, from whence it received the name of Dutch Clover; not that it is more a native of that country than of this; for it is very common in moist pastures in every county in England, but the seeds were never collected for sowing here till of late years: nor are there many persons at present here who save this seed, although it may be done, if the same care as is practised for the red Clover, is taken with this sort; therefore it should be recommended to every farmer, who is desirous to improve his land, carefully to sow an acre or two of this white Clover by itself for seeds, which will save him the expence of buying the seeds, which are often sold at a great price, and there will be no want of sale for any quantity he may have to spare.

The farther account of this Grass, may be seen under the article PASTURE.

[Mr. Majendie of Hedingham Castle, in Essex, has cultivated White Clover for seed with singular success. He had ten acres that yielded him fifteen guineas an acre, clear of expenses, the sample of the seed being remarkably fine, and exceeding any foreign in the market. He sows it with spring corn, from twelve pounds to fourteen pounds on an acre; and has found wheat to be as good after this as after red Clover.<sup>z</sup>

Mr. Pitt of Pendeford in Staffordshire, informs us that the best grass seed that can be sown for upland pasturage is the white Dutch Clover; that it has a great advantage over all others, from its extreme minuteness, on which account any given weight fills the ground proportionably fuller of plants; that these plants, on sound land, will abide for ever, make excellent sweet pasture, and may be invigorated at pleasure by dung.

He weighed, and numbered a small weight of the following seeds, by which he found, supposing them all good, that one pound of white Clover seed, gives as many plants as two pounds and a half of red Clover, ten pounds and a half of burnet, and thirty-eight pounds of saintfoin. Whence, supposing six pounds of white Clover seed sufficient for an acre; to give as many plants, an acre will require fifteen pounds of red Clover, sixty-three pounds of burnet, and two hundred and twenty-eight pounds of saintfoin.<sup>a</sup>

Dr. Anderson remarks, that the common white or Dutch Clover delights in a firm soil, although it does not require such a degree of compactness as red Clover, and therefore prospers in many fields without any artificial pressure; but on very spongy soils, art must supply the deficiency of nature, or it will not thrive. Hence it happens, that on soils of this sort, white Clover is frequently seen to flourish exceedingly on such foot-paths as are moderately trod upon, while it only languishes, or hardly appears in other parts of the field.<sup>b</sup>

Mr. Wright of Stanhow in Norfolk thinks that white Clover is a bitter food, and that sheep do not eat it kindly, so that while much food seems to be on the ground, stock does badly. Mr. Bakewell, it seems, adopted this singular opinion.<sup>c</sup>

21. Since the red Clover has been cultivated in England, there has been great improvement made of the clay lands, which before produced little but Ryegrass, and other coarse bents; which, by being sown with red Clover, have produced more than six times the quantity of fodder they had formerly on the same land, whereby the farmers have been enabled to feed a much greater stock of cattle than they could before, which has enriched the ground, and prepared it for Corn; and where the land is kept in tillage, it is the usual method now among the farmers, to lay down their ground with Clover, after having had two crops of Corn, whereby there is a constant rotation of Wheat, Barley, Clover, or Turneps on the same land.

The Clover-seed is always sown with Barley in the spring, and when the Barley is taken off, the Clover spreads and covers the ground, and this remains two years, after which the land is ploughed again for Corn.

<sup>z</sup> Young's Annals, 18. 434.

<sup>a</sup> Idem, 4. 338.

<sup>b</sup> Essays, 2. 295.

<sup>c</sup> Young's Annals, 12. 52.

<sup>y</sup> Young's Annals, 14. 217. 15. 447. and 16. 420.



The Clover is a biennial plant, whose roots decay after they have produced seeds; but by eating it down, or mowing it when it begins to flower, it causes the roots to send out new shoots, whereby some of the plants are continued longer than they would naturally remain. The common allowance of seed for an acre of ground is ten pounds. In the choice of the seeds, that which is of a bright yellow colour, inclining to brown, should be preferred, and the pale-coloured thin seed should be rejected. The Clover-feed should be sown after the Barley is harrowed in, otherwise it will be buried too deep; and after the seeds are sown, the ground should be rolled, which will press the seeds into the ground; but this should be done in dry weather, for moisture will often cause the seeds to burst, and when the ground is wet, the seeds will stick to the roll. This is the method which is generally practised by most people in the sowing of this seed with Corn, but it will be much better if sown alone; for the Corn prevents the growth of the plants until it is cut and taken off the ground, so that one whole season is lost; and many times, if there be a great crop of Corn upon the ground, it spoils the Clover, so that it is hardly worth standing; whereas, when it is sown without any other seed, the plants will come up more equal, and come on much faster than that which was sown the spring before under Corn.

Therefore from many years trial I would advise the seeds to be sown in august, when there is a prospect of rain soon after; for as the ground is at that season warm, so the first shower of rain will bring up the plants, and these will have time enough to get strength before the winter: and if, some time in october, when the ground is dry, the Clover is well rolled, it will press the ground close to the roots, and cause the plants to send out more shoots; the same should be repeated in march, which will be found very serviceable to the Clover. The reason of my preferring this season for the sowing of the seeds rather than the spring is, because the ground is cold and wet in spring, and if much rain fall after the seeds are sown, they will rot in the ground; and many times when the seed is sown late in the spring, if the season should prove dry, the seeds will not grow, so that I have always found the other season has been the best.

About the latter end of may this Grass will be fit to cut, when there should be great care taken in making it; for it will require a great deal more labour and time to dry than common Grass, and will shrink into less compass; but if it be not too rank, it will make extraordinary rich food for cattle. The time for cutting it is, when it begins to flower; for if it stands much longer, the lower part of the stems and the under leaves will begin to dry, whereby it will make a less quantity of hay, and that not so well flavoured.

Some people cut three crops in one year of this Grass, but the best way is to cut but one in the spring, and feed it the remaining part of the year, whereby the land will be enriched, and the plants will grow much stronger.

One acre of this plant will feed as many cattle as four or five acres of common Grass; but great care should be taken of the cattle when they are first put into it, lest it burst them: to prevent which, some turn them in for a few hours only at first, and so stint them as to quantity; and this by degrees, letting them at first be only one hour in the middle of the day, when there is no moisture upon the Grass, and so every day suffer them to remain a longer time, until they are fully seasoned to it; but great care should be had never to turn them into this food in wet weather; or if they have been for some time accustomed to this food, it will be proper to turn them out at night in wet weather, and let them have hay, which will prevent the ill consequences of this food; but there are some who give straw to their cattle while they are feeding upon this Grass, to prevent the ill effects of it; which must not be given them in the field, because they will not eat it where there is plenty of better food. There are others who sow Rye-grass amongst their Clover, which they let grow toge-

ther, in order to prevent the ill consequences of the cattle feeding wholly on Clover; but this is not a commendable way, because the Rye-grass will greatly injure the Clover in its growth, and the seeds will scatter and fill the ground with bents.

Where the seeds are designed to be saved, the first crop in the spring should be permitted to stand until the seeds are ripe, which may be known by the stalks and heads changing to a brown colour; then it should be cut in a dry time, and when it is well dried, housed until winter, when the seeds should be threshed out: if they are wanted for immediate sowing, they must be well dried, otherwise they will not quit their husks.

It is a common complaint that Clover seed requires great labour to thresh it; which is chiefly owing to the second crop being left for seed, which ripens so late, that there is not heat enough to dry the husks sufficiently. This may be remedied by leaving the first crop for seed; and then the ground will be ready to plough and prepare for wheat.

When cattle are fed with Clover hay, it should be put into racks, otherwise they tread a great quantity of it down with their feet. This feed is much better for any other cattle than milch cows; though when it is dry it is not near so injurious to them as when green.

[The most approved method of sowing red or broad Clover is on clean land, with a full crop of barley after turneps, at the rate of twelve pounds to an acre. The duration of it is very short, except on fresh land; which points out the propriety of intermixing with it as great a variety of other crops as may be suitable. On land where it has been often repeated, it seldom will continue above two years, and very often not above one; and though manure will increase the crop, it will not prolong its stay. Clover evidently grows most kindly after turneps, and any soil that will bear them, is suitable for it. There is however a great quantity of Clover now grown on strong clays, with good success. A common way is, to mow it in june, and make it into hay. Two tons upon an acre may be reckoned a medium crop. It is particularly good for draft horses and oxen. Sometimes it is mowed a second time, late in august; but the hay of this second crop is less in quantity, and of an inferior quality to the former; unless dry fodder therefore be greatly wanted, it is better to feed it, instead of mowing a second time.

When Clover is to be saved for seed, a common custom is, to feed it down close until the end of may; which early feed is a vast advantage for ewes, lambs, &c. as it comes in before the natural grasses.

These are the common advantages derived from Clover; but a greater benefit may be obtained by cutting it green, as often as it attains a sufficient growth, and soiling horses and cattle with it, in racks and cribs. In this manner it will support more than twice the stock it would do if fed off the ground; besides the additional quantity of manure, that will be made in the stables and yards, if they are kept littered with straw, fern, &c. which increase of manure will fully compensate the farmer for his expense in cutting and bringing the Clover into the yards. The quick growth of Clover after mowing shades the ground, and prevents the sun from exhaling the moisture of the land, so much as it would if fed bare; consequently it continues to spring with more vigour; and the moment one crop is off, another begins to shoot up. Whereas when cattle feed it, they frequently destroy as much as they eat; and besides, break the necks of the roots with their feet, which prevents the Clover from springing so freely as it does after a clean cut by the scythe. In hot weather, which is the common season for feeding Clover, the flies are generally so troublesome to the cattle, that they are continually running from hedge to hedge, to brush them off, by which it is inconceivable what injury they do to the crop. But when they are fed in stables and yards, they are more in the shade, they thrive better, and consume the whole of what is given them without waste.



In the sixth volume of the Transactions of the Linnean Society of London there is a full account by Mr. Markwick, Mr. Marsham, and M. C. G. Lehmann of Gottingen, three celebrated entomologists, of an Insect, which is very destructive occasionally to the seed of the common purple or honey-suckle Clover. It appears to be the *Curculio Trifolii* of Linneus; and is described by Mr. Marsham as having a black body, with an extended beak a little longer than the thorax, which has small dots on it; the elytra or wing-covers are striated; the antennæ pitchy; the legs rust-coloured, but the feet always black: the thighs are also sometimes black. The abdomen is white. The length of the body is a line and half. It is figured in t. 5. at p. 94. at the bottom of the plate.

The damage done by this small insect, which we may call the *Clover Weevil*, is sometimes considerable. Mr. Markwick informs us, that in 1798, four acres and a half produced him sixteen bushels three quarters of Clover seed, which sold for 41l. 17s. 6d.: and in the year 1800, the same quantity of ground produced only seven bushels and a half, worth at the same price 18l. 15s.—This deficiency was probably occasioned by the depredations of this insect, and the seed was also of an inferior quality.

These Weevils come out early in spring in warm pastures, and fly about till the heads of Clover break out, when the females deposit their eggs on them. Hatched, between the calyxes, the maggot penetrates with its head into the rudiments of the first seed, as yet in a liquid state, and then proceeds to another more advanced and suitable to its increased strength. Having consumed three or four of them, it remains in the place of the last, where it is sufficiently sheltered, and changes into its pupa or chrysalis state; and after a few days comes forth in its perfect state. Having taken a short meal, it then slowly conceals itself in the small holes of fences, or in the bark of trees, where it reposes during the winter. Happily the wren, red-breast, and other small birds destroy great numbers; but the fecundity of the remainder is prodigious.

There is a variety of Clover called *Cow-grass*, which has been cultivated in some parts of Hampshire with great success. The ground relishes it extremely well, and it is by many preferred to common Clover. It grows more floridly, and thrives better upon poor land. At first they are not easily distinguished; but on a close inspection, the *cow-grass* will be found of a darker green, and more pointed at the ends of the leaves; the stalk is of a closer texture, and not so porous as the common Clover<sup>d</sup>.

This seems to be that variety of *Trifolium pratense*, which is figured in the *Flora Rustica*, under the name of *Cow-grass*.

Mr. Arthur Young says, that it is raised for seed in the weald of Sussex; that there is a market for it at Hessel; and that it is sent to London: he wishes the cultivators of it, would take care that they have *Cow-grass*, which is the *Tr. alpestre*, (our *Tr. medium*), a plant quite different from the *Cow-grass* of the shops: its roots run laterally under ground, like those of couch or quitch<sup>e</sup>.

He also informs us that Mr. Roper, the Duke of Grafton's steward, in the spring of 1789 sowed part of a field with red Clover, and the rest of it with *Cow-grass*, brought from Aylesbury in Buckinghamshire, with barley after turneps. Both were mown for hay in 1790, the common Clover giving the greatest produce, and rather the most after-grass. The following year both were fed, and the *cow-grass* yielded vastly more than the Clover, and of a better quality. They are apparently of a decidedly different habit and quality: the *cow-grass* spreads more on the ground; thicker; the stalk is solid, not pipy, and it does not run equally to blossom. Mr. Young remarks however, that to all common appearance they are the same, for he does not put much faith in a doubtful appearance of solidity in the stalk<sup>f</sup>.

The former of these may be our *Tr. medium*, which was taken by Hudson for the *alpestre*. But the *alpestre* is quite different, and not a native of England. The latter cannot be the *medium*, if it is at all like the *pratense*, but is probably a wild variety of the latter.

A farmer at Burscote, near Newberry, says, that *Cow-grass* is found to succeed on land where Clover has been too often repeated, and that it grows very plentifully on any wet spewy ground, even in moist seasons, generally producing three tons of hay on an acre at one cutting, but not any second crop in the same year; it lodges very much, and is troublesome to mow: the hay is said to be preferred by horses to clover hay<sup>g</sup>. We do not know what species or variety this may be. It seems as if *Cow-grass* was not the same thing in different counties. The Hampshire sort is figured in *Flora Rustica*; in the same work may be found the meadow Clover in its wild state, under the false name of *Tr. medium*, and the true *Tr. medium* under the name of *flexuosum*. The *medium* is also figured in *English Botany*. With the assistance of these figures, and the ample descriptions given in this work, the *pratense*, *medium* and *alpestre* cannot well be confounded.]

27. Mr. Miller says that in some counties this is sown after the same manner as the common red Clover, especially on chalky ground, where it will thrive, and produce a better crop than Clover.

[But Mr. Miller seems to have mistaken this species, for he says that the flowers are of a pale copper colour; and that it is known by the name of Trefoil.

A new sort of Clover has been found and cultivated near Bawtry in Yorkshire, which is supposed to be the *ochroleucum*; but if the description be exact it cannot be that species, for it is said that the nobb (flowering head) has white cups tipped with pink<sup>h</sup>: now that is sometimes the case with the *repens* or white Dutch Clover; but the *ochroleucum* has the florets of a pale brimstone colour. Nor does the latter, so far as we can judge from it in its wild state, promise to rival broad Clover in any degree except in its permanency.]

49, 50. These grow naturally among grass in most of the upland pastures in this country; and the seeds of the former are frequently sold in the shops by the name of Hop-Clover, and are by many mixed with other sorts of clover and grass-seeds, for laying down ground to pasture. The latter is a much smaller plant, and has trailing stalks. The heads of flowers are smaller, and of a deeper yellow colour. These not being abiding plants, are by no means proper to be sown where the ground is designed to continue in pasture; but where one or two crops only are taken, and the land is ploughed again for corn, it may do well enough when it is mixed with other seeds, though the cattle are not very fond of it green, unless when it is very young. The large sort is the most profitable, but this is rarely to be had without a mixture of the small kind, and also of the smaller Melilot, which is commonly called None-such, or sometimes Black Seeds, for those who save the seeds for sale, are seldom curious enough to distinguish the sorts; but in lawns, where the beauty of the verdure is considered, there must not be any of these seeds sown, because their yellow heads of flowers are very unsightly among the grass; and if it is in gardens where the grass is constantly mowed, the flowers of these plants will come out near the root in such clusters, as to occasion large, unsightly, yellow patches; and as the heads decay they turn brown, and have a very disagreeable appearance. [See *Medicago lupulina*.

Hartlib, in his *Compleat Husbandman*, 1659, mentions a place in Kent, which is a white chalky down, sometimes sown with corn a year or two, and then resting as long or longer; when it is laid down, maintaining many great sheep and very lusty, so that they are even fit for the butcher; and yet there doth not scarce appear any thing that they can eat, which hath

<sup>d</sup> Kent's hints, 41.

<sup>e</sup> Young's annals, 11. 246.

<sup>f</sup> Idem, 16. 496.

<sup>g</sup> Young's annals, 17. 413.

<sup>h</sup> Idem, 24. 529 to 535.



caused divers to wonder, as if they had lived on chalk-stones: but I, says Hartlib, thoroughly viewing the ground, perceived that it naturally produceth a small Trefoil, which it seemeth is very sweet and pleasant; it is commonly called *Trifolium luteum* or *lupulinum*, that is yellow or Hop-Trefoil: and I am persuaded, if that the seed of this Trefoil were preserved, and sown with oats, when they intend to lay it down, it would very much advance the pasture of that place. Therefore I desire all ingenious men, seriously to consider the nature of the Trefoils, which are the sweetest of grasses, and to observe on what grounds they naturally grow, and also the nature of other grasses naturally growing in this isle, some on watry places, some on dry, some on clay, others on sand, chalk, &c. some on fruitful places, others in barren; by the which means I suppose a solid foundation might be laid for advancing the pasture lands of all sorts, through this island<sup>1</sup>.]

As to the other species, which are mostly preserved in botanic gardens, they are easily propagated by seeds, sown in an open bed of ground, either in autumn or spring. The plants which come up in autumn will grow much larger, and flower earlier in the summer; from these therefore good seeds may be generally obtained, whereas the others sometimes miscarry. When the plants come up, they require no other care than to keep them clean from weeds, and to thin them where they are too close.

[TRIFOLIUM. See *Anthyllis*, *Cytisus*, *Ebenus*, *Hedysarum*, *Indigofera*, *Lotus*, *Medicago*, *Menyanthes*, *Potentilla*, *Pisoralea*.

TRIFOLIUM acetosum. See *Oxalis*.

———— bituminosum. See *Pisoralea*.

———— cochileatum. See *Medicago*.

———— corniculatum. See *Lotus* and *Trigonella*.

———— fruticans. See *Jasminum* and *Pisoralea*.

———— hepaticum. See *Anemone Hepatica*.

———— palustre. See *Menyanthes*.

———— filiquosum. See *Cleome*.

———— spinosum. See *Fagonia*.

TRIGLOCHIN. (From *τρεῖς*, three; and *γλῶχιν*, a point: the capsule opening in three points, like the barbs of an arrow.)

Lin. gen. 453. Reich. n. 488. Schreb. n. 616.

Gärtn. t. 84. Juss. 47. Juncago. Tournef. t. 142. Mich. 31.

Class. 6. 3. Hexandria Trigynia.

Nat. order of *Tripetaloidæa*. Junci Juss.

#### GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets roundish, obtuse, concave, deciduous.

COR. Petals three, ovate, concave, obtuse, like the calyx.

STAM. Filaments six, very short. Anthers as many, shorter than the corolla.

PIST. Germ large. Styles none. Stigmas three or twice as many, reflexed, feathered.

PER. Capsule ovate-oblong, obtuse; cells as many as there are stigmas, opening at the base by acute valves.

SEEDS solitary, oblong.

#### ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. three, calyx-form. Style none. Caps. opening at the base.

#### SPECIES.

1. Triglochin palustre. Marsh Arrow-grass.

Lin. spec. 482. syst. 453. Reich. 2. 125. Willd.

2. 264. fl. lapp. n. 134. succ. n. 321. Aët.

Stockb. 1742. p. 147. t. 6. f. 1, 2, 3. Gärtn.

fruct. 2. 26. Hudf. angl. 152. Wither. arr. ed.

3. 359. Smith brit. 398. engl. bot. t. 366.

Relb. cant. ed. 2. n. 327. Sibth. oxon. n. 358.

Abbot bedf. n. 282. Dicks. hort. succ. 15. 10.

Fl. dan. t. 490. Hall. helv. n. 1308. Hoffm.

germ. 130. Roth. germ. 1. 158. 2. 417. Pollich

pal. n. 364. Leers herb. n. 272. t. 12. f. 5.

Krock. files. n. 575. Scop. carn. n. 446. Villars

dauph. 2. 228. Allion. pedem. n. 864. Gmel.

fib. 1. 72. Desfont. atlant. 1. 322.

<sup>1</sup> Hartlib, p. 39.

Juncago palustris et vulgaris. Tournef. inst. 266.

Raii syn. 435.

Gramen Triglochin. Baub. hist. 2. 508.

Gr. junceum spicatum f. Triglochin. Baub. pin.

6. theat. 81. Tabern. ic. 224. Raii hist. 1308.

Gr. aquaticum spicatum. Ger. emac. 13.

Gr. enode spicatum, f. triglochin. Mor. hist. f. 8. t. 2. f. 18.

Calamagrostis 4. Dalech. hist. 1006. Trag. 679.

β. Juncago maritima perennis, bulbosa radice. Mich. gen. 44.

J. maritima. Barr. rar. 55. t. 271.

Hyacinthi parvi facie Gramen Triglochin. Baub. hist. 2. 508.

Capsules three-celled even linear attenuated at the base.

2. Triglochin bulbosum. Bulbous Arrow-grass.

Lin. syst. 348. Reich. 2. 126. Willd. 2. 264.

mant. 226. Jacqu. collect. suppl. 102. ic. rar. 2.

454.

Gramen triglochin bulbosum monomotapense. Brey.

fasc. 4.

Capsules three-celled even linear attenuated at the top.

3. Triglochin maritimum. Sea Arrow-grass.

Lin. spec. 483. syst. 348. Reich. 2. 126. Willd.

2. 265. fl. lapp. n. 135. succ. n. 322. Aët.

Stockb. 1742. p. 147. t. 6. f. 4, 5. Gärtn.

fruct. 2. 26. Hudf. angl. 152. Wither. arr. ed.

3. 359. Smith brit. 399. engl. bot. t. 255.

Relb. cant. ed. 2. n. 328. Fl. dan. t. 306.

Hoffm. germ. 130. Roth. germ. 1. 159. 2. 418.

Pollich pal. n. 365. Krock. files. n. 576. Scop.

carn. n. 447. Allion. pedem. n. 865. Gmel. fib.

1. 72.

Juncago palustris et maritima perennis, fructu brevior quinquecapsulari. Mich. gen. 44.

Gramen spicatum alterum. Baub. pin. 6. theat. 82. Ger. emac. 20.

Gr. enode spicatum, pericarpis parvis rotundis. Mor. hist. f. 8. t. 2. f. 19.

Capsules six-celled grooved ovate.

#### DESCRIPTIONS, &c.

1. Root fibrous, tufted, perennial. Leaves radical, sheathing, bifarious, linear, channelled, somewhat more slender and less fleshy than in the *maritimum*, but like them semicylindrical, with a membranous, sheathing, intrafoliaceous stipule. Scape solitary, erect, simple, a foot high, longer than the leaves, bearing a long, thick-set, but slender spike of numerous flowers, smaller than in the *maritimum*. The most certain and striking distinction between them is, that the fruit of this is much more long and slender, having only three cells and three valves instead of six. These valves separating from the base, look like a three-barbed arrow-head; whence the name. Seeds linear<sup>k</sup>.

Gärtner describes the fruit as narrow, elliptic, tripartite and tricapsular. Capsules acuminate downwards, three-sided, valveless. Common receptacle three-sided, but augmented moreover by three wings, as it were so many intercalary partitions, which perhaps may be abortive capsules stifled by the neighbouring ones.

Native of Europe, Siberia and Barbary, in wet boggy meadows, flowering in july. All cattle will eat it, and Dr. Withering says cows are extremely fond of it<sup>l</sup>.

2. Root bulbous, covered with bristles heaped into a tufted bundle. Scape scarcely half a foot high, channelled a little on one side. Leaves radical, filiform, and slightly channelled on one side like the scape.

The flowers and whole plant very much resemble the preceding species, but the flowers and fruit are smaller. Styles three, protracted and spreading; whereas in *T. palustre* they are erect and obsolete. Native of the Cape of Good Hope<sup>m</sup>.

3. Scape scarcely longer than the leaves, inclining at the base, terminating in a dense spike of greenish-purple flowers, on short flower-stalks. Leaves wider

<sup>k</sup> Smith brit. and engl. bot.

<sup>l</sup> Engl. bot.

<sup>m</sup> Linn. mant.



and more fleshy than in the palustre, with which it agrees in habit. The six anthers are almost sessile, and very large before they burst. Germ with six furrows, changing to an ovate capsule, which is shorter than that of the first, and has six cells; whereas *T. palustre* has but three<sup>a</sup>.

Gærtner describes the fruit as composed of six superior capsules, united into one ovate-globular, striated fruit, three-sided, gibbous on one side and scored with a furrow; acute-angled on the other and straight, coriaceous, one-celled and valveless. Common receptacle filiform, three-sided, in the axis of the fruit: proper, a very short umbilical chord leading from the top of the cell to the upper part of the seed. In each capsule one seed, which is long, drawn to a point at each end, three-sided, of a pale greenish colour.

Native of most parts of Europe, and of Siberia, in salt marshes, and in the ouze of large rivers, where the tide flows; flowering throughout the summer. All domestic cattle being very fond of this plant, it may deserve the notice of such as possess salt-marshes<sup>o</sup>.]

**TRIGONELLA.** (*Dimin. from trigona* (corolla); so named from its three-cornered corolla.)

*Lin. gen. n. 898. Reich. n. 970. Schreb. n. 1213. Gærtn. t. 152. Juss. 356. Fœnum-græcum. Tournef. t. 270.*

Class. 17. 4. Diadelphia Decandria.  
Nat. order of *Papilionaceæ* or *Leguminosæ*.

#### GENERIC CHARACTER.

**CAL.** *Perianth* one-leafed, bell-shaped, half-five-cleft: *toothlets* awl-shaped, nearly equal.

**COR.** papilionaceous, as it were three-petalled?

*Banner* subovate, obtuse, reflex-spreading.

*Wings* two, ovate-oblong, outwardly reflex-spreading, so that the banner with the wings constitutes as it were a regular three-petalled corolla.

*Keel* very short, obtuse occupying the navel of the flower.

**STAM.** *Filaments* diadelphous (simple and nine-cleft) short, rising. *Anthers* simple.

**PIST.** *Germ* ovate-oblong. *Style* simple, rising. *Stigma* simple.

**PER.** *Legume* ovate-oblong, compressed, covered.

**SEEDS** many, roundish.

**OBS.** *From the form of the corolla only this becomes a distinct genus.*

#### ESSENTIAL CHARACTER.

*Banner* and *wings* nearly equal, spreading, in form of a three-petalled corolla.

#### SPECIES.

1. *Trigonella ruthenica.* *Small Fenugreek.*

*Lin. spec. 1093. Reich. 3. 570. vir. cliff. 76. hort. cliff. 378. Gmel. fib. 4. 24. n. 33. t. 8.*

*Melilotus supina angustifolia, medicæ facie, filiqua compressa. Amm. ruth. 159. & n. 156.*

*Lotus montana humilior trifolia, ad caulem alata lutea, filiqua modo recta, modo medicaginis instar falcata nigra. Amm. ruth. 119.*

*Legumes peduncled beaped pendulous linear straight, leaflets sublanceolate.*

2. *Trigonella platycarpus.* *Round-leaved Fenugreek.*

*Lin. spec. 1093. syst. 692. Reich. 3. 570. hort. upf. 229. Gmel. fib. 4. 25. t. 9. Kniph. cent. 9. n. 93.*

*Melilotus supina latifolia, filiqua lata membranacea compressa. Amm. ruth. 158. æt. goett. 1. 213. t. 13.*

*M. filiqua membranacea compressa. Att. petrop. 8. 209. t. 12.*

*Legumes peduncled beaped pendulous oval compressed, stem diffused, leaflets roundish.*

[3. *Trigonella striata.*

*Lin. syst. 692. suppl. 340.*

*Legumes peduncled nearly upright distant, peduncles longer than the leaf.]*

4. *Trigonella polycerata.* *Broad-leaved or Spanish Fenugreek.*

*Lin. spec. 1093. Reich. 3. 570. hort. cliff. 376. (Medicago.)*

*Buceras polyceration. Allion. pedem. n. 1142.*

<sup>a</sup> Engl. bot.

<sup>o</sup> Idem.

*Fœnum græcum sylvestre alterum polyceration. Bauh. pin. 348. Raii hist. 954. 3.*

*F. sylvestre alterum. Dod. pempt. 547.*

*Legumes subseffile beaped erect nearly straight long linear, peduncles aculeless.*

[5. *Trigonella hamosa. Egyptian Fenugreek.*

*Lin. spec. 1094. Reich. 3. 571.*

*Fœnum græcum, corniculis reflexis, minor f. repens. Boerb. lugdb. 2. 33.*

*Melilotus ægyptius Achimelech vocatus. Alp. ægypt. 41. t. 124. Bauh. hist. 2. 357. Raii hist. 953. n. 13.*

*M. Indiæ orientalis. Park. theat. 720. n. 7. Raii hist. 953. n. 14.*

*M. corniculis reflexis, minor f. repens. Bauh. pin. 331.*

*Legumes peduncled racemed declined hooked round, peduncles spiny longer than the leaf.]*

6. *Trigonella spinosa. Thorny Fenugreek.*

*Lin. spec. 1094. Reich. 3. 571. Gærtn. fruct. 2. 332. Lin. hort. cliff. 377. (Medicago.)*

*Fœnum græcum sylvestre polyceration creticum majus. Breyn. cent. 79. t. 33. f. 1. Raii hist. 955. 5.*

*Legumes subpeduncled beaped declined sickle-shaped compressed, peduncles thorny very short.*

[7. *Trigonella corniculata. Horse-shoe Fenugreek.*

*Lin. spec. 1094. syst. 692. Reich. 3. 571. hort. cliff. 376. Gort. gelr. 435. Gron. orient. 96. (Trifolium.)*

*Buceras corniculatum. Allion. pedem. n. 1143.*

*Melilotus corniculis reflexis, major. Bauh. pin. 331. Raii hist. 952.*

*M. syriaca. Park. theat. 719. n. 4.—odora 720. f. 4. Ger. 1033. f. 1. emac. 1204. f. 1.*

*M. lutea major, cornic. reflexis ex eodem centro ortis. Mor. hist. 2. 162. f. 2. t. 16. f. 11.*

*Trifolium corniculatum 2. Dod. pempt. 573.*

*Legumes peduncled beaped declined somewhat sickle-shaped, peduncle long somewhat spiny, stem erect.*

8. *Trigonella monspeliaca. Trailing Fenugreek.*

*Lin. spec. 1095. Reich. 3. 572. Desfont. atlant. 2. 208. Vahl symb. 2. 85.*

*Medicago. Lin. hort. cliff. 377. Dalib. par. 231. Sauv. monsp. 187.*

*Buceras monspeliacum. Allion. pedem. n. 1144.*

*Fœnum græcum polyceration. Rivin. tetr. t. 82.*

*F. sylvestre polyceratum monspeliacum. Breyn. cent. 80. t. 33. f. 2.*

*F. sylv. minimum polyceration. Mor. hist. f. 2. t. 17. f. 4.*

*Hedysarum minimum. Dalech. hist. 446.*

*Legumes beaped sessile bowed divaricated inclined short, peduncle mucronate unarmed.*

9. *Trigonella laciniata. Jagged Fenugreek.*

*Lin. spec. 1095. syst. 692. Reich. 3. 572.*

*Legumes peduncled subumbelled elliptic, leaflets wedge-form toothed, stipules laciniated.]*

10. *Trigonella Fœnum-græcum. Common Fenugreek.*

*Lin. spec. 1095. Reich. 3. 572. hort. upf. 229. mat. med. 175. Woodv. med. bot. 437. t. 158.*

*vir. cliff. 76. Dalib. par. 228. Sauv. monsp. 187. Krock. files. n. 1220. Affo arag. n. 735.*

*Desfont. atlant. 2. 208. Gærtn. fruct. 2. 332.*

*Ludw. æt. t. 160.*

*Buceras. Hall. helv. n. 379.—fœnum græcum. Allion. pedem. n. 1145.*

*Medicago. Lin. hort. cliff. 376.*

*Fœnum græcum. Fuchs. hist. 798. Camer. epit. 199. Trag. 597. Matth. 413. Bauh. hist. 2.*

*365. Ger. 1026. emac. 1196. 1. Raii hist. 954.*

*Mor. hist. f. 2. t. 17. f. 1. Rivin. tetr. t. 81.*

*Blackw. t. 384. Regnault bot.*

*F. sativum. Bauh. pin. 348. Park. theat. 1096. f. 1. Tournef. inst. 409.*

β. *Fœnum græcum sylvestre. Bauh. pin. 348. Park. theat. 1096. f. 2. Ger. emac. 1196. f. 2.*

*Raii hist. 954. 2.*

*Legumes sessile strict nearly erect somewhat sickle-shaped acuminate, stem erect.*

[11. *Trigonella indica. Indian Fenugreek.*

*Lin. spec. 1095. Reich. 3. 573. fl. zeyl. n. 285. Pluk. phyt. t. 200. f. 7.*

*Legumes sessile subsolitary subfalcate, leaflets quite entire, stem diffused.*



12. *Trigonella pinnatifida*.Cavan. *ic. hisp.* 1. 26. n. 40. t. 38.

Stem prostrate four-cornered, legumes linear compressed erect sessile.]

## DESCRIPTIONS, &amp;c.

1. This is a biennial plant; the roots decaying soon after the seeds are ripe. Stalks very slender, trailing, extending a foot and half in length, and dividing into several branches. Leaflets wedge-shaped, indented at the point and ferrate, narrower than in the second and fourth: [according to Linneus, they are lanceolate, very blunt, acutely ferrate above, and toothed; and the stipules are quite entire.] The flowers are produced in clusters upon slender axillary peduncles; they are small, and of a bright yellow colour. The pods are narrow (linear) and erect. Linneus says pendulous. They contain three or four seeds.—Native of Siberia.

[It was cultivated in 1759, by Mr. Miller, who received the seeds from Dr. Amman, professor of Botany at Peterburgh. It flowers in June and July<sup>a</sup>.]

2. Root biennial, like the preceding. Stalks trailing, extending a foot in length, and sending out many side branches. Leaflets roundish, ferrate: [according to Linneus, subovate and acutely ferrate longitudinally. Stipules commonly toothed.] Flowers in clusters, peduncled, axillary; they are small, and of a yellowish white colour. Pods oval, compressed, containing two seeds. It flowers in June, and the seeds ripen in September. Native of Siberia, whence the seeds were sent with the other by Amman, [to Mr. Miller, who cultivated this species in 1759<sup>a</sup>.]

3. Annual. Leaflets, especially the younger ones having lateral, snow-white streaks. Common peduncle longer than the leaves, erect, awnless at the top, with five or six terminating flowers, not in a raceme, sessile, yellow. Legumes umbelled, almost erect, like the fingers of the hand stretched out, linear, sessile, five or six, a little bowing inwards. Native of Abyssinia<sup>a</sup>.]

4. This is an annual plant, the roots decaying soon after the seeds are ripe. Stalks trailing, extending a foot and half in length, and sending out several side branches. Leaves small; the leaflets wedge-shaped and ferrate at their points. Flowers in axillary clusters; small, of a pale yellow colour, and sitting very close to the stalks. Pods short and hooked, sessile and spreading out every way. It flowers in July, and the seeds ripen in autumn. [Cultivated in 1759, by Mr. Miller<sup>a</sup>.]

5. Annual. Stems decumbent, ascending. Leaflets obovate, wedge-shaped, toothed, veined, pubescent. Peduncle longer than the leaf, terminated by a spine. Flowers in racemes, having the banner shorter by half than the wings or keel. Legumes as far as ten, filiform, hooked, hanging down, ascending at the tip towards the calyx. Native of Egypt, where it was found by Hasselquist<sup>a</sup>.

Cultivated here in 1640, as appears from Parkinson<sup>a</sup>, in whose time it was supposed to be a native of the East Indies.]

6. The stalks of this are slender, and rise a foot high, sending out several slender branches. Leaflets wedge-shaped, ferrate at the ends, where they are indented, standing upon slender foot-stalks. Flowers in clusters from the sides of the branches upon short peduncles, which stand erect, and are armed with short spines: they are small, and of a pale colour. Pods narrow, parallel, and erect. This is an annual plant, which flowers in July; the seeds ripen at the end of August, and the plant decays soon after.

[Stipules toothed. The peduncle becomes a rigid spine, at the base of which are often five veined smooth legumes<sup>a</sup>.—These are linear-oblong, sickle-shaped, roundish or very slightly compressed, with transverse raised nerves. Seeds eight to twelve, ovate-oblong with a beak, yellow<sup>a</sup>.]

Native of the island of Candia. Cultivated in 1739 by Mr. Miller<sup>a</sup>.

<sup>a</sup> Hort. kew.<sup>b</sup> Hort. kew.<sup>c</sup> Linn. spec.<sup>d</sup> Idem.<sup>e</sup> Linn. spec.<sup>f</sup> Gartner.<sup>g</sup> Linn. suppl.<sup>h</sup> Hort. kew.<sup>i</sup> Hort. kew.

7. Annual. Stem upright. Stipules simple, somewhat toothed. Peduncle four-cornered, longer than the leaf, softly-spiny at the end, under which are from ten to twelve sickle-shaped legumes, shorter than the peduncle. Calyxes before they unfold very obscure. Flowers extremely sweet-scented. Native of the South of Europe<sup>a</sup>. Cultivated in 1597 by Gerarde. It flowers in June and July<sup>b</sup>.

8. Annual. Stems prostrate, growing close to the ground. Peduncle very short, softly mucronate, not longer than the leaf. Legumes ten to twelve, declining<sup>c</sup>.

Stems many in the same tuft, pubescent. Leaves fan-shaped, pubescent with a very short down, toothletted, nerved beneath, with the middle leaflet petioled. Stipules narrow, acute. Flowers very small, yellow, glomerate, sessile along the stem. Legumes compressed, sickle-shaped, acute, striated transversely<sup>d</sup>.

*Tr. stellata* of Forskahl is a mere variety, and differs from Linneus's *monspeliaca* only in having the leaves not rounded at the end but retuse<sup>e</sup>.

Native of France, Italy and Algiers.—Introduced in 1771, by Mons. Richard. It flowers in June and July<sup>f</sup>.

9. This resembles *Medicago polymorpha laciniata*. Stems filiform, even. Leaflets even, retuse, finely toothed. Stipules jagged-toothed. Peduncles axillary, scarcely the length of the leaves, terminated by a soft spinule, bearing a few yellow flowers in a sort of umbel. Legumes almost like those of *Melilot*, oval, sharp at both ends, twice as long as the calyx. Native of Egypt<sup>g</sup>.]

10. Common Fenugreek is an annual plant, which rises with a hollow, branching, herbaceous stalk. Leaflets oblong, oval, indented on their edges, on broad furrowed foot-stalks. The flowers come out singly at each joint from the axils; they are white, and sit very close to the stalk. Pods long, compressed, shaped somewhat like a broad-sword, ending in long points, and having a broad membrane on one edge: they are filled with square yellow seeds, indented on one side like a kidney. The whole plant has a very strong odour.

[It is smooth. The stem is simple or sparingly branched and striated. Leaves petioled: leaflets obovate or elliptic, toothletted above, the middle one of the three petioled. Legumes sessile, axillary, compressed, bowed, the upper margin thinner, having a long awl-shaped point<sup>h</sup>:—they are very long, filiform-acuminate, narrow, somewhat compressed and sickle-shaped, opening by the convex margin. Seeds sometimes as many as eighteen, rhomboid, gibbous, beaked with a depressed line, yellow or saffron-coloured<sup>i</sup>.

Native of France, the county of Nice, Spain, Germany and Barbary.—Cultivated in 1597, according to Gerarde<sup>k</sup>, who says, we sow a small quantity in our gardens.

The seeds are brought to us from the South of France and Germany, where they are annually sown for exportation.

They have a strong disagreeable smell, and an unctuous farinaceous taste, accompanied with a slight bitterness. An ounce renders a pint of water thick and slimy. To rectified spirit they give out the whole of their distinguishing smell and taste, and afterwards to water a strong flavourless mucilage.

These seeds are never given internally, their principal use being in cataplasms and fomentations, for softening, maturating, and discharging tumours; and in emollient glysters. They were also an ingredient in the *oleum e mucilagibus*; but this has no longer a place in the pharmacopœia<sup>l</sup>. They are used by grooms and farriers for horses.

β. The wild plant differs, in having long runners next the root, all pressed close to the ground, the stem only being upright; leaflets obovate, not ob-

<sup>a</sup> Linn. spec.<sup>b</sup> Desfontaines.<sup>c</sup> Linn. spec.<sup>d</sup> Hort. kew.<sup>e</sup> Hort. kew.<sup>f</sup> Vahl.<sup>g</sup> Desfontaines.<sup>h</sup> Woodville and Lewis.<sup>i</sup> Linn. spec.<sup>j</sup> Hort. kew.<sup>k</sup> Gartner.



rusty lanceolate; with the joints of the leaves purple. Legumes more hairy<sup>m</sup>.

11. Procumbent, not much branched. Leaves petioled: leaflets almost equal, somewhat oblong, smooth. Stipules ovate-lanceolate. Legumes one or two on the same peduncle, subsessile in the axils, recurved, compressed<sup>n</sup>.—Native of the East Indies.

12. Root annual, long, fibrous. Stems numerous, branched, red. Leaves distant, shorter than the common petiole, which is channelled: the lower sessile with the third petioled, pinnatifid-ferrate, retuse. Stipules jagged at the base, acute at the tip. Flowers axillary, sessile, from three to five. Corolla pale yellow. Legumes an inch long, erect and bowed a little; containing many seeds. Native of Spain, in the neighbourhood of Madrid.

It resembles *Medicago polymorpha laciniata*, of Linneus, and therefore *Trigonella laciniata*, but it differs from them entirely in the legumes<sup>o</sup>.

The leaves in all the species are ternate.]

#### PROPAGATION AND CULTURE.

1 to 9. These are hardy annuals. Sow the seeds where the plants are designed to stand, for they will not bear transplanting. If they are sown in autumn, in the way directed for the common sort, the plants will come earlier to flower, and good seeds may be obtained with more certainty than from spring plants. All the culture they require, is to thin them where they stand too close, and to keep them clean from weeds.

10. The ground in which this plant thrives best, is a light hazel loam, not enriched with dung; this should be made clean from the roots of weeds, and well ploughed twice, and harrowed fine before the seeds are sown. The best time to sow the seeds is the latter end of august or beginning of september; these should be sown in shallow drills like Peas. The rows should be two feet asunder, and the seeds must be scattered one inch distant from each other in the drills; for if the plants are too close together in the spring, they may be easily thinned with the hoe when the ground is cleaned. If the seeds are sown at the before-mentioned time, the plants will appear in three weeks or a month after; and if the weeds appear at the same time, the ground should be hoed over as soon as possible in dry weather, to destroy the weeds; and when the plants are grown an inch high, the earth should be drawn up to their stems in the same manner as is practised for Peas. This will secure their stems from being injured by sharp cutting winds; and if a ridge of earth is drawn up on the north or east side of each row, it will protect the plants from the pinching winds which blow from both those quarters; for although this plant will not be in any danger from the frost in the ordinary winters, yet in very severe frosts it is sometimes killed; but as this plant will live in any situation, where Peas stand through the winter, there will be no greater hazard of the one crop than the other.

In the spring of the year the ground must be hoed again in dry weather to kill the weeds, and the plants should be again earthed up in the like manner as Peas, with whose culture this plant will thrive; but there must be great care taken to keep the ground as clean from weeds as possible, for if they are permitted to grow, they will soon advance above the plants, and greatly weaken them; and when their pods begin to form, they cannot be too much exposed to the sun and air, whereby they will be less liable to suffer from moisture.

When the seeds are sown in autumn, the plants will grow much stronger, and have many more side branches than those which come up in the spring, so will produce a much greater crop of seeds, and these will produce their flowers five or six weeks earlier, and have a better season to ripen; but in order to have them better ripened, the top of the plants should be cut off with garden shears about the middle of june, by which time the pods will be formed on the lower part of the stalks, which will be greatly for-

warded by topping the stalks in the same way as is commonly practised for garden Beans; for where the plants are suffered to extend in length, the lower pods often miscarry, or are less nourished, and those on the top of the stalks are late before they ripen; so where the topping of the plants is omitted, the pods at bottom will open and cast out their seeds, before those above will be ripe; therefore to preserve the first and cut off the other, will be found the best method; for by so doing, the pods will ripen equally, and much earlier in the season.

If the summer proves warm, the seeds will ripen in august, and the plants should then be cut off, and laid to dry for five or six days, in which time they should be turned two or three times, that the pods may dry equally; then the seeds may be either threshed out in the field, or the haulm may be housed in a barn, to be threshed at a more convenient time.

Fenugreek has not been cultivated in any quantity for use in England, because it is an uncertain crop, occasioned by the inconstancy of our weather; the plants, in cold seasons being frequently killed, before the seeds ripen; or if they live long enough to have the seeds perfected, the pods change of a dirty colour, and the seeds turn black and unfightly, when much rain falls in the autumn.

[Dr. Woodville however affirms, that in dry seasons it ripens the seeds here very well, and judging by his own experience, he thinks it might be cultivated to great advantage in this country.

TRIGONIA. (So named from the form of the fruit.)

Lin. gen. Schreb. n. 1178. Aubl. t. 149. 150. Juss. 253.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Malpighiæ* Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate: border five-cleft, the two upper segments more deeply separated, erect, diverging.

COR. papilionaceous; five-petalled.

*Banner* erect, flat, clawed.

*Wings* reflexed, longer, narrower.

*Keel* two-petalled, converging.

STAM. *Filaments* ten, connected into a sheath, distinct at top, some (3, 5, 7.) often barren. *Anthers* oblong.

PIST. *Germ* ovate, small. *Style* short, ascending. *Stigma* headed, flat, girt with a membranaceous margin.

PER. *Capsule* oblong, three-cornered, three-grooved, acute, one-celled, three-valved: *valves* boat-shaped, doubled; outer coriaceous, inner membranaceous woolly within.

SEEDS very many, roundish, involved in long wool, fastened to three threads uniting the valves.

OBS. *Are the seeds fastened rather to one suture only?*

*It may be doubted whether this genus be rightly referred to this place? S.*

#### ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five, unequal, uppermost foveolate at the base within. *Neet.* two scales at the base of the germ. *Filam.* some barren. *Caps.* leguminose, three-cornered, three-celled, three-valved.

#### SPECIES.

1. *Trigonía villosa*.

Aubl. guian. 188. t. 149. Vahl ecl. 2. 53.

Leaves obovate beneath tomentose hoary.

2. *Trigonía lævis*.

Aubl. guian. 190. t. 150.

Leaves oblong on both sides smooth shining.

#### DESCRIPTIONS, &c.

1. Branches round, smooth below, villose above: branchlets hoary-tomentose. Leaves on the younger branchlets petioled, opposite, two or three inches long, ovate, attenuated towards the base, mucronate from the rib running out a little beyond the leaf, reflexed a little at the edge, smooth above, villose on the rib only which is yellowish, marked with lines along the nerves; beneath tomentose, hoary, netted-veined, both nerves and veins raised and villose with yellowish hairs. Racemes from the last axils quite simple, terminating, compound: branches opposite, spreading very much, decreasing upwards. Pedicels opposite

<sup>m</sup> Linn. spec.

<sup>n</sup> Linn. zeyl.

<sup>o</sup> Cavanilles.



opposite or alternate, spreading very much, with a yellowish down on them like the peduncles. At the base of each pedicel are two bristle-shaped bractes. Calyx five-parted: segments ovate, acute, without tomentose and hoary, within smooth, one of them more interior and a little wider than the rest, on the outside snow-white with a raised green line on the back. Upper petal wider than the rest, outwardly gibbous at the base, inwardly opposite to the bump an excavation with villose margins: the two lateral ones a little longer, linear-wedge-shaped, somewhat sickle-shaped, the two lower oblong, gibbous in the middle of the inner side towards the edge. Nectary composed of two scales, which are stiffish, small, rufescent, smooth, a little connected at the base by one edge. Filaments straight by the two lower petals, on one side of the germ, at first united, but afterwards dividing into two bodies, having five filaments in each, three of which are equal and have anthers, the other two are smaller and barren. Anthers small, roundish. Germ villose, hoary. As the filaments do not separate but as the germ increases, it might perhaps be more proper to insert this genus in the class Monadelphia. Native of Cayenne.

2. Branches below smooth, round, having very numerous raised dots scattered over them; above flattened and somewhat four-cornered, also inclined to be villose. Leaves petioled, opposite, two or three inches long, oblong, sharpish, quite entire, smooth on both sides except the rib, veined, shining, paler beneath. Petioles a quarter of an inch in length, somewhat villose. Stipules none. Racemes from the upper axils and ends of the branches, erect, stiff; the terminating ones three inches long, with a few opposite branches at the base; the axillary ones quite simple, an inch or a little more in length. Flowers smaller by half than in the preceding, for the most part solitary, but sometimes two together, on short pedicels, hoary on the outside. At the base of the pedicels there is a minute bracte. Leaflets of the calyx lanceolate, subcinereous. Nectary as in the preceding. Native of Guiana<sup>p</sup>.

TRIGONIS. See *Cupania*.

TRIGOSANTHES. See *Feuillea*.

TRIGUERA. (So named by Cavanilles, from a Spanish botanist.)

Lin. gen. Schreb. n. 282. Cavan. diff. 2. t. A. Juss. 125.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*. *Solanææ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, half-five-cleft, permanent: segments unequal, acute.

COR. one-petalled, bell-shaped. Tube very short. Border ventricose, plaited, five-cleft, longer than the calyx; the two upper segments reflexed.

Nectary membranaceous, short, five-toothed, surrounding the germ.

STAM. Filaments five, very short, inserted outwardly into the teeth of the nectary. Anthers sagittate, converging.

PIST. Germ roundish, two-grooved. Style filiform, straight, a little longer than the stamens. Stigma obtuse.

PER. a dry Berry, subglobular, grooved, four-celled.

SEEDS two in each cell, roundish, compressed, rugged: one above the other.

Obs. The fruit is sometimes two-celled, according to Cavanilles.

ESSENTIAL CHARACTER.

Cor. bell-shaped, with an unequal border. Nect. short, five-toothed, surrounding the germ. Filam. inserted into the nectary. Berry four-celled, with two seeds in each cell.

SPECIES.

1. *Triguera ambrosiaca*.

Lin. spec. ed. Willd. 1. 839. Cavan. diff. 2. app. 2. t. A.

Stem grooved and winged, upper leaves obovate toothed pubescent.

<sup>p</sup> Vahl.

2. *Triguera inodora*.

Lin. spec. ed. Willd. 1. 839. Cavan. diff. 2. app. 3. Leaves ovate-lanceolate quite entire smooth.

DESCRIPTIONS, &c.

1. Stem angular, somewhat winged. Radical leaves obovate, quite entire; stem-leaves toothed, hairy. Peduncles axillary, in pairs. Corolla resembling that of *Hyoscyamus* or *Henbane*, of a violet colour.

2. This is scarcely winged, the leaves little or not at all running down the stalk; they are also smooth and not toothed. Both are annual plants, natives of Andalusia in Spain<sup>q</sup>.

TRIGUERA. See *Hibiscus* and *Lagunæa*.

TRILIX. (A tissue of three threads of different colours.)

Lin. gen. Reich. n. 697. Schreb. n. 873. Juss. 435. *Jacquinia Mutis*.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets ovate, acute, spreading, flat, permanent.

COR. Petals three, lanceolate, acute, less than the calyx.

STAM. Filaments numerous, capillary, length of the corolla. Anthers roundish, twin, minute.

PIST. Germ five-cornered. Style cylindrical. Stigma simple.

PER. Berry subpentagonal, five-celled, covered with the calyx.

SEEDS numerous, roundish, minute.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. three-petalled. Berry five-celled, many-seeded.

SPECIES.

1. *Trilix lutea*.

Lin. syst. 487. Reich. 2. 562. Willd. 2. 1129. mant. 247.

*Jacquinia Mutis mss.*

DESCRIPTION, &c.

This is a shrub, two fathoms in height, and very much branched. Branches round and somewhat rugged. Leaves alternate, petioled, subpeltate, cordate-ovate, serrate, acuminate, veined, pubescent. Petioles round, smooth. Flowers yellow (not from the corolla but the anthers). Peduncles mostly terminating. Pedicels alternate, one-flowered, round, pubescent. Native of Carthagenia in America; where it was discovered by Mutis<sup>r</sup>.]

TRILLIUM.

Lin. gen. n. 456. Reich. n. 491. Schreb. n. 620. Juss. 42.

Class. 6. 3. Hexandria Trigynia.

Nat. order of *Sarmentaceæ*. *Asparagi* Juss.

GENERIC CHARACTER.

CAL. Perianth three-leaved, spreading: leaflets ovate, permanent.

COR. Petals three, subovate, a little bigger than the calyx.

STAM. Filaments six, awl-shaped, shorter than the calyx, erect. Anthers terminating, oblong, length of the filaments.

PIST. Germ roundish. Styles filiform, recurved. Stigmas simple.

PER. Berry roundish, three-celled.

SEEDS many, roundish.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. three-petalled. Berry three-celled.

SPECIES.

1. *Trillium cernuum*. Drooping *Trillium*.

Lin. spec. 484. Reich. 2. 128. Willd. 2. 271. Smith spicil. t. 4.

*Paris foliis ternis, flore pedunculato nutante. Cold. noveb. 81.*

*Solanum triphyllum, flore hexapetalo carneo. Catesb. car. 1. 45.*

Flowers peduncled drooping.

2. *Trillium erectum*. Upright *Trillium*.

Lin. spec. 484. Reich. 2. 128. Willd. 2. 271. Curt. magaz. t. 470.

<sup>q</sup> Willdenow and Cavanilles.

<sup>r</sup> Linn. mant.

Paris



Paris foliis ternis, flore pedunculato erecto. *Amoen. acad.* 1. 154.

*Solanum triphyllum brasilianum.* *Baub. pin.* 167. *prodr.* 91. *Raii hist.* 670.

*S. triphyllum canadense.* *Corn. canad.* 166. t. 167.

*Solano congener triphyllum canadense.* *Mor. hist.* 3. 532. f. 13. t. 3. f. 7.

*Herba Paris triphyllus brasiliana.* *Park. theat.* 390. n. 2.

*Flower peduncled erect.*

3. *Trillium sessile.* *Sessile-flowered Trillium.*

*Lin. spec.* 484. *Reich.* 2. 129. *Willd.* 2. 272. *Curt. magaz.* t. 40.

*Paris foliis ternatis, flore sessili erecto.* *Gron. virg.* 44.

*Solanum virginianum triphyllum, flore tripetalo atropurpureo, &c.* *Pluk. phyt. t.* 111. f. 6.

*S. triph. flore hexapetalo, &c.* *Catesb. car.* 1. t. 50. *Flower sessile erect.*

DESCRIPTIONS, &c.

1. [Root perennial, tuberous. Stem erect, a foot high, simple, round, slightly striated, smooth. Leaves three together, terminating, on short foot-stalks, spreading, rhomboidal, pointed, entire, veiny, smooth, paler beneath. Flower solitary, among the leaves, without bractes. Flower-stalk round, a little waved, smooth. Calyx-leaves ovate-oblong, acute, nerved, smooth, reflexed. Petals the length and figure of the calyx, whitish marked with blueish lines, reflexed. Stamens half as long as the petals: filaments very short, equal, quadrangular, straight: anthers vertical, two-celled, purple. Germ ovate, pale yellowish white, with six membranous prominent angles: stigmas three, sessile, recurved, pale purple<sup>s</sup>.]

According to Mr. Miller, the stalk rises only five or six inches high; the leaves are two inches long, and an inch and half broad, and of a deep green colour; the calyx is green, and the petals whitish green on the outside, but purple within. The flowers appear in april, and the berries ripen in june.

It grows naturally in the woods in many parts of North America; Mr. Miller had it from Philadelphia, by Dr. Bensel: [and cultivated it in 1759<sup>t</sup>.

Kalm found it in Canada, and Mr. Archibald Menzies, in Nova Scotia<sup>u</sup>; Colden in New York, and Catesby in Carolina.

Catesby's figure is so shapeless, and so erroneously coloured, that I could never have believed it, says Dr. Smith, to have been intended for this plant, had I not examined his original specimen in the British Museum.—Dr. Smith's elegant figure was taken from a plant cultivated in the garden of Robert Barclay, Esq. at Clapham.

Of the qualities of this genus we know little. They probably agree with those of *Paris quadrifolia*<sup>x</sup>.]

2. This has a taller stalk. The three leaves are placed at a distance from the flower, which stands upon a long foot-stalk, and is erect: the petals are purple, larger, and end with sharper points.

[Native of Virginia, Canada, and other parts of North America. Said to be found in the woods of Brasil, by a French apothecary, who sent it to Bursfer<sup>y</sup>.

Cultivated in 1699 by Bobart, who had it from Virginia by Banister<sup>z</sup>. It is the most rare with us of the three species; and is in the collection at Kew, though not inserted in the catalogue.

Cornutus's figure is good, and is copied in the Oxford history. Its height is about nine inches, and it flowers in may<sup>a</sup>.]

3. Stalk purple. The three leaves grow at the top like the first; but they are much longer, and end in acute points. The petals are long, narrow, and stand erect: [they are of a dark brownish red, nearly the same colour as the Carolina All-spice. The calyx-leaves are streaked with red. The leaves are mottled.

It grows in shady thickets in Carolina and Virginia. Mr. Curtis had the plant from which his beautiful

figure was taken, from Mr. Robert Squibb, gardener, of Charlestown in South Carolina.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which should be sown upon a shady border soon after they are ripe, and then the young plants will come up the next spring; but if the seeds are sown in the spring, they will remain in the ground a year. When the plants come up, keep them clean, and in autumn, after their leaves decay, transplant the roots to a moist shady place, where they are to remain.

[The three species grow in shady situations and a light soil, and require the same treatment as *Dodecatheon*, and round-leaved *Cyclamen*. They continue to be rare plants in this country, because they require much attention in their culture, admit of little increase from their roots, and the process of raising them from seeds is tedious. The *sessile* is the most common, and the *erectum* is the most rare. They are all hardy perennial plants, and flower in spring<sup>b</sup>.

TRILOPUS. See *Hamamelis*.

TRINITATIS HERBA. See *Viola tricolor*.

TRIONUM. See *Hibiscus*.

TRIOPTERIS. (From *τρεῖς* and *πτερον*, *triplex ala*, *three-winged*. The fruit having three membranes.)

*Lin. gen. n.* 574. *Reich. n.* 624. *Schreb. n.* 782. *Gertn. t.* 116.

Class. 10. 3. Decandria Trigynia.

Nat. order of *Tribilatae*. *Malpighiae* Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, very small, permanent.

COR. *Petals* (wings of the seeds) six, ovate, from erect spreading, equal, permanent.

Three others smaller, but equal among themselves, stand round the former.

STAM. *Filaments* ten, capillary (united at the base?) placed on the outside of the petals (so called): the outer ones shorter. *Anthers* simple.

PIST. *Germ* trifid. *Styles* three, erect. *Stigmas* obtuse.

PER. *Capsules* erect, keeled at the back, each having a single wing at the base, and a double expanded one at the top, not opening.

SEEDS solitary, roundish.

ESSENTIAL CHARACTER.

*Cal.* five-parted, with two honey pores at the base on the outside. *Pet.* roundish, clawed. *Filam.* cohering at the base. *Capsules* three, one-seeded, three or four-winged.

SPECIES.

1. *Triopteris jamaicensis*.

*Lin. spec.* 612. *yst.* 427. *Reich.* 2. 374. *Willd.* 2. 743. *mant.* 387. *hort. cliff.* 169. *Gertn. fruct.* 2. 168. *Swartz obs.* 183.

*Banisteria.* *Brown. jam.* 231. n. 3.

*Leaves* oblong acuminate veined shining, *racemes* compound terminating loose, *fruits* three-winged.

2. *Triopteris indica*.

*Lin. spec. ed. Willd.* 2. 744. *Roxb. corom.* 2. 32. t. 160.

*Leaves* roundish-ovate subcordate acuminate shining smooth, *racemes* compound terminating, *fruits* three-winged.

3. *Triopteris ovata*.

*Lin. spec. ed. Willd.* 2. 744. *Cavan. diff.* 9. 431. t. 259.

*Leaves* ovate bluntish subcordate smooth, *petioles* biglandular, *racemes* compound terminating, *fruits* three-winged.

4. *Triopteris rigida*.

*Lin. spec. ed. Willd.* 2. 744. *Swartz prodr.* 75. *descr.* 2. 859.

*Leaves* roundish acute margined marked with lines coriaceous, *racemes* compound axillary, *fruits* three-winged.

5. *Triopteris acutifolia*.

*Lin. spec. ed. Willd.* 2. 744. *Cavan. diff.* 9. 433. t. 261.

*Leaves* ovate-lanceolate acute smooth, *panicle* terminating, *fruits* four-winged, *wings* equal.

6. *Triopteris acuminata*.

*Lin. spec. ed. Willd.* 2. 745.

<sup>s</sup> Smith.

<sup>t</sup> Hort. kew.

<sup>u</sup> Smith.

<sup>x</sup> Idem.

<sup>y</sup> Bauh. prodr.

<sup>z</sup> Hist. oxon.

<sup>a</sup> Curtis.

<sup>b</sup> Curtis.



*Tetrapteris mucronata*. Cavan. diff. 9. 434. t. 262. f. 2.

Leaves oblong acuminate smooth, umbels paniced terminating, fruits four-winged, wings in pairs the lower ones shorter.

7. *Triopteris buxifolia*.

Lin. spec. ed. Willd. 2. 745.

*Tetrapteris buxifolia*. Cavan. diff. 9. 434. t. 262. f. 1.

Leaves oblong bluntish smooth, umbel terminating, fruits four-winged, wings almost equal.

8. *Triopteris citrifolia*.

Lin. spec. ed. Willd. 2. 745. Swartz prodr. 75. descr. 2. 857.

*Tetrapteris inæqualis*. Cavan. diff. 9. 433. t. 260.

*Acer scandens tricoccus folio citri, flore luteo majore*. Plum. ic. 9. t. 16.

Leaves ovate-oblong acute smooth, umbels axillary peduncled, fruits four-winged, wings in pairs, the lower ones shorter.

DESCRIPTIONS, &c.

1. This is a climbing shrub, with a twining stem, and spreading, diverging, loose, round smooth branches. Leaves opposite, lanceolate-ovate or ovate with a long point, quite entire, beautifully veined, dark green; on shortish petioles. Racemes terminating, seldom axillary, spreading like panicles; branches opposite, subdivided, loose; flowers on short peduncles, scattered, pale blue, small<sup>c</sup>.

Linneus says it has the fruit of *Banisteria*, consisting of three distinct capsules, with three wings, containing each one seed. Gærtner calls them *Samaræ*, subglobular, coriaceous, three-winged at the back: the middle wing narrow, linear-oblong, three times shorter than the side ones, which are membranaceous, confluent below into a simple oblong ligule or strap, but divaricating above and ovate-oblong. Seeds subglobular, brownish red.

Native of Jamaica and Hispaniola.

2. This is a large twining shrub. Leaves opposite, ovate, acute, waved and sometimes a little scolloped, entire, from three to four inches long, and two broad. Petiole channelled, downy, three-fourths of an inch long. Panicles terminating and axillary; cross-armed, small, delicate; or the whole extremity of the branchlets may be called one beautiful large leafy panicle. Bractes small, rust-coloured. Flowers very numerous, white: petals oblong, concave, without claws. Stigmas headed, entire: sometimes the three styles adhere as if one. Seeds three, linear-oblong, united at the seeds themselves, each surrounded by a very large membranous wing<sup>d</sup>.

Native of the East Indies, in mountain forests.

3. Stem shrubby, branched: branches opposite, jointed, smooth, as is the whole plant. Leaves quite entire, hardish, on petioles four times shorter than the leaf, and having two glands near it. Stipules on each side two, like little teeth. Calyx very small, with ovate segments, all except one having two glands. Corolla yellow. Native of the island of Dominique<sup>e</sup>.

4. Stem shrubby, twining. Branches opposite, horizontal, diverging, strict, long, round, smooth, somewhat compressed at the top. Leaves petioled, opposite, smooth on both sides and shining, rigid, bright green. Branches of the raceme opposite, spreading, simple, many-flowered. Pedicels longish, filiform, one-flowered. Flowers small, blue. At the exterior base of the calyx are small green ovate sessile glands. Petals five, clawed, roundish, broadish, waved and crenulate. Capsules three, divisible, each three-winged: the hinder wing a little bigger than the others, oblong, transverse, except the middle one, which is minute.

Native of Hispaniola: flowering in May. It is nearly allied to *T. jamaicensis*, but the leaves are very different, being rounder, very rigid, and marked with lines<sup>f</sup>.

5. Branches round, woody, smooth, as is the whole plant. Leaves on short petioles. Peduncles jointed,

two-stipuled. Calyx hemispherical: segments ovate, one naked, the four others biglandular. Petals equal, yellow, very small. Filaments short, awl-shaped, widening at the base, and united into a concave body, supporting the germ. Germs three, united, somewhat roughened with rudiments of wings. Capsules three, globular, girt on the outside with a longitudinal membrane, at the sides of which are here and there short membranaceous fringes: wings subovate, equal. Seed somewhat three-sided. Native of Cayenne.

6. Branches round, smooth, opposite. Leaves quite entire, coriaceous, on short erect petioles. Rays of the umbel five or more, half an inch long, jointed, having two stipules at the joints. There did not appear any glands on the calyx in the dry specimen. Germs three, tomentose, united. Wings of the capsules four, ovate, the upper ones a little longer than the lower: the capsules keeled, and augmented by three acute corpuscles, two of which are lateral, and the third hangs down between the lower wings. Seed ovate. Native of Cayenne.

7. Stem round, with a brown bark, and roughened with small tubercles. Leaves subsessile, resembling those of Box. Rays of the umbel four or more, an inch long, jointed, two-stipuled, one-flowered. Glands of the calyx eight, pedicelled. The rest as in the preceding; but the capsules smaller. Native of the Antilles<sup>g</sup>. Cavanilles's *Banisteria microphylla*, p. 429. n. 588. is the same with this.

8. Stem shrubby, climbing very high. Branches very long, flexile, round, smooth. Leaves opposite, entire, nerved, veined, membranaceous, large, on short petioles. Branches of the umbels or panicles trichotomous, spreading, pedicels one-flowered. Leaflets ovate acute alternate sessile, scattered over the branches of the panicle. Flowers small, yellow. At the base of the segments of the calyx on the outside are two brown gibbous nectareous glands. Petals five, roundish, waved, veined, with linear claws. Filaments awl-shaped, contiguous at the base. Germs three, united: styles three, thickened at the top: stigmas acute. Capsules three, ovate, separable; each four-winged: two opposite wings larger, veined, two smaller; and a fifth intermediate like a crest. Seed large, shining, red<sup>h</sup>.

Native of South America, Jamaica and Dominique.

TRIOPTERIS. See *Dodonæa*.

TRIORCHIS. See *Ophrys* and *Orchis*.

TRIOSTEOSPERMUM. See *Triosteum*.

TRIOSTEUM. (So named from the fruit containing three seeds of a bony substance.)

Lin. gen. n. 234. Reich. n. 251. Schreb. n. 320.

Gartn. t. 26. Juss. 211.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Aggregatæ*. *Caprifolia* Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, superior, spreading, length of the corolla: leaflets lanceolate, permanent.

COR. one-petalled, tubular: border shorter than the tube, five-parted, erect; lobes rounded, the lower ones smaller.

STAM. Filaments five, filiform, length of the corolla, Anthers oblong.

PIST. Germ roundish, inferior. Style cylindrical, length of the stamens. Stigma thickish.

PER. Berry obovate, subtrigonal, three-celled.

SEEDS solitary, bony, obtusely three-cornered, obtuse, grooved.

ESSENTIAL CHARACTER.

Cal. length of the corolla. Cor. one-petalled, almost equal. Berry three-celled, inferior. Seeds solitary.

SPECIES.

1. *Triosteum perfoliatum*.

Lin. spec. 250. syst. 217. Reich. 1. 485. Vahl

Symb. 3. 37. Gartn. fruct. 1. 130.

*Triosteospermum latiore folio, flore rutilo*. Dill. elth. 394. t. 293. f. 378.

<sup>g</sup> Cavanilles.

<sup>h</sup> Swartz.

<sup>c</sup> Swartz.

<sup>d</sup> Roxburgh.

<sup>e</sup> Cavanilles.

<sup>f</sup> Swartz.



*Solanum verticillatum latifolium molle*, &c. *Banister in Mor. hist.* 3. 535.

*Leaves connate, flowers sessile in whorls.*

2. *Triosteum angustifolium*.

*Lin. spec.* 250. *Reich.* 1. 485. *Willd.* 1. 991.

*Vahl symb.* 3. 37. *Gron. virg.* 143. (*Lonicera*)

*Pluk. phyt.* 1. 104. f. 2. (*Periclymenum*).

*Periclymeno affinis planta virginiana*, flor. ochroleucis, &c. *Mor. hist.* 3. 535. f. 13. t. 1. f. 8.

*Leaves connate, peduncles opposite one flowered.*

[3. *Triosteum triflorum*.

*Lin. spec. ed. Willd.* 1. 991. *Vahl symb.* 3. 37.

*Peduncles opposite three-flowered, leaves petioled.*]

DESCRIPTIONS, &c.

1. This has a perennial root composed of thick fleshy fibres, which are contorted and rough. Stems several, strong, herbaceous, rising a foot and half high; having at each joint two oblong broad leaves embracing the stem. From the bosoms of these come out the flowers in whorls, sitting very close to the stem; they are small, of a dark red colour, inclining to purple, and appear the beginning of June.

[Berry ovate-globular, crowned with a long calyx, pulpy, yellow, one-celled; pulp before it is fully ripe spongy and growing close about the seeds; which are three, biggish, bony, elliptic, on one side convex with three thick ridges, on the other obscurely angular or flattish with a single ridge along the middle<sup>1</sup>.

Linneus and Miller describe the fruit as three-celled. Gartner as one-celled. The latter suspects that the seeds were not ripe in his specimens.

Native of North America. Cultivated in 1732, by James Sherard, M. D.<sup>k</sup>—Bobart says, that he had the seeds of this and the next species from Banister.]

2. This differs from the first in having longer and narrower leaves. The flowers stand single upon short peduncles, and there are but two at each joint, whereas the other has many growing in sessile whorls round the stalks.

The roots of both these plants are used indiscriminately in North America, as an emetic, for *Ipecacuanha*. One of the first persons who brought their roots into use was Dr. Tinkar, whence many call them Dr. Tinkar's weed; and Bobart received this species from Banister by that name. The leaves of the first sort greatly resemble those of the true *Ipecacuanha*, but the roots are of a different form. Mr. Miller conjectures that the true one is a species of this genus, [but it is now supposed to belong to the *Ptychotrias*, which see.

3. Stem erect, a foot and half high, simple, very finely pubescent. Leaves opposite, spreading very much, two or three inches long, lanceolate, as narrow again as in *T. perfoliatum*, attenuated at the top, quite entire, above simply veined and smooth, beneath softly villose, hoary, with branching veins; when tender tomentose-hoary beneath. Petioles pubescent, shorter than the stipules; which are wide at the base, awl-shaped, pressed close, scarcely half an inch long. Peduncles axillary, solitary, erect, pubescent, three-flowered: with two awl-shaped bractes at the tip, a little shorter than the calyx. Flowers sessile. Segments of the calyx awl-shaped. Fruit oblong, smooth, a little longer than the segments of the calyx, and crowned with the permanent calyx. Supposed to be a native of Madagascar. Sent to Vahl by Monf. Thouin<sup>1</sup>.]

PROPAGATION AND CULTURE.

The two first sorts are hardy enough to thrive in the open air, but should be planted on a moist light soil: on dry ground they must be watered constantly in dry weather.

Sow the seeds on a border of light earth, where the morning sun only comes: if they be sown in the spring, they will remain in the ground a whole year, during which time the border must be constantly kept clean; the following spring, when the plants appear, water them duly in dry weather: but if they be sown in autumn they will come up the following spring. Keep them constantly clean, for if weeds be permitted

to grow among them, they will soon overbear the plants while they are young, or so much weaken them that they will not soon recover.

The plants may remain in this seed-border until the michaelmas following, when they should be carefully taken up, and transplanted where they are designed to remain. Some should be planted in pots, that they may be sheltered in winter while young, lest those which are in the full ground should be destroyed by severe frost.

They may also be increased by parting the roots in the spring, just before the plants begin to shoot, which is commonly about the middle or end of march: but in doing this, the roots must not be parted too small, for that will prevent their flowering strong.

These plants perfect their seeds in this country every year. The seedling plants will not flower until the third year.

[TRIPHASIA. See *Limonia*.

TRIPLARIS. (*From Triplex, threefold.*)

*Lin. gen. n.* 103. *Reich. n.* 109. *Schreb. n.* 135.

*Juss.* 83. *Loefling.*

Class. 3. 3. Triandria Trigynia:—rectius, *Dioecia Dodecandria*. Aubl.

Nat. order of *Polygonæ* Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, ovate, trifid: segments lanceolate, membranaceous, spreading, very long, permanent:—six-cleft. *Aubl. guian.* 910.

COR. *Petals* three, length of the tube of the calyx:—none. *Syst.*

STAM. *Filaments* three, awl-shaped, length of the tube of the calyx. *Anthers* linear, membranous, ovate.

PIST. *Germ* ovate, triangular: angles compressed. *Styles* three, awl-shaped, length of the stamens. *Stigmas* three-sided, villose.

PER. none.

SEED. *Nut* three-sided within the ovate base of the calyx.

ESSENTIAL CHARACTER.

*Cal.* very large, three-parted-or, six-parted. *Cor.* three-petalled-or, none. *Nut* three-sided, within the ovate base of the calyx.

SPECIES.

1. *Triplaris americana*.

*Lin. spec.* 130. *Juss.* 128. *Reich.* 1. 245. *Loeff.* it. 256.

*T. pyramidalis.* *Jacqu. amer.* 13. t. 173. f. 5. *piet.* 12. t. 259. f. 3.

*Spikes erect terminating.*

2. *Triplaris ramiflora*.

*Lin. Juss.* 128. *Jacqu. amer. piet.* 13. t. 259. f. 3.

*Racemes lateral aggregate.*

DESCRIPTIONS, &c.

1. This is an upright elegant tree, with a trunk the height of a man, and a thin head made up of horizontal branches forming a long pyramid. Leaves oblong-ovate, acuminate, very large (a span long), entire, petioled. Spikes long, slender, erect, terminating, (hairy; with small ovate acuminate hairy bractes. *Linn.*) Nut ovate-acuminate, of a very smooth and shining black, sharp at the angles, one-celled; containing a kernel of the same form. By the side of this nut stand three leaflets, pressed close to it, which are flat, wedge-oblong, obtuse, nearly the length of the nut, rufous; which Jacquin would have taken for permanent petals, if Loefling had not said that there is no corolla: perhaps, he says, they are filaments. According to Aublet, they belong to the calyx.

Native of South America.

2. This is a branching diffused tree. Leaves ovate or roundish ovate. Racemes on the branches, close, from half an inch to an inch and half in length, many-flowered, villose. Pedicels hirsute, short, scatteringly aggregate on the common peduncle, from two to five together, from a little bracted knob. Fruit a little smaller than the preceding. Tube of the calyx villose, but not hairy; also more round. Nut brown, not shining; ovate, six-grooved not three-sided. The three leaflets, which Jacquin supposes may be filaments, permanent, and somewhat linear. The kernels

<sup>1</sup> Gartner.

<sup>k</sup> Hort. kew.

<sup>1</sup> Vahl.



kernels in both species have an astringent subacid taste.

Native of the woods about Carthage, but more rare than the preceding; by the river Cinu it is more common<sup>m</sup>.]

TRIPOLIUM. See *Aster*.

[TRIPSACUM. (Τριψις, *tritius*, from τριβω, *tero*.)

Lin. gen. n. 1044. Reich. n. 1134. Schreb. n. 1404.

Juss. 30. Gertn. t. 1.

Class. 21. 3. Monoecia Triandria.

Nat. order of Gramina, Gramineæ or Grasses.

#### GENERIC CHARACTER.

\* Male flowers double on one side alternate, in the upper part of the spike.

CAL. Glume two-flowered: outer floret male, inner neuter; each two-valved: outer valve lanceolate, flattish, obtuse, awnless, cartilaginous, with the margins thinner (the interior one straightish) embracing the interior oblong, triangular-boat-shaped, acute, almost the length of the exterior.

COR. in each two-valved, membranaceous, very thin, awnless, less than the calyx: valves nearly equal: exterior ovate, boat-shaped, bluntish; interior ancelate, bifid at the top.

Nectary two-leaved, very small: leaflets triangular, fleshy, convex, truncate, mucronate at both ends, the upper margin thinner, the middle emarginate.

STAM. of the outer Floret; Filaments three, capillary, longer than the calyx. Anthers paralleliped:—of the inner Floret: Filaments three, very slender, subconnate. Anthers none.

\* Female flowers on the same spike below the males, immersed alternately on each side into the rachis.

CAL. Involucre ovate, cartilaginous, very thick, ventricose below, shining, obscurely margined on both sides at the back, subemarginate with a blunt top, embracing the glume with a thinner margin.

Glume two-valved: outer valve oblong, ventricose, attenuated at the top, acuminate, thickish, doubled; inner similar, bluntish.

COR. two-valved, smaller than the calyx and more tender: outer valve larger, ventricose, bluntly three-toothed; inner scarcely smaller, flat at the back, emarginate. Glume barren, one-valved, oblong, folded together at each margin, two-toothed, by the anterior side of the corollet, and much smaller than it.

Nectary two-leaved, very small: leaflets linear, membranaceous, very thin, acutely emarginate at the top.

STAM. Filaments three, at the base of the germ, very small, broad at the base, capillary. Anthers linear, very small, barren.

PIST. Germ oblong. Style longer than the calyx, compressed. Stigmas two, very long, twisted, villose.

PER. none.

SEED one, ovate, compressed a little, acuminate with the permanent style.

OBS. At the base of the involucre on each side is a sinus, gaping externally with an aperture, blocked up by villose hairs.

#### ESSENTIAL CHARACTER.

MALE. Cal. Glume four-flowered. Cor. Glume membranaceous.

FEM. Cal. Glume with perforated sinuses. Cor. Glume two-valved. Styles two. Seed one.

#### SPECIES.

1. *Tripsacum dactyloides*.

Lin. spec. 1378. Juss. 842. Reich. 4. 96. Mill. illustr.

*Coix feminibus angulatis*. Lin. hort. cliff. 438. Gron. virg. 144.

*Gramen dactylon maximum americanum*. Pluk. phyt. t. 190. f. 2.

*G. dact. indicum esculentum, spica articulata*. Ambr. phyt. 1. 545. t. 546. 547. Mor. hist. 3. 185. f. 8. t. 3. f. 11. Scheuch. gram. 108.

<sup>m</sup> Jacquin.

*Gr. spica articulata virginiana*. Park. theat. 1163. n. 9.

*Sesamum perenne indicum, spica frumentacea*. Zan. hist. 181. t. 68.

Spikes androgynous.

2. *Tripsacum hermaphroditum*.

Lin. spec. 1379. Reich. 4. 97. Lin. dec. 17. t. 9.

Gertn. fruct. 1. 3. Brown. jam. 367. (Cenchrus n. 2.)

Spike hermaphrodite.

#### DESCRIPTIONS, &c.

1. Leaves an ell or more in length. Culms the thickness of a goose-quill or of the little finger, with few joints and long internodes, angular, tinged with purple, as high as a man, dividing at top into three, four or five spikes, a long span or a foot in length, and straight<sup>n</sup>. Native of Virginia.—Parkinson says, Master John Tradescant the younger brought it from Virginia, with a number of other seeds and rare plants.—It must therefore have been introduced before 1640. It flowers in august<sup>o</sup>.

2. Root annual, fibrous. Culm erect, two feet high, roundish, very smooth, jointed, branched. Branches of the same structure and height with the culm, alternate, erect, quite simple, few. Leaves alternate, flaccid, very smooth, only rugged at the edge, a span long or more: sheaths compressed, striated, very smooth. A single spike at the end of the stem and branches, solitary, cylindrical, curved. Peduncle long, round, striated, smooth. Receptacle compressed, flexuose. Flowers alternate, remote, solitary, sessile on the teeth of the receptacle, ovate, pressed close. The outer calyx has two, three or four flowers: glume four or five-parted, compressed, ovate, gibbous at the base, contracted at the top; the valves incumbent, very stiff, lanceolate, acuminate, very smooth, slightly streaked. There is a single floret between each calycine glume, less by half than the calyx. Calyx two-valved: one valve smaller, very long and acuminate; the other of the same size with the corolla, which is also two-valved, smooth and acuminate. Filaments smooth: anthers ovate. Germ ovate: styles two, pubescent. Seed one, very small, ovate, smooth, yellow, subdiaphanous. Native of Jamaica<sup>p</sup>; where Browne says this grass is fed upon by all sorts of cattle.

Introduced in 1776, by Monf. Thouin. It flowers in august and september<sup>a</sup>.

The first is a perennial grass, and tolerably hardy. The second is annual, and requires the protection of a stove.

TRITICO-SPELTUM. See *Hordeum*.]

TRITICUM (Latin, *q. tritum, vel quod ex spicis tritum-rando facile excutitur*. In Greek, τριτος *q. στροπος*, from στροπος, *seed*. Or, according to some, from the conical form of the spike, like a flame.)

Lin. gen. n. 99. Reich. n. 105. Schreb. n. 130.

Tournef. t. 292. 293. Juss. 32. Gertn. t. 81.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

#### GENERIC CHARACTER.

CAL. a common Receptacle elongated into a spike.

Glume two-valved, subtriflorous: valves ovate, bluntish, concave.

COR. two-valved, nearly equal, size of the calyx; exterior valve ventricose, blunt with a point; interior valve flat.

Nectary two-leaved: leaflets acute, gibbous at the base.

STAM. Filaments three, capillary. Anthers oblong, forked.

PIST. Germ turbinate. Styles two, capillary, reflexed. Stigmas feathered.

PER. none. Corolla fosters the seed, opens and drops it. SEED one, ovate-oblong, blunt at both ends, convex on one side, grooved on the other.

OBS. The exterior valve of the corolla in some is awned, in others awnless. The middle floret is often male.

<sup>a</sup> Morison.

<sup>o</sup> Hort. kew.

<sup>p</sup> Linn. fil. dec.

<sup>q</sup> Hort. kew.



## ESSENTIAL CHARACTER.

Cal. two-valved, solitary, subtriflorous (or many-flowered, on a flexuose toothed rachis.) Cor. blunt with a point.

## SPECIES.

\* Annual. Corn or Grain.

1. *Triticum aestivum*. Summer or Spring Wheat.  
*Lin. spec.* 126. *Reich.* 1. 238. *Willd.* 1. 476.  
*hort. upf.* 21. *cliff.* 24. *Hall. belv. n.* 1422.  $\beta$ .  
 and in *comm. nov. goett.* 5. p. 5. t. 1. f. 1. *Baub.*  
*pin.* 21. *theat.* 358. *Raii syn.* 387.  
*T. trimestre.* *Park. theat.* 1121. f. 7.  
*T. aristatum.* *Blackw. t.* 40. f. 4. 5.  
*Calyxes four-flowered ventricose smooth imbricate awned.*
2. *Triticum hybernum*. Winter or Lammas Wheat.  
*Lin. spec.* 126. *Reich.* 1. 238. *Willd.* 1. 477.  
*hort. upf.* 21. *cliff.* 24. *mat. med.* 47. *Gært.*  
*fruct.* 2. 8. *Hall. belv. n.* 1422. in *nov. comm.*  
*goett.* 5. p. 7. t. 1. f. 2. *Blackw. t.* 40. f. 1.  
 2. 3.  
*T. hybernum aristis carens.* *Baub. pin.* 21. *Mor.*  
*hist.* 3. 175. f. 8. t. 11. f. 1. *Tournef. inst.* t.  
 292. f. M. M. M.  
*T. spica mutica.* *Ger.* 58. f. 1. *emac.* 65. f. 1.  
*Park. theat.* 1120. f. 1.  
*White or red Lammas Wheat without awns.*
- $\beta$ . *T. spica & granis rubentibus.* *Raii hist.* 1237.  
*syn.* 386.  
*Tritici hyberni aristis carentis genus primum; rugos*  
*veteribus, Robus Columellæ.* *Baub. pin.* 21.  
*theat.* 354.  
*Red Wheat or Kentish Wheat.*
- $\gamma$ . *T. spica & granis albis.* *Raii hist.* 1237. *syn.* 386.  
*Villars dauph.* 2. 154. 2.  
*T. filigineum.* *Baub. pin.* 21. *theat.* 355.—*Græ-*  
*corum & Galeni Σιλικυς.* *Hippocrati Τρυγίς,*  
*ejusd.*  
*White Wheat.*
- $\delta$ . *T. aristis munitum.* *Park. theat.* 1120. f. 2. *Mor.*  
*hist.* f. 8. t. 1. inter 1 and 2.  
*T. aristis circumvallatum, granis & spica rubenti-*  
*bus, glumis lævibus & splendentibus.* *Raii hist.*  
 1238. *syn.* 387.  
*Red-eared Bearded Wheat.*
- $\epsilon$ . *T. album.* *Gært.* *fruct.* 2. 8.  
*T. aristis longioribus spica alba.* *Baub. pin.* 21.  
*Tournef. inst.* t. 293. f. F.  
*T. chalapense, spica brevior nitidissima alba.*  
*Mor. hist.* 3. 175.  
*White-eared Bearded Wheat.*  
*Calyxes four-flowered ventricose even imbricate, with*  
*little or no awns.*
- [3. *Triticum compositum.* Many spiked Wheat.  
*Lin. syst. ed.* 13. 115. *ed.* 14. 126. *Reich.* 1. 239.  
*Willd.* 1. 477. *suppl.* 115. *Hall. belv. n.* 1422.  
 p. 208. *Villars dauph.* 2. 157.  
*T. spica multiplici.* *Baub. pin.* 21. *Ger.* 59. f. 3.  
*emac.* 66. f. 4. *Park. theat.* 1120. f. 4. *Raii hist.*  
 1238. *Mor. hist.* 3. 175. f. 8. t. 1. f. 7.  
*Spike compound, spikelets clustered awned.]*
4. *Triticum turgidum.* Gray Pollard or Duck-bill  
 Wheat.  
*Lin. spec.* 126. *Reich.* 1. 239. *Willd.* 1. 478.  
*hort. upf.* 21. *hort. cliff.* 24. *Villars dauph.* 2.  
 155. *Hall. in nov. comm. goett.* 5. p. 12. t. 1.  
*T. aristatum spica maxima cineritia, glumis hirsutis.*  
*Raii hist.* 1238.  
*T. spica villosa quadrata brevior & turgidior.*  
*Mor. hist.* 3. 176. f. 8. t. 1. f. 14.
- $\beta$ . *T. quadratum.* *Mill. dict. n.* 4. *Corn Wheat.*  
*T. maximum.* *Villars dauph.* 2. 156.  
*T. spica villosa quadrata longior, aristis munitum.*  
*Mor. f.* 13. *Raii syn.* 387.  
*T. conica figura hirsutum, cum & sine aristis.*  
*Merr. pin.*  
*T. cinereum maximis aristis donatum, triturando*  
*glumas deponens.* *Baub. hist.* 2. 408. *Raii*  
*hist.* 123. n. 7.
- $\gamma$ . *T. durum.* *Desfont. atlant.* 1. 114. *Barbary*  
*Wheat.*  
*Glumes pubescent awned, spikelets four-flowered.*  
*Calyxes four-flowered ventricose villose imbricate obtuse.*

5. *Triticum polonicum.* Polish or Poland Wheat.  
*Lin. spec.* 127. *Reich.* 1. 239. *Willd.* 1. 478.  
*Hall. in nov. comm. goett.* 5. 17. t. 1. f. 16.  
*Pluk. phyt. t.* 231. f. 6. *Mor. hist.* 3. 175. f.  
 8. t. 1. f. 8.  
*T. majus longior grano glumis foliaceis incluso,*  
*Poloniæ dictum.* *Mor. hist.* 3. 175. f. 8. t. 1. f.  
 8. *Raii syn.* 387.  
*Calyxes two-flowered naked, florets with very long awns,*  
*teeth of the rachis bearded.*
- [6. *Triticum Spelta.* Spelt Wheat.  
*Lin. spec.* 127. *Reich.* 1. 240. *Willd.* 1. 478.  
*hort. upf.* 21. *Villars dauph.* 2. 158. *Hall. belv.*  
*n.* 1424. in *nov. comm. goett.* 5. 17. *Kniph. orig.*  
*cent.* 2. n. 97.  
*Zea dicoccos vel Spelta major.* *Baub. pin.* 22. *theat.*  
 412. t. 414. *Mor. hist.* 3. f. 8. t. 6. f. 1.  
*Z. amyacea.* *Mor. hist.* 3. f. 8. t. 6. f. 3.  
*Z. f. Spelta.* *Ger.* 62. *emac.* 69. f. 1. *Raii hist.*  
 1242.  
*Z. dicoccos f. Spelta vulgo.* *Park. theat.* 1124. 2.  
*Calyxes four-flowered truncate, florets awned herma-*  
*phrodite, the middle one neuter.*
7. *Triticum monococcum.* One-grained Wheat.  
*Lin. spec.* 127. *Reich.* 1. 240. *Willd.* 1. 479.  
*Hoffm. germ.* 43. *Roth. germ.* 1. 50. 2. 147.  
*Hall. belv. n.* 1425. in *nov. comm. goett.* 5. p. 18.  
 t. 1. f. 17. *Sauv. monsp.* 39. *Villars dauph.* 2.  
 159. *Gært. fruct.* 2. 9.  
*Hordeum distichum spica nitida f. Briza nuncupatum.*  
*Tournef. inst.* 513.  
*Zea Briza dicta vel monococcos germanica.* *Baub.*  
*pin.* 21. *theat.* 415. *Mor. hist.* f. 8. t. 6. f. 2.  
*Z. monococcos, Briza quibusdam.* *Baub. hist.* *Raii*  
*hist.* 1242.  
*Z. monoc. f. simplex, f. Bryza.* *Park. theat.* 1124. 3.  
*B. monococcos.* *Lob. ic.* 31. *Ger.* 67. 1. *emac.*  
 73. 1.  
*Monococcon.* *Dod. pempt.* 493.  
*Calyxes subtriflorous, the first awned, the middle one*  
*sterile.*

## \*\* Annual Grasses.

8. *Triticum hispanicum.* Spanish Wheat-grass.  
*Lin. spec. ed.* *Reich.* 1. 240. *Willd.* 1. 479.  
*T. maritimum.* *Lin. mant.* 325.  
*Festuca maritima.* *Lin. spec.* 110.  
*Calyxes six-flowered, florets all directed the same way*  
*awned at the tip.*
9. *Triticum prostratum.* Trailing Wheat-grass.  
*Lin. syst.* 126. *Willd.* 1. 480. *suppl.* 114. *Ait.*  
*kew.* 1. 121.  
*Secale prostratum.* *Pallas it.* 1. 485. *Jacqu. hort.*  
 3. 25. t. 44.  
*Agropyron triticeum.* *Gært. nov. comm. petrop.* 14.  
 1. p. 540. t. 19. f. 4.  
*Spike ovate compressed bifarious, glumes both of calyx and*  
*corolla smooth, awns shorter than the floret.*
10. *Triticum pumilum.* Dwarf Wheat-grass.  
*Lin. syst.* 127. *Willd.* 1. 480. *suppl.* 115.  
*Spike ovate, glumes somewhat awned, those of the calyx*  
*two-grooved.*

## \*\*\* Perennial Grasses: except 16, 17, 18.

11. *Triticum junceum.* Rusby Sea Wheat-grass.  
*Lin. spec.* 128. *syst.* 127. *Reich.* 1. 241. *Willd.*  
 1. 480. *mant.* 327. *amoen.* 4. 266. *Huds. angl.*  
 58. *Wither. arr. ed.* 3. 173. *Smith brit.* 157.  
*engl. bot. t.* 814. *Hall.* 28. *Lightf. scot.* 109.  
*Dicks. hort. ficc.* 6. 9. *Fl. dan. t.* 916. *Hoffm.*  
*germ.* 43. *Hall. belv. n.* 1428. *Gmel. fib.* 1.  
 118. n. 54. *Desfont. atlant.* 1. 114. *Villars*  
*dauph.* 2. 163. *Krock. files. n.* 195. *Allion.*  
*pedem. n.* 2267.  
*Gramen angustifolium spica tritici muticæ simili.*  
*Baub. pin.* 9. *prodr.* 18. t. 17. *theat.* 132.  
*Scheuch. gram.* 7. *Vaill. par.* 81. *Mor. hist.* f.  
 8. t. 1. f. 5.  
*Gr. maritimum spica loliacea, foliis pungentibus.*  
*Pluk. phyt. t.* 33. f. 4. *Dill. in Raii syn.* 391. 4.  
 $\beta$ . *Gr. loliaceum maritimum supinum spica crassior.*  
*Tournef. inst.* 516. *Dill. in Raii syn.* 391. 5.  
 $\gamma$ . *Gr.*



- 7 Gr. caninum maritimum spica foliacea. *Baub. pin. 2. theat. 15. Raii syn. 391. 6.*  
*Calyxes five-flowered truncate, leaves rolled in mucronate-pungent.*
12. Triticum distichum.  
*Lin. spec. ed. Willd. 1. 481. Thunb. prodr. 23.*  
*Calyxes four-flowered smooth awnless, flowers distich, leaves filiform.]*
13. Triticum repens. *Creeping Wheat-grafs, Quick, Quick, Couch or Dog's-grafs.*  
*Lin. spec. 128. syst. 127. Reich. 1. 241. Willd. 1. 481. fl. lapp. n. 33. fuc. n. 114. hort. cliff. 24. mat. med. 48. Hudf. angl. 57. Wither. arr. ed. 3. 173. Smith brit. 158. engl. bot. n. 909. Lightf. scot. 109. Relb. cant. ed. 2. n. 115. Sibth. oxon. n. 165. Hoffm. germ. 43. Roth. germ. 1. 50. 2. 148. Pollich pal. n. 133. Leers herborn. n. 95. t. 12. f. 3. Neck. gallob. 77. Krock. fles. n. 194. Villars dauph. 2. 160. Allion. pedem. n. 2268. Hall. helv. n. 1426. Gmel. fib. 1. 118. n. 53. Schreb. gram. t. 26.*  
*Gramen spica triticea repens vulgare, caninum dictum. Raii syn. ed. 2. 247. 1. ed. 3. 390. 1. Mill. dict. n. 1.*  
*Gr. repens, officinarum forte, spicæ triticeæ aliquatenus simile. Baub. hist. 2. 457. Raii hist. 1255.*  
*Gr. caninum. Ger. 22. f. 1.*  
*G. caninum vulgatus. Park. theat. 1173. Mor. hist. f. 8. t. 1. f. 8.*  
*G. caninum arvense f. Gramen Dioscoridis. Baub. pin. 1. theat. 7.*
- β. T. repens. *Fl. dan. t. 748. With. 173. var. 4. Fl. rust. t. 124. Schreb. 26. 5 & 7. Scheuch. 1. 1. C. 2.*  
*Gramen loliaceum radice repente, f. Gr. offic. aristis donatum. Vaill. par. 81. t. 17. f. 2.*
- γ. Gr. caninum maritimum spica triticea. *Raii syn. ed. 2. 247. 3. ed. 3. 390. 3.—var. 5. Wither.*  
*Calyxes five-flowered awl-shaped many-nerved, florets acuminate, leaves flat, root creeping.*
- [14. Triticum caninum. *Fibrous or Bearded Wheat-grafs.*  
*Hudf. angl. 58. Wither. arr. ed. 3. 173. Relb. cant. ed. 2. n. 116. Sibth. oxon. n. 166. Smith brit. 159. Hall. helv. n. 1429. Villars dauph. 2. 163. Gmel. fib. 1. 122. t. 27.*  
*Elymus caninus. Lin. spec. 124. Dist. nostr. n. 5.*  
*Gramen caninum aristatum, radice non repente. Mor. f. 8. t. 1. f. 2.—sylvaticum. Raii syn. ed. 2. 247. 2. ed. 3. 390. 2.*  
*Calyxes four-flowered acuminate three or five-nerved, florets awned, leaves flat, root fibrous.*
15. Triticum maritimum. *Sea Wheat-grafs.*  
*Lin. spec. 128. syst. 127. Reich. 1. 242. Willd. 1. 481. Vahl symb. 2. 26. Villars dauph. 2. 166.*  
*Festuca lanceolata. Forsk. descr. 22.—item, F. dichotoma ejusd. ibid.*  
*F. Ger. prov. 94. n. 4.*  
*Calyxes many-flowered, florets mucronate, spike branched.*
16. Triticum tenellum. *Delicate Wheat-grafs.*  
*Lin. spec. 127. syst. 127. Reich. 1. 242. Willd. 1. 482. Hall. helv. n. 1430. Villars dauph. 2. 164. Allion. pedem. n. 2269.*  
*Festuca. Ger. prov. 96. n. 9.*  
*Gramen loliaceum minus spica simplici. Baub. pin. 8. prodr. 11. theat. 129.*  
*Gr. lol. foliis & spicis tenuissimis. Mor. hist. 3. 182. f. 8. t. 2. f. 3.*  
*Calyxes four-flowered or more, florets awnless acute, leaves bristle-shaped.*
17. Triticum unioides. *Linear-spiked Wheat-grafs.*  
*Ait. kew. 1. 122. Vahl symb. 2. 26. Willd. spec. 1. 483.*  
*Poa ficula. Jacqu. ic. rar. 2. t. 303. Desfont. atlant. 1. 76.*  
*Cynofurus ficulus. Jacqu. obs. 2. 22. t. 43.*  
*Briza cynosuroides. Scop. insubr. 2. 21. t. 11.*  
*Gramen paniculis elegantissimis densis, siculum. Tournef. inst. 522.*

- Gr. filiceum paniculis integris. Bocc. sic. 62. t. 33. Mor. hist. 3. 204. f. 8. t. 6. f. 53.*  
*Spikelets linear-lanceolate keeled distich.*
18. Triticum loliaceum. *Dwarf Sea Wheat-grafs.*  
*Smith brit. 159. engl. bot. t. 221. Wither. arr. ed. 3. 174. Relb. cant. ed. 2. n. 117. Willd. spec. 1. 483.*  
*T. unilaterale. Ait. kew. 1. 122.*  
*T. biunciale. Villars dauph. 2. 167.*  
*Poa loliacea. Hudf. angl. 43. Relb. cant. ed. 1. 37.*  
*Gramen pumilum loliaceo simile. Raii syn. ed. 2. 250. 4. ed. 3. 395. 4. Scheuch. gram. 272. t. 6. f. 3.*  
*Gr. loliaceum exile durius. Reliqu. Rudb. 13.*  
*Gr. exile duriusculum maritimum, &c. Pluk. phyt. t. 32. f. 7.*  
*Gr. parvum marinum, spica loliacea. Mor. hist. f. 8. t. 2. f. 6.*  
*Calyxes obtuse many-flowered, spike simple directed one way, florets awnless, culm branched.*
19. Triticum unilaterale. *One-sided Wheat-grafs.*  
*Lin. syst. 127. Reich. 1. 243. Willd. 1. 483. mant. 35. Villars dauph. 2. 165. Allion. pedem. n. 2270.*  
*Gramen minimum. Baub. hist. 2. 469.*  
*Gr. pusillum unciale, panicula foliacea. Bocc. mus. 2. t. 57.*  
*Gr. exile duriusculum maritimum. Raii hist. 1287. Scheuch. gram. 272. t. 6. f. 4. sec. Villars.*  
*Calyxes one-sided alternate awnless.*

## DESCRIPTIONS, &amp;c.

1. Haller describes the Spring Wheat, as having the first or lower flowers imperfect; the spikelets wide; the glumes of the calyx hard, glaucous, somewhat hairy, very shortly awned; flowers three to five, with an awn from the exterior glume three inches long; the interior glume convex towards the seed, concave towards the next flower, ovate-lanceolate; the third flower, in the middle has a very short awn; the fourth is sterile and shrivelling; the fifth is still smaller and more imperfect. He says, it is sown about Aigle.

He does not allow that it is specifically different from Winter or Lammas Wheat, or that the having awns or no awns makes any distinction. Soil and climate, he says, will do much in that respect; winter Wheat will grow from the seed of spring Wheat; and if the former be more fruitful, that is probably owing to its having been a longer time in coming to perfection.—There is no doubt however but that Spring Wheat is a distinct species.

Summer Wheat, says Parkinson, has narrower ears, longer beards, and smaller grains, and will not endure the coldness of our winters.]

This will ripen, says Miller, much earlier, and therefore has been often sown in the spring, at the same time with oats; but if the season should prove wet, it is very subject to grow tall, and to have very thin grains; so that unless from the severity of the winter, or some other accident, the winter corn has been injured, the practice of sowing Spring Wheat is rarely used.

[The experienced reporters of the county of Northumberland, for the Board of Agriculture, inform us that Siberian or Spring Wheat was introduced and strongly recommended about twenty years since; but that wherever they have seen it tried, the crops have been uncertain, and the produce small; and that though this flinty kind will ripen, if sown even as late as april, or beginning of may, yet it has not been able to maintain a struggle with some of the varieties of Lammas Wheat, and has been totally given up.]

In the report for Mid-Lothian, it is said, that a very particular kind of Spring Wheat was sown eight or ten years in the vicinity of Edinburgh. It admitted of being sown as late in the season as the end of april or beginning of may, and was ripe in august or september, producing very weighty grain, and as high as eight bolls an acre. It did tolerably well



for a year or two, but one inclement summer, in 1792, completely finished it, the crop, all blacked or blighted, being good for nothing; and it has not been heard of since.

In the year 1788, Mr. Young informs us, that Mr. Duckett of Esher in Surry cultivated Spring Wheat on a large scale; drilling two bushels of it on an acre, about the middle of march<sup>1</sup>.

Mr. Marshall, in his rural œconomy of the Midland Countries, says that Spring Wheat is there cultivated, and with singular success; owing principally to the time of sowing, in the wane of april. By sowing early, as at the beginning of march, the grain is liable to be shrivelled, and the straw to be blighted; whilst that sown at the middle or end of april, or even the beginning of may, produced clean, plump corn.

Mr. Toosey mentions a Spring Wheat which he sowed in Canada on the third of may, and reaped the 26th of august. He sowed a pint, and reaped a bushel<sup>2</sup>.

In the Asiatic Researches, a species of Wheat is mentioned as cultivated in the East Indies, which has the calyx four-flowered, ventricose, smooth, and imbricate: the two outer florets have long beards, the third has hardly any, the fourth and innermost is neuter. The description seems to agree with the Spring Wheat; but according to the author it is doubtful whether it should be referred to that or to Spelt; or whether it may not be a new species, rather variety. It was in ear at Oujein on the 30th of january, and ripe on the 19th of march.—The Barley crop is ripe in that country the beginning of march.]

2. Common or Winter Wheat has long ears or spikes, with the grains ranged in four rows, and imbricate; the chaff smooth, ventricose or bellied, and not terminated by awns or beards. [The last character however is not constant, for Winter or Lammas Wheat, has frequently short awns, but they never grow to the length of those in Spring Wheat.

Wheat may more properly be considered as an annual than a biennial plant, as it not only ripens within a year from the time of sowing, although it commonly takes a part of two years to accomplish this; but it will run its course in six months, or less time in countries to the north of Great Britain.

Dr. Hunter (Essay 5.) has very well remarked that Wheat has two sets of roots; the first coming immediately from the grain, the other shooting from the crown some time after: the first he calls the *seminal*, and the second the *coronal* roots.

Plants observe a regular uniformity in the manner of spreading their roots; for which reason the same grain cannot in general be continued long on the same soil.

Wheat being subject to the severity of winter, its roots are wonderfully disposed to withstand the inclemency of the season. The first, or seminal root is pushed out at the same time with the germ; and that, together with the meal, nourishes the plant, until it has formed the crown. When this has become sufficiently large, it detaches a number of strong fibres, which push themselves obliquely downwards. These are the coronal roots. A small pipe preserves the communication between them and the seminal roots. It makes an essential part of the plant, and is observed to be longer or shorter, according to the depth at which the seed has been buried. The crown however is always formed just within the surface; and its place is the same, whether the grain has been sown deep or superficially.

As the increase and fructification of the plant depends upon the vigorous absorption of the coronal roots, it is no wonder that they should fix themselves so near the surface, where the soil is always the richest.

The stalk, straw, or culm as Linneus calls it, is three feet high at a medium, jointed, cespitose or in tufts; seventy-two have been known to issue from one root. Leaves smooth, three lines wide; much more, and of a very dark green in good ground. Spike

close, weighty, some inches in length. The lower flowers imperfect, as is commonly the case in this order of plants. The glumes or chaffs of the calyx are ovate-lanceolate, and end in a point like a short awn; they contain for the most part each four flowers, but there are sometimes only three, and sometimes five or six, but then one or more of these fall off without producing any grain. The two glumes or chaffs of the corolla are equal, but the outer one puts forth an awn a little below the tip, an inch or two inches in length; sometimes however there is none; the inner one is hollow, awnless and two-toothed: between these lies the seed or grain, which is villose, and the largest of its congeners. The nectaries are small, fringed and silky<sup>3</sup>.

Gærtner describes the seed as ovate, acuminate at each end, pubescent at the top, convex-three-sided on one side, scored with a deep groove on the other, the colour of honey or subruscous. The embryo has three radicles.]

Where Wheat grows naturally, says Mr. Miller, is very hard to determine at present; but it is generally supposed that Africa is the country, because in the earliest accounts we have of it, there is mention of its being transported from thence to other countries, and Sicily was the first country in Europe where this grain was cultivated: but although the place of its natural growth be probably in a warm climate, it is found to bear the inclemency of our rough climate very well; and even in more northern countries, where the summers are long enough to ripen the grain, it is found to succeed.

[Even Wheat, says Bruce, the early produce of Egypt, is not a native of it. It grows under the line, within the Tropics, and as far north and south as we know. It vegetates vigorously under snow. But whence it came, and in what shape, is left to conjecture.

It is asserted that Spring Wheat, and Sprat Barley (*Hordeum distichon*) grow wild in Tartary: and Dioscorus Siculus affirms that Wheat is wild in Sicily; that it may have come up spontaneously in that island is very probable, but that it is originally indigenous there is not at all likely.

#### Varieties.

The principal varieties of Winter Wheat are, the White and Red without awns ( $\alpha$ ,  $\beta$ ,  $\gamma$ .) and the Red and white Bearded Wheat ( $\delta$ ,  $\epsilon$ ). Of these there are innumerable subordinate varieties.]

Some of these, says Mr. Miller, differ in the colour of their chaff, and others in the form of their spikes, but they are subject to vary. He enumerates only, the Red Wheat without awns, the red-eared Bearded Wheat, many-eared Wheat, (probably n. 3.) and naked Barley. These five sorts, he says, I have sown several years, and have always found them constant without variation.

[Mr. Houghton, in his Collections, published at the end of the seventeenth century, has seven varieties, from Mr. Dale, the friend of Mr. Ray, but three of these do not belong to this species, namely the double-eared (to n. 3.) Poland Wheat (to n. 5.) and the Gray Pollard (to n. 4.)

The other four are: 1. *Triticum spica et granis albis*. *Raii hist.* 1237. 2. our  $\gamma$ . White Wheat, called Egg-shell Wheat in Essex, by some. Prospers best in heavy clay and loam; sometimes found with awns, but rarely.

2. *Tr. grano albo, glumis hirsutis*; called Mouse-dun, or by some Egg-shell Wheat in Essex, from the colour of the hairy chaff when ripe, and in which it chiefly differs from the former, being frequently sown together in our rich and light lands.

3. *Tr. spica & granis rubentibus*. *Raii hist.* 1237. 1. Red or Kentish Wheat. Much sown in Hertfordshire, and sometimes found with awns:—perhaps *tritici varietas culmo rubro*, *Raii syn. app.* which Mr. Bobart says is so much desired in Oxfordshire, may be only a variety of this.

<sup>3</sup> Haller.

<sup>1</sup> Annals 10. 189.

<sup>2</sup> Young's Annals, 17. 289.



4. *Tr. spica multiplici*. See our *Tr. compositum* n. 3.  
 5. Poland Wheat, n. 5.  
 6. *Tr. aristis circumvallatum*, *granis & spica rubentibus*, *glumis lævibus & splendentibus*. *Raii syn.* 387. Red-bearded Wheat—our *δ*.  
 7. *Tr. aristatum spica maxima cinericea*, *glumis hirsutis*. *Raii hist.* 1238. Gray Pollard—our n. 4.<sup>1</sup>

It would be almost endless, and of little use, to enumerate all the varieties of Wheat, which are continually introducing, and giving way to new ones. It will however be expected that the more remarkable ones at least should be set down in such a work as this. An alphabetical catalogue of them therefore is here given.

1. Aleppo. Spikes short and awned. Chaffs whitish and smooth. Grains short and turgid or big. From the neatness and beauty of the spike the orientals call it *Joseph*; which name they use for any thing more than ordinarily handsome, in honour of the Patriarch, who was so eminent a patriot in Egypt.

There are other varieties from Aleppo—as *tripolitanum granis nigricantibus* of Parkinson, with spikes a hand in length, and very long awns; the grains long, very dark-coloured, resembling *Rie*. This is much taller than the preceding—and another that is lower, with reddish grains, and long blackish awns<sup>u</sup>. Smyrna Wheat belongs to this variety.

2. Bearded. See *Tr. turgidum*, n. 4.  
 3. Brazil. Sown on strong land in Somersetshire.  
 4. Burwell. Ears long and large; spiculæ very wide set, nine in three inches and three-fourths; chaff a dark brown red, large and closed on the grain; straw long red. Much used in the north, especially on lands newly broken up, and has in a manner superseded the common red Wheat<sup>x</sup>.  
 Burwell seed Wheat grows on white lands in the parish of Burwell in Cambridgeshire. It is in great request in the north of England, on account of its becoming ripe much sooner than any other that is known. It is partially threshed (provincially, topped out), as soon as it is got into the barn; so that it is the ripest and best part of the ear that is obtained from it<sup>y</sup>.  
 5. Cane. See *Tr. turgidum*, n. 4.  
 6. Dantzick. Lower in the straw by six inches than common Wheat, and very regular: ear downy, white; straw white: it does not lodge, and is less subject to blight and smut than other sorts. Used for seed about Caversham, &c. in Berkshire<sup>z</sup>.  
 7. Double Wheat. See *Tr. compositum*, n. 3.  
 8. Duckbill. See *Tr. turgidum*, n. 4.  
 9. Dunover. See *Tr. turgidum*, n. 4.  
 10. Egg-shell or White. Straw white; chaff smooth and white; grain white, with the bran somewhat thick, but the flour remarkably white. It is very early ripe, and so free in the ear as to blow out in windy weather; it works mellow in grinding. From rich sandy loams it is often a beautiful sample; and when so, brings the highest price of any sort<sup>a</sup>.  
 11. Essex Dun. Similar to the Kentish White-chaffed (which see:) and the Hertfordshire Brown of Yorkshire. It has been making its way into the Midland counties. Those who have given it a fair trial, like it on account of its giving a great produce; four or even five quarters on an acre<sup>b</sup>. See var. 2. from Houghton, above.  
 12. Essex White. Only a good sample, as I believe, of the White Lammas.  
 13. Fulham. Straw white, short and coarse. Very productive, especially on poor land; but the grain very coarse and the bran thick: from

which circumstances it is not so valuable to the millers<sup>c</sup>.

14. Golden-ear. Ear short; spiculæ very close set, nine in two inches and three quarters; chaff a yellowish light brown, short; grain white, and easily shaken out by the wind.

For spring sowing, this and the Burwell red are preferred in the northern counties, except where the land is in such high condition as to endanger the crop lodging; then the Velvet-ear is used, as not being apt to lodge, from the shortness of the straw<sup>d</sup>.

15. Gray Pollard, Pole or Poll-revet or rivet. See *Triticum turgidum*, n. 4.  
 16. Harrison's Kentish Red. See Kentish Red.  
 17. Hedge. White. This variety was discovered by accident in a hedge, by Mr. Wood of Sussex, who carefully cultivated it from the single grain, and the produce in four years, by his attention, was wonderful. It is now (1795) generally known in Surrey as well as Sussex; and has since been extended to some of the midland counties. The produce is very great: thirty-seven trusses of straw having yielded, in a bad year, twenty bushels and one peck of capital Wheat, ten sheaves yielding one bushel throughout. The same year, four bushels sowed on very middling wheat land produced twelve sacks and one bushel, of a remarkably fine sample<sup>e</sup>.  
 18. Hertfordshire brown. Chaff white; grain red; straw of a middle growth: resembling the Kentish white-cosh of Norfolk<sup>f</sup>. See Essex Dun, n. 11.  
 19. Hertfordshire White; the same with Essex White (n. 12.) and an improvement of White Lammas.  
 20. Hoary Brown. A new sort introduced into Kent, within the last twenty or thirty years<sup>g</sup>.  
 21. Hoary White, or White Hoar. Straw, ear, and grain white. Mr. Young says it is distinct from Velvet ear; which see.  
 22. Holland White. See White Holland.  
 23. Kentish 1. Downy. Chaff white, downy, awnless; ears middle-sized; grain white and small; straw short. This variety is best adapted to good land, in which it generally yields well, notwithstanding the smallness of the grains<sup>h</sup>.—2. Red. Harrison's Kentish Red, so named from a farmer who produced the first sample of it, by cultivating some ears which he observed to be more closely set, and more productive than the wheat in general in the same field. The chaffs appear to be shorter than common. The produce of twelve acres, in 1785, on a clean summer fallow, without manure, was a hundred and forty-one coombs, three bushels, of very fine wheat<sup>i</sup>.—3. White or white-strawed, or white-chaffed, called Kentish White-cosh in Norfolk. It sends out a great number of stems, and therefore is often a very thick crop. The straw is generally somewhat shorter than that of many other varieties, and therefore not quite so liable to fall in rainy seasons. The ears are middle-sized, nine spiculæ in three inches and a quarter; chaff white, opening and shewing the grain when ripe; grain plump and red, resembling very much the Velvet Wheat of Surrey and Kent. The produce allowed to be greater than that of the old red; and the millers, according to Mr. Marshall begin to like it nearly as well, though on its first introduction fifteen or twenty years ago, they were prejudiced against it. The Kent surveyor says, that from its dull colour, thick bran, and grinding very steely, it is not much approved of by the millers<sup>k</sup>.—This variety, though the chaff be perfectly white on its introduction into Norfolk, and though it be studiously kept separate from the red; yet by being repeatedly sown year after year, it loses the fair-

<sup>1</sup> Vol. I. p. 232.

<sup>x</sup> Northumb. survey, 66.

<sup>z</sup> Young's Annals, 6. 143.

<sup>u</sup> Mor. hist. 3. 175. n. 4, 5, 6.

<sup>y</sup> Suffolk survey, p. 43.

<sup>a</sup> Kent survey, 80.

<sup>b</sup> Marsh. midl. 1. 232.

<sup>c</sup> Kent survey, 80.

<sup>e</sup> Young's Annals, 24, 408.

<sup>g</sup> Kent Survey, 81.

<sup>i</sup> Young's Annals, 7. 214.

surveys, Marsh. Norfolk 1. 202.

<sup>d</sup> Northumb. survey, 66, 69.

<sup>f</sup> Marsh. Yorksh. 2. 3.

<sup>h</sup> Marsh. Yorksh. 2. 3.

<sup>k</sup> Northumb. and Kent



nefs of the chaff, which firft becomes pied, and at length changes entirely to a clear red, refembling that of the old Norfolk ftock<sup>1</sup>.—4. Yellow. Chaff fomewhat red. Grain white. Ears large. Straw ftout<sup>m</sup>.

24. Lammas. 1. Brown. This is the common brown-ftrawed Wheat: it grows with a long jointed ear, the chaff of a dark brown colour; the ftaw is long and apt to fall; the hull or bran thin, and the flour very white; and the corn mellow in grinding: for which reafons it is efteemed by the millers. Till within thefe twenty or thirty years paft, this was the fort chiefly cultivated in Kent, but it has fince been giving way to many new varieties, as well as fome of the other old ones. By fome experiments made by Mr. Boys of Betfhanger it appears that this was lefs productive than feveral other varieties<sup>n</sup>.—2. Mixed. With an awnlefs whitifh fpike, and reddifh grains<sup>o</sup>. Probably the fame with the White Kentifh Wheat.—3. Red. This is the ordinary Red Wheat of the kingdom; with the fpike or ear and grains red, the ftaw red or dark yellow. It is fuperseded in many places by improved varieties. One which obtains much on the Suffex downs is called Clark Wheat, from the perfon who firft introduced it; the bloffom, chaff, and ftaw are red; the grain is white; the fample is coarfe, but it yields greatly; it requires to be cut forward<sup>p</sup>. Another, cultivated on the hills and all expofed fituations in Somerfetfhire, called the red-ftaw, differs from the red Lammas in having every bloffom of a purple colour<sup>q</sup>: the ftaw alfo is red or purple, and the grains are red<sup>r</sup>.—4. White. This, which is the old White Lammas of the kingdom, is now fuperseded, like the old Red, in many places, by new varieties. The chaff and grains are both white, and the ftaw is of a pale colour.—5. Yellow. This refembles the Brown in every refpect, except that the colour of the grain is yellow, and the chaff is of a fomewhat lighter colour<sup>s</sup>.

25. Long Cone. See *Tr. turgidum*, n. 4.  
26. Nonpareil. Said to be brought from America. It has a bright ftaw with a brown ear, and the grain is very white, large and plump. Very productive on all foils, thrafhes very free, and produces a great quantity of horfe-meat. It grinds very mellow, and is well efteemed by the millers.  
27. Pendulum. See *Tr. turgidum*, n. 4.  
28. Pilbeam. A brown wheat, growing very ftiff, and generally thick on the land. The grain fmall and plump, fomewhat of a yellow brown. It is faid to be very productive on rich lands, and is valuable to mix with others, but will not of it-felf make good bread, becaufe it does not ferment eafily<sup>t</sup>.  
29. Poland. See *Tr. polonicum*, n. 5.  
30. Pole or Poll Rivet. See *Tr. turgidum*, n. 4.  
31. Pollard. See *Tr. turgidum*, n. 4.  
32. Quebeck. A white wheat from America<sup>u</sup>.  
33. Red-poll-rivet. See *Tr. turgidum*, n. 4.  
34. Red-ftaw. See Lammas, n. 24. 3.—It is generally efteemed in Staffordfhire, as being hardy upon cold wet land; carrying a length of ftaw upon dry fands, and thereby over-topping fern and other luxuriant natives; and the grain overweighing every other fort.  
35. Spanifh.—Mr. Dillon has given a lift, with remarks, of twenty-five varieties of Spanifh Wheat, divided into four claffes:—1. Candéal, or White Wheats. 2. Gefas. 3. Claros. 4. Rubion, or Red Wheats.

He remarks that the Spanifh Wheats are hard and ftely, and that the flour here is faid not to

exceed in finenefs that of the third fort in England and Ireland<sup>v</sup>.

36. Square-ear. One of the new varieties introduced into Kent. It is very productive, but being apt to drop out before it is ripe, and to blow out in gales of wind, it is not much cultivated<sup>w</sup>.  
37. Square Gray. See *Tr. turgidum*, n. 4.  
38. Stuffed. See Velvet-ear.  
39. Taunton Dean. So called from the place it was originally brought from. It is a bright and beautiful grain, and very productive; near four quarters on an acre<sup>x</sup>.  
40. Velvet-ear, or hoary White. Straw white and fhort: ears fmall, but the grains clofe fet, eight in two inches and three quarters; chaff white (or fomewhat of a brownifh hue), covered with a thick fine down, clofed on the grain; which is fmall and of a dull white; the fkin very thin, fo that fome grains are almoft transparent when held up to the light. It grinds very mellow, and makes a beautiful fine white flour. From the quantity of down upon the chaff, and its fmall ears binding up very clofe in the fheaf, in a rainy feafon it is apt to grow in the field; on which account it is not fo proper to cultivate in a moift climate, and in fmall inclofures, that are not open to wind and fun<sup>y</sup>. From the fhortnefs of the ftaw, it is beft adapted to rich foils, where there is a danger of the crop lodging<sup>z</sup>.

Of the feveral varieties cultivated in Suffex this is preferred, having by much the thinner fkin of any: they call it fuffed Wheat<sup>a</sup>.

In the year 1768 Mr. Arbuthnot gathered fix ears of Wheat, the down on them attracting his notice. He fowed it, took off the tillers and transplanted them, repeating the operation, and fetting them in the middle of a field of beans. The plants ran away for feed, before their own tillers came into ear; fo that if this practice were to be followed, there would be the difference of a fortnight in the ripening of the ears of the fame plant.

The product of the fix ears was fourteen quarts, which were drilled on one acre in four rows, eight inches afunder, on four feet ridges: the produce three quarters three pecks. Mr. A. continued the culture of it till he grew no other, and fold great quantities for feed. In 1779 Mr. Arthur Young introduced it into Suffolke, and in the five following years, on comparifon with the common red wheat of the country, he found the fuperiority of produce in the Velvet Wheat, to be from two to fix bufhels on an acre. But he found the quality to be ftill more fuperior, for on an average he fold it at fixpence a bufhel more than the Red Wheat. Velvet Wheat is lighter than Red Wheat; but the latter has a much greater quantity of bran. A crop of this fort of Wheat is of very regular growth. The ears are very fhort, not from the fmall number of grains, but from being very clofe fet, and much enveloped in chaff. When ripe, the ftaw is of a bright white, but the ear of a red colour. From conviction of the fuperiority of this wheat to the common forts, Mr. Young had no other on his farm in 1785, and did not then intend to fow any other<sup>c</sup>.

Mr. Hall, of Elmftone-Court in Kent preferred this Wheat to any other. And by the experiments of Mr. Boys of Betfhanger in the fame county it appears, that this, which is there called Hoary White, is the beft to cultivate on good dry loamy foils, and very far fuperior to the common brown Lammas, which is commonly fown there<sup>d</sup>. Mr. Dann of Gillingham alfo fays that the Hoary White or Velvet-eared produced him much more than the Red Wheat<sup>e</sup>.

41. White Egg-shell. See Egg-shell.

<sup>1</sup> Marfh. Norf. 1. 202.

<sup>m</sup> Marfh. Yorkfh. 2. 3.

<sup>n</sup> Kent furvey 79, 80. Young's Ann. 4. 281. <sup>o</sup> Mor. hift. 3. 175.

<sup>p</sup> Young's Ann. 17. 143.

<sup>q</sup> Somers. furvey, 108.

<sup>r</sup> Mor. hift. 3. 175.

<sup>s</sup> Kent furvey, 80.

<sup>t</sup> Idem. 81.

<sup>u</sup> Bath papers, 6. 336.

<sup>v</sup> Young's Annals, 5. 470.

<sup>w</sup> Idem, 32. 639.

<sup>x</sup> Kent furvey, 81. 82.

<sup>y</sup> Young's Annals, 14. 178.

<sup>z</sup> Kent furvey, 81.

<sup>a</sup> Northumb. furvey, 66.

<sup>b</sup> Young's Annals, 11. 232.

<sup>c</sup> Annals, 4. 132.

<sup>d</sup> Id. ibid. 223. 281.

<sup>e</sup> Id. 15. 253.



42. White Holland. A white foreign wheat, not very different from the Kentish white. Produce considerable. See Zealand.  
 43. White-straw. See Kentish white-straw, n. 23. 3.  
 44. White Zealand. See Zealand.  
 45. Whole-straw.

46. Woolly-ear. Straw long; ears middle-sized; spiculæ close set, nine in three inches; chaff white, closed on the grain, which is white, larger, longer, but not so plump as the Velvet-ear: the appearance of the ear is larger in every dimension.

The downy-chaffed Wheats (this and n. 40.) have shorter straw, and are less liable to have the grain shaken out by winds, than the smooth-chaffed ones, which is a considerable advantage; but then probably this downiness makes them retain moisture upon the ear much longer than the smooth-chaffed varieties, and perhaps renders them more liable to be affected by those diseases which give a dusky colour to the chaff, and a rusty canker to the straw. The downy-chaffed varieties therefore are most proper for windy open situations; and the smooth-chaffed to well-sheltered inclosed districts<sup>b</sup>.

47. Yellow Kent. See Kentish yellow, n. 23. 4.

48. Yeogrove. See Tr. turgidum, n. 4.

49. Zealand. Straw long and reedy. Ears long and large. Spiculæ very wide set, nine in three inches and three quarters. Chaff white, sometimes with a tinge of brown, opening and shewing the grain; which is white and full-bodied. This sort is well adapted to weak and middling land. In a rich soil, especially in a moist season, it runs too much to straw<sup>i</sup>.

Some of these varieties are probably the same under different names, and others are different under the same name, in counties remote from each other. New varieties are also continually arising, and superseding old ones, sometimes from mere fashion, sometimes from real superiority. Varieties that are excellent in themselves, may gradually lose all their merit, by being cultivated in a soil not adapted to them, or treated in an improper manner. See an instance of this under n. 23. 3.

The common mode of keeping Wheat to its standard, is by transferring the best established varieties from one soil and situation to another, but this is often done without much judgment; and the farmer when he has procured at some expense a wheat strongly recommended, cannot be certain that it will suit his soil. A better method would be, to select from his best crop such individual plants as excel in vigour, productiveness, and such good qualities as are best suited to his purpose. Such would be more likely to be adapted to his soil and situation, than seed procured at a venture from other places.

But this requires attention and forecast, and is attended with some expense and trouble. It is difficult to preserve a small patch of corn from the birds, in a garden or near the house. The best way to secure it is in the middle of another crop. But with other sorts of wheat it may be liable to take a tincture from them. Mr. Marshall treats this apprehension as groundless; but it will require repeated experiments to convince us of what is so contrary to all theory. See Rural Economy of Yorkshire, vol. 2. p. 4—9.

The uses of Wheat are so obvious and generally known, that it would be impertinent to speak of them. The straw serves for various purposes, besides the common ones of thatch, fodder and litter; as for making boxes, baskets and all kinds of Dunstable work, beehives, hats, mattresses, horse-collars; for the package of goods, covering bricks, fruits, &c. from frost,

mixed with loam for walls, lighting fires, drying malt, making pot-ash, &c.

3. Linneus's account of the many-spiked Wheat is, that it is allied to the summer or spring Wheat, but that the spike is four times as large and a hand in length, formed of spikelets in two rows, alternate approximating from nine to twelve, the lower ones shorter, but the upper one single. Chaffs smooth, keeled. Awns a hand in length<sup>k</sup>.

Villars remarks, that it is easily distinguished by the branching of the spike at the base; and that the grains are round, and more closely set than in common wheat. Haller adds, that the calyx is hirsute and commonly three-flowered, the outer glume having an awn two inches long, the inner none: the two petals or inner chaffs lanceolate and somewhat hairy: the grain hairy.

It is said to be a native of Egypt, at least it is cultivated there, as it is also about Naples, in other parts of Italy, and in the South of France.

The quality of the grain is tender and delicate, it is fit therefore for pastry, being very white, fine, and less susceptible of fermentation. Its produce is very great; but it requires warmth, a good soil, and plenty of manure. It has been long cultivated in the South of Italy<sup>l</sup>; but it seems too tender for English growth. It has been cultivated in Essex.]

4. This is called Gray Wheat, Duckbill Wheat and Gray Pollard, in Suffex Fuller's Wheat; [in other places Bearded Wheat, Dunover, Rivets, Pole or Poll-rivet, red Poll-rivet, Square-gray, Pendulum, Yeogrove, &c.] It grows very tall, and if it is sown too thick, is very apt to lodge with rain and wind, for the ears are large and heavy, and nod on one side as the grain increases in weight. The awns are long, and the chaff, being hairy, detains the moisture, which helps to lodge it, for which reason many persons do not choose to cultivate this sort; but where the roots are at a proper distance, they will put out many stalks, which will be stronger, and support themselves better; the grain produces more flour in proportion than any of the other sorts. The awns always drop off when the grain is full grown: [hence probably Haller's mistake, in making two varieties of this Wheat, with and without awns.

This species differs essentially from all the preceding. The straw is thicker and stronger, though the spike commonly hangs down: this is large, square, villose, well furnished with grains, from two to three inches in length, often barren at the base, and thicker at the end. The spikelets have each four flowers, one of which is barren. The corolla is almost as long again as the calyx, villose as that is, often gaping at the top so as to show the grain; the outer valve or chaff has two nerves, and is terminated by an awn, which is often three inches in length; it is not sensibly membranous at the edge: the inner valve is flat and lanceolate. The grain is shorter and more rounded than Lammas wheat, whiter, more tender, and scored at the base. It is called in French *Bled barbu*, *Bled d'abondance*, or *Moutin blanc*<sup>m</sup>.

Of Bearded or Gray Wheat, or Rivets, there are two principal varieties, white and brown; they are sown chiefly on wet cold lands. They ripen late in the season, and are so very coarse and steely, as to be unfit for making bread, unless mixed with a large proportion of a better sort of flour. But they produce very abundant crops on strong lands, and are saleable at inferior prices. They are convenient for sowing near hedges, where birds abound. The hanging of the ear seems to me a provision for guarding it against the ill effects of too much wet, to which the heaviness of the chaff would otherwise subject it.

β. Mr. Miller considers the Cone Wheat as specifically different from the Gray Pollard.] The ears are formed like a cone, ending with a slender point, whence the name. The white and red Cone are mere varieties, being generally mixed in the same field. The awns of this are long and rough like the other, and guard

<sup>b</sup> Northumb. survey, 66.

<sup>i</sup> Marsh. Yorksh. 2. 3.

Northumb. survey, 65.

<sup>k</sup> Suppl.

<sup>l</sup> Villars.

<sup>m</sup> Ibid.



the grain from birds, which recommends its being sown in small inclosures and by hedge sides. Mr. Tul prefers this sort for sowing in drills; but the Gray Pollard, in Mr. Miller's opinion, answers much better in the horse-hoeing husbandry.

[Mortimer says that Pole-rivet or bearded Wheat is much sown in Essex and Hertfordshire upon stiff yellow clays: that in Oxfordshire they reckon the long-Cone Wheat best for rank clays, and its straw not being hollow makes it not subject to lodge or to be mildewed; but that the flour is somewhat coarse: and that in Berkshire they have a sort called Pendulum Wheat, from its hanging the ear like Cone-wheat.

One hundred and thirty five bushels of Cone Wheat were obtained from an acre and quarter of land, weighing 70 pounds to the bushel, in the county of Lancaster, though one fifth of the field was foul with weeds.

Mr. Marshall says that he met with the true Cone, or *Tr. quadratum* of Miller in North Wiltshire; that the base of the ear is large and square, whence it is there called Square-eared Wheat, but that the upper part is conical, tapering to a point: that it is remarkably turgid, and the grains in the base of the ear, bursting open the chaff before harvest, show themselves plainly to the eye.

The Wheat in common cultivation in the vale of Gloucester is called Blue Cone. The straw tall and reedy; the ear long and of a dusky purple colour, not conical but remarkably cylindrical; the chaff downy, with a very long awn, which falls off when fully ripe; the grain brown, tolerably well skinned, and of a hard flinty contexture, affording a thirsty flour, in good esteem with the miller and baker. Three fourths of the crop in the vale is of the blue Cone.

Some Cone is grown on the Cotswold hills, but not so much as in the vale. A new variety has lately been raised from the circumstance of finding one particular grain in a parcel of seed: the body is remarkably long and large; but the quality, as yet, is not good, or at least not slightly.

Villars has a species which he names *Triticum maximum*, Gros bled, Grossien, or Regagnon. It seems to belong to the Cone-wheats, though he suspects it to be the same with *Tr. polonicum* of Linneus. It grows to the height of six feet, is stronger and stouter than any other sort; the spike is from four to six inches long, very thick, and ash-coloured though smooth. The calyx has an oblique keel, two nerves without, and a short point: the glumes or chaffs of the corolla are longer; the two outer terminated by a large awn, four or five inches long; they are ash-coloured, and a little nerved at the end; the two middle ones end in a short point instead of an awn: the grain is long, and a little villose at the lower part. It is very productive, but the flour is less white and delicate: the grain is of a dark brown or livid colour, and abounds more in bran than meal.

γ. Barbary Wheat is made a distinct species by Desfontaines, but whether it belongs to this species or the second I am not certain. He describes it as having the straw not hollow, but full of pith; long and villose, 30, 40 or more from the same root; the awns very long; the grains longer than in spring or winter wheat, the substance of it horny, with scarce any meal.

In the samples that I have seen from Barbary, the grain was plump, bright and fair to the eye, and of a deep red colour, but when cut through, there was only a speck of white in the middle, the rest being horny.

Mons. l'Abbé Poirer says that the grain of Wheat along the coast of Barbary and part of the Levant is hard, and almost of the same substance with Rice; that the little meal there is in the middle, though very white, produces a black heavy bread, difficult of digestion, they only use therefore the hard or horny part, which they reduce almost to the fineness of meal, when they would make bread, but when the Arabs prepare it for making their common dish called *Courcouson*, they only break it grossly between two

portable stones. This the Moors put into an earthen pan pierced with small holes, and place it as a cover to the pot in which their meat is boiling; so that it is dressed by steam: it is eaten with a little broth, milk, butter, or honey.

5. According to Linneus, the spike is larger, and ash-coloured; and the glumes twice as long as in the preceding species; the calyxes have two flowers only, with a very long awn to each.—Haller says, that the spikelets are either three-flowered with one barren, or four-flowered with two barren.]

The Polonian Wheat grows tall, and the ears are long and heavy, so that where it is sown too thick it is very subject to be lodged, on which account it is little regarded; but since it produces much flour it is worthy of cultivation.

Mr. Bobart says he received it from Worcestershire, where it is cultivated in the fields.

6. Spelt has a stout straw that is almost solid. Spikes strong, white. Spikelets composed each of four flowers, of which the two lateral ones are fertile and have a long rough awn, but the two middle ones are barren and awnless. The chaff adheres so close as not to be separated without great difficulty.

Haller adds, that not only two out of the four flowers in each spikelet, but the lower spikelets also are entirely barren; that the flowers are more conical than in common wheat; that the chaffs of the calyx are cartilaginous, marked with lines, equal and awnless; that the outer floral chaff is a little longer, acuminate, putting forth an awn below the tip, in the lower flowers scarcely more than a line in length, but in the upper ones an inch long, the inner chaff acuminate and awnless, both are folded together; grain villose, less than that of common wheat.

Spelt is much cultivated in many of the southern countries of Europe. In the south of France they call it *Epéaute blanche*, and sow it in spring; it ripens in July and August; it requires strong land, and they esteem it to be very useful in destroying weeds, to which the stoutness of the straw is well adapted.

Haller informs us that Spelt is the principal wheat crop in the flatter and more northern part of Switzerland, and that it is cultivated in several parts of Germany.—It is also very common in Arragon and Catalonia. In Spain they sow it in September or October, and it ripens earlier than any other corn; for which reason it is of great use to the poor, although it is a light grain, yields but little flour, and the bread made from it is indifferent. The Spaniards, when in want of barley for their horses, give them Spelt. The Swiss employ it much for making dumplings, of which the peasants in that country are very fond. Haller says that the flour is much whiter than that of common wheat, and contains a larger portion of the glutinous part, in which the nutritious quality resides; but that bread made of it is drier, and very harsh when it is stale: he recommends it as superior to any other in pastry and confectionary.

Spelt is supposed to be the *Zea* of the Greeks, and the *Far* of the Romans. Herodotus says that the Egyptians used only the *Olyra* or *Zea*. *Far* was the food of the ancient Italians, and was used in sacrifices.

Villars says, that Forskahl remarked a variety of the Spelt in Egypt, the chaff of which is villose, and an inch and half long.

7. The spike of this is smaller and thinner than that of common wheat, and is shining; it has only one row of grains; the root tillers much, for which reason it is sown thin; the worst soil will do for it, if it is not too wet. The leaves that it puts forth in autumn, are more like those of a weak grass than of wheat; but all this time the root is gaining strength, and in the spring pushes up from 25 to 30 stems, which are so strong and hard that no animal will touch them.

<sup>1</sup> Voyage, 2. 106. and 1. 36.

<sup>2</sup> Young's Annals, 32. 647.

ed. Mart.

<sup>3</sup> Villars.

<sup>4</sup> Idem.

<sup>5</sup> Virg. Georg. 1. 73. note:

<sup>6</sup> Villars.

<sup>7</sup> Young's Annals, 30. 202.

<sup>8</sup> Marsh. Gloc. 1. 112.

<sup>9</sup> Id. 2. 50.



Spike distich, closely imbricate, compressed a little, somewhat ancipital. Spikelets of three or four flowers, one of which only is fertile and has a very long awn; the others are barren and awnless, or the awn is very short. Grain ovate, acuminate at both ends, three-sided-compressed, on one side grooved, of a pale reddish colour. When it germinates, it speedily puts forth five radicles, like Spring Wheat<sup>y</sup>.

This one-grained Wheat is sown in autumn, before the common sort, and yet ripens later; it is therefore longer in the ground than any other, and continues a whole year, or even more in the mountains. It is less subject to smut than common Wheat. The straw is excellent for thatching. The flour is used for the same purposes as Spelt; but is of a better quality: the bread made of it is light, though brown; but its great excellence is for gruel<sup>z</sup>. Haller says, it is cultivated very commonly in the mountainous parts of Switzerland, even the most barren.—It was in the Oxford botanic garden in 1658.

*Wheat Grasses.*

8. This is an annual grass scarcely a span in height. Flowers in a spike with capillary awns. Spikelets six-flowered. Leaves awl-shaped, with striated sheaths. Native of Spain<sup>a</sup>.

9. This also is an annual grass. When the Spike is ripe it falls entire and germinates, pushing forth as many stems as there are spikelets. The spike itself performs the office of a root. The spikelets are many-flowered. Native of the Caspian deserts, in the driest soil. Introduced into the Kew garden in 1780, by Mons. Thouin.

10. This is a small annual species, the length of a finger, with the uppermost sheath ventricose. Spike hard, compressed, somewhat awned. Native of Siberia<sup>b</sup>.

11. Root perennial, creeping. The whole plant very glaucous; the lower part of the stem however is of a more or less vivid violet hue and very smooth and shining. Leaves rigid and sharply pungent, perfectly smooth at the back; their upper side marked with numerous longitudinal rough furrows. Stipula very short. Spike solitary, erect, straight and stiff, much broader in proportion to its length than that of any other British Triticum, and consisting of numerous alternate flat spikelets, of five or six florets each, perfectly smooth and beardless. The glumes are furrowed and blunt; the interior valve of the corolla flat and fringed.

Native of Europe, the Levant, Siberia and Barbary, on the loose sand of the sea coast, which its long tough creeping roots, throwing out numerous woolly fibres, help to confine and keep stationary; to which purpose this grass cooperates with *Carex arenaria*, *Elymus arenarius*, and *Festuca rubra*. It flowers in July.

The two varieties (n. 5. and 6. of Ray's synopsis) prove, by original specimens, to differ very little from this. A maritime variety of *Tr. repens* <sup>y</sup> is often taken for this; and some have taken this species, others that variety for *Elymus arenarius*<sup>c</sup>.

12. Native of the Cape of Good Hope, where it was found by Thunberg.

13. Root perennial, creeping very much, jointed; coated; fibres downy. Stems slender, upright, two feet high, and double that height, when drawn up in hedges, round, smooth, striated, having five or six joints, which are frequently tinged with red. Leaves spreading very much, flat, from five to nine inches long, and three or four lines broad, the lower surface smooth, the upper and the margin rugged; they are often all directed to one side. Sheaths tight, ribbed, smooth, terminated by a very short stipule. Spike or ear nearly upright, two or three inches long (or more), flat, composed of numerous spikelets, with all the glumes sharp-pointed, and often more or less bearded. The rachis or common spike-stalk is sometimes hairy. The inner glumes are ciliate. The

number of florets in a spikelet varies from two to four, five, six, and even eight. The spike is much more slender than in *Tr. junceum*, and the spikelets are only half the size of those<sup>d</sup>.

This grass is very common in most parts of Europe, Siberia, &c. and is the pest of arable land, and particularly of gardens. It flowers from June to September, and insinuates its long creeping roots so deeply into the earth as to be with great difficulty extirpated; for a very small piece of the root left behind soon sprouts forth into a fresh crop<sup>e</sup>. Besides this the ends are so hard and sharp, that they will penetrate through the most obdurate soil, and in stiff land are locked up so close in the clods, that in some seasons it is very difficult to clear the land of them.

This troublesome and pernicious weed is too well known to farmers and gardeners, under the names of Quich, Quitch, Squitch, Twitch, Couch and Scutch-grass, all evidently corrupted from *Quick*, which signifies living, and is a term well appropriated to this grass, because every particle of the root will grow. In Scotland and the north of England, it has the appellation of Quickens. Gerarde calls it, Quitch grass, and Dogs grass. In some countries it is called Spear-grass, Dog's-grass and Knot-grass.—It must be observed, that farmers call any perennial grass with creeping roots, that infests arable land, by this name.

This pest of the husbandman and gardener is not however without its use. At Naples the roots are collected in large quantities, and sold in the markets to feed horses; they have a sweet taste; something approaching to that of liquorice. When dried and ground to meal they have been made into bread in years of scarcity. The juice of them drank liberally is recommended by Boerhaave in obstructions of the viscera, particularly in cases of schirrhous liver and jaundice. Cattle are frequently found to have schirrhous livers in winter, and to be cured soon when turned out to grass in the spring. It is well known that dogs eat the leaves to excite vomiting. Horses eat them when young, but leave them when fully grown. Cows, sheep, and goats eat them<sup>f</sup>. Mr. Miller affirms that the blade is so rough, that cattle will not feed upon it.

Six pounds of the fresh roots cut and bruised, and mashed with boiling water, fermented with four ounces of yeast, and distilled, produced four ounces of liquor as strong as common malt spirit, but of a much more agreeable flavour. From three ounces of the expressed juice, two drams 33 grains of chrystallized saccharine acid were obtained<sup>g</sup>.

β. The variety figured in *Flora dahica* and *Flora rustica* has awns from two to four lines in length, and the calyxes contain from four to six flowers<sup>h</sup>.

γ. A glaucous variety common on the coast, is often mistaken for *Tr. junceum*, and was the *Elymus arenarius* of Mr. Hudson's first edition of his *Flora*.<sup>i</sup> The leaves are stiff and sharp: the calyx from three to eight-flowered, and the florets pointed<sup>k</sup>.

14. Root perennial, fibrous, tomentose, not creeping. Culms very many, erect, strict, two feet high, leafy, round, very smooth, minutely striated. Leaves from upright spreading, linear-lanceolate, acute, nerved, rough on both sides, sometimes hirsute. Sheaths striated, smooth. Stipule indistinct. Spike three or four inches long, nearly erect, finally nodding; loosish. Lower spikelets often in pairs, but the rest alternate. Calyx-glumes equal, lanceolate, shortly awned, three or five-nerved, opposite, not as in *Elymus* and *Hordeum*, lateral. Florets lanceolate, nerved, awned; awns twice as long as the glume, straight. Inner glumes ciliate<sup>l</sup>.

15. Culm a span high and somewhat branched. Leaves the length of the culm, with purplish sheaths. Spike branched, almost paniced; the branches angular, spikelets eight or ten-flowered, alternate, compressed, thickest at the base, sessile, so that they are even solitary on the ramifications<sup>m</sup>.

<sup>d</sup> Smith. brit. Engl. bot. Fl. rust.

<sup>e</sup> Withering.

<sup>f</sup> Withering.

<sup>g</sup> Smith brit.

<sup>h</sup> Engl. bot.

<sup>i</sup> Annual Register for 1790: princ. occur. p. 4.

<sup>j</sup> Engl. bot.

<sup>k</sup> Withering.

<sup>l</sup> Linn. spec.

<sup>y</sup> Gartner.

<sup>z</sup> Villars.

<sup>a</sup> Linn. mant.

<sup>b</sup> Linn. suppl.

<sup>c</sup> Engl. bot.



This grass forms tufts composed of bundles of stiff hard ash-coloured involuted leaves, whence arise culms often branched at bottom, and terminated by hard ash-coloured spikes, branched into panicles at their lower part; spikelets hard, a little compressed, composed of three or four, seldom five florets, intermediate in size between *Tr. junceum* and *tenellum*<sup>a</sup>.—*Festuca dichotoma* of Forskahl is only a younger plant of this growing in a poorer soil. Vahl gathered similar specimens in Barbary<sup>o</sup>. Native of France, Spain, Barbary and Egypt, but not of England.

16. Root annual. Culm a span high, tender, filiform. Leaves rolled in. The spikes have from four to seven flowers, which are alternate<sup>p</sup>.

Height from three to six inches. Culms hard, solid, straight, two or three, commonly branched at the base, terminating in a spike, which is half the length of the stem, and composed of oval, sessile, distinct, alternate spikelets, leaving a space between each nearly equal to their length. Calyx much pointed. Outer chaff smooth, cylindrical, obtuse: inner flat, very slightly ciliate at the sides, bifid at the end<sup>q</sup>. Native of France, Spain, Italy and Switzerland.—Introduced in 1781, by Mons. Thouin<sup>r</sup>.

17. Root annual, capillary, villose. Culms many, erect, firm, round, striated, naked at top and thickened. Leaves smooth, shorter than the culm. Sheaths terminated by a white membrane (stipule or ligule.) Rachis simple, flexuose, striated, alternately excavated. Spikelets in a double row, sessile, alternate, very smooth, flat, ovate-lanceolate, sharpish, rigid, closely imbricate, from twelve to twenty-flowered. Outer glume keeled, sharpish, inner smaller<sup>s</sup>.

Desfontaines makes this grass a *Poa*, following Jacquin, who had at first, in his Observations, considered it as a *Cynosurus*. Scopoli describes it as a *Briza*.

Vahl could not discover the white streaks on the culm, mentioned by Scopoli, but remarks that it is sometimes purple towards the top. He thinks it better to associate it with the *Triticums*, on account of its toothed rachis, especially as it seems to be allied to *Tr. maritimum*.

Native of Italy, Sicily, and Barbary.—Cultivated in 1758, by Mr. Miller. It flowers from July to September<sup>t</sup>.

18. Root annual, consisting of long downy fibres, as in most grasses that grow in pure sand. Culms several, curved, branched, rigid, somewhat compressed, smooth, three or four inches high, clothed with sheathing leaves, which are linear-lanceolate, sharpish, somewhat rugged at the back, flat but involute when dry. Sheaths a little inflated, somewhat striated, smooth. Stipule short, obtuse, erose. Spike erect, rigid, composed of from eight or nine to twelve or fifteen erect flowers or spikelets, placed alternately on each edge of the common rachis, but all directed to one of its flat sides, which is thus completely hidden, whilst the other is visible behind. The spikelets are commonly solitary, but the lower ones are often in pairs, sometimes three or even four together. Calyx-glumes lanceolate, equal, obtuse, keeled, obscurely nerved, reaching to the top of the lowest florets: inner ones ciliate. Partial rachis flexuose, and exactly like the general one; an argument for the propriety of considering the latter as a part of the fructification, and consequently making the plant a *Triticum*, not a *Poa*. The outer valves of the florets are very blunt, with a sharp point; the inner are lanceolate and acute. Nectary a minute concave scale. Stamens and pistils short. In the habit and structure of the flowers this grass is nearly allied to *Poa rigida*, and it is perhaps of the same natural genus with it. It varies in exposed situations, of a dusky violet colour<sup>u</sup>.

Floral leaf shorter than the spike, which is from an inch and quarter to two inches long, and a quarter of an inch in breadth. Spikelets ten to fifteen, not crowded. Calyx six or eight-flowered; both that and

the corolla awnless. The serpentine spike-stalk has a strong wood-like midrib, edged with a thinner and greener border, the same as in *Poa rigida*<sup>x</sup>.

Native of England, in many parts on the sandy beach, as on the north coast of Norfolk, at Lowestoft in Suffolk, near South End Essex, near Wisbeach in Cambridgeshire, and in the Isle of Wight; flowering about Midsummer.—It is also native of Dauphiné, according to Villars, who remarks that this species, discovered by the sagacity of Ray and Scheuchzer, seems to have been forgotten by modern botanists. The single culms, he says, are only two or three inches long; and the spike occupies the upper third of them; the leaves are tender, striated and very narrow; the lower spikelets are on a filiform peduncle about a line in length, the upper ones are sessile; the former are insulated, the latter are so close that there are ten or twelve in the space of an inch; they are very small; having three, four or five filiform florets in a very narrow calyx; the chaffs are so pointed that they seem to have an awn, as in Scheuchzer's figure; but viewed in a magnifying glass, they are smooth, cylindrical and awnless.

19. Height three or four inches, of which the spike occupies half; it is thin and turned on one side, composed of sessile spikelets, which are very close to each other, each containing four or five flowers, the lower ones awnless, the upper having short terminating awns, annual.

Scheuchzer and Linneus have not remarked any awns upon the chaffs of this grass; but as they are very short, and on the upper flowers only, they might not perceive them, or perhaps they are not always present. It is however too well characterized to be mistaken. It differs from the *unilaterale*, not only because in that the partial spikes are turned on one side, but the leaves are wider and not so hard, and the spike as little again as the glumes, more distinct, less in number, terminated by a point or awn which is always visible. Morison's figure referred to under *Tr. tenellum* rather belongs to this species<sup>y</sup>. Dr. Smith says, that Morison's is a good figure of the *unilaterale*. Native of the South of France and Italy, on the sea coast.

#### PROPAGATION AND CULTURE.

1. To ascertain that Spring Wheat is really distinct from Lammas Wheat, Mr. Macro sowed them on the same piece of land in April. Whilst the latter was tillering, the former ran up to ear, and produced a good crop; whereas not more than a tenth part of the other, which was red Kentish wheat, eared at all, and not a single grain came to perfection<sup>z</sup>.

Thomas Ruggles, Esq. an experienced agriculturist, as well as elegant scholar, made some experiments in his farm at Clare in Suffolk, in 1785 and the two following years on the comparative produce of Spring Wheat, with Winter Wheat and Barley. His conclusion is, that Spring Wheat is more likely to answer the wishes of the farmer in the South than in the North of Europe; and that it makes a better figure in Columella, than in the Annals of Agriculture<sup>a</sup>. The detail of his experiments are well worth perusal.

Dr. Wilkinson has tried Spring Wheat at Enfield Chase for several years, and in 1799 sowed it so late as the 10th of May, yet it was ripe before barley sown at the same time in the same field. It should never be sown earlier than April, for it is too tender to sustain much frost. He has grown three quarters, but the average produce with him has been two quarters to the acre<sup>b</sup>.

Mr. Marshall informs us, that Spring Wheat has been sufficiently tried in Yorkshire to ascertain that the proper month of sowing is April. See more in our description, &c. above.]

2. The season for sowing of Lammas or winter Wheat is autumn, and always when the ground is moist. In the downs of Hampshire, Wiltshire, and Dorsetshire, the farmers begin sowing of their Wheat

<sup>a</sup> Villars.

<sup>o</sup> Vahl. symb.

<sup>p</sup> Linn. spec.

<sup>q</sup> Villars.

<sup>r</sup> Hort. kew.

<sup>s</sup> Desfontaines.

<sup>t</sup> Hort. kew.

<sup>u</sup> Smith. brit. and Engl. bot.

<sup>x</sup> Withering.

<sup>y</sup> Villars.

<sup>z</sup> Young's Annals, 7. 187.

<sup>a</sup> Idem, 7. 213. and 10. 199.

<sup>b</sup> Idem, 35. 63.



in august, if there happens rain; so that when they are in their harvest, if the weather stops them, they employ their people in sowing, for if the Corn is not forward in autumn, so as to cover the ground before winter, it seldom succeeds well on those dry lands, especially if the spring should prove dry; but in the low strong lands, if they get their Wheat into the ground by the middle of november, the farmers think they are in good season; but sometimes it so happens, from the badness of the season, that in many places the Wheat is not sown till Christmas or after, but this late-sown Wheat is subject to run too much to straw, especially if the spring should prove moist.

The usual allowance of seed Wheat to one acre of land is three bushels, but from repeated experiments, it has been found, that less than half the quantity is more than sufficient; therefore, if the farmers have regard to their own interest, they should save this expence of seed, which amounts to a considerable article in large farms, especially when it is to be purchased, which most of the skilful farmers do, at least every other year, by way of change; for they find that the seeds continued long upon the same land will not succeed so well, as when they procure a change of seeds from a distant country. And the same is practised by the husbandmen of the Low Countries, who commonly procure fresh seeds from Sicily every second or third year; which they find succeed better with them, than the seeds of their own country. In the choice of the seeds, particular regard should be had to the land upon which it grew, for if it is light land, the Wheat which grew upon strong land is the best, and so vice versa.

There have been some persons in England curious enough to procure their seed Wheat from Sicily, which has succeeded very well, but the grain of this has proved too hard for our English mills to grind, which has occasioned their neglecting to procure their seeds from thence; nor do I think there can be much advantage in procuring the seeds from abroad, since the lands of England are so various, as to afford as much change of seeds as will be necessary. And the less we purchase from abroad, the greater will be the saving to the public; so that it should be the business of skilful farmers to want as few seeds as possible, since, by exchange with each other, they may so contrive, as not to part with ready money for any seeds. The land which is usually allotted for Wheat, is laid fallow the summer before the Corn is sown; during which time it is ploughed two or three times, to bring it into a tilth; and the oftener and better the ground is ploughed, and the more it is laboured with harrows between each ploughing to break and divide the clods, the better will be the crop, and the fewer weeds will be produced. But in this article most of the farmers are deficient, for after they have given their lands one ploughing, they frequently leave it to produce weeds, which sometimes are permitted to stand until they shed their seeds, whereby the ground will be plentifully stocked with weeds; and as an excuse for this, they say that these weeds will supply their sheep with some feed, and the dung of the sheep will mend their land; but this is a very bad piece of husbandry, for the weeds will draw from the land more than the dung of the sheep will supply; so that it is undoubtedly the best method to keep the ground as clean from weeds as possible, and to stir it often to separate and break the clods, and render the land fine; and where the land can enjoy a winter's fallow, it will be of much greater service to it than the summer; and by thus labouring of the land, it will be of equal service to it as a dressing of dung. Therefore if the farmers could be prevailed on to alter their method of husbandry, they would find their advantage in it; for the expence of dressing in some countries is so great, as to take away the whole profit of the crop.

There is also a very absurd method in common practice with the farmers; which is the carrying out of their dressing, and spreading it on the land in the summer, where it lies exposed till the sun has dried out all the

goodness of it, before it is ploughed into the ground so that the dressing is of little value; therefore the dung should never be laid on the land faster than it can be ploughed in, for one load of dung so managed, is better than three in their usual method.

As Wheat remains a longer time upon the ground than most other sorts of Corn, it requires a greater stock of nourishment to lengthen and fill the ears: therefore, if the dressing is exhausted in winter, the Corn will have but short ears, and those but lean, nor will the grain afford much flour; so that it frequently happens, that a light dressing of soot in the spring, at the time the Wheat is beginning to stalk, proves of greater service to the crop, than a dressing of dung laid on the land before it is ploughed, especially if the dung is not very good. Deep ploughing (where the staple of the ground is deep enough to admit of it) will also be of great service to the Corn, for the small fibres of the roots, which are the mouths that supply the nourishment, extend themselves very deep into the ground. I have traced many of them upward of three feet, and believe they spread much farther where the ground is light; therefore it is of great advantage to the crop to have the ground stirred and loosened to a proper depth, for by so doing the roots will find a supply of pasture for the nourishment and augmentation of the ears, at the time they are forming, when it is most required; for if the ground is ploughed shallow, the roots will have extended themselves to that depth by the spring, so that when the nourishment is wanted to supply the stalks, the roots are stunted by the hardness of the soil, which they cannot penetrate; when this is the case, the colour of the blade is frequently seen to change in april, and seldom recovers its verdure again; and when this happens, the stalks are always weakened in proportion to the decay of the blade; for it is well known from long experience, that the leaves or blade of Corn, are necessary to draw in nourishment from the air and dews, for the increase of the stalk and ear; but in order to ascertain this, I have made trial of it, by cutting off the leaves of some roots of Wheat alternately, early in the spring, and have constantly found the stalks upon those roots much smaller, the ears shorter, and the grain thinner than those of the intermediate roots, whose blades were not cut. This shews the absurdity of that practice of feeding sheep upon Corn in the winter and spring. I have frequently seen in some gardens, plants divested of their lower leaves, which ignorant persons have supposed to draw away the nourishment from the head; but wherever this has been practised, I have always seen the plants have been greatly weakened by it; so that until those leaves decay naturally, they should never be taken off.

Of late years, many composts have been advertised for the steeping of the seeds of Corn, in order to improve their growth, some of which have been sold at a dear rate; but as so great success was assured by the inventors to those who should make use of them, there were numbers of persons who made the trial; but so far as I have been able to get information of their experiments, they did not succeed so well as to encourage the use of these compositions; and from several trials which I made myself with great care, I always found, that the Wheat which had been steeped in these compositions came up sooner, and grew much ranker in the winter, than that which had not been steeped; but in the spring the unsteeped Wheat had a greater number of stalks to each plant, and the ears were better fed than those which had been steeped; therefore these sorts of composts have been found of no real use to the crop.

My experiments were made in the following manner. The Wheat was sown in drills, on the same spot of ground; the seeds that had been steeped were sown in alternate rows, and the intermediate rows were sown with unsteeped Corn. The rows were a foot and a half asunder, and the grains were all taken out of one measure, and sown as equally as possible: the steeped Corn appeared above ground three days before



fore the other, and continued to grow faster than the unsteeped Corn during the winter, but in the spring the blade of the steeped Corn changed its colour, and their points became of a brown colour, when I gave a light dressing to one of the rows, which soon recovered its verdure, and caused it to be the strongest row of the whole; but the others which had not this dressing, produced weaker stalks and ears than that which was not steeped.

I have before observed, that in general the farmers sow more than double the quantity of Corn on their lands than is necessary; therefore there is a great waste of grain, which in scarce years amounts to a considerable sum in large farms, and to a whole country it is an object worthy the attention of the public: but I fear whatever may be said to prevent this, will have but little weight with the practitioners of agriculture, who are so fond of old customs, as rarely to be prevailed upon to alter them, though they are extremely absurd. But if these people could be prevailed on to make the trial with care, they must be soon convinced of their error; for if they would but examine a field of Corn sown in the common way, they will find but few roots which have more than two or three stalks, unless by chance, where there may be some few roots which have room to spread, upon which there may be six, eight, or ten stalks, and frequently many more; but in a field of Wheat which had not a greater allowance than one bushel of Corn to an acre, so that the roots had room to spread, I have observed the roots produced from six to twelve, or fourteen stalks, which were strong, and had long well nourished ears, and the produce was much greater than in any of those fields in the neighbourhood, which were sown with the common allowance. And if the land is good, and the roots stand at a proper distance from each other, there will be few roots which will not produce as many stalks as I have here mentioned, and the ears will be better nourished.

But if the land is not covered with the blades of Corn by the spring, the farmers think they shall have no crop; whereas, if they would have patience to wait till the roots put out their stems, they would soon be convinced of the contrary; especially if they could be prevailed on to draw a weighty roller over the Wheat in march, which will cause it to spread; and by settling of the loose ground to the roots, the drying winds in the spring would be prevented from penetrating to their fibres, so that the roots will produce the more stalks; but before this operation, it will be proper to have the Corn cleaned from weeds; if these are permitted to grow, they will draw away much nourishment from the Corn; and if, at this season, the land is made clean from weeds, the Corn will soon after spread and cover the ground, whereby the growth of weeds will be greatly lessened.

There is not any part of husbandry which requires the farmer's attention more, than that of keeping his land clean from weeds; and yet there are few who trouble themselves about it, or who understand the proper method of doing it; few of them know those weeds which are annual, so as to distinguish them from those which are perennial; and without this knowledge, it will be much more difficult for a person to clean his land, let his industry be ever so great, for annual weeds may be soon destroyed if taken in time; whereas, if they are neglected, their seeds will soon ripen and scatter; after which it will require three times the labour and expence to get rid of them, as would have been sufficient at the beginning, and then the crop would have had no bad neighbours to rob it of its nourishment. The common method now practised is a very absurd one, for the weeds are left to grow till the Wheat is beginning to ear, and the weeds are in flower; so the ground being covered by the Corn, all the low weeds are hid, and these are left to ripen and scatter their seeds; the tall weeds only are taken out, and if the people employed are not careful, many of these will escape them, as they will be so intermixed with the stalks of Wheat as not to appear, unless diligently sought after. By this method the weeds of tall growth are permitted to stand, and rob the Corn of its

nourishment, during the principal time of its growth, and the humble weeds are never destroyed; and by going amongst the stalks when they are tall, great numbers of them are broken and trod under the work people's feet; yet however obvious this is to every farmer, none of them have thought of altering this practice. I would therefore recommend a method which is now in common practice amongst the kitchen gardeners, which has been found of great benefit to their crops, and has also been a great saving to them in the expence of weeding; and this is making use of hoes for cleaning the Wheat early in the spring, before the ground is covered with blades of Corn. With this instrument, all the low as well as the tall weeds will be cut up, and if it is performed in dry weather, the weeds being then small will soon die. Where the ground happens to be very full of weeds, it may be necessary to go over it a second time, at about a fortnight after the first, to cut up any weeds which may have before escaped. By laying the ground clean at this time, the Corn will not be robbed of its nourishment; and there will not be time for the weeds to grow so as to prejudice it much after, for the ground will be so much shaded by the Corn, as to keep down the weeds, so that they cannot have time to ripen their seeds before harvest.

If, at the time of this operation, the roots of Corn are cut up where they are too close, it will be found of great service to the other; but this, I fear, few of the old farmers will ever agree with me in; though what I mention is not from theory but experiments, which have been repeated with great care; and where it was practised the produce of twenty rods of ground, was much greater both in weight and measure, than the same quantity of ground in the best part of the field where this was not practised, and the stalks stood upright, when a great part of the Corn in the same field was lodged.

I have often observed in those fields where foot-paths are made through Corn-fields, that by the side of those paths where the Corn is thin, and has been trodden down in the winter and spring, that the stalks have stood erect, when most of the Corn in the same field has been laid flat on the ground; which was owing to the stalks being so much stronger from their having more room, the other having been drawn up tall and slender by being so close together. There is also another great advantage in keeping Corn clean from weeds, and giving it room to spread, which is, that the Corn is not so liable to take the smut as when it is full of weeds, and the roots too much crowded, as I have frequently observed; so that cleanness and free air, is as essential to the well doing and growth of vegetables as animals; and the changing of the seed annually is also as necessary, as the change of air is to all sorts of animals; for where this has been carefully practised, there has rarely happened any smutty Corn in the field.

Brining of the seed Wheat is what the farmers generally practise to prevent the smut, which in most years answers very well, but there is nothing which contributes more to this, than keeping the plants in good health, which is better effected by the method before proposed; for by stirring of the ground with the hoe between the roots of Corn in the spring, they will be better supplied with nourishment; for in strong lands, where the water may have lain in the winter, the surface of the ground will bind so hard on the first dry weather as to stint the Corn, and frequently cause it to change colour. When this happens, the roots seldom put out many stalks, and those which are put out, are weak; but where the surface of the ground can be stirred to loosen the parts, the Corn will soon recover its colour and strength, and cover the land with shoots.

What has been here directed, must be understood to relate to Wheat sown in broad-cast, which is the usual method practised by farmers in every part of England; for the horse-hoeing husbandry which was practised by Mr. Tull, has been almost universally rejected by the farmers in every country, it being so opposite to their accustomed practice, that they cannot be pre-



vailed upon to make trial of it; and indeed, by the absurdity of the author in a few particulars, he has discouraged many from engaging in it, who would have practised it; but upon finding Mr. Tull positively asserting, that the same land would nourish the same species of plants without changing the crops for ever, and this without manure, which being contrary to all experience, led them to believe his other principles had no better foundation. And he practised this method of sowing the same species upon the same ground, till his crops failed, and were much worse than those of his neighbours who continued their old method of husbandry, and hereby his horse-hoeing husbandry was ridiculed by them, and laid aside by gentlemen who were engaging in it. But notwithstanding these and some other particulars which have been advanced by Mr. Tull, yet it is much to be wished that this new husbandry might be universally practised; for some few persons who have made sufficient trial of it, have found their crops answer much better than in the common or old method of husbandry; and the French, who have learned it from Mr. Tull's book, are engaging in the practice of it with greater ardour than those of our own country: and although they had not the proper instruments of agriculture for the performance, and met with as strong opposition from the persons employed to execute the business as in England, yet the gentlemen seem determined to persist in the practice of it, though as yet few of their experiments have had the success they hoped for; partly from the awkwardness of their labourers, and partly from their averseness to practise this husbandry, and also from their being made in land not well conditioned, but yet their produce has been equal to that of the old husbandry; and they say, that if the produce of the land in the new method of husbandry does not exceed that in the old way, yet by saving seven parts from eight of the seed Corn, it is a great affair to a whole country, especially in times of scarcity.

As Mr. Tull has given a full direction for the practice of this husbandry, I shall refer the reader to his book for instruction, and shall only mention two or three late experiments which have been made in his method, whereby the utility of it will more fully appear.

The first was in a field of Wheat, which was sown partly in broad-cast in the common method, and partly according to Tull's method; the spots thus sown were not regular in lands, but interspersed indifferently in many directions. Those parts of the field in Tull's method, were in rows at two feet distance, and stood thin in the rows. The roots of the Wheat in these spots had from ten to thirty stalks on a root, and continued upright till it was reaped; whereas few of the roots in the common method had more than two or three stalks, and these were most of them lodged before harvest; so that upon trial of the grain when threshed, there was near a third part more in weight and measure, than from the same extent of ground, taken in the best part of the field sown in the common way.

Another trial was made in sowing of the Corn in rows at different distances, with some sown in two parts of the ground broad-cast. The event was, that all which was sown broad-cast in the usual way was lodged, as was also most of that where the rows were six or nine inches asunder; those which stood a foot distance escaped better, but the rows two feet asunder were the best, and the produce much greater than any of the other; which plainly shews the absurdity of that practice, in sowing a great quantity of seeds to have a better produce, which is the opinion of most of the old farmers; and it was formerly the prevailing opinion among gardeners, who allowed near eight times the quantity of seeds for the same space of ground as is now usually sown, and these crops are greatly superior to any of those.

The produce of an acre of Wheat is various, according to the goodness of the soil. In some of the shallow, chalky, down lands, where there have been near four bushels of Corn sown, I have known the produce not

more than double of the seed; but when this is the case, the farmer had much better let his land lie waste, since the produce will not defray the expence, so that more than the rent of the land is lost: and although these sorts of crops are frequently seen on such land, yet such is the passion for ploughing among the husbandmen at present, that if they were not restrained by their landlords, they would introduce the plough into every field, notwithstanding they are sure to lose by it.

But although the produce of these poor downs is so small, as before related, yet upon good land, where the Corn has stood thin upon the ground, I have known eight or ten quarters reaped from an acre, over the whole field, and sometimes much more. And I have been informed by persons of great credit, that on good land, which was drilled and managed with the horse-hoe, they have had twelve quarters from an acre of land, which is a great produce; and this is with greater certainty, if the seasons prove bad, than can be expected by the common husbandry.

The finest field of Wheat I ever yet saw, was sown in rows at a foot and a half distance; the allowance of seed to this field was three gallons, and by the common practice of the farmers, there is seldom less than three bushels, which is eight times the quantity: this Wheat was hoed by the hand twice in the spring, which cost five shillings and six-pence per acre. When the Corn was in ear, it was not less than six feet high; there were from twelve to twenty stalks on each root, which were so strong as to all stand upright; the ears were very long, the ground perfectly clean from weeds, and the produce was more than eleven quarters to an acre of land. These experiments, one should imagine, would excite an industry among farmers to the practice; but on the contrary, not one of those in the neighbourhood would follow it.

[This work not professing to be a complete body of Husbandry, it is not to be expected that we should enter into all the minutiae of the culture of Wheat; and yet, as it is a subject of primary importance, we should scarcely be excused, if we did not treat of it sufficiently though succinctly.

#### *Preparation.*

The old Preparation for Wheat is a naked summer fallow. If there is one practice in husbandry, says Mr. Young, shown by modern improvements to be worse than another, it is that of sowing Wheat on fallows. And yet it is still the practice in many places. Where they are thought necessary, let them be sown with barley or oats, or any thing rather than Wheat.

In some counties the fallows are ploughed just before harvest on to two bout ridges, ready to plough and sow under furrow in the spring method, a seedman to every plough, which reverses the ridges. In others they lay their lands into ten or twelve furrow fitches or lands, and sow some under furrow, some under the harrow. Ridges vary exceedingly, according to their wetness; and in Kent, by means of the turn-wrest plough, they have no ridges, but the whole field an even surface.

Other preparations for Wheat are, Beans, Clover, Lay, Peas, Potatoes, Rape, Tares and Turneps. Wheat should never be sown after Rye, Barley or Oats, nor should the land be manured for it, but for the preceding crop.

Beans, if well cultivated, form the best preparation for wheat. Mr. Young saw in Kent a field of Wheat, which followed beans, clover, tares and fallow; the first was superior to all the rest, next the clover, then the tares, and the worst was after the fallow. The bean-stubble should have its due tillage as early as possible: this will depend on soil, for on some it will be more advantageous to trust to the shim, scarifiers and scufflers, than to the plough. If the land be very clean, the great Isle of Thanet shim will cut through every thing, and loosen the surface sufficiently to enable the harrows to leave it as clean and fine as a garden; women attending to pick and burn. If less

<sup>c</sup> Calendar, 483. <sup>d</sup> Midd. survey, 167. Young's ann. 18. 444.



clean, the Kentish broad-share may do the work more effectually. In other cases the scuffler may be equal to the business. It is now to be considered whether the land should be ploughed or not: if the soil be of a firm, solid, tenacious quality, and it is not intended to drill, it may be adviseable; there will then be no apprehension of the Wheat being root-fallen, but a new surface will be brought up, which will drill with difficulty. If the soil be of a more loose, friable quality, and the finer surface gained should be ploughed down, the Wheat having too loose a bottom will run the chance of being root-fallen. In such cases, it is best not to plough, but drill directly; which saves tillage, and gives the probability of a better produce. This is new practice on strong land, but there is no reason to doubt of its being right. Mr. Duckett pursued it on a sandy soil for many years with great effect. Whatever other circumstances may influence the growth of this grain, it loves a firm bottom to root in, and rarely flourishes to profit, when that is loose and crumbly; nor must the under stratum be in its quality repellent. The best basis is the cultivable earth, firm from not having been lately disturbed<sup>c</sup>.

Clover forms a very excellent preparation for Wheat; and while the Norfolk husbandry of 1. Turneps. 2. Barley. 3. Clover. 4. Wheat; is practicable on a farm, dry enough for turneps, and rich enough for wheat, a farmer might be satisfied with his profit. But after many repetitions of this course it has been found, that Turneps required ample manuring, where they had not wanted any; and that Clover became so subject to failures, that it was no longer easy to have it every fourth year. This created the necessity of variations, but still retaining clover as the preparation for Wheat. The husbandry however was very imperfect, by the mode of putting in the Wheat by the harrow, when the seed was apt to fall into the seams of the furrows, and consequently to come up among whatever grass and weeds might be in the land. The discovery of dibbling was a great improvement: by this method the seed was deposited in the centre of the flags, and the regular treading the land received, pressed down the furrow, and gave a degree of firmness not otherwise attainable. The success was great, but the labourers have done it of late years in so slovenly a manner, that drilling is every where coming in, both in Norfolk and Suffolk. At present, it is thought in those counties the mark of a bad farmer to sow Wheat broad-cast on clover.

The land having been ploughed a fortnight or three weeks, it is to be well rolled down with a heavy roller, and then dibbled: the chief attention is to be paid to the dibblers making the holes deep enough, and to the children dropping equally without scattering. It is then bush-harrowed. Six pecks of seed are sufficient for two rows on a flag in September; but in one row as much should be put in: and if the land is given to mildew, an increase of seed on that account is right, whatever be the soil or season; it being well known, that thin crops suffer most from that distemper. For drilling, it should be remembered, that in ploughing all lays, the use of the skim-coulter is very great, and in some cases indispensable: an effective harrowing should precede the drill: the quantity of seed is the same as in dibbling<sup>d</sup>.

Wheat is sometimes sown on grass land, broken up in the summer, after the hay has been cut off: but on old lays it is more usual first to take a crop or two of oats, according to the strength of the land.

Peas are a good preparation for Wheat, on land which is too light for beans, being a good smothering crop.

Great crops of Wheat have been grown after potatoes, well manured for, and on a proper soil; but barley has been generally found to do better. See *Potatoes* under *Solanum*; art. *Crops following*.

A good crop of winter Tares leaves the ground in such loose, friable order, that it is much better husbandry to sow turneps or plant cabbages on it, than

<sup>c</sup> Young's calendar, 484.  
survey—47-52.

<sup>d</sup> Idem, 456. See Suffolk

to leave it to receive tillage for Wheat. However if this management should take place, the land should not be ploughed, but left to consolidate at bottom, for the roots of the Wheat to fix in, and the surface worked with the scarifiers or scufflers, according to its temper, just sufficient to keep it clear of weeds, and in that state, drill the Wheat without any ploughing<sup>e</sup>.

Wheat is sometimes sown after Rape and Turneps; and I have seen Turneps sown after Wheat; the land being ploughed whilst the shocks were standing in the field. It is more common to sow Barley after Turneps.

#### *Steeping the Seed.*

It has been a great controversy whether this operation be beneficial or not; the evidence certainly goes much in favour of doing it; and there can be no objection to it except the expence and trouble; unless the seed-Wheat be suffered to lie too long in some mixtures. The intention of them is to guard against the smut, and the modes of steeping, brining and liming are innumerable. Arsenic has lately had the preference; and Mr. Young informs us, that it appears from his experiments that steeping the seed from twelve to twenty-four hours in a ley of wood ashes, in lime water, and in a solution of arsenic, gave clean crops from extremely smutty seed; but a short time in those mixtures had a much less effect<sup>f</sup>.

In Northumberland, and some other parts, the seed Wheat is thrown into a vessel full of chamberley; it is stirred about with a strong stick, and the light grains are skimmed off; the liquor is then let off, and the Wheat taken out, and mixed with powdered quick-lime, till it is dry enough for sowing: the sooner this is done the better; because it is apt to heat if suffered to continue in the sacks, or in large heaps; but if dried and spread thin on a granary floor, will keep several days. Five or ten minutes are as long as the seed should steep in the liquor; its vegetative powers will be injured if it remain much longer in very putrid chamberley<sup>g</sup>.

Salt water, where the sea is near, and brine, where it is not so, are the common steeps for seed Wheat in most places. After soaking for a few hours, it is taken out, and a sufficient quantity of lime, to dry it for sowing, is sifted over it. This however is said often to prove ineffectual: and Mr. Wyborn of Hull in Kent, whose Wheat one year after brining was uncommonly full of smut, endeavoured to investigate the nature of this distemper, and discovered that it was an infectious disease, and curable by arsenic. But if the Wheat stands much more than ten or twelve hours in the solution of arsenic, vegetation will be totally destroyed<sup>h</sup>.

Mr. Middleton, in his survey of Middlesex, (p. 168.) says, he has prevented the smut, by putting lime recently burnt, into a copper of boiling water, and pouring this mixture, boiling hot, on the Wheat, previously spread on a stone floor, immediately turning the Wheat and the mixture well together with shovels. This is done over night, and the seed is commonly sown the next day.

On good authority it is affirmed that the smut may be prevented by simply washing the seed Wheat in clean water, several times if necessary<sup>i</sup>.

It is supposed by some, but seemingly without much reason, that steeps act as prolific liquors, to invigorate the germ; but they probably act no farther than in destroying the smut, whatever it be. They may be too weak to do this; and if they are too strong, or the seed remain too long in them, they may injure the vegetation.

#### *Time of sowing.*

October and november are the months in which Wheat is commonly sown. It has been lately thought in some places that September is a still better time, provided it be wet enough, but few farmers are ready so early<sup>m</sup>.

<sup>e</sup> Young calendar, 459. <sup>f</sup> Idem, 453. and Suffolk survey, 45. and Marth's Yorksh. 2. 10. <sup>g</sup> Northumb. survey, 67. <sup>h</sup> Kent survey, 82. Young's annals, 16. 311. <sup>i</sup> Yorksh. N. R. survey, 111. <sup>m</sup> Suffolk survey, 45.



In Mid-Lothian it is sown with success from the end of august, when it is common with several farmers to sow their fallows, to the beginning of april, when turnep-land has been known to be sown<sup>a</sup>.

In Northumberland, the fallows are sown in september and october; after drilled beans Wheat is sown in october and november; and after turneps all through the winter, until the middle of march. On account of snow lying late, many hundred acres have been sown in april, and produced a good crop. The experienced surveyors are disposed to think, that on those light soils, february is the best seed-time for Wheat, maslin and rie<sup>b</sup>.

Good crops have been had in the north riding of Yorkshire, from sowing at the beginning of april; but sowing so late as this, or even at candlemas, is very precarious, for if the summer be wet, the corn is little worth. Upon warm turnep land, Wheat may be put in as late as Christmas, with great advantage; but beyond that time, it is apt to be lean in the ear, and to be infected with smut<sup>c</sup>.

In Middlesex, Wheat is sometimes sown after turneps in january and february, and even so late as the middle of march: but october is thought to be the most promising season, and of course, all the land that is then ready ought to be sown<sup>d</sup>.

In Kent, on wet and cold lands Wheat is sown early in october; on stiff and drier clay soils somewhat cold, about the middle of that month; but the general time for the county is the month of november. Sometimes it happens, by badness of weather, &c. that a considerable quantity is sown the first week in december, but the more early sowings generally produce the strongest crops<sup>e</sup>.

Upon all cold, wet, backward soils, september is the best season for putting in Wheat, provided there has been rain in tolerable plenty. Upon drier and warmer soils it is better to postpone it to october. But clover and other layers should be ploughed, if rain comes, in september, for it is a great advantage to have them remain unsown for three weeks or a month after ploughing<sup>f</sup>.

In the vale of Gloucester, the time of sowing is november and december; and if a farmer get his seed into the ground before Christmas, he is thought to finish in due season: this country is therefore nearly a month behind the rest of the kingdom. There are two disadvantages attending this late sowing: the uncertainty of the season, and the want of a greater quantity of seed.

On the contrary, the Cotswold hills are in a manner proverbial for early sowing; august and september being the principal months. The general rule is to begin ploughing in july, and to begin sowing the first wet weather in august. Wheatseed time therefore generally commences in Wheat harvest; and the farmers wish to see the ground covered before michaelmas. The districts that form the two extremes, with respect to the time of sowing Wheat, are included within the same county, and even lie contiguous to each other<sup>g</sup>.

Mr. Young relates a successful experiment of early sowing, with a view to escape the mildew. He sowed eight acres after tares the beginning of september, finishing the fifteenth. It came up in eight or nine days; the autumn proved remarkably dry; it was the eleventh of november before any rain fell, and all the farmers were sowing at the end of november and beginning of december. In the spring and summer the early-sown Wheat flourished remarkably, while seven-eighths of the crops around had a miserable appearance, and some parts of fields were actually ploughed up. At harvest this field was ready to cut three weeks before any other, and a month before many. Reaping was commenced on the twenty-eighth of july, and on the fourteenth of august the whole was carted to the stack. This earliness of harvest will generally be a great advantage. In respect to the mildew, it

totally escaped; yet several fields near it were considerably attacked. The crop, though extraordinary for the season, was not large, owing to its being sown too thick; namely, two bushels and a peck to the acre, whereas so early one bushel and a half would have been enough. The year following he sowed twelve acres thinner, in september, which were a very capital crop, quite bright and clean from mildew, except some few spots; it was quite ripe, and reaping on the fifteenth of august<sup>h</sup>.

Mr. Pitt of Pendeford in Staffordshire observes, that very early sowings exhaust the land too much the first summer, and give too much time for the growth of noxious weeds; he adds, that he always remarked Wheat sown the beginning of september new style to be much fouler the succeeding spring, than that sown a month later on equal land.

The greatest evil he has found to attend late sowing on sound land, is from vermin, especially rooks and larks<sup>i</sup>.

#### *Quantity of seed sown.*

The quantity of seed sown for a crop of Wheat is in general from two to three bushels. Mr. Marshall says, pretty universally three bushels an acre, in the midland counties, without much regard to the time of sowing. That however ought to be attended to, and accordingly the Cotswold farmers do attend to it, by sowing in august six pecks (about fourteen gallons), and in september two bushels (of nine and a half gallons each). But it has been found that one bushel sown in august, provided the land be clean and in heart, is abundantly sufficient; and we may venture to say that one third of the seed Wheat sown in most other districts is saved in this<sup>j</sup>.

It is remarkable that in the Vale of Gloucester, though they sow very late, yet the quantity of seed sown there is considerably less than in other parts of the kingdom: even at Christmas seldom more than two bushels on an acre; in the more early part of the season seven pecks is the usual quantity. The measure being large, this is near seventeen gallons. But in Norfolk, three bushels, containing near twenty-five gallons, are usually sown, some weeks perhaps before seed-time commences in this county. Two bushels and a half (about twenty-two gallons), may be taken as the middle quantity of seed Wheat, throughout the kingdom<sup>k</sup>.

At Michaelmas this quantity is commonly reputed most advantageous to sow broadcast on a medium soil; a gallon of seed may be added to this for every fortnight later. But the quantity should vary also with the quality of the land; a poor soil requiring more seed than a rich one<sup>l</sup>.

In Suffolk, two bushels are the common allowance of seed to an acre; some will sow a peck more, and if late in the season, even three bushels: some however will, on good land trust to seven pecks; but even in dibbling, that quantity is often put in<sup>m</sup>.

In Northumberland they sow from two to three bushels; in Nottinghamshire two bushels; in Somersetshire two bushels and a half or three bushels; in Kent three bushels; in some parts of the North Riding of Yorkshire from five to eight pecks, in others ten or twelve pecks<sup>n</sup>: about Doncaster in the same county they sow four bushels on an acre: a gentleman in that neighbourhood sows only two bushels, and thinks that his success has been at least equal to that of his neighbours, who sow, or rather throw away, so much more seed<sup>o</sup>.

It appears from a table in Young's Annals of Agriculture (16. 340.), that a less quantity of seed suffices in warm countries than in cold ones. This seems to be a constant rule founded upon the experience and custom of people, wherever wheat is cultivated.

A pole is 16 feet and a half or 198 inches in length, and the number of square inches in a pole is 39204. Now there being 160 poles in an acre, the number of square inches in an acre is 6,272,640. Allowing

<sup>a</sup> Survey, 93. <sup>b</sup> Survey, 68. <sup>c</sup> Survey, 112.  
<sup>d</sup> Survey, 169. <sup>e</sup> Survey, 83. <sup>f</sup> Young's Calendar, 452.  
<sup>g</sup> Marsh. Gloc. 1. 116. and 2. 51.

<sup>h</sup> Annals agr. 2. 192. <sup>i</sup> Idem. 5. 470. <sup>j</sup> Marsh. Gloc. 2. 52. <sup>k</sup> Idem. 1. 117. <sup>l</sup> Midd. Survey, 168.  
<sup>m</sup> Survey, 45. <sup>n</sup> Surveys. <sup>o</sup> Young's ann. 18. 371.



then one grain of Wheat to an inch; it will require that number of grains to an acre, or twelve bushels, six gallons, and three quarters of a pint. For thirty-two grains taken from the middle of the ear make a penny weight troy; therefore an ounce contains 640, and a pound 6780 grains of Wheat, and a bushel, 491,540 grains, supposing a bushel of Wheat to weigh sixty-four pounds troy, which is about fifty-six pounds avoirdupois.

The following table will give the quantity of Wheat required to sow an acre at different distances, from one to ten inches.

| Inches | Bushels | Gallons | Pints          | Odd grains |
|--------|---------|---------|----------------|------------|
| 1      | 12      | 6       | $\frac{3}{4}$  |            |
| 2      | 3       | 1       | 4              | 1440       |
| 3      | 1       | 3       | $2\frac{3}{4}$ |            |
| 4      | 0       | 6       | 3              | 360        |
| 5      | 0       | 4       | $\frac{1}{2}$  | 1305       |
| 6      | 0       | 2       | $6\frac{1}{2}$ | 480        |
| 7      | 0       | 2       | $\frac{3}{4}$  | 627        |
| 8      | 0       | 1       | 4              | 184        |
| 9      | 0       | 1       | 1              | 640        |
| 10     | 0       | 1       | 0              | 1286       |

#### *Culture whilst growing.*

The growing Wheat is generally weeded in June and the beginning of July, by cutting up thistles and other perennial weeds with a small angular hook, and by pulling up charlock and other annual weeds by hand.

When a dry spring succeeds a wet winter, it makes the surface of strong land so hard, that the new or coronal roots cannot freely penetrate into the soil. This is discovered by the corn turning of a sickly yellow. In this case the crop should be harrowed once or twice in a place, and afterwards rolled.

In case the land is not sufficiently rich, or has not been thoroughly manured, sow top-dressings, or drench the crop with the drainings of dunghills, and immediately after harrow and roll. This should be done as early in spring as the land is dry enough to bear the treading of horses without poaching.

When worms or slugs attack Wheat, it is usual to turn a flock of sheep upon it; and some persons send a boy with a dog to drive them about, in order to tread the more of the vermin to death.

After a frosty winter, the crowns of the roots are sometimes exposed for two or three inches in length; in that case, turning sheep in after a moderate shower, and driving them about, will tread the Wheat into the moist ground, where it will produce fresh roots<sup>f</sup>.

The practice of eating the Wheat in spring with sheep is not uncommon, especially when it is what is called winter-proud. It is also thought to have a good effect when the crop is thin, because it occasions it to tiller or branch more than it would otherwise have done<sup>g</sup>. It is also sometimes eat down in autumn when it gets too rank from early sowing; not however by a few sheep kept long upon it, but by a large flock at once<sup>h</sup>.

In the vale of Gloucester Wheat is universally hoed; and this valuable operation is less difficult and more effectual in practice, than it appears to be in theory. Two hoeings are generally spoken of, but are executed only by good managers. One hoeing and a hand-weeding are essential to good management; for the early hoeing will unavoidably miss many weeds, which afterwards run up to seed, and foul the succeeding crops. The first hoeing is begun in April, or as soon as the season will permit; and ought to be finished before the plants begin to branch or tiller. The sooner the second hoeing succeeds, the less difficulty there is in doing it; but the later it is given, the more serviceable it proves.

A thin crop requires a wide hoe; a thick crop, a narrow one. They are from three to five inches; made like the turnep-hoe, except that the corners are rounded off<sup>i</sup>.

When Wheat is dibbled one row on a flag or furrow, it is always well hand-hoed; but if two rows, it is too thick to admit that operation conveniently. Sometimes however such is also hoed<sup>k</sup>.

Drilled crops are hoed once or twice, and hand-weeded where wanted. These hoeings not only destroy the weeds, but make a good preparation for clover and grass seeds, which seldom fail where this operation is properly performed<sup>l</sup>.

#### *Dibbling Wheat.*

This excellent practice, which originated in Norfolk, is well established in Suffolk. In the maritime sand district, many thousand acres are thus put in; and upon light lands after peas, where Wheat was formerly little cultivated. The ground being rolled with a light barley roller, a man walking backwards on the flag, as the furrow slice is called, with an iron dibber, the handle about three feet long, in each hand, strikes two rows of holes, about four inches from one row to the other, on each flag; and he is followed by three or four children, to drop the grains, three, four, or five in each hole. In this way from six to seven pecks of seed are deposited in an acre, at very equal depths, in the centre of the flag. A bush-harrow follows to cover it. The expence is from eight to nine shillings an acre. The treading so equally is very beneficial upon light soils; and in dry weather hurtful upon none. The seed is laid in at an equal and proper depth; and it is all in the flag itself, not in the seams, where weeds, if any, will arise; and there is some saving in seed. The crops are superior to the common, and the sample is more equal. Some use a frame, which strikes many holes at a time, but the work is not so well done. The system of well-paid employment for the poor, which this practice carries with it, is of great importance.

This practice has lately been improved: a narrow set plough of only seven inches width at bottom, is used to plough with; then follows a one-horse roll, to level the flag or furrow for the dibblers. It is sufficient to deposit two or three grains in each hole. Instead of bush-harrowing, a two-horse roll follows, afterwards the harrows twice in a place; when the field is finished in this manner, it is harrowed up again obliquely; by this method the Wheat is deposited in the middle of the flag, at nine inches distance in the rows; and when come up, has the appearance of being drilled: the two-horse roller is of material use in closing up the holes, and preventing the Wheat from being disturbed by harrowing; and the land is made so solid by rolling, that very little apprehensions are entertained about the slug or worm. Six pecks of seed are enough for an acre<sup>m</sup>.—Some talk of two pecks, and even one peck; others insist upon eight or ten; and some, at the other extreme, tell us that almost as much seed should be dibbled in as is sown broadcast. Certainly very thin sowing is bad economy. And this practice is better calculated for light, than for strong land.

Mr. Marshall, in his Rural Economy of Norfolk (vol. 2. 35.) gives an account of the first rise of this practice, as well as the particulars of it.

#### *Drilling Wheat.*

Drilling Wheat is practised with great intelligence and success by individuals in different parts of the country, but it is by no means common any where. The deficiency of the machines, the awkwardness of labourers in using them, and the small quantity of seed recommended by the venders of them to be sown, have been obstacles to the general establishment of this neat culture.

In all drilling, the land should be well ploughed, and made fine, before the drill comes upon it, by rolling and harrowing; a one-horse roll should follow the drill, to close the land upon the seed, and then the more the land is harrowed, the better; very little seed ought to be saved by drilling; for it is found by

<sup>f</sup> Midd. survey. 169.

<sup>g</sup> Marsh. Gloc. 2. 53.

<sup>h</sup> Yorksh. N. R. survey, 113.

<sup>i</sup> Idem. i. 118.

<sup>k</sup> Suffolk survey, 52.

<sup>l</sup> Northumb. survey, 69.

<sup>m</sup> Suffolk survey, 47, 49.



experience, that corn drilled in rows at nine inches asunder, requires thickness in the ridges<sup>a</sup>.

Others are of opinion that they get greater crops from wheat drilled in rows eighteen inches distant, and save half the seed<sup>b</sup>.

Others again think that even nine inches are too far asunder for the rows, except on very rich land, and consider seven inches as the most profitable distance for the farmer. These gentlemen allow that some seed may be saved, but they do not drill less than two bushels to the acre<sup>c</sup>.

It would be entering too wide a field, to determine the comparative merits of the broad-cast and drill husbandry. Much may be seen upon the subject in Mr. Young's Annals of Agriculture; and something in the Bath papers, and the County surveys drawn up for the consideration of the Board of Agriculture, and other publications.

On light soils it should seem that drilling may be adopted to great advantage; but on clays and foul lands, the drills and horse-hoes cannot work.

#### *Transplanting Wheat.*

That Wheat increases very greatly, where it has room to spread, by the branching of the roots, or tillering as it is called in some counties, or stocking, as in others, is a well known fact. It is also no less certain that plants of Wheat raised in a good soil, may be divided into several, and these again subdivided almost *ad libitum*; so as to produce a considerable quantity of grain from a single seed. This may be illustrated from the following experiment, which was conducted under my own eye, in the botanic garden at Cambridge, by Mr. Charles Miller then Curator there. A few grains of the common red Wheat were sown on the second of June 1766. On the eighth of August, one of the most promising plants was selected, and separated into eighteen parts, each of which was planted separately. These were divided, as they would bear without injuring them, between the middle of September and the middle of October, and made in all sixty-seven plants. These were left to stand during the winter; and another division of them made between the middle of March and the twelfth of April, produced five hundred plants. The subdivision might have been carried much farther; but these were deemed amply sufficient to produce the quantity of grain stipulated for, which was half a bushel.

The number of ears was ———— 21,109.

The number of grains, by estimation, 576,840.

The measure  $3\frac{1}{2}$  pecks and one quart.

The weight 47 pounds 7 ounces.

The plants were strong, and were tied up to stakes to prevent their lodging. Some of them produced an hundred ears from a single root. Many of the ears measured seven inches in length, and contained from sixty to seventy grains. The soil was a blackish garden mould, but light and poor, and on a gravelly bottom; half the ground was well dunged, the other half had no manure, but little or no difference was discoverable in the plants. The whole was covered with nets to keep off the sparrows.

The above account is given from my own minutes, made at the time on the spot. It may be seen in the Philosophical Transactions, in the Annual Register for 1769, and in the second volume of Letters and Papers published by the Bath Agricultural Society.

Another experiment is communicated by Dr. Hunter of York.—In October 1795, a quart of Wheat was drilled in a piece of garden ground; and on the 22d of March, the plants were taken up, and transplanted into a field, which had borne a crop of potatoes; it contained 600 square yards or half a rood, and the soil was a light loam. The land was only once ploughed, harrowed and rolled; after which the plants were pricked in at the depth of one inch, and at the distance of nine inches from each other; each square yard containing sixteen plants. The expence of planting was estimated at one guinea an acre, supposing the work to be chiefly done by women and

children. The crop was neglected, not having been properly hoed. Besides it was much blighted and mildewed, owing, as was supposed, to its growing in the middle of a field of very tall oats. The loss by mildew and neglect, was estimated at six bushels to the acre. The produce was eleven pecks, which is at the rate of twenty-two bushels to the acre.

Another experiment was made on better Wheat land, and every necessary attention was bestowed upon the crop. But it was planted a month later than the other, with a view to ascertain the best time for transplanting. The consequence was, that the plants were induced to tiller more than necessary during the whole summer. Upon the whole, the second week in March seems the best time for transplanting Wheat; for about that time the second roots begin to sprout from the crown. The produce of this crop was four pecks on 101 square yards, or the forty-eighth part of an acre, which is at the rate of forty-eight bushels to the acre. The plants were nine inches from each other. From the great space allowed for each plant (eighty-one inches), it was necessary to hoe two or three times during the summer. The ears of corn were in both experiments uncommonly long.

The advantages of this practice would be a considerable saving of seed; the employment of the feeble hands when there is little work; planting land in the spring, that was too wet for sowing in autumn or winter; hoeing and keeping the land clean at a small expence; and having a crop of turneps, cabbages, peas, beans, tares or potatoes, as preparatory to a crop of planted Wheat, instead of lying waste under a summer fallow<sup>d</sup>.

Another mode of transplanting Wheat has been suggested, by collecting seedling plants from the stubbles, which have been self-sown the preceding autumn. These plants are of little utility to the farmer, and are sometimes, by winds and other accidents, so abundant on the ground as to afford sufficient stock to plant many acres. When the autumnal season is unfavourable, these seedling plants might be rendered useful<sup>e</sup>.

#### HARVESTING.

It is well known that Wheat is for the most part cut with the sickle; in some parts, where straw is more than ordinarily valuable, it is cut near the ground, but in most places at a considerable height. Men only or chiefly reap throughout the greater part of England. In the northern counties and in Scotland it is almost entirely done by women.

In the north riding of Yorkshire, in reaping, provincially shearing, three women and one man make a set, who of a middling crop do an acre a day. If corn be thin, a man will bind after four women; if very thick, he requires a boy to make bands for him<sup>f</sup>. In Lothian, most of the reapers are women from the Highlands. A man binds to eight reapers, who generally cut two Scotch acres a day, the stubble being from four to six inches high. The sheaves are made about twelve inches in diameter: fourteen of them form a stock or shock, covered with two sheaves<sup>g</sup>.

In Middlesex, Kent, Surry, and West Devonshire, Reaping, (provincially near London called *bagging*;) is mostly done with a toothless hook of about twice the weight of a common sickle. It is sharpened in the same manner as a scythe; and the corn is cut by a succession of blows, made within two or three inches of the ground. The reaper collects enough for one sheaf at a time, binds and sets it up in tens, called a shock. This bagging is, to all intents and purposes, mowing with one hand against the standing corn. By this operation the straw is cut much closer to the ground than can be done by hand-reaping; it is equally expeditious, and secures a greater quantity of straw, which near London is a considerable object<sup>h</sup>.

In West Devonshire this operation is called hewing. The hook is formed much like the common-reaping-hook, but somewhat larger every way, longer,

<sup>a</sup> Idem. 48. 50.

<sup>b</sup> Idem. 51.

<sup>c</sup> Bath papers, 6. 189.

<sup>d</sup> Young's annals, 27. 242, 440.

<sup>e</sup> Survey, 114.

<sup>f</sup> Survey, 93.

<sup>g</sup> Bath papers, 6. 166.

<sup>h</sup> Midd. survey, 172.

broader



broader and stouter, with a hooked knob at the end of the handle, to prevent its slipping. The corn is struck at horizontally and almost close to the ground with one hand; whilst the other hand and arm strike it at the same instant about the middle of the straw; thus driving it upright against the standing corn: the workman taking a sweep round as much as will form a sheaf, and collecting the whole together in the centre, into a sort of leaning cone; finally striking the hook under its base, to disengage it entirely from the foil; but still supporting it with the left arm and the leg, until the hook be put beneath it, to lift it horizontally to the band. Sometimes the hewer forces his way up one side of a narrow ridge, against the wind, and back on the other side, thus collecting half a sheaf, and then fetching another half sheaf in the same manner. If a crop of Wheat be free from weeds, and stand well, this method of cutting is expeditious and eligible enough; but if it be lodged, or ravelled, or foul at bottom, it is improper: at best it requires expert workmen to make good work. A scythe in good hands will do as well or better, and is still more expeditious. To secure the scattered corn, women or boys collect and set up the sheaves; and these are followed by women with rakes<sup>x</sup>.

Much Wheat on the Yorkshire wolds is mown against the standing corn with a cradle scythe, bound in sheaf, and set up in stooks or shocks, at the time of mowing<sup>y</sup>.

Whenever there is any appearance of blight on Wheat, it can hardly be cut too early. The greenness of the straw is no indication that the grain is not ripe; for it never gets to a bright yellow, but remains green till it turns absolutely black. When the straw is in this state, the circulation of the sap ceases, and the grain shrinks in size daily. Nothing can keep up its plumpness but cutting it, and laying it down on the stubble, to receive the dews; turning it frequently, and not tying it up, till the corn is dry and fit to carry. It will thus prove good marketable grain; whereas had it been left standing longer, part would never have been threshed out of the ears, and the residue would have been so light and horny, as to fly off entirely in the tailing. The straw also will be tough and fit for thatching, which would otherwise have been beaten to pieces in threshing<sup>z</sup>.

It is the universal practice to tie up Wheat in a sheaf, and to set up the sheaves in shocks or stooks: but the sheaves are made larger in some districts than others, and the number of sheaves that go to make a shock is not the same in all places. In general sheaves are made too large, and much inconvenience results from it in a wet harvest. The bands are commonly made by tying two handfuls together; but if the straw be not very short, one length will be sufficient. In forming the shocks, ten or twelve sheaves are usually set together in two rows, without capping or other precaution against rain<sup>a</sup>.

In Yorkshire and some of the Midland counties Wheat is hooded or capped; that is, covered with two sheaves inverted. Unless the straw be long, two sheaves are not equal to the safe covering of ten. It is therefore now the more general practice to set them up in tens. If Wheat be ripe, this is a safe and eligible practice, in a wet season. But in fine weather the ears of corn cannot be too much exposed to sun and dews; or if the corn be cut green, or the grain be thin from mildew, or any other cause, it must be very improper to cover it, nay a slight shower is of great benefit to it. In covering of Wheat therefore the farmer ought to be directed, not by custom but by the state of the crop and of the weather<sup>b</sup>.

In West Devonshire nine sheaves are crowded together in a square of three sheaves every way, and a tenth is put over them, as a cloak or hood, the whole forming a sort of cone or pyramid. This is a bad practice. The close posture of the sheaves prevents a circulation of air; and in most cases the covering is

very imperfect, one sheaf, unless it be very large and the straw very long, not being sufficient to secure the rest from wet, but serving rather to conduct the rain into the centres of the upright sheaves<sup>c</sup>.

In Kent, between Sandwich and Dover, they cover the shocks (of from twelve to twenty sheaves, in two rows) with cloths or mats, just wide enough securely to cover about one third of the length of the sheaf, and fastened at each corner by a peg stuck into the sheaf. Mats are more commonly used, which cost seven-pence each. The expense is considerable, but the practice is found to improve the sample so much that the Dover bakers give a clear preference to it<sup>d</sup>.

In many parts of the West of England Wheat is stacked, or mowed, as they call it, in the field, immediately after it is bound. These mows are round, and usually contain from a cart to a waggon load; they are drawn up to a point, and are covered with a single sheaf inverted. Thus the day's cutting is secured every evening; and the corn remains in the field frequently five or six weeks, till the farmer is at leisure to take it into the barn or the great mow or rick. The men are very dextrous in making these mows, so as to prevent rain from injuring the corn. In a late harvest, and a moist climate, especially after a wet summer, which seldom fails of filling the butts of the sheaves with green succulent herbage; thus securing the ears from injury, and at the same time exposing the butts to the air, seems a good expedient. The objections to it are, that mice are apt to be brought home in the sheaves, and that the corn seldom has sufficient dryness for winter threshing<sup>e</sup>.

In the rest of England Wheat is carried immediately either to the barn, or to the great rick in the farm yard; these ricks are, or should be set upon posts, tinned stones or brick piers, capped with flat stones, and a frame of timber laid over them, to keep out vermin.

It is unquestionably an advantage to Wheat, to expose it as much as possible to the weather between cutting and carrying. If the season be unsettled at the time of cutting, cover immediately, and as soon as the weather settles uncover; keeping the ears exposed to the sun, wind, dews and moderate showers, until they are sufficiently weathered. But if the season be tolerably settled at the time of cutting, it is best to set the sheaves up uncovered, and so to let them remain until the ears are opened, the chaff loosened, and the grain mellowed: then, if the weather be hazardous, they may be covered, until the butts are dry. In some cases, in settled weather, it may be best not to tie up the corn immediately, but to let it lie upon the stubble for some time. The shocks should be set up north and south, not east and west; for in the latter case the sheaves on the north side will not be fit to carry till several days after those on the south side<sup>f</sup>.

#### *Threshing and Cleaning.*

Threshing of Wheat, as is well known, is performed with a flail, and in all except very small farms, on an oaken floor. Threshers in most counties strike incessantly without changing hands, or reducing the force of the blows, till the principal part of the grain is beat out on one side; they then turn the sheaf, and repeat the operation on the other side: they next change hands, and strike in an oblique direction, which draws the straw from the sheaf an inch or two at every such blow, till the whole is completed. This gives the thresher an opportunity of seeing and hitting every ear, till it is cleared of the grain: and it is the only method of doing so by the flail. This practice tosses the straw about and bruises it, consequently it cannot be sent in handsome trusses to market: the threshers therefore near London strike with an irregular blow; their rule is to hit two or three blows rather smartly, and one or two so slightly as to be of little use, thus relieving themselves from the necessary fatigue which the men of other places undergo in

<sup>x</sup> Marsh. West. 1. 168. <sup>y</sup> Marsh. York. 2. 256. <sup>z</sup> Young's ann. 29, 491. <sup>a</sup> Suffolk survey, 52. <sup>b</sup> Marsh. York. 1. 389. Middl. 2. 15, 160. York. N. R. survey, 115.

<sup>c</sup> Marsh. West. 1. 170. <sup>d</sup> Young's ann. 16. 359. and 17, 145. <sup>e</sup> Marsh. West. 1. 171. Survey Somers, 97. Middlesex 173. <sup>f</sup> Marsh. midl. 2. 17.



threshing clean. This shifting or desifting from labour, with the necessary perpendicular blows for preserving the straw straight, for the sake of sending it to market in handsome trusses, is the reason of their not threshing clean<sup>g</sup>.

With the same view of keeping the straw entire, not only for litter indeed, but for thatching, in the west of England, Wheat is not threshed in the straw, but the ears are cut off<sup>h</sup>. Or else the ears are threshed lightly with the flail, or beaten across a cask by hand until the grain is got pretty well out of them. Then the straw is suspended in large double handfuls in a short rope, fixed high above the head, with an iron hook at the loose end of it, which is put twice round the little sheaf, just below the ears, and fastened by the hook laying hold of the tight part of the rope: the left hand being now firmly placed upon the hook, and pulling downward, so as to twitch the straw hard, and prevent the ears from slipping through it, the butts are freed from short straws and weeds, by means of a small long-toothed rake or comb. This done, the rope is unhooked, and the straw laid evenly in a heap. A quantity of clean straight unbruised straw being thus obtained, it is formed into small sheaves, returned to the floor, and the ears threshed again with the flail, or by hand over the cask, to free it from any grain which might have been missed in the former beating. Lastly, the straw is made up into large bundles, of thirty-six pounds weight each, with all the ears at one end, and laid quite smooth and level<sup>i</sup>.

Threshing machines are now gaining ground, in some parts of the kingdom, particularly in Scotland and the north of England. They are yet too expensive for any but great farmers; and perhaps it is not to be wished that they should be generally used, as in some part of winter the farmers would find it difficult to employ all the labourers were it not for the flail.

In Kent, Wheat is universally cleared with a casting shovel, and flat broom called a spry, which sweeps off the chaff, &c. This method is certainly the most expeditious and best, where the barn-floor is large, and of a sufficient length: but in a small room the winnowing machines will do it better, and perhaps cheaper<sup>k</sup>. A machine-fan is in use in some parts of Yorkshire; it is too complex to come into general use, but if it could be simplified would probably be universally adopted. It was made by Sharp, and since by Winlaw<sup>l</sup>.

#### Produce.

We have accounts here and there of heavy crops of Wheat. As of a piece of thirty-one acres near Lewes in Sussex, which for six years together yielded from forty to fifty-six bushels on an acre throughout<sup>m</sup>. The average at Mawby near Caistor in Norfolk, for ten years together was forty bushels; and from forty-eight to sixty have been gotten there: but such products are out of the common course<sup>n</sup>. In the survey of the north riding of Yorkshire, twenty-four bushels to the acre is said to be esteemed a good crop, though in the best cultivated parts from twenty-eight to thirty-two bushels are frequently obtained, and even forty bushels are not rare<sup>o</sup>. In Middlesex the produce is stated to vary from under ten to upwards of forty bushels to the acre; but twenty-four, or at most twenty-eight to be perhaps the average of the county<sup>p</sup>.

Mr. Marshall gives the average produce of the Midland Counties at twenty-four bushels of nine gallons; and adds that from thirty-two to forty bushels are produced, and on fifty acres together forty-five bushels. But he justly remarks that this produce is very high<sup>q</sup>.

On the Cotswold hills in Gloucestershire, on the contrary, the average produce is only sixteen bushels: but these hills are better adapted to barley than Wheat<sup>r</sup>.

<sup>g</sup> Middlesex survey, 174. <sup>h</sup> Somers. survey, 97. <sup>i</sup> Marsh. West. 1. 181. <sup>k</sup> Kent survey, 84. <sup>l</sup> Marsh. York. 1. 281. <sup>m</sup> Young's ann. 29. 445. <sup>n</sup> Idem. 12. 45. <sup>o</sup> Survey, 116. <sup>p</sup> Survey, 175. <sup>q</sup> 1. 238. <sup>r</sup> Marsh. 2. 56.

Mr. Young says, that the crops in Suffolk vary from twelve bushels on sands, to twenty-eight on rich loam, and that thirty-two and forty bushels on an acre are not uncommon crops. He states however twenty-two bushels as the average of seven years<sup>s</sup>. Mr. Howlett also gives the average for Essex at twenty-two bushels of eight gallons and a half<sup>t</sup>.

I am disposed to admit the last as a fair average for a great part of England. Heavier crops are very partial, and by no means to be depended upon in a general account. In making that out, considerable deductions even from twenty-two bushels ought perhaps to be made, for slovenly farmers, improper soils, ill managed, untoward seasons, smut, mildew, insects, &c. I have reduced the above statements to bushels, because every body does not know that a comb is four, and a quarter eight bushels; that a load in some places is forty bushels, in others only five.

#### Distempers.

*Mildew*, or more properly *Meldew*, from an old but false notion that this distemper is occasioned by a honey dew falling upon the straw from the air. It is now generally supposed to be a species of Fungus, which causes the black or red spots in the straw, and like other parasitical plants draws to itself that nutriment which should go to the increase of the grain.

Mr. Nesfield supposes that Mildew in Wheat is occasioned by frosts late in the spring, or in the early part of summer; that the frosts most likely to cause it are such as follow warm days, from the time that the Wheat is pretty far advanced upon the spindle, that is in general from about the 20th of May to the 10th of June; that the effect of these frosts is less or more pernicious according as they are or are not immediately followed by gentle showers; and according to the real or only apparent vigour of the Wheat, which depends chiefly upon the nature of the soil and the state of the weather, as to wet or dry through the winter. A thin crop upon a loose soil will almost certainly be mildewed, not being able, from its luxuriance, to resist the slightest frost late in the spring. And if it be too thick, it will have a weakness equally liable to injury. Wheat on fallow is, in general, more subject to mildew than that on clover-lay, except on very stiff soils<sup>u</sup>.

In contradiction to this theory, Mr. Young remarks, that in 1791, the spring frosts were uncommonly severe; particularly that on the seventh and eighth of May there was ice a quarter of an inch thick, and on the 25th a still sharper frost; and yet there was mildew, in hills or in vales, in forward luxuriant crops or such as were backward and poor<sup>v</sup>.

Mr. Jenkinson observes, that at least in the northern part of England, frost is the most general cause of this malady, and sometimes wet stormy weather. When it proceeds from frost, and the mildew is only partial, then low hollow places, and ground much confined only suffer. When grain is near ripe, it is sooner affected, but the damage is not so great as when it is farther from maturity. When the frost is attended with a thick fog, almost inevitable destruction ensues<sup>w</sup>.

Modern observers know, says Fontana, that the Mildew appears when a scalding sun and cold nights succeed strong dry fogs; the nutritive juice being contained during the night in the small vessels of the plant near the epidermis, which, being heated with the sun, is disordered, ferments, and bursts those small vessels, forming a cautery whence the humour proceeds; and as the fibres and vessels break with the least resistance, and more easily open lengthways than crossways, so the mildew, or the spots of that disease, that is to say, the parasitical plants which find a commodious situation in those apertures, spread themselves the whole length of the plant, but no spot is observed crossways. The seeds of the mildew, or the buds of the parasitical plants of which the air is full, as with the seeds of a thousand other microscopic plants, are deposited in these wounds or apertures,

<sup>s</sup> Survey, 53. <sup>t</sup> Young's ann. 13. 188. <sup>u</sup> Idem. 1. 330. <sup>v</sup> Idem. 16. 423. <sup>w</sup> Idem. 3. 318.



take root within them, and meeting with the sickly humour, which however is capable of nourishing and fructifying them, they quickly adhere and fix themselves in these parts<sup>a</sup>.

Mr. Marshall asks, whether the Mildew or Blight is not caused, or at least encouraged by a succession of wet seasons? It is well known that the disease is most injurious in a wet season. An old man, who has observed a particular farm fifty or sixty years, says that the blight comes on at once, about the end of july; and that Wheat, which is forward enough to be filled by that time, escapes it<sup>a</sup>.

In 1785, a strong blight took place the beginning of august. The straw of backward crops was much discoloured; and the north sides of some lands were much mildewed, whilst the south sides were not. It was evident from this and every year's observation, that the forwardest Wheats are least liable to be blighted; and that having passed a certain stage of ripeness, no obvious injury is incurred. No perceptible blight took place this year, whilst dry weather continued; but no sooner was showery weather ushered in, than a blight became obvious<sup>b</sup>.

I do not know any thing so likely to discover the cause of the Mildew, as an accurate observation of the seasons, from the time of the Wheat's coming out of the ground, to its flowering and beginning to mature the grain.

In the year 1803, the Wheat was much mildewed in the midland and eastern counties. There were catching frosts of short duration in october, november and december 1802. From the 10th to the 21st of january 1803 there was frost, with snow on the 17th and 19th. Towards the end of the month there was more snow and some frost, and on the 26th the thermometer was at 21° at noon out of doors. The first half of february frost and snow; the latter half wet and windy. From the third to the 11th of march frost and snow, but the rest of the month mild. April was mild till the latter end, when there were cold winds, and covered weather with storms of hail. May was in general wet and windy, but not cold. June was very wet, and the 28th was foggy: so was the first of july. That month was various, but in general warm and moist; on the second and 20th thunder; on the fourth the thermometer was at 77° and on the 15th at 63°. Here was much wet, but no late frosts previous to this mildew. The thermometer never was below 54° during the month of may; nor below 62° in june, so that there could not well be any frost to signify all that time.

The Barberry is supposed to blight Wheat partially to a certain extent. It is a common notion in Norfolk, and accordingly the farmers have industriously extirpated this shrub from their hedges. It cannot be accounted for from the farina of the Barberry being shed over the flower of the Wheat; because the Barberry is out of flower before the Wheat shoots up into ear. Such strong attestation is given to the fact, that there is no disputing it, though we cannot at present account for it; and Mr. Marshall, who had ridiculed the notion, ascertained the fact by an experiment<sup>c</sup>. See *Berberis*.

The only guard, says Mr. Marshall<sup>d</sup>, which the farmer has against the attack of this secret enemy appears to be, at present, that of sowing early. But may not something lie within the power of manure or tillage? Perhaps sodburning might be serviceable as a preventive.

The chief remedy, according to Mr. Nesfield is, every thing that tends to give strength, not luxuriance; such as sowing upon clover-lays manured with compost or clay, as best suits the soil; as little pulverization by ploughing as possible, unless in strong clay soils; feeding in the spring, if the Wheat be too florid; rolling light soils, &c.<sup>e</sup>

But when Wheat is once fully attacked with this fatal disease, the only remedy is to reap it as soon as possible.

Fontana informs us, that he took some green plants of corn, which appeared to be most affected with the mildew; the grains were so unripe, that a milky fluid issued from them when pressed; but the season being hot and every thing drying apace, he soon found the grain hard and resisting; it was lighter than the good ripe corn, and even somewhat withered, but it was full of a fine white meal, of an excellent quality. The Wheat reaped from the same farm had not yielded one tenth part of the seed. Many farmers in Tuscany, the Bolognese and Romagna, at the first appearance of the mildew had cut their corn green, and had moderate crops, but considerably greater than their neighbours in the same circumstances, who waited until the customary time of harvest<sup>f</sup>.

Mr. Marshall gives us a well authenticated instance of the good effect of cutting mildewed Wheat whilst very green. A fine piece being lodged by heavy rains, and being soon after perceived to be infected with the mildew, was cut, though still in a perfectly green state: namely, about three weeks before the usual time of cutting. It lay spread abroad upon the stubble until it became dry enough to prevent its caking in the sheaf; when it was bound, and set up in shocks. The grain, though small, was of a fine colour, and the heaviest Wheat which grew upon the farm that season, owing no doubt to the thinness of its skin. What appears more remarkable is, that the straw was perfectly bright, without a speck upon it<sup>g</sup>.

It is a received idea in a part of Yorkshire, that Meslin or wheat and rie together, is never affected by the blight or mildew, and that the nature of rie is such, that a very small quantity of it sown among Wheat prevents this destructive effect<sup>h</sup>.

Mildew is a disease incident to the straw of Wheat, but ultimately affecting the ear. *Smut* or *Brand* affects the grain directly, by converting it into a black dust like foot, whence in many counties it is called *Burnt* (corruptly *Bunty*) Wheat.

Some are of opinion that this disease is generated by a very wet season happening during the time that the Wheat is in blossom, and that it is propagated and continued, by using the corn thus vitiated, for seed. Mr. Wimpey drilled part of a ridge with good sound seed; another part immediately adjoining with seed taken from very smutty corn, washed in two waters till no blackness remained, and carefully skimmed; and a third portion adjoining, with the same smutty Wheat unprepared. The crop from the sound seed was perfectly free from smut: that from the second had many smutty ears among it, perhaps one in twenty: the third had at least half the ears infected<sup>i</sup>.

Mr. Arthur Young sowed fourteen beds, with the same smutty seed. That which was sown dry, and also that which was well washed in clean water, turned out very smutty: that washed in lime water, was the next in order for badness, but much better than the two others; then those which were washed in a lye of wood ashes, and in a mixture of arsenic and salt; and next that which was steeped in lime water four hours: those which were steeped in the lye four hours, in lime-water twelve hours, in the arsenic steep twelve hours, and in the same twenty-four hours, had very few smutty ears, and that which was in the arsenic steep four hours, had only one smutty ear: those which were steeped in the lye twelve hours, in the lime water twenty-four hours, and in the lye twenty-four hours, had none<sup>k</sup>.

Though the use of steeps to prevent the smut has been in use for many ages, and innumerable experiments have been instituted and cases have occurred, which prove their efficacy; yet there are still persons who think that they are of no use, any farther than as they separate light grains and seeds of weeds, and guard the sown Wheat against vermin.

That it is not the season alone, as some insist, that occasions the smut in Wheat, is plain, because it has

<sup>a</sup> Idem. 17. 272.

<sup>b</sup> Midland, 2. 135.

<sup>c</sup> Id. ib. 149.

<sup>d</sup> Young's annals, 27. 540. Marth. Norf. 2. 19. and 359.

<sup>e</sup> Midland, 2. 150.

<sup>f</sup> Young's ann. 1. 325.

<sup>g</sup> Idem. 17. 273.

<sup>h</sup> Gloc. 2. 54.

<sup>i</sup> Marth. York. 2. 13.

<sup>j</sup> Bath papers, 5. 40.

<sup>k</sup> Annals, 10. 231.



frequently happened, that a field having been mostly sown with grain prepared according to custom, the feedsmen finding that a sufficient quantity had not been steeped, has taken some dry out of the barn to finish: and the latter has proved very smutty, when the former was clean and sound.

It would take up too much room to enter into this controversy. We must refer therefore to Young's Annals, vol. 4. p. 202. 6. 173, 243. 8. 115, 181, 407. 10. 434. 16. 311. Marshall's Midland Counties, 2. p. 13. Bath letters and papers, vol. 5. p. 244, 270. vol. 6. 116, 186. &c.

Smutty Wheat may be made a tolerably good sample, by washing and stirring it well about in two or more waters, and then kiln-drying it by a very moderate fire<sup>1</sup>.

To avoid the danger of Smut every prudent farmer will sow sound uninfected seed, brine and lime it well, and get it into the ground as soon as the season and condition of his land will permit.

Of late years a minute insect has been remarked to do considerable damage occasionally to the Wheat crop. It is called *Tipula tritici*, and is described, and the history of it given at large, in the third and fourth volumes of the Transactions of the Linnean Society of London. It varies from a yellowish white to a deep yellow. In a single flower of the ear there are sometimes thirty, and seldom fewer than eight or nine larvæ or caterpillars of this minute fly. The greatest part of these are providentially destroyed in their pupa or chrysalis state, by a friendly *Ichneumon*, which lays one egg in each pupa. The larva appears to feed upon the pollen or dust of the anthers, for in those florets in which it resides the germ never swells. It does not appear that the grain is injured in any other way by this insect, but it invariably produces the inanimation of it in the floret which it inhabits. It may always be detected by the discoloured appearance of the base of the corolla, which is its usual station.

To ascertain the quantity of mischief produced by this insect within particular limits, Mr. Kirby went into a field of fifteen acres, partly of red and partly of white Wheat; and took five stations, one on each side, and one in the centre. The result was, that in thirty ears of white Wheat, seventy-three grains were destroyed, or not quite two grains and a half to an ear; and in twenty ears of red Wheat, twenty-nine grains were destroyed, which is nearly a grain and half to an ear, on the whole, about two grains to an ear; which might be near a twentieth part of the produce, and would make a difference of at least twenty bushels in the crop. Least mischief seemed to be done on the south side of the north hedge, but no part escaped wholly. In a field which was sown later, there was scarcely any of these grubs; but it was much infested by a species of *Aphis* or plant-louse, called in some places the Dolphin.

The red-gum, which is undoubtedly a kind of Fungus, is totally unconnected with these insects. In the field where Mr. Kirby found an infinity of the larvæ of the *Tipula tritici*, and *Thrips physapus*, he scarcely saw any florets which produced this little plant called the red-gum; but some ears of a kind of bearded Wheat, which he cultivated in his garden, were quite discoloured by it, without any larva attending upon it. Of all the insects that are found in Wheat, this last, in all its states, is by far the most numerous, and seems to derive its nourishment from the grain, though some doubt it<sup>m</sup>.

The *Tipula tritici*, says Mr. Ruggles, so accurately described by Mr. Kirby, has last year (1799), in all the country about Finchingfield in Essex, and also about (Clare) his other place of residence in Suffolk, extended itself in quantity and mischief to a surprising degree, insomuch that he is convinced, from repeated facts exposed to his observation in his own farms in the two counties, and also in those of his neighbours, that where no mildew or red-gum affected the Wheat, and no other apparent cause than this insect, the crop of last harvest has been deficient one third, if not more. He received the same or similar

accounts from different farmers in both counties; and found that the damage done to most of the ears of Wheat was a total destruction of all the grains, especially where the yellowness of the chaff appeared early. He remarks, that these insects particularly infest the American Wheats, which on account of their plumpness and weight have been generally sown in his neighbourhood; and suggests a hint whether, as it has not been long observed, it may not have been recently introduced.

In the beginning of december 1800, on the examination of some Wheat out of a field very much tainted with this insect, Mr. Ruggles found in the chaff of the ear, which appeared to him, by feeling it, least filled with the grain, several little nests of these minute yellow grubs still alive; which proves that they are not all killed that remain after the *ichneumon* is produced. And a tenant of his, who had dressed a considerable quantity for seed, informed him, that the bosom of the heap, after it was thrown, was totally discoloured of a high yellow; from the quantity of grubs which had been beaten out of the chaff by the flail.

Mr. Ruggles also observed, that many kernels of Wheat in these diseased ears, had the appearance of one or two very minute, white specks about the germ, and those which so appeared were particularly tender about that part. If these specks be the eggs of the future larva, the continuation of the insect from its egg state may be easily conceived; for if the egg be attached to the eye or germ of the mature grain, and be sown with it, the alarming increase of this disease may easily be accounted for<sup>n</sup>. Till this last observation be verified, I should rather conceive, that the fly lays her egg in the ear of Wheat, probably at the base of the chaff, whilst it is yet in a tender state. But this subject merits the farther attention of Mr. Ruggles and the ingenious entomologists who have started it.]

5. Polish Wheat growing tall, and having long heavy ears, is very subject to be lodged; and therefore is little regarded by farmers; but as it produces much flour, it might on that account be worthy of cultivation.

[6. Spelt is common in many parts of the continent. In Spain they sow it in september or october, and it ripens earlier than any other corn; for which reason it is of great use to the poor, although it is a light grain, yields but little flour, and the bread made from it is indifferent<sup>o</sup>.]

13. This has a creeping root, which spreads far in the ground, and is a very troublesome weed in gardens and arable land; for every small piece of the root will grow and multiply exceedingly, so it is very difficult to extirpate where it once gets possession: in gardens, the common method of destroying it is, to fork out the roots as often as the blades appear above ground; where this is two or three times carefully repeated, it may be totally rooted out; but when the surface of the ground is very full of the roots of this grass, the shortest way of destroying it, is to trench the ground two spits and a shovelling deep, turning all the couch into the bottom, where it will rot, and never shoot up; but this can only be practised, where there is a sufficient depth of soil; for in shallow ground the roots cannot be buried so deep, as to lie below the depth to which they naturally shoot.

Where the roots of this grass get possession in arable fields, it is very difficult to root out again; the usual method is by laying the land fallow in summer, and frequently harrowing it well over to draw out the roots: where this is carefully practised, the ground may be so well cleaned in one summer, as that the roots cannot much injure the crop which may be sown upon it; but such land should be cropped with beans, peas, or such things as require the horse-hoeing culture; for where the land can be frequently stirred and harrowed afterward, it will be of great service in cleaning it from the roots of this grass and other bad weeds.

[Several of the perennial grasses are comprehended

<sup>1</sup> Bath papers, 5. 254.

<sup>m</sup> Linn. trans. 4. 230.

<sup>n</sup> Young's annals, 36. 133. 215.

<sup>o</sup> Idem, 32. 647.



by husbandmen under the name of Quich. The black Quich, so troublesome in dry arable land, is the *Agrostis vulgaris*. The creeping red-stalked Bent-grass, *Agrostis stolonifera*, is the worst Quich-grass on strong wet lands. The dogs-grass, *Triticum repens*, is the Quich of gardens, and is common both on sand and clay, running prodigiously in the former, and bedding itself almost inextricably in the clods of the latter. Several others of the perennial grasses interfere in a less degree with the growth of corn, and as they have all the habit of establishing themselves in the ground when it lays in turf, summer fallowing becomes necessary for their extirpation previous to sowing Wheat; for that can be only partially effected by hoeing, or in any other way than by repeated deep summer ploughings; and as mixed soils, which are too moist for turneps, have a particular propensity to the production of these grasses, summer fallowing becomes absolutely necessary, and every attempt to crop without it, for any length of time, on such land, has terminated to the injury of the land, and the loss of the occupier. We may add, that the radical extirpation of Quich and other root-weeds, is the only case in which a naked fallow is ever necessary; and that when this is once well done, it need not be repeated for many years, provided a proper attention is given to the management of the land.

On sands, Quich may be destroyed by strong harrowing, collecting into heaps, and burning.

**TRITICUM.** See *Bromus* and *Elymus*.

——— *vaccinum*. See *Melampyrum*.

**TRITONIA.** See *Gladiolus* and *Ixia*.]

**TRIUMFETTA.** (So named by Plumier, in memory of Giov. Battista Triumfetti, Prefect of the botanic garden at Rome. Author of *Hortus Romanus*, 1681. Observations, 1685. Prolusio, 1700. Vindiciæ, 1703, &c. His brother Lælius was a skilful botanist.)

*Lin. gen. n. 600. Reich. n. 655. Schreb. n. 819, et p. 832. Plum. 8. Juss. 290. Gært. t. III.*

*Bartramia. Gært. t. III.*

Class 11. 1. Dodecandria Monogynia.

Nat. order of *Columniferae*. *Tiliaceæ* Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* five-leaved: *leaflets* lanceolate, arilled below the tip, deciduous.

**COR.** *Petals* 5, linear, erect, obtuse, concave, bent back, awned below the tip.

**STAM.** *Filaments* 16, equal, ascending, length of the corolla, awl-shaped, erect. *Antthers* simple.

**PIST.** *Germ* roundish. *Style* length of the stamens. *Stigma* bifid, acute.

**PER.** *Capsule* globular, fenced on every side with hooked prickles, four-celled.

**SEEDS** 2, convex on one side, angular on the other.

**OBS.** *Triumfetta* has no calyx, and a four-celled valveless capsule.

*Bartramia* has a five-leaved calyx: five glandular nectaries at the base of the petals: a quadripartite, eight-celled capsule; and solitary adnate seeds.

#### ESSENTIAL CHARACTER.

*Cal.* five-leaved. *Cor.* five-petalled. *Caps.* hispid, opening in four parts.

#### SPECIES.

1. *Triumfetta Lappula. Prickly-seeded Triumfetta.*

*Lin. spec. 637. syst. 444. Reich. 2. 420. Willd. 2. 853. hort. cliff. 210. hort. ups. 148. Jacqu. amer. 146. pict. 72. Plum. gen. 50. ic. 255.*

*Pluk. phyt. t. 245. f. 7. (Lappula) Sloan. jam. 1. 211. Raii hist. suppl. 247. (Agrimonia.)*

*T. Plumieri Gært. fruct. 2. 137.*

*Leaves emarginate at the base, flowers uncalyced.*

2. *Triumfetta glandulosa. Glandular Triumfetta.*

*Lin. spec. ed. Willd. 2. 854. Vahl. symb. 3. 62. Forsk. cat. arab. n. 297.*

*Flowers complete, leaves ovate-lanceolate tomentose-hoary beneath.*

3. *Triumfetta Bartramia. Currant-leaved Triumfetta.*

*Lin. spec. 638. syst. 444. Reich. 2. 420. Willd. 2. 854. Pluk. phyt. t. 41. f. 5. (Lappula) Pet. gaz. t. 42. f. 10. (Agrimonia.)*

*Bartramia. Gært. fruct. 2. 137.*

*Leaves emarginate at the base, flowers uncalyced.*

*Bartramia. Lin. zeyl. n. 174. spec. ed. 1. 389.*

*B. Lappago. Gært. fruct. 2. 137.*

*Lappago amboinica. Rumph. amb. 6. 59. t. 25. f. 2. Leaves entire at the base undivided.*

4. *Triumfetta velutina. Velvet Triumfetta.*

*Lin. spec. ed. Willd. 2. 854. Vahl. symb. 3. 62.*

*Flowers complete, leaves ovate somewhat angular acuminate tomentose-hoary beneath.*

5. *Triumfetta procumbens. Procumbent Triumfetta.*

*Lin. spec. ed. Willd. 2. 855. Forst. prodr. n. 204.*

*Leaves roundish-cordate subtrilobate tomentose, stem procumbent.*

6. *Triumfetta hirta. Hairy Triumfetta.*

*Lin. spec. ed. Willd. 2. 855. Vahl. symb. 3. 63.*

*Flowers complete, leaves three lobed, the branches of the terminating panicle dichotomous rough haired.*

7. *Triumfetta semitriloba. Mallow-leaved Triumfetta.*

*Linn. syst. 444. Reich. 2. 420. Willd. 2. 855.*

*mant. 73. Jacqu. amer. 147. pict. t. 133. hort.*

*3. 41. t. 76. Brown. jam. 233. n. 2.*

*Flowers complete, leaves half-three-lobed.*

8. *Triumfetta grandiflora. Great-flowered Triumfetta.*

*Lin. spec. ed. Willd. 2. 855. Vahl. ecl. 2. 34.*

*Flowers complete, leaves subcordate ovate entire serrate somewhat hairy, floral leaves lanceolate, branches rough-haired.*

9. *Triumfetta macrophylla. Long-leaved Triumfetta.*

*Lin. spec. ed. Willd. 2. 855. Vahl. ecl. 2. 34.*

*Flowers complete, leaves ovate-cordate entire unequally serrate acuminate tomentose glandular at the base.*

10. *Triumfetta rhombæfolia. Rhomb-leaved Triumfetta.*

*Linn. spec. ed. Willd. 2. 856. Swartz prodr. 76. descr. 2. 863.*

*T. rhomboidea. Jacqu. amer. 147. t. 90. pict. t. 134. Leaves rhomboid, the upper ones lanceolate-ovate, flowers complete.*

11. *Triumfetta annua. Annual Triumfetta.*

*Lin. syst. 444. Reich. 2. 421. Willd. 2. 856. mant. 73. Mill. fig. 199. t. 298.*

*Leaves ovate undivided, sometimes but rarely lobed.]*

#### DESCRIPTIONS, &c.

1. This rises with an upright stem to the height of six or seven feet; towards the bottom it becomes woody, and at top divides into four or five branches. Leaves placed alternately the whole length of the stem, about two inches and a half long, and almost two inches broad near the base; divided almost into three lobes toward the top; and the middle division ending in an acute point; they are veined on their under side, are covered with a soft brown down, and have several nerves running from the midrib to the sides; their upper side is of a yellowish green, and a little hairy; their borders are acutely but unequally serrate, and stand upon foot-stalks an inch in length. The branches are terminated by long spikes of flowers, which come out in clusters from the side of the principal foot-stalk, at the distances of about an inch. The flowers are small, the petals narrow and of a yellow colour; they are succeeded by burry capsules, somewhat like those of Agrimony, but round, and with longer prickles placed on every side.

[Jacquin only remarks, that it is an upright branching shrub, eight feet high; and that the flowers have no vestige whatsoever of a calyx.

Gartner describes the pericarp as a globular coriaceous capsule, echinated with little hooked prickles hispid backwards, quite entire, three-celled but more frequently four-celled, valveless and not separable into little grains. Seeds solitary, ovate, convex on one side, angular on the other, smooth, hard, ash-coloured, fastened to the inner angle of the cells near the top.

Native of Jamaica, Martinico; and other islands of the West Indies, the Bermudas, and Brazil.—Cultivated here in 1739; by Mr. Miller. It flowers in July and August, and in warm seasons the seeds sometimes ripen in England.

[2. Branches woody, round, villose. Leaves petioled, alternate, frequent, three inches long, gradually smaller upwards, softly villose on both sides



with stellate hairs, but greener above, marked with lines along the nerves, ferrate with the lower serratures of the upper leaves glandular, entire at the base. Petioles short, villose with stellate hairs. Stipules awl-shaped. Flowers from the axils of the upper leaves. Germ covered with minute bristles. It differs from the *velutina* (n. 4.) in having the leaves only half the width, not angular towards the outside, acute not acuminate, with the hairs beneath more distinct, and the stipules setaceous-subulate<sup>1</sup>. Native of Arabia Felix and India.

3. Root annual. Leaves resembling those of currants. Flowers small, purple or rose-coloured. —Capsule spherical, white-tomentose, echinated with bristle-shaped, hooked, smooth little prickles; four-grained, quadripartite: grains coriaceous, convex on one side, angular on the other, two-celled, valveless, growing to the seeds. Seeds solitary, two in each grain, and eight in the whole, from an ovate drawn to a point upwards, convex on one side, angular on the other, rufescent. Sometimes the capsules are only three-grained and tripartite; others may easily be divided into six or eight parts, so that each seed is covered with its proper cell, as in some of the *Malvaceæ*. This differs therefore from *Triumfetta*, not only in the calyx, and five globular nectaries at the base of the petals, but in its many-grained capsule and confined seeds<sup>2</sup>. Linneus also, in his first works, considered this plant as a middle species between this genus and *Urena*, and did not allow it to be a *Triumfetta*, on account of its having a corolla. But he changed his mind, when he published the thirteenth edition of his *Systema Vegetabilium*. Native of the East Indies.

4. Stem softly villose, round. Leaves petioled, alternate, from two to three inches long, five-nerved, unequally ferrate, softly villose above, hoary with minute substellate hairs beneath, very soft, entire at the base. Stipules lanceolate, attenuated, ciliate, ferruginous. Flowers in the upper axils. Native of the Isle of France<sup>3</sup>.

5. Native of the Society Isles<sup>4</sup>.

6. Stem frutescent: Leaves alternate, a hand long, equal in length and breadth, smooth above, seven-nerved, appearing rough beneath with very small stellate hairs, when examined with a magnifier; the nerves, especially at the base, have fewer but longer hairs; they are veined, unequally ferrate, with the three or five serratures next the petiole glandular, subcordate at the base, divided above into three ovate distant acuminate lobes. Petioles rough-haired, but becoming smoothish by age. Panicle terminating, diffused: branches hirsute, less hairy at the tip, twice or thrice dichotomous, alternate, the two last opposite. Flowers pedicelled, aggregate at intervals, small, solitary at the divisions. Calyx hoary. Native of the island of Santa Martha in America; where it was found by von Rohr<sup>5</sup>.

7. This is an upright branching shrub, six feet high. It is so like the first species in its habit, that at first sight they might easily be mistaken; but the flowers of this have always a calyx<sup>6</sup>.

Browne says, it frequently rises to the height of six or seven feet, where the soil is rich and moist; the flowers, which generally grow in two distinct parcels near the axils of the leaves, are sustained by a few narrow stipules, that perform the office of an involucre; half the capsule is echinated, the other smooth.

The leaves and tender buds, infused in water, yield a fine clear mucilage, from whence we may conclude this plant to be a good emollient. The bark is tough and strong, and serves for ropes, and other conveniences of that kind, in the inland parts of the country.

Native of the West Indies. Introduced in 1773 by John Earl of Bute. It flowers in July<sup>7</sup>.

8. This differs from the other species, in having the corollas twice or thrice as large.—Stem woody, round, with the branches smooth below, rough-haired above, bifid at the end. Leaves alternate, two or

three inches long, a little attenuated, three-nerved, somewhat rugged, having a few hairs either in bundles or single scattered over the upper surface, less hairy underneath, ferrate, the alternate serratures larger, the four lowest terminated by an orbicular hollow gland. Petiole two inches long, thicker near the leaf, ash-coloured with stellate hairs. Stipules lanceolate, acuminate. Lower peduncles axillary or opposite to a leaf, many-flowered: partial umbelled; terminating with partial peduncles racemed: pedicles umbelled, two or three-flowered, tomentose as the common peduncle is, and rough-haired. Bractes lanceolate. Calyx smooth, with lanceolate acuminate leaflets. Petals oblong, clawed, a little shorter than the calyx. Style longer than the calyx. Native of Montserrat, where it was found by Ryan.

9. Branches round, tomentose as the whole plant is. Leaves alternate, five or six inches long, as wide in the middle as they are in length, spreading very much, without any sinus at the insertion of the petal, serratures frequent, alternately larger and blunter, the lower ones glandular; they are soft on both sides, but more villose underneath, veined; the lower ones five-nerved, the upper ones three-nerved. At the insertion of the petiole on each side are two brown approximating glands. Petioles two inches long, round. Stipules lanceolate, attenuated, smooth within. Peduncles from the upper axils, often several, some simple, others compound: pedicels umbelled, with bristle-shaped bractes at the base. Calyx five-leaved, with linear acuminate leaflets. Petals five, linear, length of the calyx. It resembles *T. Lappula*, but the flowers being calyced it should seem to be different. It may be distinguished from *T. rhombæfolia* by the form and tomentoseness of the leaves. Native of South America, where it was found by von Rohr<sup>8</sup>.

10. This is an upright branching shrub, three feet in height, the whole having an unpleasant smell, especially the seeds. Branches subdichotomous. Leaves alternate, subsessile, ferrate, acute, entire, wrinkled, villose, the upper ones less rhomboidal. Flowers very numerous, with yellow petals, and red calyxes, on many-flowered, very short, axillary and aggregate peduncles; hence they are in whorls. A cell or two is often wanting in the pericarps, but they are mostly six-celled. It differs from *T. Bartramia* in the leaves not being angular. The French call it *Cousin*, on account of the capsules adhering to the clothes. Native of the West Indies<sup>9</sup>.

11. This is an annual plant, rising about two feet and a half high, and sending out several branches on every side. Leaves ending in long acute points, some are heart-shaped, others have an angle on each side towards the point; they are from three to four inches long, and almost as much in breadth where broadest; they stand upon very long footstalks, and are notched on their edges. The flowers come out in long loose spikes at the top of the plant: they are small and yellow: some have four petals and eight stamens, others five petals with ten stamens. Fruit roundish, burry, four-celled, with one seed in each cell. Native of India. Cultivated by Mr. Miller before 1760, though it is not inserted in the editions of his Dictionary of 1768 and 1771. It flowers in September and the seeds ripen in November<sup>10</sup>.]

#### PROPAGATION AND CULTURE.

1. Sow the seeds on a hot-bed early in the spring; when the plants come up, transplant each into a separate pot filled with light, fresh, kitchen garden-earth, and plunge them into a moderate hot-bed of tanners' bark, shading them from the sun until they have taken new root, and then treating them in the same manner as other tender exotic plants. In autumn remove them into the bark stove, and refresh them with water frequently, except in very cold weather. If the plants live through the winter, they will flower the following summer, and ripen their seeds in autumn; but may be continued two or three years if carefully managed.

<sup>1</sup> Vahl.

<sup>2</sup> Gærtner.

<sup>3</sup> Vahl.

<sup>4</sup> Forster.

<sup>5</sup> Vahl.

<sup>6</sup> Jacquin.

<sup>7</sup> Hort. kew.

<sup>8</sup> Vahl.

<sup>9</sup> Jacquin.

<sup>10</sup> Miller's figures.



[TRIUMFETTA. See *Corchorus*.

TRIXAGO. See *Rbinanthus*.

TRIXIS. (From τριξος for τρισος triplex.)

Lin. gen. Schreb. n. 1336. Swartz. prodr. 115.

Baillieria Aubl. t. 317. Juss. 188.

Class. 19. 4. Syngenesia Polygamia Neceffaria;

Nat. order of *Compositæ Oppositifoliæ*.

*Corymbifera* Juss.

#### GENERIC CHARACTER.

CAL. Common imbricate, ovate: scales eight to ten, oblong, acuminate, convex, almost equal: outer somewhat keeled, membranaceous at the tip.

COR. Compound. Corollets hermaphrodite numerous, in the disk: Females fewer, shorter, in the ray.

Proper in the Hermaphrodites funnel-form; with a very short tube, and an erect five-cleft border: In the Females funnel-form; with a compressed tube, and a trifid border: the hinder segment larger, the anterior ones smaller.

STAM. in the Hermaphrodites Filaments five, length of the tube. Anther cylindrical, above the border.

PIST. in the Hermaphrodites: Germ linear, pubescent. Style filiform, length of the stamens, bifid at the tip. Stigmas reflexed.

PER. none. Calyx unchanged, converging.

SEEDS in the Hermaphrodites often abortive. In the Females ovate, somewhat compressed, margined, convex behind, blunt at the tip, subtrigonal, hirsute. Down none.

REC. chaffy: Chaffs oblong, acute, concave, membranaceous.

#### ESSENTIAL CHARACTER.

Corollets of the ray trifid. Seeds hairy at the tip, without any Down. Recept. chaffy.

#### SPECIES.

1. *Trixis terebinthinacea*.

Swartz prodr. 115.

Leaves ovate serrulate hispid hirsute beneath, flowers corymbed.

2. *Trixis aspera*.

Swartz prodr. 115.

Baillieria aspera. Aubl. guian. 804. t. 317.

Leaves ovate attenuated at the base and tip, tooth-serrate rough, flowers paniced.

3. *Trixis erosa*.

Swartz prodr. 115.

Leaves broad-ovate gash-serrate wrinkled rugged, petioles longer.

These are natives of the West Indies, the first of Jamaica; and the last of Dominica and St. Christopher's<sup>d</sup>.

TRIXIS. See *Perdicium* and *Proserpinaca*.

TROCHERA. See *Ehrharta*.]

TROLLIUS. (Trollblume seems to signify in German a magical flower.)

Lin. gen. n. 700. Reich. n. 758. Schreb. n. 954.

Gærtn. t. 118. Juss. 233.

Class 13. 7. Polyandria Polygynia.

Nat. order of *Multifloræ Ranunculaceæ* Juss.

#### GENERIC CHARACTER.

CAL. none.

COR. Petals about 14, subovate, deciduous, in the three outer rows three, in the inmost five.

Nectaries nine, linear, flat, curved in, perforated at the base inwards.

STAM. Filaments numerous, bristle-shaped, shorter than the corolla. Anthers erect.

PIST. Germs numerous, sessile, columnar. Styles none. Stigmas mucronate, shorter than the stamens.

PER. Capsules numerous, collected into a head, ovate, with a point curved back.

SEEDS solitary.

#### ESSENTIAL CHARACTER.

Cal. none. Pet. about 14. Caps. numerous, ovate, many-seeded.

#### SPECIES.

1. *Trollius europæus*. European Globe-flower.

Lin. spec. 782. syst. 518. Reich. 2. 668. Willd.

2. 1333. fl. suec. n. 510. Gærtn. fruct. 2. 177.

Huds. angl. 244. Wither. arr. ed. 3. 510. Smith

<sup>d</sup> Swartz.

brit. 597. engl. bot. t. 28. Lightf. scot. 295.

Fl. dan. t. 133. Hall belv. n. 1189. Hoffm.

germ. 198. Roth. germ. 1. 236. 2. 608. Leers

herborn. n. 420. Scrp. carn. n. 694. Krock. files.

n. 888. Villars dauph. 3. 719. Allion. pedem.

n. 1919. Gmel. fib. 4. 190. Pallas it. 3. 253.

Kniph. cent. 4. n. 90. Knorr. del. 2. t. T. 4.

T. altissimus. Crantz austr. 134.

Helleborus. Lin. hort. cliff. 227. fl. lapp. n. 226.

H. niger Ranunculi folio flore globofo. Tournef. inst. 272.

Ranunculus montanus, Aconiti folio; flore globofo.

Baub. pin. 182.

R. glomerato flore. Clus. hist. 1. 237.

R. flore globofo. Dod. pempt. 430.

R. globosus. Ger. 809. 13. emac. 955. Park. parad.

218. 8. t. 219. f. 11. Raii hist. 700. syn. 272.

Petiv. brit. t. 43. f. 2.

R. flore globofo; quibusdam Trollius. Baub. hist. 3.

419.

R. sextus. Camer epit. 385.

Pseudo-helleborus ranunculoides luteus flore globofo.

Mor. hist. 3. 461. f. 12. t. 2. f. 2.

Corollas converging, nectaries length of the stamens.

2. Trollius asiaticus. Asiatic Globe-flower.

Lin. spec. 782. syst. 518. Reich. 2. 669. Willd. 2.

1334. Pallas it. 2. 528. Curt. magaz. t. 235.

Helleborus aconiti folio; flore globofo croceo. Amman.

ruth. 101.

Corollas spreading, nectaries longer than the stamens.

#### DESCRIPTIONS, &c.

1. Root perennial, fibrous, black; from which spring up many leaves resembling those of Wolf's-bane; cut into five segments almost to the bottom. The stalk rises almost two feet high; it is smooth, hollow, and branches toward the top. Each branch is terminated by one large yellow flower, shaped like that of Crowfoot, but without any calyx. The corolla is composed of several (about fourteen) concave petals, the points of which are turned inwards, so as almost to close up the stamens and pistils, and the whole is of a globular form, whence its name of Globe-Ranunculus or Globe-Crowfoot.

[Stem upright, round. Leaves many-parted, pinatifid, gashed, smooth; the lower ones on long petioles<sup>e</sup>: round, entire at the base, jagged upwards; these again deeply divided into three, the middle division trifid, all sharply serrate or jagged on the outer edge, nearly entire on the inner<sup>f</sup>: stem-leaves sub-fessile, alternate. Nectaries linear-spatulate, scarcely equal to the stamens, shorter by half than the petals. Stamens linear: anthers curved in<sup>g</sup>. Capsules numerous, above thirty, collected into a head, subcylindrical, curved inwards, ribbed transversely, mucronate at the end<sup>h</sup>, (or terminated by a crooked horn; pointing outwards, and giving the head a star-like appearance<sup>i</sup>:) they are one-celled, and open on the inner side. Seeds numerous, about twelve in each capsule, small, angular, black and shining; fastened to the opening future. <sup>k</sup> Leers says there are only four seeds in a capsule. Native of the North of Europe, Carniola, Dauphiné, Piedmont, Siberia. In the northern counties of England, in Wales, and Scotland, on the sides of mountains, and mountainous meadows, in moist shady places. Mr. Miller found it in great plenty in the park of Burrow-hall in Lancashire. Mr. Curtis in Skirith wood, and moist woods about Settle in Yorkshire. Mr. Woodward, near Troutbeck in Westmoreland. Mr. Atkinson, at the road side near Dale Park, in Furness Fells. Mr. Robson, in the marshes of the county of Durham. In Scotland, at Drumlanrig in Nithsdale; at Corrys-Lyn, the famous fall of the Clyde; at Cartland rocks near Lanerk; in Carubber-Den near Linlithgow; and in Achendenny wood. It is too common in the north to specify more places of growth. In the south it is seen only in gardens. It flowers at the end of may and beginning of june. In the northern counties it is called Locker-goulans; which I suppose is corrupted from the Lucken-Gowan (Cabbage Daisy) of the Scots.

<sup>e</sup> Smith brit.

<sup>f</sup> Woodw. mss.

<sup>g</sup> Smith brit.

<sup>h</sup> Gærtner.

<sup>i</sup> Woodw. mss.

<sup>k</sup> Gærtner.



This splendid flower, says Linneus, adorns the pavements of the rustics, on festival days. <sup>1</sup> Allan Ramsay makes his young laird wish to gather these flowers to weave a chaplet for his Katy's brow<sup>m</sup>. In Westmoreland this plant is collected with great festivity by the youth of both sexes about the beginning of June; at which time it is usual to see them return from the woods in an evening laden with it, to adorn their doors and cottages with wreaths and garlands.

In habit and sensible qualities the Trollius agrees with Hellebore and Ranunculus, but is less acrid than most of them<sup>n</sup>.

Clusius says, that in 1581 he saw it at London, having been then newly brought from the mountains of the north.]

2. The Siberian Globe-flower differs from the first in having larger leaves, of a lighter green colour, with fewer and larger segments, resembling those of yellow Monk's-hood. The petals spread open, not converging at their points, like those of the first sort. The corolla, stamens and nectaries, are of an elegant saffron colour.

[It differs little, according to Linneus, from the preceding, by its fulvous nectaries longer than the stamens, its deep yellow gaping corollas, and its germ or pistils bent outwards, and as it were procumbent<sup>o</sup>.

Native of Siberia. Cultivated by Mr. Miller in 1759. It flowers in May and June<sup>p</sup>.]

#### PROPAGATION AND CULTURE.

1. Part the roots at the end of September, when the leaves are beginning to decay, planting them at a foot distance, in a shady situation and a moist soil. The plants should not be parted oftener than once in three years, nor into parts too small.

2. This may be increased and treated like the first, but requires a moister soil; it should have a shady situation, but not under the drip of trees: it thrives best on a north border, where the soil is loamy, but not too stiff. In a dry soil, or much exposed to the sun, the plants frequently die in summer. It may be kept in a flourishing state by covering the surface of the ground with moss.

[Mr. Curtis adds, that it should be planted in a composition of loam and bog earth, in a north border, taking care that it does not suffer from want of watering in dry summers. It may be raised from seeds, which frequently ripen on strong healthy plants.]

As the flowers of both these plants make a pretty appearance, they deserve a place in every good garden, especially as they will thrive in moist shady places, where few better plants will live. By thus suiting plants to different soils and situations, every part of a garden may be well furnished, and a greater variety obtained.

[TROMGUM. See *Solanum insanum*.]

TROPÆOLUM. (Dimin. from *Tropæum*, a trophy.

Lin. gen. n. 466. Reich. n. 502. Schreb. n. 634.

Gertn. t. 79. Hellen. monogr. Juss. 269. Cardamindum. Tournef. t. 244.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Tribilatae*. *Gerania*. Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, from upright spreading, acute, coloured, deciduous; the two lower segments narrower; horned at the back with an awl-shaped, straight, longer nectary.

COR. Petals five, roundish, inserted into the divisions of the calyx: two upper sessile; the others lower, with oblong, ciliate claws.

STAM. Filaments eight, awl-shaped, short, declining, unequal. Anthers erect, oblong, rising.

PIST. Germ roundish, three-lobed, striated. Style simple, erect, length of the stamens. Stigma trifid, acute.

PER. Berries (or Nuts) somewhat solid, three, on one side convex grooved and striated, on the other angular.

SEEDS three, gibbous on one side, angular on the other, roundish, grooved and striated.

<sup>1</sup> Fl. suec.

<sup>o</sup> Syst. veg.

<sup>m</sup> Lightfoot.

<sup>p</sup> Hort. kew.

<sup>n</sup> Engl. bot.

#### ESSENTIAL CHARACTER.

Cal. one-leaved, with a spur. Pet. four, unequal. Nuts three, coriaceous.

#### SPECIES.

1. *Tropæolum minus*. Small Indian Cress.

Lin. spec. 490. syst. 357. Reich. 2. 144. Willd. 2.

298. hort. cliff. 145. upf. 93. Curt. magaz. t. 98.

Cardamindum minus & vulgare. Tournef. inst. 430.

Feuill. peruv. 3. 14. t. 8.

Nasturtium indicum. Dod. pempt. 397. Lob. ic.

516. f. 2, 1. Ger. 196. emac. 252. Park. parad.

280. t. 279. f. 9. Raii. hist. 487.—majus. Baub.

pin. 306.

N. ind. folio peltato scandens. Baub. hist. 2. 175.

Leaves peltate subrepand mucronate, petals acute.

2. *Tropæolum majus*. Great Indian Cress.

Lin. spec. 490. syst. 357. Reich. 2. 144. Willd.

2. 298. hort. cliff. 143. upf. 93. mat. med. 101.

Gertn. fruct. 1. 380. Knorr. del. 1. t. R. 18.

Curt. magaz. t. 23. Plenc. ic. 294. Regnaule

bot.

Cardamindum ampliori folio et majori flore.

Tournef. inst. 430. Feuill. peruv. 3. 14. t. 8.

C. majus. Rivin. pent. t. 97.

Acriviola maxima odorata. Boerb. lugdb. 1. 244.

Viola indica scandens, nasturtii sapore, maxima odo-

rata. Herm. lugdb. 628. t. 629. Raii hist. 1869.

Leaves peltate repand, petals obtuse.

[3. *Tropæolum hybridum*. Bastard Indian Cress.

Lin. syst. 357. Reich. 2. 144. Willd. 2. 298.

mant. 64. Berg. aët. holm. 1765. p. 32. t. 1.

Leaves subpeltate five-lobed, lobes obtuse subrepand, petals wedged toothed at the tip.

4. *Tropæolum peregrinum*. Fringe-flowered Indian Cress.

Lin. syst. 357. Reich. 2. 145. Willd. 2. 299. mant.

371. Jacqu. hort. Schoenb. 1. 51. t. 68.

Cardamindum Quinquifolii folio, vulgo Malla. Feuill.

peruv. 2. 756. t. 42.

Leaves subpeltate five-lobed-palmate somewhat toothed, petals lacinated.

5. *Tropæolum pentaphyllum*. Five-leaved Indian Cress.

Lin. spec. ed. Willd. 2. 299. Lamarck encycl. 1.

605. t. 277. f. 2.

Leaves quinate, leaflets quite entire acute, petals shorter than the calyx quite entire acute.]

#### DESCRIPTIONS, &c.

1. Stem herbaceous, trailing. Leaves almost circular, smooth, grayish. Flowers axillary, on very long peduncles; composed of five acute-pointed petals, the two upper large and rounded, the three under narrow jointed together at bottom and lengthened out into a tail two inches long. There are two varieties of this, one with a deep orange-coloured flower inclined to red, and the other with a pale yellow flower.

[This is distinguished from the next by its smallness, and by the points at the top of the petals, and at the end of the nerves in the leaves. It was cultivated in 1596 by Gerarde, and was a great favourite with Parkinson in 1629; but it was afterwards lost in our gardens, till it was lately re-introduced by Dr. J. E. Smith, who by distributing it to his friends, and the nursery-men near London, has again rendered it tolerably plentiful<sup>q</sup>.] Mr. Miller (in 1768) says only it is less common at present in the English gardens than the second.

Linneus says, it became known at Lima in 1580 by Dodonæus. That author informs us, that he saw this very rare foreign plant at Cologne, in the garden of Christina Bertolf, widow of Joachim Hopper, and that she had the seed from Spain.]

2. The second sort is larger in all its parts. The borders of the leaves are indented almost into lobes; and the petals are rounded at the top. There are two colours of this, as of the former, and also a variety with double flowers, as in that.

[The fruit consists of three berries, (some consider them rather as nuts),—becoming juiceless when ripe, fungous, deeply grooved and wrinkled, gibbous on one side, angular on the other, narrowing upwards,

<sup>q</sup> Curtie.



of a dirty white colour. Seeds solitary, of an oblong spheroidal form, but wrinkled by age, shaped as the berry is externally, rufescent, terminated at top by the umbilical chord<sup>r</sup>.]

The flowers of this species being larger and making a finer appearance than those of the preceding, was probably the reason why that was neglected, and for a time in a manner lost to our gardens. They are both natives of Peru, and commonly esteemed to be annual plants, though they may be continued through the winter, if they are kept in pots, and sheltered in a green house or glass case, in like manner as the variety with double flowers is preserved.

The stalks will climb six or eight feet high, when they are trained up, and thus the flowers make a good appearance; but when they trail upon the ground, they will spread over the neighbouring plants and become unsightly.

The flowers are frequently eaten in salads; they have a warm taste like the garden Cress, and hence the plant has its common name of Nasturtium; they are likewise used for garnishing dishes. The seeds are pickled, and by some are preferred to most pickles for sauce, under the false name of capers.

[It begins to flower in July, and continues till the approach of winter.

Elisabeth Christina, daughter of the celebrated Linneus, we are informed by her father, observed the flowers of the great Indian Cress to emit spontaneously, at certain intervals, sparks like electric ones, visible only in the evening, (ante crepusculum.)

It is said by Linneus to have been first brought into Europe by the care of Count Bewerning, in 1684.— If so, it quickly migrated into England, for according to Collinson's manuscripts, it was introduced in 1686 by Dr. Lumley Lloyd<sup>s</sup>.

3. This agrees with the other *Tropæolums* in stature, size, &c. The leaves are different, not being peltate, but widely cuneate, nodding, mostly five-lobed, with the lobes sharpish; they are naked, nerved, veined, three times shorter than the petiole, with the whole margin ascending, especially the lateral one, which is so united to the opposite base, as to form there an almost cowed leaf, and the most slightly peltate of any. Nectary blunt. Corolla scarcely ever determinate. This plant took its rise from the preceding at Stockholm, in the Ehrenreich garden, and can seldom be increased by seeds, but by slips or cuttings.

4. Root annual. Leaves slightly peltate, deeply five-cleft: the middle segment three-lobed, the next with a single outer lobe. Petals scarcely longer than the calyx, ciliate-multifid. Tube of the calyx thickish, much longer than the corolla<sup>t</sup>.

According to Willdenow, the petals are longer than the calyx, lacinated, ciliate and pale yellow.

Native of Peru. Introduced in 1775, by Benjamin Bewick, Esq. It flowers in September and October<sup>u</sup>.

5. Leaflets oval, subpetioled. All the petals sessile and short. Native of Monte Video<sup>x</sup>.]

#### PROPAGATION AND CULTURE.

1, 2. Sow the seeds in April, in the places where they are to remain, which should be where their stalks may have support. The varieties with double flowers are continued by cuttings, and are kept under shelter all winter.

[The smaller sort should be raised on a hot-bed, like other tender annuals, if we wish to have it flower early in the summer, continue long in blossom, and produce perfect seeds. But it will grow readily in the open air, in warm sheltered situations<sup>v</sup>. The greater sort may also be brought forward in a hot-bed, if the flowers or fruit are wanted for use. But plants will come up spontaneously from seeds dropped in the autumn, which is rather extraordinary in a Peruvian plant.

TROPHIS. (From τροφή, nutritio: on account of its nourishing quality as fodder for cattle.)

<sup>r</sup> Gærtner.  
<sup>u</sup> Hort. kew.

<sup>s</sup> Hort. kew.  
<sup>x</sup> Lamarek.

<sup>t</sup> Linn. mant.  
<sup>v</sup> Curtis.

Lin. gen. n. 1103. Reich. n. 1207. Schreb. n. 1502. Juss. 442. Browne. Bucephalon. Lin. gen. ed. 6. p. 575.

Class. 22. 4. Diccia Tetrandria.

Nat. order of Calycifloræ. *Incertæ sedis*. Juss.

#### GENERIC CHARACTER.

\* Male.

CAL. none.

COR. Petals four, obtuse, spreading.

STAM. Filaments four, capillary, longer than the corolla.

\* Female on a distinct plant.

CAL. one-leaved, very small, closely investing the germ.

COR. none.

PIST. Germ ovate. Style filiform, two-parted. Stigmas adnate.

PER. Berry substriated, wrinkled, one-celled.

SEED single, subglobular.

#### ESSENTIAL CHARACTER.

MALE. Cal. none. Cor. four-petalled.

FEM. Cal. none. Cor. none. Style two-parted. Berry one-seeded.

#### SPECIES.

1. *Trophis americana*. The Ramoon Tree.

Lin. spec. 1451. Juss. 882. Reich. 4. 239. amoen. 5. 410. Brown. jam. 357. t. 37. f. 1. Swartz obs. 372.

β. *Bucephalon racemosum*. Lin. spec. 2. 1661.

B. fructu racemoso rubro. Plum. gen. 52. ic. 67.

#### DESCRIPTION, &c.

1. This is a tree twenty feet high at most, with nearly upright, round, even branches. Leaves oblong, acuminate with the point blunt, entire, beneath netted-veined and paler. Male flowers in peduncled roundish aments, an inch long, erect, axillary, subsolitary: flowers approximating, minute, whitish. Female flowers in axillary racemes, two together, longer than the petioles, composed of seven or eight sessile, alternate, horizontal flowers. Germ pubescent: style parted to the base; segments length of the germ, spreading and bent down, with ferruginous hairs on them. The fruit is a striated, one-seeded drupe. A clammy very white milky juice flows from an incision in the trunk of the tree, or from the branches when broken<sup>a</sup>. The leaves and twigs make an agreeable wholesome fodder for all sorts of cattle, and are often used as such in dry seasons, in the inland woody parts of Jamaica, where grass is frequently very scarce. The berries (or drupes, as Swartz calls them) are generally about the size of large grapes, and of an agreeable pleasant flavour<sup>a</sup>.

Native not only of Jamaica, but of other islands in the West Indies, in dry exposed situations<sup>b</sup>.

β. The leaves of this are ovate, acuminate, quite entire, alternate, on very short petioles. Spikes lateral, solitary. Native of America<sup>c</sup>. Perhaps a different species.

Koenig found another species in the East Indies, which he named *Trophis aspera*, or Rough-leaved *Trophis*. It is thus characterized and described by Sir William Jones in the fourth volume of the Asiatic Researches.

#### MALE Flowers.

CAL. Common imbricated: leaflets six or eight, ovate, acute, small, expanding, withering, containing generally from five to seven florets: partial four-parted; divisions ovate, expanded, villous.

COR. none, unless you assume the calyx.

STAM. mostly four (in some three, in one five.) Filaments awl-shaped, fleshy, rather compressed, spreading over the divisions of the calyx, and adhering to them at the point. Anthers double, folded.

The buds elastic, springing open on a touch.

#### FEMALE Flowers.

CAL. four-parted; divisions ovate, concave, pointed, permanent, propped by two small bractes, unless you call them the calyx.

COR. none, unless you give the calyx that name.

PIST. Germ roundish. Style very short, cylindric. Stigma long, two-parted, permanent.

<sup>a</sup> Swartz.

<sup>b</sup> Browne.

<sup>c</sup> Swartz.

<sup>d</sup> Linn. spec.  
PER.



# T U B

PER. Berry one-seeded, navelled, smooth, somewhat flattened.

SEED globular, arilled.

Leaves various, some obovate, some oblong, some oval, pointed, irregularly notched, alternate (some opposite), crowded, crisp, very rough veined and paler beneath, smoother and dark above. Berry deep yellow. The Pandits having only observed the male plant, insist that it bears no fruit. Female flowers axillary, from one to four or five in an axil.

On poor rocky soil it is low and bushy, but in the plains it is a tree of considerable magnitude. From an idea of its astringent or antiseptic virtue, the natives use little pieces of the wood, split at one end into a kind of brush, for cleaning their teeth.

TRUE LOVE. See *Paris*.

TRUMPET FLOWER. See *Bignonia*.

TRUMPET HONEYSUCKLE. See *Lonicera*.

TSIAGERI NUREN. See *Dioscorea*.

TSIAMA PULLU. See *Panicum*.

TSIAM CUMULU. See *Orobancha*.

TSIAM PACA. See *Michelia*.

TSIAM PANGAM. See *Casalpinia*.

TSIANA KUA. See *Costus*.

TSIANGA PUSPAM. See *Gratiola*.

TSIELA. See *Ficus*.

TSIELI. See *Scirpus*.

TSIEM TANI. See *Rumphia*.

TSIERA BELUTTA. See *Celosia*.

TSIEREGAM MULLA. See *Nyctanthes*.

TSIERE MARAM. See *Croton*.

TSIERIA KUREN PALLU. See *Perotis*.

TSIERIA MAYA NARI. See *Gratiola*.

TSIERIA SAMSTRAVADI. See *Eugenia*.

TSIEROU KANDEL. See *Rhizophora*.

TSIEROU MAU MARAVARA. See *Epidendrum*.

TSIEROU POUNA. See *Calophyllum*.

TSIERU. See *Calamus*.

TSIERU KIRGANELI. See *Phyllanthus*.

TSIERU KOTSIJELLETI PULLU. See *Eriocaulon*.

TSIERU PARUA. See *Sida*.

TSIERU TSIUREL. See *Calamus Rotang*.

TSIERU VALLI PANNA. See *Ophioglossum*.

TSIERU VEELA. See *Cleome*.

TSIERU UREN. See *Melochia*.

TSIETTI MANDARU. See *Poinciana*.

TSIETTI PU. See *Chrysanthemum indicum*.

TSJIN KIN. See *Lagerstroemia*.

TSIOVANNA ARELI. See *Nerium*.

TSITTI PULLU. See *Cynosurus*.

TSIUDE MARAM. See *Justicia*.

TSIUNDA TSIERA. See *Hottonia*.

TSIURIA CRANTI. See *Ipomæa*.

TSUBAKKI. See *Camellia*.

TSUTSUSI. See *Azalea*.

TUBA BACCIFERA. See *Menispermum*.

TUBER. See *Lycoperdon*.

Dr. Withering separates the Lycoperdons that are more solid, stemless, do not become powdery, nor open at top, under this name of *Tuber*.

Dr. Withering names the eatable Truffle, (in some places called *Trubs*), *Tuber cibarium*. It is globular, the size of a large plumb, whitish, rugged with elevated dots, in the centre containing a brown powder like that of *Lycoperdon Bovista*, but in small quantity, opening with a rent<sup>d</sup>. It is found under the surface of the earth, at the depth of four or five inches. It has no proper root; the colour is dark approaching to blackness: when young it is white within, but when old black with whitish veins<sup>e</sup>.

This is one of the best of the esculent Fungi. Dogs are taught to hunt it; when they scent it, they bark a little, and begin to scratch up the earth. In Italy, they watch the pigs, who root it up. In England, it is found in high woods and pastures, and on the downs of Wiltshire, Hampshire and Kent<sup>f</sup>.

It is said that Truffles may be cut by their eyes, like Potatoes, and propagated in the same manner. They delight in a clayey soil, and in shady places.

TUBERARIA. See *Cistus*.

<sup>d</sup> Linn. suec.

<sup>e</sup> Bulliard.

<sup>f</sup> Withering.

# T U L

TUBEROSE. See *Polyanthes*.

TULBAGIA. (So named by Linneus, from de Tulbagh, governor of the Cape of Good Hope, a patron of Botany, who sent the Cape plants to the Burmanns in Holland.

Lin. gen. Reich. n. 435. Schreb. n. 549. Gertn. t. 16. Juss. 54.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceæ*. *Narcissi* Juss.

## GENERIC CHARACTER.

CAL. Spathe two-valved, oblong, membranaceous; with the flowers peduncled.

COR. Petals six, lanceolate, length of the nectary, placed on the tube, three in the middle, three behind the border. Nectary one-petalled, cylindrical; with the border six-parted, awl-shaped, spreading.

STAM. Filaments six, very short, three in the throat, three within the tube. Anthers somewhat oblong acute.

PIST. Germ superior, ovate. Style cylindrical, short. Stigma turbinate, hollow.

PER. Capsule ovate, subtrigonal, three-celled, three-valved: partition contrary to the valves.

SEEDS two in a cell. G.

Obs. Corolla one-petalled, funnel-form, with a six-cleft border. Nectary crowning the aperture, three-leaved; leaflets bifid. G. It cannot be associated with *Narcissus*, on account of its superior Germ. The corolla bears more resemblance to the Hyacinth.

## ESSENTIAL CHARACTER.

COR. funnel-form, with a six-cleft border. Nect. crowning the aperture, three-leaved; leaflets bifid, the size of the border. Caps. superior.

## SPECIES.

1. *Tulbagia alliacea*. *Narcissus-leaved Tulbagia*.

Lin. syst. 316. Willd. 2. 33. suppl. 193. Thunb. prodr. 60.

T. capensis. Lin. mant. 223. Jacqu. hort. 2. 52. t. 115. Reich. syst. 2. 16.

T. inodora. Gertn. fruct. 1. 57. Nectary one-leaved, six-toothed.

2. *Tulbagia cepacea*.

Lin. syst. 316. Willd. 2. 34. suppl. 194. Thunb. prodr. 60.

Nectary three-leaved.

## DESCRIPTIONS, &c.

1. Stature of *Galanthus* or Snow drop. Root bulbous, with numerous thick subfusiform fibres. Leaves radical, numerous, linear, even. Scape twice as long as the leaves. The spathe contains from five to seven flowers. Corolla green, like the oriental Hyacinth, with a small acute border. Nectary very dark purple, length of the border<sup>g</sup>.

Leaves almost filiform, somewhat fleshy. Scape a foot high. Spathe umbelliferous, two-valved. Flowers drooping, dusky purple. Corolla one-petalled, tubular, gibbous at the base: border six-parted, with the parts linear obtuse spreading length of the tube. Nectary placed at the mouth of the tube, six-toothed but very indistinctly, obtuse, thick, length of the border. Filaments none: anthers six sessile ovate twin, the three upper alternate, under the top of the nectary, the three lower in the nectary, below the others. Germ superior: style short: stigma simple, obtuse. Capsule ovate, triangular, obtuse, three-celled, three-valved. Seeds many, compressed, almost triangular<sup>h</sup>.

Native of the Cape of Good Hope; where it flowers in august.—Here it flowers in may; and was introduced in 1774, by Mr. Francis Masson<sup>i</sup>.

2. Root bundled. Leaves radical, from two to four, lanceolate-linear, somewhat fleshy. Scape a span high. Spathe umbelliferous, two-valved. Flowers erect, purple. Corolla one-petalled, tubular, gibbous at the base: border six-parted, with the parts lanceolate, obtuse, spreading, length of the tube. Anthers sessile below the mouth of the tube; the three upper ones alternate. It differs from the first in being of smaller stature, and in having a three-

<sup>g</sup> Linn. mant.

<sup>h</sup> Linn. suppl.

<sup>i</sup> Hort. kew.



## DESCRIPTIONS, &amp;c.

1. Bulb ovate, gibbous. Stem quite simple, nearly upright, round, smooth, leafy in the middle, attenuated at the base. Leaves alternate, slightly embracing, lanceolate, acute, keeled, glaucescent. Flower always yellow, greenish on the outside. Petals elliptic-lanceolate, without any nectary. Filaments flattened. Anthers terminating, versatile, oblong. Germ three-cornered. Stigma sessile, three-cornered<sup>1</sup>.

The wild Tulip has most of these characters in common with the garden species; but the circumstances that abundantly distinguish this are the narrow leaves, the nodding flower, the hairiness at the base of the stamens and on the tips of the petals, and especially the simple obtuse form of the stigma, which is totally different from that of the garden Tulip: the flower too is fragrant; the pollen yellow, not black; and the anthers remarkably long. In Flora Danica they are represented short and round<sup>m</sup>.

Leers remarks, that all the petals are villose at the tip, and the three inner ones at the base also. Desfontaines observes, that the petals are acute, the three outer ones narrower by half, and greenish on the outside.

Native of the South of Europe, Germany and Switzerland; also of Siberia and Barbary. It was first given as a native or at least a naturalized species, in English Botany, from the observations of W. Mathew, Esq. who found it in an old chalk-pit near Bury; and on the opinion of Mr. Rose of Norwich, and of Dr. Smith, who have both found it in a chalk-pit near that city. It has also been observed near Bury by Sir Thomas Gery Cullum, Bart. and at Whipnade, on the borders of Hertfordshire and Bedfordshire, by the Rev. D. Jenks. It grows in a bed of good mould, above the chalk; the roots lying several inches below the surface, and flowers in April<sup>n</sup>.

Linneus remarks, that the flower does not begin to open till about ten o'clock; whereas the garden Tulip opens before eight a. m. He reports, from Parkinson, that the roots boiled, and eaten with oil and pepper, are sapid and wholesome: whereas Haller says they are acrid and cause vomiting.

According to the Kew catalogue, it was cultivated in 1597 by Gerarde.] Mr. Miller says, it was formerly preserved in the English gardens, but since so many varieties of the third sort have been propagated in England, that has been rejected, and is now only to be found in old neglected gardens.

[2. This is distinguished both from the preceding and succeeding species, by its pubescent scape, spreading sweet-smelling corolla; the earliness of its flowering, and the smallness of its size. Native of the South of Europe<sup>o</sup>.

3. Stem nearly upright or bending a little, taller and stronger than in the first, from a foot to eighteen inches in height. Leaves three, four or five, embracing, doubled, lanceolate, acute, nerved, glaucous; the lowest near the bulb two inches and a half wide, the others gradually narrower. Flower large, erect, in a wild state, most commonly red with a black base; petals ovate, blunt, smooth. Anthers commonly very dark-coloured or black. Stigma three-lobed, each lobe bifid, bent back, and the edge curled back.—Capsule superior, of a triangular prismatic form, three-grooved, transversely striated: valves having a partition in the middle, and ciliate at the sutures with white silky vibrissæ turned inwards. Seeds obovate, narrowed towards the navel, flat on both sides, margined, rufescent, fastened horizontally in a double row to the central margin of the partitions. Before the fruit is fully ripe, the vibrissæ in this genus, and in that of Fritillaria, are glued together into three thin membranes, which being interposed between the columns of seeds, make the unripe capsules six-celled<sup>p</sup>.

Native of many parts of the Levant. Linneus (from Gesner) says, Cappadocia, whence it came to Europe in 1559. It is common in Syria, and is sup-

<sup>1</sup> Smith brit.  
<sup>o</sup> Willdenow.

<sup>m</sup> Engl. bot.  
<sup>p</sup> Gærtner.

<sup>a</sup> Idem.

leaved nectary. Native of the Cape. Both species smell strong of Garlick, when the leaves are rubbed or broken<sup>k</sup>. By Gærtner's naming the first *inodora*, I should suppose he found little or none of this smell in it.]

TULIPA. (From the resemblance of the flower to the eastern head-dress called Tulipan or Turban. Gerarde calls it Turkes Cap Dalmatian Cap or Tulipa.)

Lin. gen. n. 415. Reich. n. 448. Schreb. n. 563. Tournef. t. 199, 200. Juss. 48. Gærtner. t. 17.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Coronariae. Lilia Juss.

## GENERIC CHARACTER.

CAL. none.

COR. bell-shaped. Petals six, ovate-oblong, concave erect.

STAM. Filaments six, awl-shaped, very short. Anthers quadrangular, oblong, erect, distant.

PIST. Germ large, oblong, from three-cornered round.

Style none. Stigma three-lobed, triangular: angles protuberant, bifid: permanent.

PER. Capsule three-sided, three-celled, three-valved: valves ciliate at the edge, ovate.

SEEDS numerous, flat, incumbent in a double row, semicircular, separated by similar flocks.

## ESSENTIAL CHARACTER.

Cor. six-petalled, bell-shaped. Style none.

## SPECIES.

1. Tulipa sylvestris. Wild or yellow Tulip.

Lin. spec. 438. Juss. 325. Reich. 2. 50. Willd. 2.

96. fl. suec. n. 284. Wither. ar. ed. 3. 336.

Smith brit. 361. engl. bot. t. 63. Abbot bedf. n.

253. Fl. dan. t. 375. Hoffm. germ. 118. Roth.

germ. 1. 152. 2. 397. Hall. belv. n. 1236. Scop.

carn. n. 407. Leers herborn. n. 259. Villars

dauph. 2. 248. Allion. pedem. n. 1891. Pallas

it. 3. 562. Desfont. atlant. 294. Gouan illustr.

25. Kniph. cent. 8. n. 96. Berg. phyt. 2. 179.

T. minor lutea italica. Baub. pin. 63.

T. minor lutea narbonensis. Baub. hist. 2. 677. Raii

hist. 1149.

T. narbonensis. Clus. hist. 1. 151. Dod. pempt. 232.

T. bononiensis. Ger. 116. 1. emac. 138. 1.

β. T. turcica. Roth. catal. 1. 45.

T. minor lutea gallica. Baub. pin. 63. Sauv. monsp.

306. Tournef. inst. 376. Mor. hist. f. 4. t. 17. f. 9.

Flower solitary nodding a little, stigma obtuse three-sided,

stamens hairy at the base, leaves lanceolate.

[2. Tulipa suaveolens. Early dwarf Tulip.

Lin. spec. ed. Willd. 2. 97. Roth. catal. 1. 45.

T. pumilio. Lob. ic. 127.

Stem one-flowered pubescent, flower erect, petals obtuse

smooth, leaves ovate-lanceolate.]

3. Tulipa gesneriana. Common garden Tulip.

Lin. spec. 438. Reich. 2. 50. Willd. 2. 97. hort.

cliff. 118. upf. 82. Pallas it. 3. 652. Kniph.

cent. 2. n. 95, 96. Knorr. del. 1. t. T. et T. 1.

2. 3. Thornton.

T. hortensis. Gærtner. fruct. 1. 64.

T. præcox & ferotina. Baub. pin. 57, &c. Raii

hist. 1146. Clus. hist. 1. 138, &c. Ger. 117.

emac. 138. 3. 139, &c.

T. turcarum. Cord. hist. 213.

Tulipa. Dod. pempt. 231. Best. eyf. vern. 2. t. 7.

f. 4. 5.—3. t. 10. f. 3. t. 17. f. 2.—4. t. 1—9, &c.

Park parad. 45, &c. Mor. hist. f. 4. t. 17. f. 1.

Stem one-flowered smooth, flower erect, petals obtuse

smooth, leaves ovate-lanceolate.

[4. Tulipa biflora. Two-flowered Tulip.

Lin. syst. 325. Willd. 2. 98. suppl. 196. Pallas

it. 3. app. n. 86. t. D. f. 3.

Flowers erect flattish, stem two-leaved and two or three-

flowered, leaves linear-subulate.

5. Tulipa breyniana. Cape Tulip.

Lin. spec. 438. Reich. 2. 51. Willd. 2. 98. Thunb.

prodr. 65.

Sisyrinchium, ex phœniceo suaverubente flore æthi-

opicum. Breyn. cent. t. 36. Rudb. elyf. 2. 13. f. 11.

Stem many-flowered, many-leaved, leaves linear.

<sup>k</sup> Linn. suppl.



posed by some to be the lily of the field alluded to by our Saviour. In Persia, where it is abundant, they consider it as the emblem of perfect lovers. When a young man, says Chardin, presents one to his mistress, he gives her to understand, by the general colour of the flower, that he is on fire with her beauty, and by the black base of it, that his heart is burnt to a coal. Chardin saw it on the northern confines of Arabia. Rauwolf found it at Aleppo, and on mount Libanus; Shaw, between Jaffa and Rama; Busbequius, between Adrianople and Constantinople, every where in abundance, with Narcissus, Hyacinths, &c. in the middle of winter. It grows also in Macedonia, Thrace, and the Crimea. According to Clusius, the early-blowing flowers were brought to Constantinople from Cavala, a town on the eastern coast of Macedonia; and the late-blowing ones, from Caffa, a town in the Crimea.

Conrad Gesner first made the eastern Tulip known by a description and figure. In his additions to Cordus, he tells us that he first saw it in the beginning of april 1559 at Augsborg, in the garden of John Henry Harwart. The seeds were brought from Constantinople, or according to others from Cappadocia. Balbinus asserts, that Busbequius brought the first Tulip roots to Prague, whence they were spread all over Germany. Busbequius himself says, in a letter written 1554, that this flower was then new to him. We know that he collected natural curiosities, and brought many from the Levant. He relates that he paid very dear to the Turks for Tulips; but he nowhere affirms that he was the first who brought them from the East. In 1565, there were Tulips in the garden of Mr. Fugger, from whom Gesner wished to procure some<sup>a</sup>.

Clusius informs us, that Augerius de Busbeque (Busbequius) received a great quantity of the seed, together with many bulbs, from Constantinople, the year that Clusius came to Vienna, and going the year following to France, he left them under the care of Clusius, who in 1575 and the following year, committed them to the ground in a heap, thinking they were so old and withered that they would not come to any thing; they grew however, and produced a great variety of flowers.

Clusius relates also that he gave more than a hundred bulbs to an apothecary at Vienna to be preserved in sugar, in the same manner as the roots of the Orchis, with a view to ascertain whether they had not the same qualities, but he neglected the business. However in the year 1592, John Muler, another apothecary, preserved a quantity of the roots, and they were found to be far more sweet and pleasant than Orchis roots, but whether they had the same virtues was not ascertained. A merchant of Antwerp had a cargo of the roots thirty years before this (1562), and taking them for a sort of onion, ordered some to be roasted under embers, and ate them with oil and vinegar like common onions: the rest he set in the kitchen garden among the cabbages, where most of them perished, except a few that George Rye, a merchant of Mecklin took under his care, and which produced a variety of beautiful flowers.

According to the Kew catalogue the Tulip was cultivated in England, by Mr. James Garret, in 1577. Reference is made to Gerarde's herbal, published in 1597: where it is said—"my loving friend Master James Garret, a curious searcher of simples, and learned apothecary in London, hath undertaken to find out if it were possible, the infinite sorts, by diligent sowing of their seeds, and by planting those of his own propagation, and by others received from his friends beyond the seas, for the space of twenty years not being yet able to attain to the end of his travail, for that each new year bringeth forth new plants of sundry colours not before seen: all which to describe particularly were to roll Sisyphus stone, or number the sands." Gerarde says also, that he received it from Aleppo, and he mentions

<sup>a</sup> Epist. 79, 80. T'g. 1577. 8vo. Beckmann hist. of Inventions, i. 36, &c.

Master Garth, a worshipful gentleman, as a cultivator of this bulb.

This era of the introduction of the Tulip into England is confirmed by the remembrances for Master S. by Richard Hakluyt, in 1582, wherein it is said,—"now within these four years, there have been brought in England, from Vienna in Austria, divers kinds of flowers called Tulipas."

They first appeared in Provence, in the garden of the celebrated Peyrefc.

Towards the middle of the seventeenth century the Tulip became the object of a considerable trade, and the price of the roots rose higher than that of the most precious metals. It was chiefly carried on in some cities of the Netherlands, and rose to its greatest height in 1634 and the three following years. For one root of a variety called the *Viceroy*, articles to the value of 2500 florins were agreed to be delivered. The *Semper Augustus* has been often sold for 2000 florins: one person agreed to give 4600 florins, with a new carriage, two horses and complete harness; and another agreed to give twelve acres of land for a single root. The trade was generally followed for a time, but it was a mere gambling business, like the Mississippi and South sea schemes, and was rightly named *Tulipomania*.

No plant affords more varieties than the Tulip. Sometimes, but rarely, it has two flowers; six petals is the regular number, but it is not uncommon to find seven or eight, and the flowers are sometimes quite double; some of the varieties produce their flowers earlier than others; and the capsules are not very unfrequently four-sided and four-celled. But the most remarkable variation in the Tulip is in the colours of the petals, an almost infinite variety of these having been produced by art.

The old authors divided Tulips into *Præcoces* or early-blowers, and *Serotinae* or late-blowers, with an intermediate division of *Dubie Mediae*, doubtful or middle-blowers, which flowered between the two others, and for the most part rather belonged to the late-blowers. Modern florists have almost neglected the early-blowers.]

These are not near so fair, says Mr. Miller, nor do they rise half so high as the late ones; but they are chiefly valued for appearing early in the spring: some of them will flower the middle of march in mild seasons, if planted in a warm border near a wall or other shelter, and others will succeed them, so that they will keep flowering until the general season for these flowers is come, which is towards the end of april. As these early-blowers are few in comparison with the others, Mr. Miller gives the names of the principal ones, to the number of forty-one. By those names the roots were to be obtained in Flanders and Holland, where the florists are very exact in keeping up their lists of flowers complete.

The several varieties of these early-blowing Tulips rise to different heights in their stems, and scarcely any two of them are equal. The Duke Van Toll, which is one of the first that appears in the spring, is generally very short-stalked, and the others in proportion to their earliness are shorter than those which succeed them; and the late-blowers are all considerably longer in their stems than any of the early-blowers; so that when they are mixed together confusedly, they make a very indifferent appearance.

The late-blowing Tulips producing much finer flowers than the early ones, have engrossed almost the whole attention of the florists. It would be to little purpose to enumerate all the varieties, since there is scarcely any end of their numbers, and what some value at a considerable rate, others reject; and as there are annually many new flowers obtained from breeders, those which are old, if they have not very good properties to recommend them, are thrown out and despised.

[Parkinson, so long since as 1629, enumerates 140 varieties in his *Paradisus terrestris*. But to tell you



of all the sorts, says he, which are the pride of delight, they are so many, and as I may say, almost infinite, doth both pass my ability, and as I believe, the skill of any other. There is such a wonderful variety and mixture of colours in them, that it is almost impossible for the wit of man to decipher them thoroughly, and to give names that may be true, and several distinctions to every flower. Threescore several sorts of colours simple and mixed I can reckon up that I have, and of especial note, and yet I doubt not, but for every one of them there are ten others differing from them. But besides this glory of variety in colors that these flowers have, they carry so stately and delightful a form, and do abide so long in their bravery, that there is no lady or gentlewoman of any worth that is not caught with this delight.

In Parkinson's time the early-blowers, and doubtful or mean-flowering Tulipas, as he calls them, furnished most of the varieties: the serotina or late-flowering Tulipa, as he says, having no such plentiful variety of colours or mixtures in his flowers, as are in the two former sorts. Accordingly he enumerates only five varieties of these, which now furnish the Florists with all those beauties which attract their admiration. But probably many which he calls meane (that is, intermediate) flowering, are properly late-blowers. He divides the flowers into their four primary or principal colours, white, purple, red and yellow; and under every one of these, sets down the several mixtures which he has seen and observed in them.

Modern Florists in Holland and Flanders, and our English Florists from them, boast a prodigious variety of late-blowing Tulips. Mr. Maddock of Walworth, in his catalogue of flowers for 1792, has no less than about 665 of these admired beauties, all ranged under their proper families and colours, with their names and prices: besides the early sorts, double tulips, parrot-tulips, french tulips; and breeders.

The late-blowers are distributed into five families.

1. Primo Baguets: very tall; fine cups with white bottoms, well broken with fine brown, and all from the same breeder. 2. Baguet Rigauts: not quite so tall, but with strong stems, and very large well-formed cups with white bottoms, well broken with fine brown, and all from the same breeder. 3. Incomparable Verports: a particular kind of Bybloemens; with most perfect cups; very fine white bottoms; well broken with shining brown; and all from the same breeder. Some of these are from two to five guineas a root. 4. Bybloemens: with bottoms white or nearly so, from different breeders, and broken with variety of colours. Those of the Verports are cherry and rose. 5. Bizarres: ground yellow; from different breeders, and broken with variety of colours.—These barbarous terms used by the Dutch Florists, are a mixture of Dutch and French. Baguet, is from the French Baguette, a rod or wand, so named from its tall slender stem. Bizarre is also French; and the Tulips of that family have the name from the variety and irregularity of their colours. Rigauts are probably from the name of some eminent florist, Rigaud. The other terms are Dutch.—Breeders are of one colour, and when broken produce new varieties.

The properties of a fine variegated late Tulip, according to the best modern Florists are these. 1. The stem should be strong, upright; and tall, about thirty inches high. 2. The flower should be large, composed of six petals, proceeding a little horizontally at first, and then turning upwards so as to form an almost perfect cup with a round bottom, rather wider at the top. 3. The three outer petals should be rather larger than the three inner ones, and broader at their base: all the petals should have the edges perfectly entire; the top of each should be broad and well rounded; the ground colour at the bottom of the cup should be clear white or yellow; and the various rich stripes, which are the principal ornament of a fine flower, should be regular, bold, and distinct on the margin, and terminate in fine broken points, elegantly feathered or pencilled. 4. The centre of each petal should contain one or more bold blotches or stripes, intermixed with small portions of the original colour,

abruptly broken into many irregular obtuse points. Some Florists are of opinion that the central stripes or blotches do not contribute to the beauty of the Tulip, unless they are confined to a narrow stripe exactly down the centre; and that they should be perfectly free from any remains of the original colour: it is certain that such flowers appear very beautiful and delicate, especially when they have a regular narrow feathering at the edge: but it is unanimously agreed, that the Tulip should abound in rich colouring, distributed in a distinct and regular manner throughout the flower, except in the bottom of the cup, which should indisputably be of a clear bright white or yellow, free from stain or tinge, in order to constitute a perfect flower.

The double and Parrot Tulips are in no sort of esteem among the Florists.

4. Plant the size of *Ornithogalum luteum*. Stem very smooth. Leaves two alternate linear attenuated to both ends recurved channelled, sheathing the stem at bottom. Peduncles shorter than the leaves two or three in a sort of umbel. Flowers like those of *Ornithogalum luteum*, but several times bigger and spreading. The three outer petals lanceolate, pale sky-blue or greenish; the inner ones white with a large orange spot at the base. Filaments bearded at the base. The bulb every year drops down perpendicularly a little bulb, which succeeds the old one.

Native of Russia, by the Wolga.

5. Stem-leaves six or seven alternate, linear, lanceolate, the upper ones gradually shorter. Flowers at the top, three or four, smaller than in Breynius's cultivated plant. Petals narrowed at the base. Style none. Native of the Cape of Good Hope. Introduced in 1787, by Mr. Francis Masson. It flowers in July.\*.]

#### PROPAGATION AND CULTURE.

3. The roots of early blowing Tulips should be planted the beginning of September, in a warm border, near a wall, pale, or hedge; because if they are put into an open spot of ground, their buds are in danger of suffering by morning frosts in the spring. The soil for these should be renewed every year, where people intend to have them fair. The best soil for this purpose is that which is taken from a light sandy pasture, with the turf rotted amongst it, and to this should be added a fourth part of sea sand. This mixture may be laid about ten inches deep, which will be sufficient for these roots, which need not be planted more than four or five inches deep at most. The offsets should not be planted amongst the blowing roots, but in a border by themselves, where they may be planted pretty close together, especially if they are small; but these should be taken up when their leaves decay, in the same manner as the blowing roots, otherwise they would rot if the season should prove very wet; for these are not so hardy as the late blowers, nor do they increase half so fast as those, so that a greater care is required to preserve the offsets of them. When these Tulips come up in the spring, the earth upon the surface of the borders should be gently stirred and cleared from weeds; and as the buds appear, if the season should prove very severe, it will be of great service to cover them with mats, for want of which many times they are blighted, and their flowers decay before they blow, which is often injurious to the roots, as is also the cropping of the flowers so soon as they are blown; because their roots, which are formed new every year, are not at that time arrived to their full magnitude, and are hereby deprived of proper nourishment.

If, when these flowers are blown, the season should prove very warm, it will be proper to shade them with mats, &c. in the heat of the day; as also if the nights are frosty, they should be in like manner covered, whereby they may be preserved a long time in beauty; but, when their flowers are decayed, and their seed-vessels begin to swell, they should be broken off just at the top of the stalks, because if they are permitted to seed, it will injure the roots.

\* Maddock, 67.

† Linn. suppl.

‡ Linn. spec.

\* Hort. kew.



When the leaves of these flowers are decayed (which will be before the late blowers are out of flower) their roots should be taken up, and spread upon mats in a shady place to dry; after which they should be cleared from their filth, and put in a dry place where the vermin cannot come to them, until the season for planting them again, being very careful to preserve every sort separate, that you may know how to dispose of them at the time for planting; because it is the better way to plant all the roots of each sort together (and not to intermix them, as is commonly practised in most other kinds of flowers;) for as there are few of them which blow at the same time, so when the several roots of one sort are scattered through a whole border, they make but an indifferent appearance; whereas, when twenty or thirty roots of the same sort are placed together, they will all flower at the same time, and afford a more agreeable appearance.

There are many curious persons, who, in order to preserve their several kinds of Tulips, and other bulbous-rooted flowers separate, have large flat boxes made, which are divided into several parts by small partitions, each of which is numbered in the same manner as the divisions of their beds; so that when a catalogue of their roots is made, and the numbers fixed to each sort in the beds, there is nothing more to do when they take up their roots, but to put every kind into the division marked with the same number which was placed to each sort in the bed, which saves a great deal of trouble in making fresh marks every time the roots are taken up, and effectually answers the purpose of preserving the kinds separate.

The late blowing Tulips are generally obtained from breeders, which is a term applied to all such flowers as are produced from seeds, which are of one self-colour, and have good bottoms and chives; these in time break into various beautiful stripes, according to the ground of their former self-colour, but this must be entirely thrown off, otherwise they do not esteem a flower well broken.

Of these breeders there has been a great variety brought into England from Flanders which is the grand nursery for most sorts of bulbous-rooted flowers; but there are some curious persons, who have lately obtained many valuable breeders from seed sown in England; and doubtless, were we as industrious to sow the seeds of these flowers as the people of France and Flanders, we might in a few years have as great a variety as is to be found in any part of Europe; for, although it is six or seven years from the sowing before the flowers blow; yet, if after the first sowing there is every year a fresh parcel sown, when the seven years are expired, there will be constantly a succession of roots to flower every year, which will reward the expectation, and keep up the spirit of raising; but it is the length of time at first, which deters most people from this work.

The manner of propagating these flowers from seeds is as follows: you should be careful in the choice of the seed, without which there can be little success expected. The best seed is that which is saved from breeders which have all the good properties before related, for the seeds of striped flowers seldom produce any thing that is valuable.

The best method to obtain good seeds is to make choice of a parcel of such breeding Tulip roots as you would save seeds from, and place them in a separate bed from the breeders, in a part of the garden where they may be fully exposed to the sun, observing to plant them at least nine inches deep; for if they are planted too shallow, their stems are apt to decay before their seed is perfected.

These flowers should always be exposed to the weather, for if they are shaded with mats, or any other covering, it will prevent their perfecting the seed. About the middle of July, (a little sooner or later, as the summer is hotter or colder) the seeds will be fit to gather, which may be known by the dryness of their stalks, and the opening of the seed-vessels, at which time they may be cut off, and the seeds preserved in the pods till the season for sowing, being careful to put

them up in a dry place, otherwise they will be subject to mould, which will render them good for little.

Having saved a parcel of good seed, about the beginning of September is the best season for sowing it, when there should be provided a parcel of shallow seed-pans; or boxes, which should have holes in their bottoms to let the moisture pass off; these must be filled with fresh sandy earth, laying the surface very even, upon which the seeds should be sown as regularly as possible, that they may not lie upon each other; then there should be some of the same light sandy earth sifted over them, about half an inch thick. These boxes or pans should be placed where they may have the morning sun till eleven of the clock, in which situation they may remain until October, at which time they should be removed into a more open situation, where they may enjoy the benefit of the sun all the day, and be sheltered from the north winds, where they should remain during the winter season; but in the spring, when the plants are up, they should be again removed to their first situation; and if the season should be dry, they must be refreshed with water while the plants remain green; but as soon as their tops begin to decay, there must be no more given them, lest it rot their tender bulbs; therefore the boxes should be placed in a shady situation during the summer season, but not under the drip of trees.

These plants, at their first appearance, have very narrow grassy leaves like those of onions, and come up with bending heads, in the same manner as they do; so that persons who are unacquainted with them, may pull them up instead of grass whilst they are very young, before their leaves are a little more expanded, which is rarely performed the first year; for they seldom appear before the middle of March, and they commonly decay about the latter end of May, or the beginning of June, according as the season is hotter or colder.

The weeds and moss should also be cleared off from the surface of the earth in the boxes, and a little fresh earth sifted over them soon after their leaves decay, which will be of great service to their roots. These boxes should be constantly kept clear from weeds, which, if permitted to grow therein, when they are pulled up, the roots will be apt to draw the bulbs out of the ground. At Michaelmas they should be fresh earthed again, and as the winter comes on, they must be again removed into the sun as before, and treated in the same manner, until the leaves decay in the spring, when the bulbs should be carefully taken up, and planted in beds of fresh sandy earth, which should have tiles laid under them, to prevent their roots from shooting downward, which they often do when there is nothing to stop them, and thereby are destroyed. The earth of these beds should be about five inches thick upon the tiles, which will be sufficient for nourishing these roots while they are young.

The distance which these young bulbs should be allowed, need not be more than two inches, nor should they be planted above two inches deep; but toward the end of October, it will be proper to cover the beds over with a little fresh earth about an inch deep, which will preserve the roots from the frost, and prevent moss or weeds from growing over them; but, if the winter should be very severe, it will be proper to cover the bed either with mats or peashaulm, to prevent the frost from entering the ground, because these roots are much tenderer while young, than they are after they have acquired strength.

In the spring the surface of the ground should be gently stirred to make it clean, before the plants come up; and if the spring should prove dry, they must be frequently refreshed with water during the time of their growth; but this must not be given to them in great quantities, lest it rot their tender bulbs; and when the leaves are decayed, the weeds should be taken off, and the beds covered with fresh earth, which should also be repeated again in autumn.

In these beds the bulbs may remain two years, during which time they must be constantly kept clear from weeds, and in spring and autumn fresh earthed, in the manner already directed; after which the bulbs must



must be taken up, and planted into fresh beds, at four inches asunder, and as many deep, where they may remain two years more, during which time they should have the same culture as before; and after that, the bulbs being large enough to blow, they should be taken up, and planted in fresh beds at the usual distance, and in the same manner as old roots; where, when they flower, such of them as are worthy to be preserved, should be marked with sticks; and at the season for taking up the bulbs, they must be separated from the others, in order to be planted as breeders in different beds; but you should by no means throw out the rest until they have flowered two or three years, because it is impossible to judge exactly of their value in less time; for many, which at first flowering appear beautiful, will afterwards degenerate so as to be of little value; and others, which did not please at first, will many times improve, so that they should be preserved until their worth can be well judged of.

In this method many sorts of new breeders will be annually raised, from which there will always be fine flowers broken, which, being the produce of a person's own sowing, will be greatly valued, because they are not in other hands, which is what enhances the price of all flowers: and it has been entirely owing to this method of raising new flowers, that the Dutch have been so famous, amongst whom the passion for fine Tulips did some time reign so violently, that many of the florists near Haerlem have often given a hundred ducats for one single root; which extravagance was the occasion of an order being made by the States, to limit the utmost price that should be afterward given for any Tulip root, were it ever so fine.

Having thus given an account of the method of raising these flowers from seeds, I shall now proceed to the management of those roots which are termed breeders, so as to have some of them every year break out into fine stripes.

There are some who pretend to have a secret how to make any sort of breeders break into stripes whenever they please, but this, I dare say, is without foundation; for from many experiments which I and others have made of this kind, I never could find any certainty of this matter. All that can be done by art, is to shift the roots every year into fresh earth of different mixtures, and into a different situation, by which method I have had very good success.

The earth of these beds should be every year different, for although it is generally agreed that lean, hungry, fresh earth hastens their breaking, and causes their stripes to be the finer and more beautiful, yet, if they are every year planted in the same sort of soil, it will not have so much effect on them, as if they were one year planted in one sort of earth, and the next year in a very indifferent one, as I have several times experienced; and if some fine striped Tulips are planted in the same beds with the breeders, intermixing them together, it will also cause the breeders to break the sooner.

The best compost for these roots is a third part of fresh earth from a good pasture, which should have the sward rotted with it, a third part of sea sand, and the other part sifted lime rubbish; these should be all mixed together six or eight months at least before it is used, and should be frequently turned, in order to mix the parts well together. With this mixture the beds should be made about two feet deep, after the following manner: after the old earth is taken from out of the bed to the depth intended, then some of the fresh earth should be put in about eighteen inches thick; this should be levelled exactly, and then lines drawn each way of the bed, chequerwise; at six inches distance, upon the center of each cross, should be placed the Tulip roots, in an upright position, and after having finished the bed in this manner, the earth must be filled in, so as to raise the bed six or eight inches higher, observing, in doing this, not to displace any of the roots, and also to lay the top of the beds a little rounding to throw off the water.

There are many persons who are so careless in planting their Tulip roots, as only to dig and level the beds well, and then with a blunt dibble to make holes, in-

to which they put the roots, and then fill up the holes with a rake, but this is by no means a good method; for the dibble, in making the holes, presses the earth closely on each side, and at the bottom, whereby the moisture is often detained so long about the roots as to rot them, especially if the soil is inclinable to bind; besides the earth being hard at the bottom of the bulbs, they cannot so easily emit their fibres, which must certainly prejudice the roots.

These beds should be sunk, more or less, below the surface, according to the moisture or dryness of the ground, for the roots should be so elevated as never to have the water stand near the reach of their fibre in winter, for moisture is very apt to rot them; so that where the soil is very wet, it will be proper to lay some lime rubbish under the earth, in order to drain off the wet, and the beds should be entirely raised above the level of the ground; but to prevent their falling down into the walks, after frost or hard rains, it will be proper to raise the paths between them, either with sea coal ashes or rubbish, eight or ten inches, which will support the earth of the beds; and these paths may slope at each end from the middle; which will make passage for the water to run off as it falls. But where the soil is dry, the bottom of the beds may be sunk eighteen or twenty inches below the surface, for in such places the beds need not be more than four or six inches above the surface, which will be allowance enough for their settling.

During the winter season there will be no farther care required. The roots being planted thus deep, will be in no danger of suffering by ordinary frosts, but if the winter should prove very severe, some rotten tan or peas-haulm may be laid over the beds to keep out the frost during the continuance, but this must be removed when the frost is over; and in the spring, when their leaves begin to appear above ground, the earth upon the surface of the beds should be stirred to clear it from weeds, moss, &c. and when the flower-buds begin to come up, they should be guarded from frost, otherwise they are very subject to blight and decay soon after they appear, if the frost pinches their tops; but they need only be covered in such nights when there is a prospect of frost, for at all other times they should have as much air as possible; without which they will draw up weak, and produce small flowers.

When the breeding Tulips are in flower, you should carefully examine them, to see if any of them have broken into beautiful stripes, which, if you observe, there should be a stick put into the ground by every such root, to mark them, that they may be separated from the breeders, to plant amongst the striped flowers the following year; but you should carefully observe, whether they have thrown off their former colour entirely, as also when they decay, to see if they continue beautiful to the last, and not appear smeared over with the original colour, in both which cases they are very subject to go back to their old colour the next year: but if their stripes are distinct and clear to the bottom, and continue so to the last, (which is what the florists call dyeing well,) there is no great danger of their returning back again, as hath been by some confidently reported; for if one of these flowers is quite broken (as it is termed,) it will never lose its stripes, though sometimes it will blow much fairer than at others, and the flowers of the offsets will be often more beautiful than those of the old roots.

This alteration in the colour of these flowers may be seen long before they are blown, for all the green leaves of the plant will appear of a fainter colour, and seem to be striped with white, or of a brownish colour, which is a plain proof, that the juices of the whole plant are altered, or, at least, the vessels through which the juice is strained; so that hereby particles of a different figure are capable of passing through them, which, when entered into the petals of the flower, reflect the rays of light in a different manner, which occasions the variety we see in the colours of flowers. This breaking of the colours in flowers proceeds from weakness, or at least is the cause of weak-



ness in plants; for it is observable, that after Tulips are broken into fine stripes, they never grow so tall as before, nor are the stems, leaves, or flowers, so large as before; and it is the same in all other variegated plants and flowers whatever, which are also much tenderer than they were before they were striped; so that many sorts of exotic plants which by accident became variegated in their leaves, are often rendered so tender, as not to be preserved without much more care, though indeed the striping of Tulips never occasions so great weakness in them as to render them very tender. The greatest effect it has on them, is in lessening their growth, causing some (which, while they continued in their original plain colours rose near three feet in height) to advance little more than two after their colours were altered; and the more beautifully their stripes appear, the shorter will be their stems, and the weaker their flowers.

There is nothing more to be observed in the culture of striped flowers than what has been directed for breeders, excepting that these should be arched over with tall hoops and rails, that they may be shaded from the sun in the day time, and protected from strong winds, hard rains, and frosty mornings, otherwise the flowers will continue but a short time in beauty; but where the instructions here given are duly followed, they may be preserved in flower a full month, which is as long as most other flowers continue.

There are some persons who are so extremely fond of these flowers, as to be at a great expense in erecting large frames of iron work to cover their beds of Tulips, in such a manner, that they may walk between two beds under the frames, over which are spread tarpaulins, so as to keep off sun, rain, and frost, whereby they can view the flowers without being at the trouble of taking off or turning up the tarpaulins, or being incommoded by the sun or rain, which cannot be avoided where the covering is low; besides, by thus raising the covers, the flowers have a greater share of air, so that they are not drawn so weak, as they are when the covering is low and close to them; but these frames being expensive, can only be made by persons of fortune; however, there may be some of wood contrived at a smaller expense, which being arched over with hoops, may answer the purpose as well as the iron frames, though they are not so lightly or lasting.

But after the flowers are faded, the heads of all the fine sorts should be broken off to prevent their seeding; for if this is not observed, they will not flower near so well the following year, nor will their stripes continue so perfect; and this will also cause their stems to decay sooner than otherwise they would do, so that their roots may be taken up early in June; for they should not remain in the ground after their leaves are decayed. In taking the roots out of the ground, you must be very careful not to bruise or cut them, which will endanger their rotting, and, if possible, it should be done a day or two after rain. When these roots are taken out of the ground, they must be cleared from their old covers, and all sorts of filth, and spread upon mats in a shady place to dry, after which they should be put up in a dry place, where vermin cannot get to them, observing to keep every sort separate, but they should not be kept too close from the air, nor suffered to lie in heaps together, lest they should grow mouldy, for if any of the roots once take the mould, they commonly rot when they are planted again, if not before.

The offsets of these roots, which are not large enough to produce flowers the succeeding year, should be also put by themselves, keeping each sort distinct; these should be planted a month earlier in autumn than the blowing roots, in particular beds by themselves in the flower-nursery, where they may not be exposed to public view; but the earth of the beds should be prepared for them in the same manner as for larger roots, though these should not be planted above five inches deep, because they are not strong enough to push through so great covering of the earth as the old roots; they may be placed much nearer together than those which are to flower, and in one year most of them will become strong enough to flower, when they may

be removed into the flower-garden, and placed in the beds amongst those of the same kinds.

[The most proper time to plant Tulip roots is from the end of October to the tenth of November. The bed should be in an open airy part of the garden. Having marked out the ground according to the intended dimensions of the bed, take out the soil to the depth of twenty inches: fill up the bottom with sound fresh earth, ten inches thick; upon this put a mixture of rotten cow-dung and fresh earth in equal quantities and two years old, to the thickness of twelve inches; and upon this more of the same kind of earth as that of the bottom, two inches thick at the sides, and three in the middle, to give the bed a small degree of convexity. This operation is to be performed about the 20th of October, or a week or two before planting, that the bed may have time to settle. It will then be about two inches higher than the alleys. If heavy rains should intervene, it will be proper to cover the bed to keep them off; because they would render it too compact and adhesive for the tender fibres to pass freely through it.

On the day of planting, rake the surface of the bed even, still preserving its convexity, and mark the places for the roots seven inches from each other every way. Adapting the length of the bed, and the number of rows to the quantity of your roots.

If the bed consists of seven rows, which makes the handsomest appearance, it should be fifty inches wide, which will allow a space of four inches between the outer rows and the sides of the bed; and there should be an alley or path round it two feet and an half or three feet wide. If the bed should contain only five rows, it must be three feet wide to give the roots the same distances. Such a bed will require only one path in front.

Having sprinkled a little clean sand where the roots are to be set, place them with great exactness, and add some very sandy earth, so as to envelope each root completely in a little cone of it; then cover the whole very carefully with strong sound fresh loam, about four inches thick at the middle of the bed, gradually decreasing to three inches at the sides: thus will the convexity be increased in a proper degree, and the roots will be covered with soil proportioned to their size and strength: the largest and strongest being placed in the centre rows; the smallest and weakest on the outside. No Tulip root, however strong, should be planted more than four inches deep from the crown of it; nor should any blooming root be set less than two inches and a half or three inches deep, however small it may be. The soil which is made use of for covering the bulbs, should have been frequently turned over, and well exposed to the sun and air, some time before it is used, that it may be perfectly sweet, and free from that acrid quality which moist soils are subject to, when taken considerably below the surface.

If the bed contain but five rows, with a path in front only, the smallest and lowest-growing roots should be planted in front, and so on to the last row, which should contain the strongest and largest: and the bed may slope towards the front; in which case the back should be supported with boards or brick-work, to prevent the earth from crumbling down, and leaving the roots bare.

When the planting is finished, hoop the bed over, that it may be covered occasionally with mats or canvas, to preserve it from heavy rains and severe frosts: either in moderation will be of more service than injury to it.

By the end of February every plant in health will be above ground, except a few very late ones, which may be a week longer before they appear. If any canker is discernible, it should be carefully cut out with a sharp knife, on some fine dry day.

If the surface of the bed appears to be of too close a contexture, it should be carefully stirred up, about two inches deep.

By the end of April, some of the plants may be grown so tall as to require the hoops to be raised a little. As soon as any of the earlier ones begin to show colour, they should be shaded from the sun, which will cause the colours to run and intermix in such



# T U L

such a manner as to destroy the elegance and beauty of the flower; some are more liable to this injury than others, and may be spoiled in five minutes.

When the greater part of the flowers have begun to open, a frame or awning should be erected over the bed and paths, to keep out the rain, and to admit as much light as possible; for which purpose the cloth covering should be rolled up in the morning early, if the weather be favourable, otherwise the colours of the flowers will be faint and weak. This cloth covering should come down on each side within about three feet of the ground, to allow a free circulation of air, except in windy weather, and then the windward side must be protected quite to the ground.

Tulips never require to be watered; but moderate rains may be admitted before, and in small quantity after the bloom is over; early in the spring they are necessary, in order to procure a strong bloom.

When the awning is erected, the hoops should be carefully taken away; the sides and ends of the bed neatly boarded up, and the paths lowered two or three inches, to bring the flowers nearer to the eye: a slight frame about two feet high, should surround the bed, to prevent any injury being done to the flowers: lines of small twine, painted green, should pass from one end of the bed to the other between the rows of flowers; and to these the stems are to be loosely tied with short pieces of green worsted. The awning may be continued on for three weeks with great safety.

When the petals of many flowers begin to drop off, the awning should be taken down, together with the frame, boards, &c. and the mats and hoops replaced, to throw off excess of rain. As the petals fall, the seed-vessel should be broken off, close to the stem; for if this be suffered to remain on the plant, it will weaken the root considerably.

The bed may remain in this state about a fortnight longer, by which time the foliage will become of a yellowish brown, and two or three inches at the top of the stem will wither, dry up, and become purplish: this denotes the critical period to take up the roots: if it be done earlier, they will be weak and spongy; and if deferred later, their juices will become gross; and at the next blooming the flowers will be what is generally termed foul.

When the roots are taken up, they are to be gradually dried, and kept dry. In august or september take off the loose skins, fibres, and such offsets as are easily separated; observing not to leave the roots too bare. The last brown skin, which is intimately connected with the root, should remain on it till the time of planting; it should then be entirely stripped off, and the root left perfectly bare and white; but it should be performed with great care with a small sharp-pointed penknife, to avoid bruising or wounding the root, especially at the lower end, where the fibres are formed, for that is at this time extremely tender, and will scarcely bear to be touched.

The smallest and weakest offsets, particularly such as are not provided with a brown skin, may be replanted as soon as they are taken up, about an inch and half deep, in a fresh sandy loam, in a dry situation, defending the bed from heavy rains by hoops covered with mats; or they may be buried in dry sand till the autumn; and then planted with the larger roots, only not quite so deep.

Tulips are hardier than most other flowers; the offsets, and more ordinary ones may be planted in any part of the garden, from two to four inches deep, according to the size of the roots, in a good sound soil, with a little rotten cow-dung, placed from seven to twelve inches below the surface.

Hail-storms are very injurious to the foliage of Tulips, early in the spring: therefore although it is not necessary to cover the beds of inferior Tulips, during a common winter, yet it is highly proper to defend them against spring storms, and to cover them when in bloom, in case of hot or windy weather.

# T U R

TULIPA JAVANA. See *Amaryllis zeylanica*.

[TULIPIFERA. See *Liriodendron*.

] And TULIP TREE.

TUMBA. See *Plumbago*.

TUNA. See *Castus*.

TUNICA. See *Dianthus* and *Gypsophila*.

TUPA. See *Lobelia*.

TUPEICAVA. See *Scoparia*.

TUPELO. See *Nyssa*.

TURBITH. See *Convolvulus* and *Seseli*.

TURIA. See *Ceschynomene*.

TURKEY-BERRY TREE. See *Cordia*.]

TURKEY WHEAT. See *Zea*.

TURK'S CAP. See *Lilium*.

[TURMERIC. See *Curcuma*.]

TURNER. See *Brassica*.

TURNERA. (So named by Plumier, in memory of William Turner, M. D. Prebendary of York, Canon of Windsor, and Dean of Wells. Student of Pembroke Hall in Cambridge, 1538. Died 1568. Author of A New Herball, Lond. 1551. fol.—second part, Cologne, 1562.—Second edition, Collen, 1566. with the addition of a third part, &c. &c.

Lin. gen. n. 376. Reich. n. 407. Schreb. n. 514.

Gartn. t. 76. Juss. 313. Burcardia. Schreb.

gen. n. 530. Piriqueta. Aubl. t. 117. Juss.

295.

Class. 5: 3. Pentandria Trigynia.

Nat. order of Columniferae. Portulacae Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leaved, funnel-form, deciduous: tube oblong, erect, cylindric-angular: border erect, five-parted; segments lanceolate, length of the tube.

COR. Petals five, obcordate, acuminate, flat, from upright spreading; claws narrow, inserted into the tube of the calyx.

STAM. Filaments five, awl-shaped, shorter than the corolla, inserted into the tube of the calyx. Anthers acuminate, erect.

PIST. Germ conical. Styles three, filiform, length of the stamens. Stigmas capillaceous-multifid.

PER. Capsule ovate, one-celled, three-valved. Receptacles annexed to the valves longitudinally, linear.

SEEDS numerous, oblong, obtuse.

## ESSENTIAL CHARACTER.

Cal. five-cleft, funnel-form; exterior two-leaved. Pet. five, inserted into the calyx. Stigmas multifid. Caps. one-celled, three-valved.

## SPECIES.

1. Turnera ulmifolia. Elm-leaved Turnera.

Lin. spec. 387. Syst. 296. Reich. 1. 741. Willd.

1. 1503. vir. cliff. 20. hort. cliff. 122. t. 10.

Gartn. fruct. 1. 366. Swartz obs. 116. Mill.

fig. t. 268. f. 2. Brown jam. 189.

T. frutescens ulmifolia. Plum. gen. 15. Mart. cent. t. 49.

β. T. angustifolia. Mill. dist. n. 2. fig. t. 268. f. 1. Curt. magaz. t. 281.

T. frutescens folio longiore et mucronato. Mart. cent.

t. 49. Cistus urticae folio, &c. Sloan jam. 1. 202.

t. 127. f. 4, 5.

Flowers sessile petiolar, leaves biglandular at the base.

[2. Turnera Pumilea.

Lin. spec. 387. Syst. 297. Reich. 1. 742. Willd.

1. 1503. amoen. 5. 395. Swartz. obs. 116.

Pumilea. Brown jam. 188. n. 1.

Chamae-Cistus luteus, foliis parvis serratis. Pet. gaz.

59. t. 38. f. 9.—urticae folio, flore luteo. Sloan.

jam. 1. 202. t. 127. f. 6.

Flowers sessile petiolar, leaves n landular.

3. Turnera rupestris.

Lin. spec. ed. Willd. 1. 1504. Aubl. guian. 1. 289.

t. 113. f. 1.

Peduncles axillary two-bristled, leaves linear ferrate.

4. Turnera sidoides.

Lin. Syst. 297. Reich. 1. 742. Willd. 1. 1504.

mant. 58.

Peduncles axillary two-bristled, leaves obovate-wedge-shaped ferrate.

5. Turnera frutescens.



*Lin. spec. ed. Willd. 1. 1504. Aubl. guian. 1. 290 t. 113. f. 2.*

*Peduncles axillary two-bristled, leaves lanceolate acuminate equally serrate.*

6. *Turnera rugosa.*

*Lin. spec. ed. Willd. 1. 1504.*

*Piriqueta villosa. Aubl. guian. 1. 298. t. 117.*

*Burcardia. Gen. plant. ed. Schreb. n. 530.*

*Peduncles axillary leafless, flowers five-styled, leaves oblong erose-toothed wrinkled.*

7. *Turnera cistoides. Betony-leaved Turnera.*

*Lin. spec. 387. syst. 297. Reich. 1. 742. Willd.*

*1. 1505. Swartz obs. 117.*

*Pumilea. Brown. jam. 189. n. 2.*

*Helianthemoides. Boerb. lugdb. 2. 269.*

*Helianthemum betonicae folio, caule hirsuto. Plum. spec. 7. ic. 150. f. 1.*

*Chamaeciflus. Sloan. jam. 1. 202. t. 127. f. 7.*

*Peduncles axillary leafless, leaves serrate at the top.*

8. *Turnera racemosa.*

*Lin. syst. 297. Willd. 1. 1505. Jacqu. hort. vind.*

*3. t. 94.*

*Racemes terminating elongated, leaves ovate toothed.*

9. *Turnera guianensis.*

*Lin. spec. ed. Willd. 1. 1505. Aubl. guian. 1. 291. t. 114.*

*Raceme terminating few-flowered naked, leaves linear serrate biglandular at the base.]*

DESCRIPTIONS, &c.

1. Stem shrubby, eight or ten feet high, sending out branches on every side the whole length. Leaves ovate-lanceolate, two inches and a half long, and an inch and half broad, rough on their upper side, and of a lucid green, their under side has many strong veins, and is of a lighter green, the edges are serrate: the flowers sit close upon the footstalks of the leaves, having two pretty large leafy appendages to the calyx. The corolla is large and of a bright yellow. [Capsule superior, ovate, indistinctly three-cornered, pubescent, opening from the top to the middle in three parts. Receptacle, three raised lines, inscribed longitudinally on the inner wall of the capsule, accompanied by very numerous short umbilical chords. Seeds slightly curved inwards, attenuated towards the navel, scored with many minute excavations in rows, chestnut-brown: aril halved, tongue-shaped, membranaceous, thin, whitish, lying on the concave part of the seed, free on all sides, inserted into the navel<sup>a</sup>.]

Found by Father Plumier in Martinico; it is native of other parts of the West Indies. [Browne says, it grows in great abundance about the red hills in Jamaica, and seldom rises above four or five feet from the root; that it has a shrubby but weakly stalk, with a few serrated ovate leaves, and large yellow flowers, having somewhat of the appearance of the malvaceous tribe at first sight.

Cultivated in 1733, by Mr. Miller<sup>a</sup>.

β. Narrow-leaved *Turnera* has a smaller corolla, with pointed petals; the bractes have no glands; the leaves are more obtuse; the anthers orange not yellow<sup>b</sup>.]

It rises with a shrubby stalk to the height of eight or ten feet; with branches less slender and stiff than in broad-leaved *Turnera*. Leaves narrow-lanceolate, hairy, near three inches long; and about three quarters of an inch broad, terminating in acute points, obtusely serrate on their edges, and standing upon very short foot-stalks: when rubbed they emit a disagreeable odour. The flowers are of a pale yellow; the petals large and oval, with the tails or claws twisted and joining. They are not so large or of so bright a yellow as in the true Elm-leaved *Turnera*. Sloane first discovered it in Jamaica, [where he says it grows between Guanaboa and the town on the Red Hills very plentifully, and in several other places of the island.]—This as well as the other was observed by Dr. William Houstoun in several parts of America, and was cultivated in 1733, by Mr. Miller, who considered it as a distinct species, having found from an experience

of thirty years, that plants raised from its seeds, constantly differed from those of the *ulmifolia*. [Mr. Curtis also has given it as a species; and informs us, that the narrow-leaved *Turnera* is generally known to the nurserymen about London as the *ulmifolia*, to which name the foliage by no means answers. The true Elm-leaved *Turnera* is figured in Martyn's Decades, and in Linneus's Hortus Cliffortianus. On the same plate in the former of these works, there is a very excellent figure of what he considered as another species; and which is this narrow-leaved variety. It flowers from June to August: the flowers are showy, but of short duration. The circumstance of their growing out of the footstalk of the leaf is remarkable<sup>c</sup>.

I am at a loss to understand what Linneus means by the leaves of this variety being more obtuse than the other, for they are rather acuminate. The petals are very obtuse at the top, and crenated there, with sometimes a short point, standing out in the middle. See Mr. Curtis's figure.

2. Root annual, branching, thready. Stem herbaceous, from three to six inches high, branched, nearly upright, but often decumbent, round, hirsute; branches simple, erect. Leaves alternate, distant, broad-lanceolate, short, deeply serrate, nerved, hirsute, clustered towards the end of the branchlets, spreading. Petioles round, short, hirsute, terminating, flower-bearing. Stipules two, linear, erect, at the base of the leaves, within which is a small yellow flower, scarcely open. Flowers terminating, clustered, in the centre of the leaves. Calyx corolliferous, connate with the corolla; segments linear, acute, pressed to the corolla, erect, hirsute. Corolla deciduous: claws linear, long, roundish at top, veined, orange; border convoluted so that the corolla is scarcely open. Filaments of the same length with the petals, erect. Anthers oblong, blue. Germ ovate. Valves of the capsule ovate, acute, revolute. Seeds roundish, compressed, wrinkled, brown. Native of Jamaica, in dry sandy fields; flowering towards the end of the year<sup>d</sup>.

Brown named this plant and the seventh species *Pumilea*, from their smallness. This, he says, grows about Old-harbour, and the foot of Liguanea mountains; is always simple and upright, and never rises more than two or three inches; the flowers always solitary, from the axils of the upper leaves.

3. This is a shrub three feet high. Leaves alternate, sessile, narrow, oblong, toothletted, acute. Flowers small, yellow, axillary, solitary. Native of Guiana. Aublet found it in the moist clefts of rocks, on the high banks of the river Sinemari; flowering and fruiting in November<sup>e</sup>.

4. Stems palmary, simple, hairy. Leaves alternate, subsessile, deeply serrate except towards the base where they are quite entire, very evenly tomentose on both sides, hairy beneath along the veins and edge. Flowers solitary in the axils, on very short peduncles. Bractes on the peduncle two opposite linear rough-haired length of the calyx. Calyx turbinate, five-cleft, hairy. Petals obovate, inserted into the calyx. Filaments shorter by half than the petals. It agrees with *T. cistoides* in having a hairy stem; but that wants the bractes and the nap on the leaves. Native of Brasil. *Arduini*<sup>f</sup>.

5. This is a shrub eight feet in height. Leaves alternate, subsessile, lanceolate, acute, toothletted, yellowish green. Flowers axillary, yellow, small, solitary. Native of Guiana, in clefts of rocks, on the banks of the Sinemari, flowering in December.

6. This is an annual plant, with a fibrous root. Stem branched, two feet high, hirsute with rufescent hairs. Leaves alternate, ovate, oblong, toothed, villose, wrinkled, subsessile. Flowers at the ends of the branches and stem, solitary, axillary, on long peduncles. The whole plant is covered with rigid rufescent hairs. Native of Cayenne and Guiana on sandy coasts<sup>g</sup>. Not only Aublet gave it as a genus distinct from

<sup>a</sup> Gærtner.

<sup>b</sup> Hort. kew.

<sup>c</sup> Linn. syst.

<sup>d</sup> Curt. magaz.

<sup>e</sup> Linn. mant.

<sup>f</sup> Swartz.

<sup>g</sup> Aublet.

<sup>h</sup> Aublet.



Turnera under the name of Piriqueta; but Schreber also under that of Burcardia.

7. Root annual, undivided, long, erect, white, thready. Stem subdivided, erect, half a foot high, round, hirsute; with alternate, spreading branches. Leaves on short petioles, linear-lanceolate, bluntish, spreading, toothed or serrate, nerved, somewhat hispid. Bractes none. Flowers solitary in the axils, peduncled and not sessile on the petioles, yellow, small. Peduncles shorter than the leaves, round, filiform, hirsute. Calyx corolliferous: segments lanceolate, acute. Petals contiguous, rounded, entire, slightly striated. Filaments shorter by half than the petals, from the base of the corolla: anthers oblong, vertical, yellow. Germ oblong, subtrigonal: styles diverging: stigmas pencilled. Capsule roundish: valves ovate, revolute. Seeds minute, roundish, ferruginous<sup>h</sup>. Browne says, it seldom rises above four inches; that it is erect, and has very narrow leaves; and that the flowers grow single at the axils of the upper leaves.

Native of Jamaica, Surinam, &c. in South America.—Introduced in 1774, by Mons. Richard. It flowers from June to October<sup>i</sup>.

8. This is an annual plant, with an upright rough-haired stem, suberous at the base. Peduncles very long one-flowered<sup>k</sup>. Flowers yellow<sup>l</sup>.

9. This plant puts forth from the root a somewhat woody stem, two feet high. Leaves alternate, linear, ferrulate, sessile, biglandular towards the base. Flowers in terminating spikes, on short peduncles, each biglandular at its rise. Corolla yellow. Capsule subtrigonal, three-valved. Seeds three, wrinkled. Native of Guiana in marshy meadows; flowering in April<sup>m</sup>. Annual<sup>n</sup>.]

#### PROPAGATION AND CULTURE.

These plants are easily propagated by sowing their seeds on a hot-bed early in the spring, and when the plants are come up two inches high, they should be transplanted into small pots, and plunged into a hot-bed of tanners bark, observing to water and shade them until they have taken root; after which they must be treated as hath been directed for the Guavas, and other tender plants from the same countries. The seeds of these plants will often fall into the pots which are placed near them in the stove, which will grow, and soon furnish plants enough, after a person is once possessed of them. As they are too tender to live in the open air in England, they must be placed in the bark-bed in the stove, where, during the winter season, they must be kept warm and frequently watered; but in the summer season they must have a great share of air, otherwise they will draw up tender, and not produce many flowers.

When the plants are grown pretty large, they may be treated more hardily, by placing them in the dry stove; where, if they are kept in a moderate degree of heat, they will thrive and flower very well. Those who would save the seeds of these plants, must watch them carefully, because, when they are ripe, they soon scatter if they are not gathered.

These plants produce their flowers great part of the year, if they are kept in a proper degree of warmth, so that there are some of the flowers in beauty for at least nine or ten months, which renders the plants more valuable.

They seldom continue more than two or three years.

TURNSOLE. See *Croton* and *Heliotropium*.

[TURPENTINE TREE. See *Pistacia Terebinthus*.

TURPETHUM. See *Convolvulus*.

TURRÆA. (So named by Linneus, in memory of Giorgio à Turre, author of a History of Plants, printed at Padua, 1685. We may add, Antonio Turra of Vicenza, author of a dissertation de Farsetia, &c.

Lin. gen. Reich. n. 574. Schreb. n. 722. Cavan. diff. 7. Smith. ic. ined. 1. t. 10—12. Juss. 264.

Class. 10. 1. Decandria Monogynia.

Nat. order of Trikilata. Melia Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, five-toothed, very small, permanent.

<sup>h</sup> Swartz.

<sup>i</sup> Hort. kew.

<sup>k</sup> Willdenow.

<sup>l</sup> Jacquin.

<sup>m</sup> Aublet.

<sup>n</sup> Willdenow.

COR. Petals five, linear, spreading, long.

Nectary: tube cylindrical, length of the petals, with a ten-cleft mouth.

STAM. Filaments ten, within the mouth of the nectary, very short. Anthers subovate.

PIST. Germ roundish. Style filiform, length of the nectary. Stigma thickish, wrinkled.

PER. Capsule roundish, pentacoccus: with the valves opening longitudinally.

SEEDS two, kidney-shaped.

OBS. Corollas of *Melia*, *Swietenia* and *Trichilia* are very like them.

#### ESSENTIAL CHARACTER:

Cal. five-toothed. Pet. five. Nect. toothed, cylindrical, bearing the anthers at the mouth between the teeth. Capsule pentacoccus. Seeds two.

#### SPECIES:

1. *Turræa virens*.

Lin. syst. 399. Reich. 2. 271. Willd. 2. 555. mant. 237. Smith ic. ined. 1. t. 10.

Leaves elliptic-lanceolate emarginate very smooth, calyxes and fruits silky-villose.

2. *Turræa pubescens*.

Lin. spec. ed. Willd. 2. 555. Hellen. act. holm. 1788. p. 296. t. 10. f. 3.

Leaves ovate emarginate pubescent beneath, calyxes villose.

3. *Turræa maculata*.

Lin. spec. ed. Willd. 2. 555. Smith ic. ined. 1. t. 11.

T. glabra. Cavan. diff. 7. 360. t. 204.

Leaves ovate acute smooth, calyxes ciliate.

4. *Turræa sericea*.

Lin. spec. ed. Willd. 2. 555. Smith ic. ined. 1. t. 12.

T. tomentosa. Cavan. diff. 7. 361. t. 205.

Leaves ovate bluntish tomentose on both sides, calyxes peduncles and petals villose.

5. *Turræa lanceolata*.

Lin. spec. ed. Willd. 2. 556. Cavan. diff. 7. 361. t. 205. f. 1.

Leaves lanceolate rounded on both sides smooth, segments of the calyx very long lanceolate.

#### DESCRIPTIONS, &c.

1. This is an evergreen tree or shrub, with scattered divaricating leafy branches, and a smooth cloven bark, silky-villose on the twigs. Leaves alternate, subacuminate, quite entire, a little rolled back at the edge, naked shining and veined on both sides, paler beneath. Petioles very short, silky, curved inwards. Stipules none. Flowers lateral shaped into a very small axillary spike, with a few small leaves interposed. Bractes small linear villose. Peduncles angular one-flowered somewhat silky. Calyx small pentangular. Petals linear-lanceolate tender naked yellow. Nectary tubular oblique, widening a little towards the top, striated, segments linear acute bent down spreading. Stamens placed alternately between the segments of the nectary. Anthers subovate, margined, in the throat of the nectary. Style declined, deciduous. Capsule depressed, ten-valved, five-celled. Allied to *Melia*, *Swietenia* and *Trichilia* in the nectary, but very distinct from them all in the fruit. Found by Koenig among heaps of scoræ on worn-out volcanos in the East Indies.

Hellenius, in the Stockholm acts for 1788, has described a species very different from this under the name of *Turræa virens*. Dr. Smith thinks this and another, which he names *T. pubescens* (n. 2.) are doubtful species; the anthers being on the tips of the nectary, not between the segments, and the fruit being unknown<sup>o</sup>.

2. Leaves entire or emarginate membranaceous; flowers umbelled. Fruit as yet unknown. Native of the isle of Hainam.

3. This is a tree with deciduous leaves, alternate branches, and a cloven but very smooth bark. Leaves alternate elliptic quite entire, smooth on both sides, with pale spots beneath especially near the nerves. Petioles straight channelled smooth. Stipules none.

<sup>o</sup> Smith ic. ined.



Flowers in lateral bundles, with small acute ciliate bractes interposed. Peduncles smooth, thicker towards the top, one-flowered, erect. Calyx small, hemispherical, smooth, ciliate at the edge. Petals very long, linear, yellow, a little wider at the end, pubescent on the outside. Nectary of the same length and colour with the petals, exactly cylindrical, very slender, smooth, ten-streaked, margin ten-cleft, the clefts linear-lanceolate acute spreading. Stamens in the throat of the nectary. Style of the same length with the nectary. Native of Madagascar, where it was found by Commerſon. Communicated by Thouin.

4. This also is a tree with deciduous leaves. Branches alternate, with a dusky bark slightly pubescent. Leaves alternate elliptic quite entire, on both sides, the younger ones at least, very softly villose, nerved; the nerves straight. Petioles straight, villose. Stipules none. Flowers from the lateral buds, mostly solitary, very large red drooping, bursting forth whilst the leaves are yet tender. Bractes numerous acute villose. Peduncles short thick angular tomentose-hoary. Calyx bell-shaped angular, the whole tomentose-hoary not ciliate. Petals four inches in length linear recurved, ovate and obtuse at the end, hoary on the outside. Nectary the length of the petals, curved in, hairy, scarcely widening at the top, border ten-cleft; clefts bifid linear acute spreading. Stamens in the throat of the nectary, with the anthers standing out between the clefts. Anthers two-horned. Style a little longer than the nectary. Stigma club-shaped. Found in Madagascar by Commerſon, and communicated by Thouin<sup>2</sup>.

5. Stem frutescent, covered with a gray bark; branches wand-like. Leaves alternate, subcoriaceous, shining, quite entire, one-nerved, pale beneath, supported on short petioles. Stipules none. Peduncles axillary, one or two-flowered. Petals yellow with a scarlet base. Fruit covered with a rufous nap. Found by Commerſon in Madagascar<sup>3</sup>.

TURRAEA. See *Trichilia*.

TURRITA. See *Arabis*.]

TURRITIS. (From *turris*, a tower. Linneus says, because it is tall and narrow.—Ray, that it had the name—*ab extremorum caulium forma, qui in metæ aut pyramidis effigiem definit.*)

Lin. gen. n. 819. Reich. n. 883. Schreb. n. 1095.

Tournef. Dill. gen. Juss. 238. Gertn. t. 143.

Class. 15. 2. Tetradynamia Siliquosa.

Nat. order of *Siliquosa*, *Cruciformes* or *Cruciferae*.

#### GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate-oblong, from parallel-converging, deciduous.

COR. four-petalled, cruciform. Petals ovate-oblong, obtuse, erect, entire: claws erect.

STAM. Filaments six, awl-shaped, erect, length of the tube: two of them shorter. Anthers simple.

PIST. Germ length of the flower, round, somewhat compressed. Style none. Stigma obtuse.

PER. Siliqua longest of all, stiff, four-cornered; angles opposite alternate obsolete and somewhat compressed, two-celled, two-valved: valves scarcely equal to the partition.

SEEDS very numerous, roundish, emarginate.

#### ESSENTIAL CHARACTER.

Siliqua very long, angular. Cal. converging, erect. Cor. erect.

#### SPECIES.

1. *Turritis glabra*. Smooth Tower-Mustard.

Lin. spec. 930. Juss. 600. Reich. 3. 274. Willd.

3. 542. hort. cliff. 339. fl. suec. n. 606. Gertn.

fruct. 2. 297. Hudf. angl. 291. Wither. arr. ed.

3. 588. Smith. brit. 715. engl. bot. t. 777.

Curt. lond. 4. t. 47. 253. Sibth. oxon. n. 577.

Fl. dan. t. 809. Hall. belv. n. 455. Hoffm. germ.

240. Roth. germ. 1. 286. 2. 114. Pollich. pal.

n. 637. Krock. files. n. 1091. Crantz austr. 36.

Scop. carn. n. 839. Villars dauph. 3. 322. Allion.

pedem. n. 977.

<sup>2</sup> Idem.

<sup>3</sup> Cavanilles.

*T. perfoliata*. Neck. gallob. 283.

*T. fol. inferioribus cichoraceis, cæteris Perfoliatæ*.  
Tourn. inst. 224.

*Turritis*. Ger. 212. emac. 272. Raii hist. 799. Jyn.  
293. Petiv. brit. t. 47. f. 10.

*T. vulgarior*. Park. theat. 852. 1. Baub. hist. 2.  
836.

*Turrita vulgarior*. Clus. hist. 2. 126. 1.

*Brassica sylvestris*, foliis circa radicem cichoraceis.

Baub. pin. 112.—fol. integris et hispidis. Baub.

pin. Mor. hist. 2. f. 3. t. 2. f. 22.

Root-leaves toothed hispid, stem-leaves quite entire embracing.

[2. *Turritis lævigata*.

Lin. spec. ed. Willd. 3. 543.

Leaves smooth, root-leaves obovate serrate, stem-leaves lanceolate-linear quite entire embracing.

3. *Turritis stricta*.

Lin. spec. ed. Willd. 3. 543. Allion. austr. pedem.  
18. n. 978.

Leaves smooth shining radicate ovate somewhat toothed, stem leaves lanceolate sharply toothed sessile.]

4. *Turritis hirsuta*. Hairy Tower-Mustard.

Lin. spec. 930. Reich. 3. 275. Willd. 3. 543. hort.

cliff. 339. fl. suec. n. 607. Hudf. angl. 291.

Witber. arr. ed. 3. 589. Smith brit. 716. engl.

bot. t. 589. Lightf. scot. 358. Relb. cant. ed. 2.

n. 555. Sibth. oxon. n. 576. Fl. dan. t. 1040.

Hall. belv. n. 456. Hoffm. germ. 240. Pollich.

pal. n. 638. Crantz. austr. 35. Jacqu. collect.

1. 70. ic. rar. 1. 126. Neck. gallob. 283. Villars

dauph. 3. 323. Allion. pedem. n. 978. Gmel.

fib. 3. 263. Thunb. jap. 260.

*T. hirta*. Krock. files. n. 1092.

*T. muralis minor*. Raii Jyn. 294. Petiv. brit. t.  
47. f. 12.

*Arabis hirsuta*. Scop. carn. n. 835. Roth. germ. 1.  
285. 2. 112.

*Erysimo similis hirsuta alba*. Baub. pin. 101. prodr.  
42. ic. Park. theat. 834. 6. Mor. hist. f. 3.

t. 3. f. 5.

*Barbarea muralis*. Baub. hist. 2. 269. Raii hist.  
799. non descr.

All the leaves hispid, stem rough-haired, hairs simple spreading; silique quadrangular.

[5. *Turritis patula*.

Lin. spec. ed. Willd. 3. 544. Ehrh. Beitr. 7. 259.

All the leaves hispid, stem-leaves embracing toothed at the end, branches spreading.

6. *Turritis pubescens*.

Lin. spec. ed. Willd. 3. 544. Desfont. altant. 2.  
92. t. 163.

All the leaves hispid, stem-leaves sessile bluntly toothed at the end, branches spreading.

7. *Turritis ciliata*.

Lin. spec. ed. Willd. 3. 544. Schleicher cat. 59.

Leaves smooth, stem-leaves sessile toothed at the base, with forked ciliate hairs at the base and tip.

8. *Turritis alpina*.

Lin. syst. 600. Reich. 3. 275. Willd. 3. 545.

Hoffm. germ. 240. Krock. files. n. 1093.

Root-leaves toothed hispid, stem-leaves half embracing.

#### DESCRIPTIONS, &c.

1. Root annual, (biennial, Lin. and Curt.) fusiform. The straight upright wand-like stem is two feet or more in height (one to three Curt. two to three Woodw. a foot and half Miller.) round, leafy, at first simple, but producing a few lateral upright flowering-branches after the main spike of pods is full grown; (near the ground hairy, but smooth above, Curtis) Root-leaves lanceolate, broadly toothed and almost sinuate, rough on both sides with rigid forked or simple hairs: stem-leaves numerous, alternate, sessile, upright, sagittate, entire, smooth, glaucous, embracing. Flowers numerous, small, in a corymb which soon becomes a spike: petals pale sulphur-coloured (or greenish white, Witb.) entire. Pods long, linear, flat, bursting at their base, and containing a great number of seeds.—Pods upright, approximating to the stem so as almost

<sup>2</sup> Engl. bot.



to conceal it; roundish somewhat flattened, faintly quadrangular, *Curt.* When fully grown cylindrical compressed, *With.* According to Gartner, three inches and more in length, linear, rhomb-compressed, smooth: partition membranaceous, parallel to the valves, or equal to the greatest breadth of the pod, terminated by the stigma which is sessile and shortly two-necked: valves in the middle very obtusely angular. Seeds about sixty in each cell, ovate compressed a little, terminated by a very narrow almost obsolete membranaceous margin, fulvous, (reddish brown, *Curt.*)

Scarcely to be distinguished from *Arabis* either by its natural habit or technical characters\*. Pollich remarks that he could not discover any nectareous glands; Scopoli however mentions them. Gartner says, that the great length of the pod is the best mark of the genus.

Native of most parts of Europe in pastures, pits and other waste places, and on banks near hedges, on a dry gravelly soil; flowering from may to july. Near London not common; Mr. Curtis noticed it only near Charlton, but says that farther on in Kent it is more common, as well as in many other parts of England. It has been found near Lewisham. A. B. Lambert, Esq. and Mr. Groult gathered it near Richmond. It occurs in several parts of Norfolk, as between Norwich and Yarmouth in many places, at Spixwort, and in the road to Coltishall. The Rev. H. J. Wollaston found it in Thurston churchyard, Suffolk, and in the field adjoining. Near Colchester in Essex, by Hudson. Stow wood in Oxfordshire, by Sibthorp. Near Lichfield, by Mr. Whateley. Near Castle Bromwich, by Mr. Jones. Between Ashbourne and Okeover in Derbyshire, by Dr. Stokes. In the quarries above Bath, by Mr. Swaine. On St. Vincent's rocks near Bristol, by Dr. Withering. About Darfield near Barnesley in Yorkshire, by Mr. Salt†.

Mr. Curtis remarks, that it varies so much in size, that the old botanists make two species of it. Dr. Withering would have it named Towerwort in English.

2. Root biennial. Stem quite simple, a foot high. Root-leaves smooth, obtuse, very slightly serrate, petioled: stem-leaves smooth, sagittate; the lower ones an inch long, lanceolate, obtuse, serrate at the top; the rest an inch and half long, narrow, lanceolate-linear, quite entire. Flowers like those of the preceding, but a little smaller. Pods erect. It is clearly distinct from the preceding, which it otherwise resembles, by its smooth obovate serrate root-leaves, and its narrower lanceolate-linear stem leaves. Native of Pennsylvania.

3. Stem quite simple, two feet high, erect. Root-leaves scarcely toothed: stem-leaves shining, narrowed at the base, remotely and sharply toothed. It is allied to the next succeeding species, from which it differs chiefly in its smoothness. Native of Piedmont, in moist meadows‡.

4. Root strong, woody, perennial. Stems generally several, one of which is much stronger than the rest, erect, a foot high, leafy, branched round, clothed with thickset, simple, white, prominent hairs; the upper part and flowering branches smooth. Leaves toothed, all more or less hairy with simple or forked hairs: root-leaves slender at the base: those on the stem sessile or partly embracing. Flowers small, white. Pods numerous, forming a very long spike, erect, but finally nodding, narrow-linear, compressed, but with four angles, smooth and somewhat shining, beaded as it were by the projecting seeds, rather blunt at the top, and crowned with the almost sessile stigma\*.

Mr. Woodward remarks, that the plant does not grow so tall, and that the pods are not nearly so numerous as in the smooth Towerwort. The corolla also is white; and Mr. Miller observes that it flowers earlier. Scopoli has ranged it in the genus *Arabis* on account of its glands.

Native of many parts of Europe, on rocks, in stony places, on old walls and castles, and in dry mountainous

pastures; flowering in may. In the western and northern counties, by Ray. Near Midhurst in Sussex, by Doody. In Switham bottom near Croydon in Surry, by Hudson. On Lakenham church near Norwich, by Mr. Crowe. Near Bury in Suffolk, by W. Matthew, Esq. In several places in Cambridge-shire. Rewley Abbey, Oxfordshire, by Dr. Sibthorp. Ruins of Old Sarum. St. Vincent's rocks. Wick Cliffs. Baydales, Darlington. About Settle. King's park, Edinburgh, &c.

Linneus originally confounded with this, not only *T. alpina*, which has all the leaves smooth; but also *T. hirsuta* of Gerard's *Flora Galloprovincialis*, which has perfectly flat pods without any lateral angles, and the hairs on its stem depressed and forked, as are all those on its leaves; which in the proper *T. hirsuta* are for the most part simple†.

5. Root annual. It is different from the *hirsuta* in this circumstance, in being of a smaller stature, in having a more flexuose stem, with spreading instead of upright stiff branches; the leaves toothed towards the tip, not as in the *hirsuta* in the middle and towards the base. It agrees with that species, which it resembles very much, in its hairiness, forked hairs, leaves cordate at the base, and smooth calyx. Native of Hungary, on open hills.

6. This also resembles *T. hirsuta*, but the branches are spreading, the leaves obtusely toothed towards the tip, the stem-leaves sessile attenuated at the base not cordate‡. Desfontaines says that it is less villose, that the stem-leaves are more deeply toothed; and the pods fewer and pubescent. Native of Algiers on the mountains.

7. The whole of this is smooth, the stem quite simple and erect, the root-leaves oblong, attenuated at the base into the petiole, ciliate along the margin and at the base and tip with forked hairs, stem-leaves attenuated at the base and toothed, ciliate at both ends with long forked hairs. Native of Switzerland§.

8. Stature the same as that of *T. hirsuta*, but the stem even, and the stem-leaves altogether smooth, quite entire, sessile or little cordate at the base and blunt, scarcely half embracing. The flowers are larger: the petals white, very blunt, obovate-oblong, twice as long as the calyx; which is compressed a little and erect. The flowers indicate that this is different from the *hirsuta*¶. Native of Germany, Silesia, Austria.]

#### PROPAGATION AND CULTURE.

If the seeds be permitted to scatter, or if they be sown on a wall, among rock-work, or in a dry border, there is no hazard of these plants maintaining their situation.

TURRITIS. See *Arabis*, *Brassica*, *Cardamine*, *Dentaria*, *Erysimum*, *Hesperis*, *Sisymbrium*.

TUSAI. See *Fritillaria imperialis*.

TUSSILAGO. (From *tussis*; on account of its use in curing coughs.)

Lin. gen. n. 952. Reich. n. 1032. Schreb. n. 1289.

Tournef. t. 279. Vaill. art. gall. 1720. f. 46.

Juss. 181. Gertn. t. 170. Petalites. Tournef.

t. 258. Vaill. art. gall. 1719. Gertn. t. 166.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*. *Corymbifera* Juss.

#### GENERIC CHARACTER.

CAL. Common cylindrical: scales lanceolate-linear, (15 or 20,) equal, as long as the disk, submembranaceous.

COR. Compound, various.

Corollæ in some all hermaphrodite and tubular, or only in the disk.

Females in some none, in others ligulate.

Proper of the Hermaphrodite funnel-form: border five-cleft (or four-cleft,) acute, reflexed, longer than the calyx.

Females none, or ligulate, very narrow, longer than the calyx, entire.

STAM. in the Hermaphrodites; Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. in the Hermaphrodites. Germ. short. Style filiform, longer than the stamen. Stigma thickish.

\* Idem.

† Smith brit. With. &c.

‡ Willdenow.

§ Smith brit. and engl. bot.

¶ Idem.

Willdenow.

Idem.

Linn. syst.



In the Females Germ short. Style filiform, length of the hermaphrodite. Stigma bifid, thickish.

PER. none. Calyx scarcely changed.

SEEDS in the Hermaphrodites solitary, oblong, compressed. Down capillary, stipulate.

In the Females, if any, like the others.

REC. naked.

OBS. Petasites Tourn. has no ligulate florets in the ray, though in some there are naked female florets.

Tussilago Tourn. has always female florets in the ray, with a ligulate corolla.

Anandria has a sessile down.

T. frigida varies with floscular and radiate flowers.

#### ESSENTIAL CHARACTER.

Cal. scales equal, as long as the disk, somewhat membranaceous. Down simple. Recept. naked.

#### SPECIES.

1. Tussilago Anandria.  
Lin. spec. 1213. syst. 755. Reich. 3. 784. hort. upf. 259. t. 3. f. 1. Gmel. fib. 2. 141. t. 68. f. 1. Lour. cochinch. 503. ed. Willd. 614.  
Anandria. Lin. amoen. 1. 120. t. 11.  
β. T. scapo unifloro, calyce subaperto. Gmel. fib. 1. 143. t. 67. f. 2.  
Scape one-flowered scaly erect, leaves lyrate-ovate.
- [2. Tussilago dentata.  
Lin. spec. 1213. Reich. 3. 785. Burm. plum. 28. Plum. spec. 10. ic. 40. f. 2. (After.)  
Scape one-flowered without any bracte, leaves lanceolate toothed villose.
3. Tussilago albicans.  
Swartz prodr. 113.  
Leontodon tomentosum. Lin. suppl. 347.  
Scape one-flowered without any bracte, flower nearly erect, leaves lanceolate-ovate tomentose beneath indistinctly serrate backwards.
4. Tussilago pumila.  
Swartz prodr. 113.  
Scape one-flowered without any bracte erect, leaves lyrate gasped toothblotted tomentose.
5. Tussilago nutans.  
Lin. spec. 1213. Reich. 3. 785. amoen. 5. 406. Swartz obs. 305. Brown. jam. 310. (Leontodon.) Sloan. jam. 1. 255. t. 150. f. 2. (Dens Leonis.) Plum. spec. 14. ic. 41. f. 1. (After.)  
Scape one-flowered without any bracte, flower nodding, leaves lyrate obtuse.]
6. Tussilago alpina. Alpine Colt's-foot.  
Lin. spec. 1213. syst. 755. Reich. 3. 785. hort. cliff. 411. Gouan monsp. 438. Jacqu. austr. 3. 26. t. 246. Krock. files. n. 1384. Villars dauph. 3. 174. Allion. pedem. n. 639. Curt. magaz. t. 84.  
T. sylvestris. Scop. carn. n. 1057. Jacqu. austr. 5. app. t. 12.  
T. alpina rotundifolia glabra. Baub. pin. 197.  
T. alpina 2. Clus. hist. 2. 113.—flore aperto, Ger. emac. 812.  
T. alp. folio glabro. Park. theat. 1373. 1. Raii hist. 260. 3.  
Petasites. Hall. belv. n. 142. Planta adulta.  
β. T. alp. rotundifolia canescens. Baub. pin. 197.  
T. alp. folio canescente. Park. theat. 1373. 2.  
T. alpina. Scop. carn. n. 1056. Raii hist. 260. 2.—flore evanido. Ger. emac. 812. Clus. hist. 2. 113.  
T. discolor. Jacqu. austr. t. 247.  
Petasites. Hall. belv. n. 142. Planta junior.  
Scape almost naked one-flowered, leaves cordate-orbicular crenate.
7. Tussilago Farfara. Common Colt's-foot.  
Lin. spec. 1214. syst. 755. hort. cliff. 411. fl. suec. n. 743. mat. med. 185. Woodv. med. bot. 37. t. 13. Gært. fruct. 2. 447. Hudf. angl. 364. Wither. arr. ed. 3. 719. Smith. brit. 878. engl. bot. t. 429. Hull. 187. Curt. lond. 2. t. 60. Lightf. scot. 475. Relb. cant. ed. 2. n. 683. Sibth. oxon. n. 726. Abbot. bedf. n. 594. Fl. dan. t. 595. Pollich pal. n. 791. Leers herb. n. 663. Krock. files. n. 1385. Scop. carn. n. 1059. Villars dauph. 3. 175. Allion.

pedem. n. 640. Gmel. fib. 2. 140. Neck. gallob. 351. Lour. cochinch. 502. ed. Willd. 614. Blackw. t. 204. Kniph. cent. 6. n. 96. Knorr del. 1. t. H. 10. Ludw. ect. t. 50. Regnault bot.

Tussilago. Fuchf. hist. 140. Camer. epit. 590, 591. Matth. 844. valgr. v. 2. 198. Lob. obs. 320. 1. 2. ic. 1. 589. 1, 2. Ger. 666. emac. 811. Park. theat. 1220. Baub. hist. 563. 3. Raii hist. 259. syn. 173. Petiv. brit. t. 17. f. 8. & 7.

T. vulgaris. Baub. pin. 197. Mor. hist. f. 7. t. 12. f. 1.

Petasites. Hall. belv. n. 143.

Ungula caballina. Trag. hist. 418.

Bechium f. Farfara. Dod. pempt. 596.

Scape one-flowered scaly, leaves cordate angular toothblotted.

#### [8. Tussilago japonica.

Lin. syst. 755. Reich. 3. 786. mant. 113. Thunb. jap. 313.

Arnica tussilaginea. Burm. ind. 182.

Doronicum tussilaginis folio. Pluk. amaltb. 71. t. 390. f. 6. Burm.

Flowers alternate radiate.

#### 9. Tussilago frigida.

Lin. spec. 1214. syst. 755. Reich. 3. 786. fl. lapp. n. 303. suec. n. 744. mant. 469. Fl. dan. t. 61.

Hall. belv. n. 141. Krock. files. n. 1387. Villars dauph. 3. 175. Gmel. fib. 2. 150. t. 70?

Petasites minor tussilaginis folio. Mor. hist. 3. 95. f. 7. t. 10. f. 4.

Cacalia tomentosa. Baub. pin. 198. prodr. 102. Scheuch. alp. 130. t. 18. f. 1.

Thyrse fastigate, flowers radiate.

#### 10. Tussilago palmata. Palmate-leaved Colt's-foot. Ait.

kew. 3. 188. t. 11.

Thyrse fastigate, leaves palmate toothed.

#### 11. Tussilago alba. White Colt's-foot or Butter-bur.

Lin. spec. 1214. syst. 755. Reich. 3. 787. hort. cliff. 411. fl. suec. n. 745. Fl. dent. t. 524.

Krock. files. n. 1386. Villars dauph. 3. 178.

Allion. pedem. n. 641. Pallas it. 1. 36.

Petasites. Hall. belv. n. 139.

P. n. 2. Mill. dict. ed. 7.

P. minor. Baub. pin. 197. Mor. hist. f. 7. t. 12. f. 3.

P. albus. Gært. fruct. 2. 406.

P. flore albo. Camer. epit. 593.

P. albus anguloso folio. Baub. hist. Raii hist. 261.

Thyrse fastigate, female florets naked few.

#### 12. Tussilago hybrida. Long-stalked Colt's-foot, or Butter-bur.

Lin. spec. 1214. Reich. 3. 787. hort. cliff. 411. Hudf. angl. 364. Wither. arr. ed. 3. 721. Smith

brit. 879. engl. bot. t. 430. Hull. 188. Lightf. scot. 476. Leers herb. n. 664. Krock. files. n. 1388. Villars dauph. 3. 181. Allion. pedem. n. 642. Pallas it. 1. 36.

Petasites. Hall. belv. n. 140. Buxb. bal. 258.

P. n. 4. Mill. dict. ed. 7.

P. major & vulgaris prima. Rupp. jen. ed. 1. 180. ed. Hall. 190.

P. major, floribus pediculis longis insidentibus. Dill. elib. 309. t. 230. f. 297. Raii syn. 179.

Thyrse oblong, female florets numerous, hermaphrodite florets very few, anthers separate.

#### 13. Tussilago paradoxa. Downy-leaved Colt's foot or Butter-bur.

Retz. obs. 2. 24. n. 81. t. 3. Ait. kew. 3. 188.

Petasites. Hall. belv. n. 141.

P. n. 3. Mill. dict. ed. 7. n. 3.

Thyrse subovate, female florets naked many, hermaphrodites in threes, anthers free, leaves triangular-cordate toothblotted.

#### 14. Tussilago Petasites. Common Butter-bur.

Lin. spec. 1215. syst. 756. Reich. 3. 787. hort. cliff. 411. fl. suec. n. 746. mat. med. 186. Hudf.

angl. 364. Wither. arr. ed. 3. 720. Smith brit. 880. engl. bot. t. 431. Hull 187. Curt. lond. 2.

t. 59. 134. Lightf. scot. 477. Relb. cant. ed. 2. n. 684. Sibth. oxon. n. 727. Abbot bedf. n. 595. Fl. dan. t. 842. Pollich pal. n. 792.

Leers



*Leers herborn. n. 675. Neck. gallob. 350. Krock. files. n. 1389. Villars dauph. 3. 180. Allion. pedem. n. 643. Thunb. jap. 314. Knorr. del. 2. t. T. Regnault. bot.*

*T. major. Matth. 845. valgr. 2. 199. Camer. epit. 592.*

*Petasites. Hall. belv. n. 138. Fuchs. hist. 644. Dod. pempt. 597. Clus. hist. 2. 116. 1, 2. Ger. 668.*

*emac. 814. Raii hist. 260. syn. 179. Petiv. brit. t. 15. f. 11, 12. Blackw. t. 222.*

*P. vulgaris. Park. theat. 419. f. 3.*

*P. major & vulgaris. Baub. pin. 197. Mor. hist. f. 7. t. 12. f. 1.*

*P. vulg. rubens rotundiore folio. Baub. hist. 3. 566. 2.*

*Thyrse ovate, almost all the florets hermaphrodite syngenesious.]*

#### DESCRIPTIONS, &c.

1. This is a very low plant, the leaves of which grow close to the ground. The flowers stand upon short foot-stalks which rise between the leaves, and are three or four inches long, each sustaining one flower at the top, of a dirty purplish colour. These appear early in the spring, and are succeeded by downy seeds which ripen in June.

[Stem none. Root perennial, with branching radicles, creeping far and wide. Leaves radical, subovate, sublyrate, veined, on long erect petioles. Scape one-flowered, thick, shorter than the leaves, with acute imbricate scales. Flower yellow, with an erect somewhat open calyx<sup>c</sup>.

In cooler situations the calyx is closed and the flower floscular; in warmer ones the flower is radiate and spreading. The down is sessile and hairy<sup>d</sup>. Native of Siberia, and the northern provinces of China.

2. Native of America.

3. Root annual, simple. Leaves radical, a finger's length, webbed above, white-tomentose beneath. Scape longer than the leaves, more tomentose at top. Calyx oblong, imbricate; scales somewhat pappose, linear, acute. Seeds striated. Down rufescent. Native of Jamaica<sup>e</sup>.

4. Annual. Native of Jamaica<sup>f</sup>.

5. This is an annual stemless plant, about a foot high. Leaves radical, petioled, wedge-shaped, sometimes ovate and only deeply toothed, gashed in the middle, gradually attenuated to the base, white tomentose beneath. Scape long, simple, somewhat tomentose. Flower nodding during the time of flowering, solitary. Calyx imbricate: scales lanceolate-ovate, tomentose at the base. Corolla radiate: corollets of the disk five-cleft, white; of the ray ligulate, longer than the calyx, linear, bifid, purple. Seeds angular. Native of Jamaica<sup>g</sup>.]

6. This is a low perennial plant. The upper surface of the leaves is smooth and of a bright green colour; the under a little downy and whitish: their foot-stalks arise from the ground, and are three inches long. The peduncles spring from the root, are four inches long, woody, and sustain one purplish flower at the top.

[Flower floscular, with female florets in the ray. The scapes has one or two bractes<sup>h</sup>.

The creeping root often produces two bundles of leaves, which are round, hard, and kidney-shaped, often toothed, and cottony underneath. From the centre of one of these bundles rises a scape six or eight inches long, having one or two linear leaves on it, and a reddish flower at the top. Calyx hard and single, a little swollen at the base where one or two scales are often found. It incloses from forty to fifty florets, ten or fifteen of which are females naked at the edge; the rest are floscular. The seeds are grooved<sup>i</sup>.

Scopoli and Jacquin make two species of this.

Native of the Alps; Switzerland, Austria, the South of France, Piedmont; also of Siberia.—Cultivated by Mr. Miller in 1731<sup>k</sup>. It flowers in March, April and May.

7. Root perennial, creeping horizontally far and wide. Scape erect, simple, from three to five inches high, lengthening after flowering, channelled, downy, clothed with lanceolate imbricate scales, pressed close to the scape; tinged with reddish brown. Flowers solitary, terminating, yellow, more conspicuous on account of their radiate form than most of the other species. The calyx consists of several simple parallel linear equal flat three-nerved smooth reddish brown scales, the length of the disk, finally bent back, accompanied at the base by a few scattered scales like those on the scape. Florets of the ray numerous, spreading, linear, in two or three rows, twice as long as those of the disk, with a more slender stigma. Seeds smooth, slightly attenuated upwards, roundish or indistinctly angular, pale brown or bay-coloured. Down sessile, longer than the calyx, twice as long as the seed, scarcely toothletted, never striped as Linnetis makes it. Receptacle at first flat or slightly concave; afterwards pillowed and almost globular, pitted, naked and smooth. The leaves grow on long foot-stalks, clustered, from short lateral branches; they are very smooth above, green with reddish veins, but tomentose-white beneath: when young they are rolled back; and in that state they are thickly clothed with cotton, as is the scape also<sup>l</sup>.

The flowers come up early in the spring before the leaves, and at some distance from them: they are upright, but as soon as the bloom is past, and the seeds with their down as yet moist are inclosed within the calyx, the heads hang down, as the moisture evaporates in ripening they become lighter, are again erected, and the down expands<sup>m</sup>. The seeds, especially in the disk, are commonly barren. This is often the case with plants, which, like the Colt's-foot, run much at the root.

Native of Europe, Siberia and the northern provinces of China, in moist stiff clayey and marley soil; Dr. Withering remarks, that it is the first plant which vegetates in marle or limestone rubble.

The cotton on the leaves easily rubs off; this wrapped in a rag, dipped in a solution of saltpetre, and dried in the sun, makes the best tinder. The leaves are the basis of the British herb-tobacco. They are somewhat austere, bitterish and mucilaginous; were formerly much used in coughs and consumptive complaints. Dr. Cullen has found them to do considerable service in scrophulous cases. He gave a decoction of the dried leaves, and found it succeed where sea-water had failed. And Fuller relates the case of a girl, with twelve scrophulous sores, who was cured by drinking daily as much as she could for above four months, of a decoction of the leaves made so strong as to be sweetish and glutinous<sup>n</sup>.

It is remarkable that the smoaking of Colt's-foot for a cough has the recommendation of Dioscorides, Galen, Pliny, Boyle, &c. And Linneus says it is still used in Sweden for this purpose. According to Pliny's direction it may be an efficacious remedy in a cough—"in singulos haustus, passum gustandum est." A sip of raisin wine, or rather syrup, is to be taken after each puff<sup>o</sup>. Upon which Mr. Curtis observes, that this is the only account among the ancients which tends towards the practice of smoaking. He has given an excellent figure of this plant in his Flora Londinensis, accompanied with a very entertaining account of its virtues, and the history of smoaking.

Colt's-foot derives the Greek Βηχίον, as well as the Latin name, from its property of curing coughs. The modern European names are taken from the shape of the leaves.

8. Leaves radical, cordate-orbicular, angular, toothed, naked above, obscurely villose beneath, dichotomously nerved, a hand long. Petioles angular, subtomentose, a span in length. Scapes striate-angular, tomentose, erect, half a foot high. Bractes on the scape scattered, and under the petioles, solitary, lanceolate, above naked, beneath tomentose. Flowers alternate. Peduncles tomentose, one-flowered, seldom

<sup>c</sup> Loureiro. <sup>d</sup> Linn. spec. <sup>e</sup> Linn. suppl. <sup>f</sup> Swartz prodr. <sup>g</sup> Swartz obs. <sup>h</sup> Linn. spec. & syst. <sup>i</sup> Villars. <sup>k</sup> Hort. kew.

<sup>l</sup> Smith brit. & engl. bot. Curt. lond. Woodw. mss. <sup>m</sup> Curtis. <sup>n</sup> Withering. <sup>o</sup> Curtis.



two-flowered; the lower ones longer, a finger's length; the upper shorter, aggregate, fastigate, an inch long. Scales of the calyx linear, subtomentose. Corollets yellow. Seeds of all oblong, roundish, villose. Down subfastigate, white, the same length with the tube of the corolla. Root bitter, esteemed a counterpoison by the Japanese<sup>p</sup>.

Linneus, in mantissa, remarks that the leaves are the size of those of *Caltha*; the scape a foot high; the flowers of the same size as in *Arnica*. Native of Japan.

9. Root perennial, creeping. Leaves all radical, triangular, excavated at the base into a deep sinus, having seven or eight prominencies on each side, smooth above, white-tomentose beneath. Petioles slender, scarcely a span long. Scape a span high, round, having one or two broad membranaceous embracing wings, ending in the rudiment of a leaf. Flowers from six to twelve, terminating, fastigate. Calyx oblong. Corolla white, rayed. Stamens in the florets of the disk, but none in those of the ray. Stigma bifid in the former, simple in the latter. Down thrice or four times as long as the calyx<sup>q</sup>.

It varies, according to Linneus, in syst. veg. with floscular and with radiate flowers.

Monf. Villars seems to have taken some pains to ascertain this species. He describes it as having in Dauphiné, a root creeping a little and aromatic, superficial and much less deep or thick than in the alba, *Petasites*, &c. Its heart-shaped leaves a little triangular, are on cylindrical woolly petioles, a foot long; they are unequally toothed like the common Colt's-foot, greenish and woolly above when young, but smooth and deep green in a more advanced state, beneath snow-white. The flowers come out very early; they are frequently accompanied by a leaf or two, even at the base of the stem, which is eight or ten inches high, with reddish pointed scales on it, and terminated by eight, ten or twelve to fifteen flowers in a corymb: these have a reddish calyx composed of thirteen flat pointed scales, besides three four or five smaller ones on the peduncle: the florets are all hermaphrodites white or slightly tinged with red, and forty-five or fifty in number. Seed brown, surmounted by a simple dusky egret.

He remarks that Morison's figure agrees well with the plant found in Dauphiné; that Linneus, Gmelin, Haller, Scheuchzer, Tournefort and Vaillant have all quoted this figure; that Linneus and Gmelin having found angular leaves and radiate flowers, he has described their plant exactly, and assembled a certain number of synonyms; and that Linneus having cited Haller, and the Swiss plant not differing from that of Dauphiné, he has little doubt of its being the same with that of the north.

Native of Lapland, Switzerland, Silesia, Dauphiné and Siberia.

10. Native of Newfoundland and Labrador. Perennial; flowering in april. Introduced in 1777, by John Fothergill, M. D.<sup>r</sup>. It is sufficiently distinguished by its palmate leaves.

11. Root perennial, less superficial than that of the frigida, smaller and not striking so deep as the *Petasites*. Leaves of a size between them, kidney-shaped, villose on both sides, soft, less firm, and of a yellowish green. Flowers of a beautiful white, on a scape from four to eighteen or twenty inches in height, disposed in a corymb, from thirty to forty in number, on peduncles a little villose, having two or three scales, the lower ones two or even three-flowered, the others simple. Scape striated, hollow: scales obtuse, marked with several nerves. Calyx cylindric, composed of eighteen or twenty linear scales. Florets twenty to twenty-five, of which two or three at the edge are female. The pistil of the females is simple and white; that of the hermaphrodites thicker and terminated by two lanceolate very apparent stigmas. It flowers earlier than the frigida<sup>r</sup>.

Native of several parts of Europe. Cultivated in 1683, by Mr. James Sutherland<sup>s</sup>.

12. Root perennial, thick and fleshy, creeping very far. Leaves radical, heart-shaped, pointed, irregularly toothed, cut away close to the side nerves at the base, very broad, downy beneath, standing on long upright fleshy cottony foot-stalks. Scape erect, rising above the leaves, a foot and half high, simple, round, cottony, invested with lanceolate scales, the lowermost of which mostly terminate in a small leafy appendage. Thyrses terminating, nearly ovate and dense, after flowering cylindrical and more loose: pedicels one or two-flowered, sometimes three-flowered, slender, scaly and downy. Flowers flesh-coloured, without any ray: calyx short, nearly smooth, tipped with purple: florets very numerous, all tubular, and for the most part female, except two or three in the middle which are hermaphrodites, red, with the anthers either quite distinct or connected very slightly, and the stigma obtuse, club-shaped, emarginate, and the germ always abortive; the females have a more slender and whitish corolla, a two-parted acute stigma, and a germ naturally fertile, but frequently abortive, as in other plants that run much at the root. Seed obovate. Down rugged, silvery-white. Receptacle pitted. Linneus describes the female florets as naked, or without corolla, but in his own specimen there is no floret naked. —We are almost persuaded, says Dr. Smith, of what nobody has hitherto hinted, that this plant is the true female of *T. Petasites*, being furnished with a small provision only of the other sex to perform its office occasionally, as in *Spinachia*, *Cannabis*, *Musa*, &c.

Native of Germany, Holland, Silesia, Switzerland, Dauphiné, Piedmont, Britain; by the sides of ditches: in several parts of Leicestershire, about Manchester, near Banbury in Oxfordshire. It flowers in april. The down of the seeds, forming a silvery plume, is very ornamental and conspicuous<sup>t</sup>.

13. Root scarcely creeping. Leaves radical, on long petioles, white-tomentose beneath. Scape near the root scaly-leaved, naked below, white-tomentose above, the whole covered with lanceolate loose tomentose scales. Flowers nearly upright, about twenty in a thyrses. Pedicels a little longer than the flowers, having from two to four smooth linear bractes on them. Calyx composed of from twelve to sixteen lanceolate obtuse erect scales or leaflets, red at the tip. Female florets above eighty, length of the down, with the border scarcely widening, unequally trifid, the style long and exceeding the calyx, the stigma slightly bifid. In some the border being oblique appears to be entire, but then two minute toothlets may be observed at the base or the lower sinus. Hermaphrodite florets about three, funnel-form, length of the calyx, with a five-parted erect border; the segments acute: anthers linear, style short, stigmas two long, straight, linear-lanceolate, shorter than the corollet. Down the length of the tube<sup>u</sup>.

Native of Switzerland. Cultivated in 1758, by Mr. Miller. It flowers in april<sup>v</sup>.

It is worth consideration, says Dr. Smith, whether the *T. alba* may not stand in the same relation to this paradoxa, as *Petasites* does to hybrida; the anthers in paradoxa being separate as in hybrida, and united in alba as in *Petasites*<sup>w</sup>.

14. Root perennial, creeping very far, and increasing rapidly so as to be extirpated with difficulty; in which respect it agrees with the hybrida, as well as in the appearance and form of its leaves, which however are somewhat larger in this. The scape is rather shorter, and the thyrses is not so much lengthened out after flowering. The flowers are larger, and the scales of the calyx twice as long. All the florets are hermaphrodite in appearance, with the anthers united, and the stigma thickened and emarginate, but the germ entirely abortive. The younger Linneus and Haller have occasionally noted a very few female florets to accompany the others, which the latter tells us produce good seeds. This circumstance is rare, and has not been observed in England; nor, if general, would it invalidate the conjecture, that this is the real male of

<sup>p</sup> Thunb. jap.  
<sup>r</sup> Villars.

<sup>q</sup> Linn. lap.  
<sup>s</sup> Hort. kew.

<sup>t</sup> Hort. kew.

<sup>u</sup> Smith brit. & engl. bot.  
<sup>v</sup> Engl. bot.

<sup>w</sup> Retzius.

<sup>x</sup> Hort. kew.

*T. hybrida*,



*T. hybrida*, forming but one species with that. All these plants increase so much by root, that impregnation rarely takes place, which is also the case with mints and many other vegetables. As the florets of the circumference only in this genus produce perfect seeds, the central ones having the thickened stigma which appears always to be barren, Dr. Stokes and Professor Sibthorp would remove it to the order Polygamia Neceffaria; but syngenesious plants are subject to such variations in the perfection of their organs or impregnation, that it is by no means certain how far that order, or indeed some others, are founded in nature<sup>a</sup>.

Native of Europe. Common in Britain, on the banks of rivers and ditches: flowering in April. The roots abound with a resinous matter: they have a strong smell, and a bitterish acrid taste. Linneus remarks, that the large leaves afford shelter from rain to poultry and other small animals<sup>b</sup>.

From the largeness of the leaves it had its Greek name *Petasites*. In English, Butter-bur, from their being used formerly to wrap up butter in. Pestilent-wort, from their supposed efficacy in the plague.]

## PROPAGATION AND CULTURE.

These plants are easily propagated by parting their roots in autumn, and must be planted in a moist shady border, where they will thrive, and require no farther care but to keep them clean from weeds.

[Colt's-foot is a bad weed on some lands, especially such as have been over-cropped and exhausted. Ploughing and harrowing alone will not destroy it; but it must be drawn out by the roots, which may be easily done at no great expense where land is well tilled. Root weeds are hardly to be destroyed effectually any other way.

**TUSSILAGO.** See *Arnica*, *Cacalia*, *Senecio*.

**TUTSAN.** See *Hypericum*.

**TUZPATLIZ.** See *Dorstenia Contrayerva*.

**TWAYBLADE.** See *Ophrys*.

**TYPHA** (of Pliny. *Τύφη* of Theophrastus and Dioscorides. From *Τύφος palus*, a marsh. These plants growing in marshes.)

Lin. gen. n. 1040. Reich. n. 1131. Schreb. n.

1401. Tournef. t. 301. Juss. 25. Gertn. t. 2.

Class. 21. 3. Monoecia Triandria.

Nat. order of *Calamariæ*. *Typhæ*. Juss.

## GENERIC CHARACTER.

\* Males numerous in an ament terminating the culm.

**CAL.** Ament common cylindrical, very close, composed of three-leaved setaceous proper Perianths.

**COR.** none.

**STAM.** Filaments three, capillary, length of the calyx. Anthers oblong, pendulous.

\* Females numerous in an ament surrounding the same culm, digested very compactly.

**CAL.** none.

**COR.** none.

**PIST.** Germ placed on a bristle, ovate. Style awl-shaped. Stigma capillary permanent.

**PER.** none. Fruits numerous, forming a cylinder.

**SEEDS** single, ovate, retaining the style, placed on a bristle. Down capillary, from the base to the middle fastened to the seed-bearing bristle, length of the pistil.

## ESSENTIAL CHARACTER.

**MALE.** Ament cylindrical. Cal. indistinct, three-leaved. Cor. none.

**FEM.** Ament cylindrical, below the males. Cal. a villose hair. Cor. none. Seed one, placed on a capillary down.

## SPECIES.

1. *Typha latifolia*. Great Cat's-tail or Reed-mace.

Lin. spec. 1377. syst. 841. Reich. 4. 94. fl. suec.

n. 830. Hudf. angl. 400. Wither. arr. ed. 3.

111. Smith brit. 959. Hull. 203. Curt. lond.

3. t. 61. 171. Lightf. scot. 538. Relb. cant.

ed. 2. n. 742. Sibth. oxon. n. 72. Abbot. bedf.

n. 651. Fl. dan. t. 645. Hall. helv. n. 1305.

Pellich pal. n. 870. Leers herborn. n. 727.

Scop. carn. n. 1144. Villars dauph. 2. 192.

<sup>a</sup> Smith brit. & engl. bot.

<sup>b</sup> Withering.

Allion. pedem. n. 2348. Kniph. cent. 6. n. 97.

Desfont. atlant. 2. 333. Lour. cochinch. 552. ed.

Willd. 675. Forst. prodr. n. 336. Brown. jam.

336. Gertn. fruct. 1. 8.

*Typha*. Camer. epit. 607. Matth. 863. Fuchs. t.

823. Lonic. 1. 174. 1. Lob. obs. 42. 1. ic. 1. 81.

1. Ger. 42. emac. 46. Raii hist. 1312. syn. 436.

*T. palustris*. Tabern. ic. 246. Dod. pempt. 604.

*T. pal. major*. Baub. pin. 20. hist. 2. 539. Mor.

hist. f. 8. t. 13. f. 1. Tournef. inst. 530.

*T. pal. maxima*. Park. theat. 1204. 1.

*T. aquatica*. Trag. 681.

Leaves somewhat sword-shaped, male and female spike

approximating.

2. *Typha angustifolia*. Narrow-leaved Cat's-tail.

Lin. spec. 1377. syst. 841. Reich. 3. 94. hort. cliff.

439. fl. suec. n. 830. Hudf. angl. 400. Wither.

arr. ed. 3. 111. Smith brit. 459. Hull 203.

Curt. lond. 3. t. 62. 169. Relb. cant. ed. 2. n.

743. Sibth. oxon. app. n. 1169. Abbot. bedf. n.

652. Fl. dan. t. 815. Hall. helv. n. 1306.

Pollich pal. n. 871. Scop. carn. n. 1145. Villars

dauph. 2. 192. Allion. pedem. n. 2349. Desfont.

atlant. 2. 333. Gmel. fib. 1. 133.

*T. palustris clava gracili*. Baub. pin. 20. theat. 340.

Tournef. inst. 530. t. 301.

*T. pal. media*. Baub. hist. 2. 540. Raii hist. 1312.

syn. 436. Mor. hist. f. 8. t. 13. f. 2.

*T. minor*. Park. theat. 1204. 2.

β. *T. palustris minor*. Baub. pin. 20. 3. Raii hist.

1312. syn. 436.

*T. minor*. Baub. hist. 2. 540. Lob. ic. 1. 81.

Tabern. Kreuterb. 559. Smith brit. 960.

*T. minima*. Park. theat. 1204. 3.

*T. palustris minima*, duplici clava. Mor. hist. f. 8.

t. 13. f. 3.

Leaves semicylindrical-flattish, equalling the culm, male

and female spike remote.

## DESCRIPTIONS, &amp;c.

1. Root perennial, creeping, the thickness of the human thumb, jointed, spongy, furnished with small fibres of a whitish colour; the young shoots white, tender, terminating in a sharp hard point, like quick-grass. Stalk from three to six feet high, simple, upright, leafy, round and smooth, without knots, leafy at the base. Leaves alternate, upright, twisted, at bottom sword-shaped and fleshy, at top flat, and of a blueish colour, about an inch in breadth, and two or three feet in length, inclosing the stalk in a very long sheath. Sheaths two, deciduous, one at the bottom of the male spike, the other at the middle: Mr. Woodward remarks, that there is frequently a third smaller between the middle and the top of the spike. Filaments before the shedding of the pollen very short, sustaining from one to four anthers; the pollen being shed, they hang down and become longer than the anthers, which are four-grooved, and terminated by a greenish gland. The female ament is contiguous to the male; the germ very minute, sitting on a short foot-stalk; the style thickened above; and the stigma black. Seed very small, on a downy peduncle, terminated by an awn. Receptacle of the male catkin hairy. The quantity of impregnating dust in the male spike is exceedingly great, but proportioned to the great number of seeds in the female spike below; whether these generally vegetate has not yet been ascertained: we only know that many plants which increase much by the root seldom produce perfect seed.

The part which Linneus describes as the calyx, appears rather to consist of some hairs proceeding from the receptacle, and which seem more evidently to be so, from the hairy appearance of the receptacle when the stamens drop off. Mr. Curtis thinks it would be much less puzzling, and perhaps more agreeable to the system, to place this plant in the order Polyandria; there being many stamens, and all united to one receptacle.

Haller says that the roots are eaten in salads, that cattle eat the leaves, and that the downy seeds serve for stuffing pillows. Linneus relates, that coopers use the leaves to fasten the hoops round their casks. Schreber affirms that the leaves are suspected to be



poisonous. Browne informs us, that in Jamaica, the leaves make good mats, and are sometimes used for thatch.

The appearance of the Typha has engaged gentlemen fond of plants to introduce it on the edges of ponds; and painters frequently represent it in aquatic scenes<sup>c</sup>. Rubens has put it into the hand of Christ as a sceptre when he was saluted as a king in mockery by Herod's soldiers.

This plant is a native of the four continents, is common in Britain, and has been found in Jamaica and in New Zealand: in ponds, ditches, and by the sides of rivers and brooks. It flowers with us in July.

2. The smaller Cat's-tail differs from the preceding in having much narrower leaves, not exceeding one third the breadth of the other, semicyndrical below, flat and strap-shaped towards the end, more slender spikes, though the plant grows as tall and as firm as the great Cat's-tail, and the male and female spikes about an inch asunder<sup>d</sup>.

Native of Europe, Barbary and Siberia. Gerarde says, that he found it in the Isle of Shepey. Ray says, that he observed both species growing together in a brook near Leez house in Essex. He adds that it is no less common than the great one; that the leaves are not only narrower but of a paler green; the spike not only more slender, but less coloured and appearing earlier. Mr. Curtis remarked it on the middle of Woolwich common: Mr. Woodward in clay-pits in Norfolk and Suffolk: Mr. Relhan by the brick-kilns on the Chesterton road, by the Cam below Ditton, in Swan pond, &c. Dr. Sibthorp, at Cowley: Dr. Abbot, at Knotting green in Bedfordshire. Hounslow heath.

β. Dr. Smith considers this as a distinct species, and thus describes it. Culm a foot and half high, three times as slender as in *T. angustifolia*. Leaves flat, broadish, scarcely the length of half the culm. Spike three times as thick as in *angustifolia*, abbreviated, foliolose, interrupted, the upper ament either entirely male, as in the others, or female at bottom. Dr. Smith has admitted it in his Flora on the authority of Dillenius. He had it from the territory of Geneva.

He names it *Typha minor*, and thus characterizes it.—Leaves ensiform twice as short as the culm, spike interrupted abbreviated incrassated, culm extremely slender.

When growing among rocks, with its roots confined, it becomes smaller, with the spikes more numerous<sup>e</sup>. Ray says that he found this at the confluence of the Rhone and Arve near Geneva, where Lobel and John Bauhin had observed it before him<sup>f</sup>. It is said also to have been found by Mr. Dandridge on Hounslow heath<sup>g</sup>.

#### PROPAGATION AND CULTURE.

These plants increase so much by their creeping roots, that they soon choak up a small piece of water, and overpower most other aquatics: they are best therefore cultivated for curiosity in a moist border of the garden, where they will flourish and produce spikes even more abundantly than in the water.

TYPHA. See *Acorus*.

TYPHALÆA. See *Urena*.

TYSSELINUM. See *Selinum*.

## V.

VACCARIA. See *Saponaria*.

VACCINIUM (of Pliny and Virgil: *æol. οὐανινθιον* or *οὐανινθιον*, for *οὐανινθιον*. Mart. Virg. georg. 4. 183.)

Lin. gen. n. 483. Reich. n. 523. Schreb. n. 658.

Gartn. t. 28. Juss. 162. Vitis idæa. Tournef. t. 377. Oxycoccus. Tournef. t. 431.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Bicornes*. *Ericæ* Juss.

#### GENERIC CHARACTER.

CAL. Perianth very small, superior, permanent.

COR. one-petalled, bell-shaped, four-cleft: segments revolute.

<sup>c</sup> Curtis.

<sup>f</sup> Hist.

<sup>d</sup> Curtis and Woodw. mss.

<sup>e</sup> Syn. ed. 3.

<sup>g</sup> Linn

STAM. Filaments eight, simple, inserted into the receptacle. Anthers two-horned; furnished at the back with two spreading awns, opening at the tip.

PIST. Germ inferior. Style simple, longer than the stamens. Stigma obtuse.

PER. Berry globular, umbilicate, four-celled.

SEEDS few, small.

OBS. The number often adds one fourth part in all the parts of the fructification.

Calyx in most species four-cleft; in *Myrtillus* quite entire.

Corolla when fresh almost entire is revolved to the base in *Oxycoccus*.

#### ESSENTIAL CHARACTER.

Cal. superior. Cor. one petalled. Filam. inserted into the receptacle. Berry four-celled, many-seeded.

#### SPECIES.

\* With deciduous leaves.

1. *Vaccinium Myrtillus*. Bilberry, Bleaberry, Whortleberry, Black Whorts.

Lin. spec. 498. Reich. 2. 164. Willd. 2. 348.

fl. lapp. n. 143. succ. n. 333. mat. med. 103. hort.

cliff. 148. Hudf. angl. 163. Wither. arr. ed. 3.

370. Smith brit. 414. engl. bot. t. 456. Lightf.

scot. 200. Sibth. oxon. n. 369. Abbot bedf. n.

293. Dicks. hort. succ. 5. 12. Fl. dan. t. 974.

Hall. belv. n. 1020. Hoffm. germ. 134. Roth.

germ. 1. 169. 2. 440. Pollich pal. n. 374.

Krock. files. n. 593. Leers herb. n. 290.

Neck. gallob. 180. Scop. carn. n. 458. Villars

dauph. 3. 512. Allion. pedem. n. 490. Affo.

arag. n. 338. Desfont. atlant. 1. 327. Gmel.

fib. 3. 136. Gartn. fruct. 1. 142. Du Roi

barbecc. 2. 471. Dubam. arb. 2. 364. t. 107.

Willd. arb. 397. Kniph. cent. 8. n. 97. Knorr.

del. 1. t. 8. 18. n. 1. Blackw. t. 463. Regnault

bot. suppl. Plenck. ic. 298.

*Vaccinia nigra*. Dod. pempt. 768. 2. Lob. obs. 548.

2. ic. 2. 109. Ger. emac. 1415. 1. Park. theat.

1456. 1.

*Myrtillus*. Camer. epit. 135. Matth. 231. Pauli

dan. t. 298.

*M. germanica*. Dalech. hist. 192.

*Vitis idæa foliis oblongis crenatis, fructu nigricante*.

Bauh. pin. 470. Tournef. inst. 608.

*Vitis idæa f. Myrtillus* 1. Tabern. ic. 1078.

*Vitis idæa angulosa*. Bauh. hist. 1. 520. (non ic.)

Raii hist. 1488. syn. 457.

β. *Vaccinium foliis oblongis crenatis, fructu albo*.

Rupp. jen. 52. Gmel. fib. 3. 136. n. 9.

Peduncles one-flowered, leaves ovate serrate deciduous,

stem angular.

[2. *Vaccinium pallidum*. Pale Bilberry or Whortleberry.

Ait. kew. 2. 10. Willd. spec. 2. 349.

Racemes bracted, corollas cylindric, bellshaped, leaves

ovate acute serrulate smooth deciduous.

3. *Vaccinium hirtum*. Hairy Bilberry or Whortleberry.

Lin. syst. 363. Willd. 2. 349. Thunb. jap. 155.

Peduncles one-flowered, leaves ovate-serrate, branches

round divaricating.

4. *Vaccinium stamineum*. Green-wooded Bilberry or

Whortleberry.

Lin. spec. 498. Reich. 2. 165. Willd. 2. 349.

Ait. kew. 2. 10. Gron. virg. 43. Pluk. phyt.

t. 339. f. 3. (*Vitis idæa*.)

Peduncles solitary naked one-flowered, anthers longer than

the corolla, leaves oblong-ovate acute quite entire some-

what glaucous beneath.

5. *Vaccinium uliginosum*. Great or marsh Bilberry or

Whortleberry.

Lin. spec. 499. syst. 363. Reich. 2. 165. Willd.

2. 350. fl. lapp. n. 142. succ. n. 332. Hudf. angl.

164. Wither. arr. ed. 3. 370. Smith. brit. 415.

engl. bot. t. 581. Lightf. scot. 201. Fl. dan.

231. Hall. belv. n. 1021. Hoffm. germ. 135.

Roth. germ. 1. 169. 2. 441. Pollich. pal. n. 375.

Krock. files. n. 594. Villars dauph. 3. 513.

Allion. pedem. n. 491. Gmel. fib. 3. 137. n. 10.

Du Roi barbecc. 2. 473. Willd. arb. 397.

Kniph. cent. 9. n. 96.

*Vitis idæa foliis subrotundis exalbidis*. Bauh. pin.

470. Scheuch. it. 1. 52.



- V. Gesneri major. *Camer. hort.* 182.  
 V. 2. *Clus. hist.* 1. 61. t. 62. 1.  
 V. fol. subr. major. *Ger. emac.* 1416. 6.  
 V. magna quibusdam, f. *Myrtillus grandis.* *Baub. hist.* 1. 518. *Raii hist.* 1487. *syn.* 457. *Tournef. inst.* 608.  
*Vaccinia nigra fructu majore.* *Park. theat.* 1456. 2.  
*Peduncles one-flowered, leaves obovate, quite entire smooth, branches round.*  
 6. *Vaccinium album.* *White Bilberry or Whortleberry.*  
*Lin. spec.* 499. *Reich.* 2. 165. *Willd.* 2. 350.  
*Peduncles simple, leaves quite entire ovate tomentose beneath.*  
 7. *Vaccinium mucronatum.* *Pointed-leaved Bilberry or Whortleberry.*  
*Lin. spec.* 499. *Reich.* 2. 165. *Willd.* 2. 350.  
*Peduncles quite simple one-flowered, leaves ovate mucronate smooth quite entire.*  
 8. *Vaccinium diffusum.* *Shining-leaved Bilberry or Whortleberry.*  
*Ait. kew.* 2. 11. *Willd. spec.* 2. 351.  
*Peduncles solitary naked one-flowered, leaves ovate acute indistinctly serrate somewhat villose.*  
 9. *Vaccinium angustifolium.* *Narrow-leaved Bilberry or Whortleberry.*  
*Ait. kew.* 2. 11. *Willd. spec.* 2. 351.  
*Peduncles solitary one-flowered, leaves elliptic-lanceolate smooth indistinctly serrulate.*  
 10. *Vaccinium corymbosum.* *Corymbed Bilberry or Whortleberry.*  
*Lin. spec.* 499. *Reich.* 2. 166. *Willd.* 2. 351.  
*Flowers corymbed ovate, leaves oblong acuminate quite entire.*  
 11. *Vaccinium bracteatum.* *Braided Bilberry or Whortleberry.*  
*Lin. syst.* 363. *Willd.* 2. 351. *Thunb. jap.* 156.  
*Racemes leafed, leaves serrate acute.*  
 12. *Vaccinium ciliatum.* *Ciliate Bilberry or Whortleberry.*  
*Lin. syst.* 363. *Willd.* 2. 351. *Thunb. jap.* 156.  
*Racemes leafed, leaves ovate quite entire hispid.*  
 13. *Vaccinium fuscum.* *Cluster-flowered Bilberry or Whortleberry.*  
*Ait. kew.* 2. 11. *Willd. spec.* 2. 351.  
*Racemes almost naked, corollas cylindric-ovate, calyxes acute, leaves elliptic acute quite entire, veins somewhat villose beneath.*  
 14. *Vaccinium frondosum.* *Obtuse-leaved Bilberry or Whortleberry.*  
*Lin. spec.* 499. *Reich.* 2. 166. *Willd.* 2. 352.  
*Ait. kew.* 2. 11. *Gron. virg.* 155.  
*Racemes braided, pedicels bracteolate, corollas subcampanulate, leaves obovate-oblong quite entire deciduous.*  
 15. *Vaccinium venustum.* *Red-twigged Bilberry or Whortleberry.*  
*Ait. kew.* 2. 11. *Willd. spec.* 2. 352.  
*Racemes braided, pedicels bracteolate, corollas subcampanulate, leaves elliptic quite entire deciduous smooth.*  
 16. *Vaccinium ligustrinum.* *Naked-racemed Bilberry or Whortleberry.*  
*Lin. spec.* 500. *Reich.* 2. 166. *Willd.* 2. 352.  
*Racemes naked, stem shrubby, leaves crenulate oblong.*  
 17. *Vaccinium resinum.* *Clammy Bilberry or Whortleberry.*  
*Ait. kew.* 2. 12. *Willd. spec.* 2. 352.  
*Andromeda baccata.* *Wangenh. amer.* 11. t. 30. f. 69.  
*Racemes braided, corollas ovate, leaves elliptic sharpish quite entire deciduous bedewed with resinous atoms.*  
 18. *Vaccinium amoenum.* *Broad-leaved Bilberry or Whortleberry.*  
*Ait. kew.* 2. 12. *Willd. spec.* 2. 353.  
*Racemes braided, corollas subcylindrical, leaves elliptic subserrulate deciduous, veins somewhat villose beneath.*  
 19. *Vaccinium virgatum.* *Privet-leaved Bilberry or Whortleberry.*  
*Ait. kew.* 2. 12. *Willd. spec.* 2. 353.  
*Racemes sessile, corollas subcylindrical, leaves oblong-elliptic serrulate deciduous smooth on both sides, flowering branches elongated.*  
 20. *Vaccinium tenellum.* *Gale-leaved dwarf Bilberry or Whortleberry.*  
*Ait. kew.* 2. 12. *Willd. spec.* 2. 353.

- Racemes braided sessile, corollas ovate-cylindrical, leaves oblong elliptic somewhat wedge shaped serrulate deciduous smoothish.*  
 21. *Vaccinium Arctostaphylos.* *Madeira Bilberry or Whortleberry.*  
*Lin. spec.* 500. *Reich.* 2. 166. *Willd.* 2. 353.  
*Vitis idaea orientalis maxima, cerasi folio, flore variegato.* *Tournef. cor.* 42. *it.* 2. 223. *ic.*  
 β. *Vitis idaea cappadocia maxima, mespili folio, flore variegato.* *Tournef. cor.* 42.  
*Flowers racemed, leaves crenulate ovate acute, stem arboreous.*  
 \*\* *With evergreen leaves.*  
 22. *Vaccinium meridionale.* *Jamaica Bilberry or Whortleberry.*  
*Ait. kew.* 2. 12. *Willd. spec.* 2. 353. *Swartz prodr.* 62. *descr.* 2. 676.  
*Leaves ovate-oblong acute serrate perennial flat lucid, racemes terminating erect, corollas prismatical.*  
 23. *Vaccinium cereum.* *Waxen Bilberry or Whortleberry.*  
*Forst. prodr.* n. 167. *Willd. spec.* 2. 354.  
*Andromeda cerea.* *Lin. suppl.* 238. *syst.* 406.  
*Peduncles solitary one-flowered, corollas quinquangular-ovate, leaves ovate-roundish serrate.]*  
 24. *Vaccinium Vitis adæa.* *Red Bilberry or Whortleberry, or Cowberry.*  
*Lin. spec.* 500. *syst.* 363. *Reich.* 2. 167. *Willd.* 2. 354. *fl. lapp.* n. 145. *succ.* n. 334. *hort. ciff.* 148. *mat. med.* 103. *Huds. angl.* 164. *Wither. arr. ed.* 3. 371. *Smith brit.* 415. *engl. bot.* t. 598. *Lightf. scot.* 202. *Dicks. hort. succ.* 5. 10. *Fl. dan.* t. 40. *Gunn. norv.* n. 109. *Hall. belv.* n. 1022. *Hoffm. germ.* 135. *Roth. germ.* 1. 169. 2. 441. *Pollich. pal.* n. 376. *Krock. files.* n. 595. *Villars dauph.* 3. 513. *Allion. pedem.* n. 492. *Scop. carn.* n. 459. *Du Roi harbecc.* 2. 475. *Kniph. cent.* 9. n. 95. *Knorr del.* 1. t. S. 18. n. 2. *Plenck. ic.* 299.  
*Vaccinia rubra.* *Dod. pempt.* t. 770. f. 1. *Ger. emac.* 1415. 2.—*buxeis foliis.* *Park. theat.* 1456. 4.  
*Vitis idæa foliis subrotundis non crenatis, baccis rubris.* *Baub. pin.* 470. *Dukam. arb.* 7.  
*Vitis idæa buxeis nec deciduis foliis.* *Clus. pan.* 77.  
*Vitis idæa rubra.* *Camer. epit.* 136.  
*Vitis idæa sempervirens fructu rubro.* *Baub. hist.* 1. 522. *Raii hist.* 1488. *syn.* 457.  
*Racemes terminating nodding, leaves obovate revolute toothletted dotted beneath.*  
 25. *Vaccinium Oxycoccus.* *European Cranberry.*  
*Lin. spec.* 500. *syst.* 363. *Reich.* 2. 167. *Willd.* 2. 354. *fl. lapp.* n. 145. *succ.* n. 355. *Huds. angl.* 164. *Wither. arr. ed.* 3. 372. *Smith brit.* 416. *engl. bot.* t. 319. *Lightf. scot.* 202. *Roth. cant.* ed. 2. n. 338. *Abbot bedf.* n. 294. *Dicks. hort. succ.* 5. 11. *Fl. dan.* t. 80. *Gunn. norv.* n. 72. *Hall. belv.* n. 1203. *Hoffm. germ.* 135. *Pollich. pal.* n. 377. *Krock. files.* n. 596. *Villars dauph.* 3. 514. *Scop. carn.* n. 457. *Blackw. t.* 593. *Plenck t.* 300.  
*Vaccinia palustris.* *Dod. pempt.* 770. 2. *Lcb. obs.* 547. 3. *ic.* 2. 109. *Ger.* 1367, *emac.* 1419. *Park. theat.* 1229. *Raii hist.* 685.  
*Oxycoccus.* *Cord. hist.* 2. 146.  
 O. f. *Vaccinia palustris.* *Baub. hist.* 1. 227. 2. *Raii syn.* 267. *Tournef. inst. app.* 655.  
*Vitis idæa palustris.* *Baub. pin.* 471.  
*Schollera Oxycoccus.* *Roth. germ.* 1. 170. 2. 442.  
*Leaves ovate quite entire revolute acute, stems creeping filiform smooth.*  
 26. *Vaccinium hispidulum.* *Hairy-stemmed American Cranberry.*  
*Lin. spec.* 500. *Reich.* 2. 168. *Willd.* 2. 355.  
*Kalm itin.* 3. 37. *ed. angl.* 2. 79.  
*Leaves quite entire revolute ovate, stems creeping filiform hispid.*  
 [27. *Vaccinium macrocarpon.* *Smooth-stemmed American Cranberry.*  
*Ait. kew.* 2. 13. t. 7. *Willd. spec.* 2. 355.  
*V. hispidulum.* *Wangenh. amer.* 108. t. 30. f. 67.  
*Vitis idæa palustris virginiana fructu majore.* *Raii hist.* 685. *Pluk. phyt.* t. 326. f. 6. *malq.*



*Leaves quite entire oval-oblong, obtuse flat, stems creeping filiform.*

## DESCRIPTIONS, &amp;c.

1. Root perennial woody. Stem shrubby, erect, scarcely a foot high, very much branched, forming a small tufted bush. Branches smooth, green, twisted, sharply angular especially the young ones. Leaves alternate, on short foot-stalks, smooth, veiny, bright green, without any stipules. Flowers axillary, solitary, on short round simple peduncles, drooping, globular (or nearly so, but a little flattened at the base,) flesh-coloured (or pale reddish purple,) inodorous. The calyx and corolla have each five teeth, the former very small, and the teeth of the latter small, reflected, reddish white. Stamens inclosed, very often or perhaps generally ten; the numbers four or five in the two former, and eight or ten in the latter, being indifferent in this natural order as to the determination of genera or species. Anthers cloven, discharging their pollen by a pore at each point, and accompanied besides by two bristles or horns, as in many of the Heaths. Germ obconical, green, smooth. Berry globular with a dimple at the top, five-celled before it ripens, but when arrived at maturity the numerous seeds are imbedded in one continued soft acrid blood-red pulp<sup>a</sup>: they are often described as black, but they are in reality very dark blue. There are as many as thirty seeds in a cell; they are oblong, angular, very finely striated in waves, yellowish or of a red-rust colour<sup>i</sup>.

Native of Europe, Siberia and Barbary, on heaths and stony moors, and in woods where the soil is spongy. It is abundant in the mountainous parts of Great Britain. On Porland heath, the highest spot in Norfolk. In Aspley wood, Bedfordshire; Dr. Abbot. Checkendon-woods near Clump House; Dr. Sibthorp. Rocks above Great Malvern, Worcestershire; Mr. Ballard. The Bishop's woods, near Eccleshall. Lightwoods, near Birmingham; Dr. Withering. In the woods of Purbeck, Dorsetshire, particularly at the Grange, the seat of John Bond, Esq; Dr. Pulteney. Both Gerard and his editor Johnson mention its growing on Hampstead heath. Near Loughborough in Leicestershire. In Scotland abundant, both in woods and heaths.

About may the young fresh-green leaves, and wax-like red flowers, make an elegant appearance. Towards autumn the leaves grow darker and more firm, and the ripe berries are gathered in the north for tarts, and in Devonshire are eaten with clotted cream<sup>k</sup>.

The berries are very acceptable to children, either eaten by themselves or with milk, or in tarts. The moor-game live upon them in the autumn. The juice stains paper or linen purple. Goats browse upon the plant; sheep are not fond of it; horses and cows refuse it<sup>l</sup>.

The berries have an astringent quality; and in Arran and the Western isles are given in diarrhoeas and dysenteries with good effect. The Highlanders eat them with milk, and make them into tarts and jellies, which last they mix with Whiskey to give it a relish to strangers.

A variety with white berries was discovered by the Duke of Athol in the woods about midway between his two seats of Dunkeld and Blair<sup>m</sup>.

2. Native of North America, where it was found by Samuel Martin, M.D. Introduced in 1772. It flowers in may and june<sup>n</sup>.

3. Stem shrubby, very much branched. Branches alternate, round, divaricate and spreading very much, ferruginous, smooth: branchlets filiform, wrinkled, villose at the end. Leaves alternate, subsessile, acute, villose, a little paler beneath, spreading, unequal, half an inch long. Flowers scattered over the branchlets, solitary, drooping, on peduncles half a line in length. Calyx four-cleft, three times shorter than the corolla. Corolla five-cleft. Filaments eight, very short. Anthers ovate, shorter than the corolla, pointed with an awl-shaped bifid tip. Style filiform, angular, a

little longer than the corolla. Native of Japan, in the mountains between Miaco and Jedo<sup>o</sup>.

4. Peduncles axillary, filiform, longer than the corolla. Corollas five-cleft, spreading bell-shaped. Anthers ten. Style longer than the flower<sup>p</sup>.

Native of North America. Introduced in 1772 by Mr. William Young. It flowers in may and june<sup>q</sup>.

5. This grows taller than the common Bilberry, (n. 1.) and the stem and branches are round. Leaves obtuse, (sometimes slightly dented at the end,) rarely inclined to be pointed, a little revolute, smooth and even, not at all rugged, glaucous beneath, with a network of veins, often tinged with red. Flowers flesh-coloured or pink, the calyx and corolla mostly four-cleft. Stamens generally eight, each with two horns as in V. Myrtillus. Berry large, globular, black with a glaucous hue. Seeds finely striated<sup>r</sup>.—The young leaves are ciliate at the base<sup>s</sup>.

Native of many parts of Europe and of Siberia.—On marshy mountainous heaths in Britain, but not general. Observed at Gambleby in Cumberland, and in Whinfield forest, Westmoreland; by Ray: in the Highlands of Scotland, by Lightfoot. It flowers in april and may, and the berries ripen in august. The fruit has less flavour than the common Bilberry, but abounds with a weak acid juice<sup>t</sup>. In large quantities it occasions giddiness, and a slight head-ach, especially when full grown and quite ripe<sup>u</sup>. Many vintners in France are said to make use of the juice to colour their wines red<sup>v</sup>. They furnish an ardent spirit which is highly volatile and intoxicating. The alpine birds feed upon the fruit, and it is very common there<sup>w</sup>.

6. Flowers two or three at the ends of the branches. Peduncles aggregate, very short, naked. Native of Pennsylvania, where it was found by Kalm.

7. Branches round, glaucous. Leaves elliptic, smooth on both sides, on channelled petioles. Peduncles a little shorter than the leaves. Native of North America, where it was found by Kalm<sup>x</sup>.

8. Native of South Carolina, where it was found by Mr. John Cree. Introduced in 1765. It flowers from may to july.

9. Native of Newfoundland and Labrador. Introduced about 1776, by Benjamin Bewick, Esq. It flowers in april and may<sup>y</sup>.

10. Nerves of the leaves villose underneath. Corymbs from a gemmaceous involucre, sessile. Corollas cylindric-ovate, longer than in the others. Stamens ten. Found in North America by Kalm<sup>z</sup>.

11. Stem entirely smooth. Branches and branchlets alternate, divaricating. Stem-leaves alternate, on very short petioles, ovate, revolute, veined, smooth on both sides, an inch long; on the racemes lanceolate, a line in length. Racemes axillary with the flowers turned one way, spreading very much, a finger's length. Bractes on the middle of the peduncle, two, bristle-shaped, length of the peduncle, which is scarcely half a line long. Calyx very short. Corolla cylindrical, white. Native of Japan on the island of Nipon; flowering in june. Japanese name Ki-Fusi.

12. Stem ash-coloured, smooth. Branchlets alternate, erect, villose. Branch-leaves scattered, ovate, acute, nerved with the nerves all over hispid, unequal, from an inch to two inches in length; on the racemes lanceolate, smooth, a quarter of an inch long. Racemes at the ends of the branchlets, directed one way, a finger's length. Calyx very short. Corolla red. Native of Japan. In the language of that country Sasjebu<sup>c</sup>.

13. Native of North America, where it was found by Mr. William Young. Introduced in 1770. It flowers in may and june<sup>d</sup>.

14. Racemes below the leaves, with small oblong bractes. Pedicels longer than the bractes, having two little filiform bractes. Corolla ovate-campanulate. Stamens ten<sup>e</sup>. Native of North America. In-

<sup>a</sup> Smith brit. and engl. bot. <sup>i</sup> Gartner. <sup>k</sup> Engl. bot. <sup>l</sup> Withering. <sup>m</sup> Lightfoot. <sup>n</sup> Hort. kew.

<sup>o</sup> Thunberg. <sup>p</sup> Linn. spec. <sup>q</sup> Hort. kew. <sup>r</sup> Smith brit. and engl. bot. <sup>s</sup> Linn. syst. <sup>t</sup> Engl. bot. <sup>u</sup> Linn. succ. and Withering. <sup>v</sup> Withering. <sup>w</sup> Villars. <sup>x</sup> Linn. spec. <sup>y</sup> Hort. kew. <sup>z</sup> Linn. spec. <sup>c</sup> Thunberg. <sup>d</sup> Hort. kew. <sup>e</sup> Linn. spec.



roduced in 1770, by Mr. William Young. It flowers in June.

15. Native of North America. Found by Mr. William Young, and introduced in 1770. It flowers in May and June<sup>f</sup>.

16. Flowers in alternate numerous racemes, entirely destitute of bractes or leaflets; by which mark it is easily distinguished. Native of Pennsylvania; where it was found by Kalm<sup>g</sup>.

17, 18, 19, 20. Natives of North America. The seventeenth introduced in 1772, by Samuel Martin, M. D.; the eighteenth in 1765, by Mr. John Cree; they flower in May and June. The nineteenth and twentieth were introduced by Mr. William Young, the former in 1770, the latter in 1772. The nineteenth flowers in April and May, the twentieth in May and June<sup>h</sup>.

21. Racemes longer than the leaves, situated below them, and furnished with ovate leaflets<sup>i</sup>.

Native of Madeira and the Levant. Introduced in 1777, by Mr. Francis Masson. It flowers in June and July<sup>k</sup>.

22. Corollas seldom five-cleft. Fruit like that of *Vitis idæa*, and sapid. It resembles the preceding; but in that the leaves are annual, the racemes leafy, and the flowers variegated. Native of Jamaica, in the blue mountains<sup>l</sup>. Introduced in 1778, by Thomas Clark, M. D.<sup>m</sup>

23. Leaves on short petioles. Corolla bell-shaped. Anthers oblong, yellow, two-horned at the back<sup>n</sup>.

The younger Linneus says that he placed this plant in the genus *Andromeda* at the persuasion of Forster; he however has put it among the *Vacciniums* in his *prodromus*. It is a native of Otaheite.

24. Roots creeping, woody.] It is of very humble growth, seldom rising above six or eight inches high; [and is almost herbaceous, but evergreen. Stems mostly upright, little branched, twisted or flexuose, angular, smooth, pliant. Leaves alternate, on footstalks, obscurely serrate or toothed towards the top, and by no means quite entire as Linneus says they are, retuse, very smooth and shining above, pale and dotted beneath. Mr. Woodward remarks, that they are furrowed above, with corresponding nerves beneath; and that with the larger leaves much smaller ones are intermixed, similar in shape: and Mr. Miller that] they are so like those of the dwarf Box, as to be taken for it, even by persons of skill, at a distance. [An elegant drooping cluster of bell-shaped, blush-coloured or pale pink flowers terminates the stem or branches. But Mr. Curtis observes that it is seldom found in flower. The flowers do not seem to vary from their proper four-cleft form, and eight stamens; though Pollich reckons ten; and Krocker says there are often ten filaments. Under each flower is a single, elliptic, concave, ciliate bracte. The anthers terminate in a pair of taper points, through a pore at the end of which the pollen is discharged, but they have not the lateral horns which are found in some of the species. Dr. Withering remarks, that the floral leaves and calyxes are coloured; the filaments very white and woolly; the anthers red, two-celled, with a yellowish tube at the point of each. Berries red, acid, astringent and bitter. They are scarcely to be eaten raw, and though made into pies in Derbyshire, where they are called Cow-berries, their flavour is far inferior to the Cranberry. Their best use is for making a rob or jelly, which is eaten with all kinds of roast meat in Sweden, and is far preferable to that of the red currant as a sauce for venison. It is also an excellent medicine in colds, sore throats, and all irritation of the mouth or fauces<sup>o</sup>.

Linneus says that they are sent in large quantities from West Bothnia to Stockholm for pickling; that in Switzerland and other more southern parts of Europe they leave them to the birds; and that in upper Tornio they are found perfectly white.]

Mr. Miller says, he has been informed, that in Sweden and Norway this shrub is planted for edgings

to borders in gardens: and that he has several times received plants of it from Greenland by the whale ships.

[Native of most parts of Europe; particularly the northern countries, on dry stony heaths or moors, on the mountains. Many places in Derbyshire, and our northern counties are clothed with this humble evergreen, as also in Scotland and Wales. In Ireland, on the tops of all mountains the elevation of which is 500 yards and upwards. It flowers in June, (Dr. Withering says, March and April;) and the berries ripen in August<sup>p</sup>.

25. Roots perennial, fibrous. Stems suffrutescent; very slender, smooth, and creeping by means of long fibres. Branches scattered, procumbent, leafy; flowering about the upper part. Leaves alternate, erect, on short footstalks; small, acute, dark shining green above; glaucous beneath. Peduncles terminating; aggregate, about an inch long, red, one-flowered, having a few scattered or opposite bractes. According to Linneus, the raceme is very short, and the peduncles very long, with two alternate bractes on them: but the bractes are not always alternate, and there are sometimes more than two. Flowers drooping; of a beautiful rose colour or deep flesh-colour, singularly elegant. Calyx smooth, coloured, composed of four obtuse fringed segments. Corolla divided to the base into four ovate petals, rolled back, and according to Withering falling off separate. Hence some have judged this species to form a genus distinct from *Vaccinium*: but there is no end to thus subdividing genera. Filaments flat, downy, standing out, above the corolla: anthers deeply cloven, discharging the pollen by a hole in each point. Sometimes, according to Mr. Gough, there are ten stamens. Style red: stigma acute, and an open hole. Berry globular or pear-shaped, pale red mottled with purple, when fully ripe purplish red.

These berries; made into tarts, are much esteemed, but on account of a peculiar flavour, are disliked by some. They may be kept several years, if wiped dry, and then closely corked in dry bottles; or the bottles may be filled with water. They are brought to London from the moorland counties, and even imported from Russia; the Cambridge market is supplied from Lincolnshire. At Longtown in Cumberland twenty or thirty pounds-worth are sold by the poor people each market day for five or six weeks together. The Swedes have no idea of putting them to any other use than to boil silver plate to its proper whiteness; the sharp acid of the Cranberry corroding the external particles of the copper alloy.

Native of Europe, on turfy bogs, mostly entangled in *Sphagnum* and other bog-mosses, which cover the surface of shallow waters, so that those who gather the fruit are obliged to wade in search of it. The flowers come out in June, and the berries ripen in August.

Plentiful in the north of England, in Scotland, and Ireland in their flow bogs. On Derfingham moor near Norfolk, on Bootham moor near Lincoln, and in great quantities in many parts of the county. Gamlingay bogs, Cambridgeshire; and Potton bogs, Bedfordshire. Bishop's woods near Eccleshall, Staffordshire; Birmingham heath, &c.

It has many names in English—Cranberries, Moss-berries, Moor-berries, Fen-berries, Marsh Worts or Whortleberries, Corn-berries. The most general name Cranberry probably originated from the peduncles being crooked at the top, and before the expansion of the flower, resembling the head and neck of a crane<sup>q</sup>.

26. This has the same structure with the European Cranberry, but is bigger in all its parts, and the stem is imbricate with bristle-shaped scales<sup>r</sup>. It is extremely abundant over all North America, and is called by the Canadian French *Atopa*, which name they have borrowed from the Indians. They are brought to market every Wednesday and Saturday at Philadelphia, late in autumn. They are boiled and

<sup>f</sup> Hort. kew. <sup>g</sup> Linn. spec. <sup>h</sup> Hort. kew. <sup>i</sup> Linn. spec.  
<sup>k</sup> Hort. kew. <sup>l</sup> Swartz. <sup>m</sup> Hort. kew. <sup>n</sup> Linn. spec.  
<sup>o</sup> Smith brit. and engl. bot.

<sup>p</sup> Engl. bot. <sup>q</sup> Smith brit. and engl. bot. Withering.  
<sup>r</sup> Linn. spec.



prepared in the same manner as the Swedes do their red Whortleberries, (*Vacc. Vitis idæa*;) and they are made use of during winter, and part of summer, in tarts and other kinds of pastry. But as they are very sour, they require a great quantity of sugar. Quantities of these berries are sent over preserved to Europe and the West Indies.

27. The leaves are more oblong in this, and not rolled back at the edge, but flat. The stems have not the scales upon them, which are found in the preceding species. Ray says, that the berries are sent to London from New England, that he had eaten them, and that they were used for making tarts: but whether they were from this or the former sort may perhaps be doubted.—It is a native of North America, in boggy grounds; was cultivated in 1760, by Mr. James Gordon; and flowers here in May.

It is uncertain whether the hispidulum of Miller belongs to the preceding, as he has given the character of that from Linneus, and Ray's synonym which is attributed to this by Willdenow. See *Arbutus thymifolia*.

Miller's *Vaccinium pensylvanicum*, (n. 3.) seems rather to be a variety of *V. Vitis idæa*.] He refers to *Pluk. phyt. t. 321. f. 4.* for a figure of it: and describes it as having a low shrubby stalk, like the *Vitis idæa*; small ovate pointed leaves, not unlike some varieties of the Myrtle, and continuing green all the year; the flowers axillary at every joint, nodding on pretty long peduncles, solitary, small, white. Berries red. Native of Virginia and other parts of North America.

#### PROPAGATION AND CULTURE.

These are shrubs or shrubby plants, and hardy, (except n. n. 3. 11. 12. 21. 22. 23.) But they are difficult of culture in gardens, because they require a moorish or boggy soil, which for some of the species must be covered with moss, and constantly kept wet.

1 and 24. *Vaccinium Myrtillus* and *Vitis idæa* increase very fast by their creeping roots, and when fixed in a proper soil will soon overspread the ground. The first is frequently found on sandy heaths, intermixing its roots with Heath; but the other grows only upon moorish land.

25, &c. The European and American Cranberries, being natives of bogs, cannot be propagated upon dry land; but on natural or artificial bogs they will spread and increase, if they are taken up carefully with some of the soil to their roots, and transplanted in autumn. But they can only be cultivated for curiosity in gardens, for they will not thrive much or produce fruit out of their native swamps and bogs.

[*Vaccinium cantabricum*. See *Andromeda Daboecia* or *Erica Daboeci*.

**VAHLIA.** (So named by Thunberg, in honour of Martin Vahl, Regius Professor of Botany at Copenhagen, and member of several academies. Author of *Symbolæ Botanicae: Eclogæ Americanæ*, &c. One of the Editors of the *Flora Danica*.)

*Lin. gen. Schreb. n. 452. Thunb. nov. gen. 36.*

*Juss. 318. Ruffelia Lin. suppl. 24.*

Class. 4. 2. Pentandria Digynia.

Nat. order of *Succulentæ*. *Onagræ*. Juss.

#### ESSENTIAL CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, acute, concave, spreading.

COR. Petals five, ovate, concave, spreading, shorter by half than the calyx.

STAM. Filaments five, filiform, erect, inserted between the petals, length of the calyx. Anthers oblong, four-grooved.

PIST. Germ inferior. Styles two, filiform, from upright spreading, longer than the stamens. Stigmas simple, obtuse.

PER. Capsule ovate, truncate, scored with five raised lines, crowned with the permanent calyx, one-celled, two-valved.

SEEDS numerous, minute.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Caps. inferior, one-celled, many-seeded.

Kalm.

Hort. kew.

#### SPECIES.

##### 1. *Vahlia capensis*.

*Lin. spec. Willd. 1. 1354. Thunb. diff. 2. 36. cum ic. prodr. 48.*

*Ruffelia capensis. Lin. suppl. 175.*

#### DESCRIPTION, &c.

This plant has the stature of a *Silene*, half a foot or scarcely a foot in height. Stem herbaceous, round, without knots, below brachiate and subpubescent. Leaves opposite, sessile, subpubescent, narrow-lanceolate. Stipules none. Flowers from the upper branches, peduncled, two or more frequently three together, yellow. Petals and anthers snow-white. Native of the Cape of Good Hope, in sandy places near Verkeerde valley.

**VALANTIA.** (So named by Tournefort, in honour of Sebastien Vaillant, an eminent French Botanist, Demonstrator at the botanic garden at Paris. Author of *Discours sur la structure des Fleurs*, 1718. 4to. and *treatises on Compound Flowers*, in the *Memoirs of the French Academy for 1718*, &c. *Botanicum Parisiense*, 1723, 8vo. 1726, fol. after his death, which happened in 1722.)

*Lin. gen. n. 1151. Reich. n. 1258. Schreb. n.*

*1575. Tournef. mem. par. 1706. t. 3. Dill.*

*gen. 8. Mich. 7. Juss. 197. Crucata Tournef.*

*t. 39. Galium Hall. Scop. Smith, &c.*

Class. 23. 1. Polygamia Monoecia: vel. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*. *Rubiaceæ* Juss.

#### GENERIC CHARACTER.

\* *Hermaphrodite Flower* solitary.

CAL. scarcely any, in place of it the Germ.

COR. one-petalled, flat, four-parted: segments ovate, acute.

STAM. Filaments four, length of the corolla. Anthers small.

PIST. Germ large, inferior. Style length of the stamens, semibifid. Stigmas headed.

PER. coriaceous, compressed, reflexed.

SEED single, globular.

\* *Male Flower*, one on each side of the hermaphrodite.

CAL. scarcely any, in place of it the Germ.

COR. one-petalled, flat, three-parted, or four-parted: segments ovate, acute.

STAM. Filaments four or three, length of the corolla. Anthers small.

PIST. Germ small, inferior. Style and Stigmas obsolete, and scarcely to be observed.

PER. abortive: but a slender oblong rudiment adheres to the side of the hermaphrodite.

SEED none.

OBS. The male flowers are trifid in *V. muralis* and *Aparine*: quadrifid in *articulata* and *Cruciata*.

#### ESSENTIAL CHARACTER.

HERM. Cal. none. Cor. four-parted. Stam. four. Style bifid. Seed one.

MALE. Cal. none. Cor. three or four-parted. Stam. four or three. PIST. obsolete.

#### SPECIES.

##### 1. *Valantia muralis*. Wall Cross-wort.

*Lin. spec. 1490. syst. 908. Reich. 4. 318. hort. cliff.*

*468. upf. 302. Sauv. monsp. 162. Allion. pedem.*

*n. 40. Sabb. hort. 1. t. 83. Mich. gen. 13. t. 7.*

*Rubeola echinata saxatilis. Baub. pin. 334.*

*Rubia echinata saxatilis. Park. theat. 276. n. 7.*

*Cruciata muralis minima romana. Col. ecphr. 1. 298.*

*t. 297. Raii hist. 479. Mer. hist. 3. 328. f. 9.*

*t. 21. f. 2.*

Male flowers trifid placed upon the smooth germ of the hermaphrodite.

##### 2. *Valantia hispida*. Bristly Cross-wort.

*Lin. spec. 1490. syst. 908. Reich. 4. 319. hort. cliff.*

*461. Desfont. atlant. 2. 389.*

*Galium floribus masculis trifidis, omnibus plantæ partibus hispidis. Zin. goett. 233.*

Male flowers trifid placed upon the hispid germ of the hermaphrodite.

Lin. suppl.



- [3. *Valantia filiformis*. *Least Cross-wort*.  
*Ait. kew.* 3. 428.  
*Capsules longer than the pedicel cylindrical hairy unarmed, leaves lanceolate smooth subciliate.*
4. *Valantia Cucullaria*. *Hooded Cross-wort*.  
*Lin. spec.* 1491. *Reich.* 4. 319. *amoen.* 4. 295.  
*Cucullaria*. *Buxb. cent.* 1. 13. *t.* 19. *f.* 2.  
*Each of the fructifications covered with an ovate bracte which is bent down.]*
5. *Valantia Aparine*. *Smooth-seeded Cross-wort*.  
*Lin. spec.* 1491. *Reich.* 4. 319. *hort. upf.* 302.  
*Sauv. monsp.* 162. *Gouan monsp.* 516. *Desfont.*  
*atlant.* 2. 390.  
*Galium faccharatum*. *Allion. pedem.* n. 39.  
*Aparine femine coriandri*. *Park. theat.* 567. *Vaill.*  
*par. t.* 14. *f.* 3. *b.*  
*Male flowers trifid pedicelled placed on the peduncle of the hermaphrodite.*
6. *Valantia articulata*. *Jointed Cross-wort*.  
*Lin. spec.* 1491. *syft.* 908. *Reich.* 4. 320. *hort.*  
*upf.* 303.  
*Cruciata orientalis latifolia erecta glabra*.  
*Tournef. cor.* 4.  
*Male flowers quadrifid, peduncles dichotomous leafless, leaves cordate.*
7. *Valantia Cruciata*. *Common Cross-wort*.  
*Lin. spec.* 1491. *Reich.* 4. 320. *hort. upf.* 303.  
*Sibth. oxon. n.* 190. *Neck. gallob.* 417. *Leers*  
*berborn. n.* 771. *Pollich pal. n.* 939. *Villars*  
*dauph.* 2. 334. *Berg. phyt.* 2. 183.  
*Galium cruciatum*. *Smith brit.* 173. *engl. bot. t.* 143.  
*Wither. arr. ed.* 3. 186. *Relb. cant. ed.* 2. n. 127.  
*Diët. nost. n.* 48.  
*G. Cruciata*. *Scop. carn. n.* 145. *Allion. pedem. n.* 32.  
*G. n.* 709. *Hall. helv.*  
*G. latifolium, Cruciata quibusdam, flore luteo*. *Bauh.*  
*hist.* 3. 717.  
*Cruciata*. *Dod. pempt.* 357. *i.* *Ger.* 965. *emac.*  
*1123. i.*  
*Raii hist.* 479. *syn.* 223. *Petiv. brit. t.* 30. *f.* 1.  
*Blackw. t.* 76.  
*C. hirsuta*. *Bauh. pin.* 335. *Tournef. inst.* 115.  
*C. vulgaris*. *Park. theat.* 566.  
*Male flowers quadrifid, peduncles lateral two-leaved.*
- [8. *Valantia glabra*. *Smooth Cross-wort*.  
*Lin. spec.* 1491. *Reich.* 4. 320. *Villars dauph.* 2.  
*334.*  
*Galium vernum*. *Scop. carn. n.* 144. *t.* 2. *Allion.*  
*pedem. n.* 33. *Hall. helv. n.* 720.  
*G. latifolium glabrum*. *Bauh. prodr.* 146. *Raii hist.*  
*479.*  
*Cruciata glabra*. *Bauh. pin.* 335.  
*C. minor lutea*. *Park. theat.* 566. 2.  
*Male flowers quadrifid, peduncles dichotomous leafless, leaves oval ciliate.*
9. *Valantia hypocarpia*.  
*Lin. spec.* 1491. *Reich.* 4. 320. *amoen.* 5. 412.  
*Swartz obs.* 385. *Brown. jam.* 141. *Rubia.*  
*All the flowers quadrifid below the germ, peduncles naked one-flowered.*

## DESCRIPTIONS, &amp;c.

1. Root annual. Stem and leaves smooth\*. Leaves four in a whorl; flowers herbaceous; fruit echinate. Native of Italy on the whole coast of Tuscany, especially in dry rocky places; also on old walls at a distance from the coast, as in the Farnese garden, Diocletian's baths, &c. at Rome<sup>†</sup>. On the sandy shores of the County of Nice: and in the South of France, where Cherler found it about Nemours, and Magnol about Montpellier. Columna first discovered it near Leghorn.

2. Root annual. Stems hispid. Leaves rugged. Fruit rounded, hispid all over; not even or beaked. It is nearly allied to *V. muralis*, but is larger and erect<sup>‡</sup>. Stems erect, sometimes branched at bottom. Leaves small, in fours, elliptic (or wedge-shaped,) hispid, toothletted, on very short petioles. Flowers axillary, in threes; the middle one hermaphrodite, with a four-cleft corolla. Fruit hispid, crested-echinate<sup>§</sup>.

\* Linn. syft.

† Micheli.

‡ Linn. spec. and syft.

§ Desfontaines.

Native of the South of Europe, and of Barbary about Algiers.

These two species were cultivated by Mr. Miller in 1768, and flower in may and june.

3. Native of the Canary islands, where it was found by Mr. Francis Masson, and introduced in 1780. It is annual, and flowers in july.

4. Native of the Levant. Introduced in 1780 by Mons<sup>r</sup>. Thouin. It is annual, and flowers in may and june<sup>b</sup>.

5. This has the appearance of *Galium Aparine*. Stem rugged backward, scandent. Leaves in fixes, rugged at the edge. Peduncles the length of the leaves, three-flowered at the top; the hermaphrodite flower sessile, the two side ones male and pedicelled, trifid or quadrifid<sup>c</sup>.

Stems branched, procumbent, angular; angles toothletted, rough. Leaves mostly in fixes, linear, toothed at the edge, blunt with a point. Flowers axillary, in threes. Corolla white. Middle flower four-cleft; the two side ones three or four-cleft. Seeds round, wrinkled-papillose, thick, smooth. It should not be confounded with *Galium spurium* of Linneus, which is very like it, but has the seed as small again, a little wrinkled, smooth or villose<sup>d</sup>.

The *Aparine femine lævi* of Vaillant, *t.* 4. *f.* 3. *a. a.* to which most authors refer, *Aparine femine læviore* of Ray; which Smith and Withering call *Galium tricornis*, Hudson, &c. *G. spurium*, differs from this in having the leaves about eight in a whorl, ferrate backwards, not rugged at the edge forwards; and the tubercles of the fruit much smaller. *G. spurium* of Linneus has only six leaves, with the fruiting peduncles from upright spreading, twice as long as the leaf, and the surface of the fruit even, scarcely granular or roughened<sup>e</sup>.

The plant which is figured as *Valantia Aparine* in *Flora Rustica*, is determined by Dr. Smith to be his *Galium tricornis*.

*Valantia Aparine* is native of Germany, France, Sicily and Barbary.

6. Root annual. Leaves smooth, subciliate with the edge rugged: floral leaves sessile, subcordate, rolled in at the base, after the flower is past turned back closely and concealing the fruit; when that is ripe the flowering-stem with the leaves separates in joints. Native of Egypt, Syria and Barbary<sup>f</sup>. Both these were cultivated in 1768 by Mr. Miller, if he has rightly named them, for he gives no descriptions.

7. This, with *glabra*, *Aparine*, and *articulata*, belongs more properly to the *Galiums*. For the description of the present species, See *Galium cruciatum*.

8. Linneus says this is very nearly allied indeed to the preceding.—Bauhin, to whom Linneus refers, describes it as having a very slender, creeping, jointed root; the little stalks tender, jointed, less than a palm in height; leaves from each joint four, decussated, smooth, nerved like those of Plantain, pale green, an inch and half in length; flowers small, yellow, on short pedicels. Common about Bologna the whole summer among bushes.—Scopoli also says that the flowers are yellow. It seems doubtful whether Villars's *glabra* be the same with this; the flowers in his plant being white and small, and the plant itself bearing no resemblance to *V. Cruciata*.

Native of the South of Europe. Introduced in 1783, by William Pitcairn, M.D. It flowers in july<sup>g</sup>.

9. Stem herbaceous, from one to three feet high, loose, branched, grooved, rugged. Branches opposite, numerous, divaricating, subdivided, patulous, loose, hispid. Leaves in fours, sessile, small, oblong, entire, convex, channelled at the base above, hispid-hispid. Flowers peduncled, axillary, small, yellow. Peduncles shorter than the leaves or of the same length, pubescent. Calyx four-leaved, inferior, scarcely bigger than the corolla: leaflets ovate with a short point, rough-haired, rugged. Filaments very short. Anthers roundish, very minute. Germ superior, minute, two-grooved.

<sup>b</sup> Hort. kew.<sup>c</sup> Linn. spec.<sup>d</sup> Desfontaines.<sup>e</sup> Smith brit. 177.<sup>f</sup> Linn. syft.<sup>g</sup> Hort. kew.



Style very short. Stigma two-lobed, pellucid. Berries two, connate, fulvous, small, one-seeded. Seeds roundish, whitish, shining. Native of Jamaica, in the cool mountains<sup>a</sup>.]

## PROPAGATION AND CULTURE.

If the annual sorts are permitted to scatter their seeds in autumn, the plants will come up, and require no farther care but to thin them, and keep them clean from weeds.

The roots of the seventh and eighth spread greatly, [and may be easily increased by dividing them. They are all hardy plants, except the third and last.

VALANTIA. See *Galium*.

VALDIA. See *Ovieda*.

VALENTINIA. (So named by Swartz, probably in honour of Mich. Bernh. Valentini, professor of medicine at Gießen.)

Lin. gen. Schreb. n. 1748. p. 801. Swartz prodr. 63.

Class. 8. 1. Octandria Monogynia.

## GENERIC CHARACTER.

CAL. Perianth one-leaved, spreading, concave, coloured, five-parted: segments obtuse, concave, entire.

COR. none, unless the calyx be taken for it.

STAM. Filaments eight, awl-shaped, erect, a little shorter than the calyx. Anthers roundish.

PIST. Germ roundish, superior. Style length of the stamens, round, thick. Stigma headed.

PER. Capsule berried, roundish opening into three or four parts which afterwards roll back, one-celled, pulpy within.

SEEDS four, oblong.

## ESSENTIAL CHARACTER.

Cal. five-parted, coloured, spreading. Cor. none. Caps. berried, four-seeded, pulpy.

## SPECIES.

1. *Valentinia ilicifolia*.

Lin. spec. ed. Willd. 2. 344. Swartz prodr. 63. descr. 2. 689.

*Malpighia aquifolii amplioribus foliis*. Plum. ic. 167. f. 2.

*Ilex folio agrifolii americana*. Pluk. phyt. t. 196. f. 3.

## DESCRIPTION, &amp;c.

This is a branching shrub, two or three feet high. Leaves alternate ovate-lanceolate an inch and half long, waved and spiny at the edge smooth and very stiff. Flowers terminating, in a sort of umbel, scarlet.

Native of Hispaniola, on the most barren rocks towards the ocean, and in Cuba about the Havanna<sup>1</sup>.

VALERANDI. See *Samolus*.]

VALERIANA. (According to some, named from one Valerius, who is said first to have used this plant in medicine: or as others, from valor or valentia, or from valere. But all this is uncertain.)

Lin. gen. n. 44. Reich. n. 48. Schreb. n. 60. Tournef. t. 52. Vaill. mem. par. 1722. Juss. 195. Gært. 2. t. 86.

*Valerianella* Tournef. and Vaill. Fedia Gært. t. 86.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Aggregatae*. *Dipsacæ* Juss.

## GENERIC CHARACTER.

CAL. scarcely any. A superior margin.

COR. Tube nectariferous on the lower side, gibbous. Border five-cleft. Segments obtuse.

STAM. Three or fewer, (in one species four). Filaments awl-shaped, erect, length of the corolla. Anthers roundish.

PIST. Germ inferior. Style filiform, length of the stamens. Stigma thickish.

PER. A crust not opening, deciduous, crowned.

SEEDS solitary, oblong.

OBS. A wonderful diversity of the parts of fructification is observed in this genus; as to their number and form in the different species: for instance,

The margin of the calyx is scarcely observable in some, but is five-cleft in others.

The tube of the corolla in some is oblong, in the two first

<sup>a</sup> Swartz.

<sup>1</sup> Willd. from Swartz.

it is furnished with a melliferous spur, in others it is very short. The border in some is equal, in others two-lipped with the upper lip bisd.

Stamens in most three, in some two or one only, in the Siberian species four; in others the sexes are distinct.

Stigma, in some trifid, in others emarginate, in others globular.

Pericarp, in some scarcely any, in others a thick capsule, in others two-celled.

Seeds in some crowned with down, in others without any, and of various forms.

## ESSENTIAL CHARACTER.

Cal. none. Cor. one-petalled, gibbous on one side of the base, superior. Seed one.

## SPECIES.

\* *Valerians*, with a single downy seed.

1. *Valeriana rubra*. Common or broad-leaved red Valerian.

Lin. spec. 44. syst. 79. Reich. 1. 84. Willd. 1. 175. hort. cliff. 15. upf. 14. Gært. fruct. 2. 35. Hudf. angl. 12. Wither. arr. ed. 3. 65. Smith brit. 38. Relb. cant. ed. 2. n. 26. Sibth. oxon. n. 57. Hall. belv. n. 213. Allion. pedem. n. 1. Berg. phyt. t. 141. Desfont. atlant. 1. 27. Lamarck illustr. n. 392. t. 24. f. 2. Tournef. inst. 131. Baub. pin. 165. Dod. pempt. 351. 1. Ger. 550. 1. emac. 678. 1. Park. theat. 123. 11. Raii hist. 389. Bess. exst. aff. 1. 3. f. 1.

*V. latifolia rubra*. Baub. hist. 3. 211. 2.

*V. marina*. Riv. Mon. t. 3. f. 2.—*latifolia major*. Mor. hist. f. 7. t. 14. f. 15.

*Phu peregrinum*. Camer. epit. 24.

*Ocimastrum*. Lob. obs. 184. 2.

*Polemonii species*. Dalech. hist. 1187.

Flowers one-stamened tailed, leaves lanceolate quite entire.

2. *Valeriana angustifolia*. Narrow-leaved, red Valerian.

Mill. dict. n. 4. Lin. spec. ed. Willd. 1. 75. Allion. pedem. n. 2. Hall. belv. n. 213. β. Desfont. atlant. 1. 28.

*V. rubra* β. Lin. spec. 44. syst. 79. Reich. 1. 84. mant. 319.

*V. monandra*. Villars dauph. 2. 280.

*V. rubra angustifolia*. Baub. pin. 165. prodr. 38. Baub. hist. 3. 211. Park theat. 122. n. 7. Raii hist. 389. Tournef. inst. 131.—ang. & longioribus foliis. Pluk. phyt. t. 232. f. 3.

*V. marina angustifolia*. Mor. hist. f. 7. t. 14. f. 16.

Flowers one-stamened tailed, leaves linear, quite entire.

3. *Valeriana Calcitrapa*. Cut-leaved Valerian.

Lin. spec. 44. Reich. 1. 84. Willd. 1. 175. vir. cliff. 4. hort. cliff. 16. upf. 14. Sauv. monsp. 275. Villars dauph. 2. 286. Allion. pedem. n. 3. Desfont. atlant. 1. 28. Kniph. orig. cent. 9. n. 98.

*V. foliis calcitrapæ*. Baub. pin. 164. Mor. hist. f. 7. t. 14. f. 7. Tournef. inst. 132.—item, sylvestris, foliis tenuissime divis. Baub. pin. 165.

*V. annua* f. æstiva. Clus. hist. 2. 54. Ger. emac. 1077. f. 8. Park. theat. 121. f. 5. Raii hist. 390.

Flowers one-stamened, leaves pinnatifid.

[4. *Valeriana dioica*. Small or Marsh Valerian.

Lin. spec. 44. syst. 80. Reich. 1. 85. Willd. 1. 176. fl. suec. n. 35. hort. cliff. 16. vir. cliff. 5. Hudf. angl. 12. Wither. arr. ed. 3. 65. Smith brit. 37. Engl. bot. t. 628. Curt. lond. 4. t. 3. 278. Relb. cant. ed. 2. n. 27. Sibth. oxon. n. 58. Abbot. bedf. n. 23. Fl. dant. t. 687. Hall. belv. n. 208. Hoffm. germ. 11. Roth. germ. 1. 16. 2. 37. Pollich pal. n. 30. Krock. siles. n. 48. Neck. gallob. 18. Scop. carn. n. 40. Villars dauph. 2. 281. Allion. pedem. n. 4. Kniph. orig. cent. 11. Berg. phyt. 2. 41.

*V. palustris minor*. Baub. pin. 164. Mor. hist. f. 7. t. 14. f. 5.

*V. pal. inodora parum laciniata*. Baub. pin. 86. fem.

*V. alpina minor*. Baub. pin. 165. prodr. 87.

*V. minor*. Ger. 917. 3. emac. 1075. 3. Mor. umb. 51. t. 10. d. e. Raii hist. 388.

*V. aquatica*



- V. aquatica minor flore minore. *Raii hist.* 389. *fem.*
- V. sylvestris minor. *Clus. hist.* 2. 55. 2. *Park. theat.* 123. 13. *Raii syn.* 200. *mas.*
- V. sylv. f. palustris minor altera. *Raii syn.* 200. *fem.*
- V. minor pratensis vel aquatica. *Bauh. hist.* 3. 211. 1.
- V. flore exiguu. *Riv. mon.* 2. 2. *fem.*
- V. minima. *Dod. pempt.* 350. *fem.*
- V. quarta omnium minutissima. *Trag.* 62. *fem.*
- V. palustris foliis subrotundis. *Loef.* 279. *ic.* 84. *fem.*
- Phu minimum. *Matth. valgr.* 1. 38. 41. *mas.*
- P. min. f. Valeriana montana palustris. *Camer. epit.* 23. *mas.*
- P. minus, f. V. minor. *Tabern.* 165. *Blackw. t.* 284. *mas.*
- Flowers three-stamened dioecious, radical leaves ovate, stem-leaves pinnate.
5. Valeriana capensis. *Cape Valerian.*  
*Lin. spec. ed. Willd.* 1. 176. *Thunb. prodr.* 7.  
Flowers three-stamened, leaves pinnate, leaflets ovate toothed.]
6. Valeriana officinalis. *Officinal or great wild Valerian.*  
*Lin. spec.* 45. *synt.* 80. *Reich.* 1. 86. *Willd.* 1. 177. *fl. lapp. n.* 13. *suec. n.* 34. *hort. cliff.* 15. *mat. med.* 42. *Woodv. med. bot.* 262. *t.* 96. *Huds. angl.* 12. *Wither. arr. ed.* 3. 66. *Smith brit.* 38. *engl. bot. t.* 698. *Curt. lond.* 6. *t.* 3. *Relb. cant. ed.* 2. *n.* 28. *Sibth. oxon. n.* 59. *Abbot. bedf. n.* 24. *Fl. dan. t.* 570. *Hall. belv. n.* 210. *Hoffm. germ.* 11. *Roth. germ.* 1. 16. 2. 38. *Pollich pal. n.* 31. *Neck gallob.* 18. *Krock. files. n.* 49. *Scop. carn. n.* 39. *Villars dauph.* 2. 282. *Allion. pedem. n.* 5. *Gmel. fib.* 3. 120. *Ludw. est. t.* 99. *Kniph. orig. cent.* 5. *n.* 97. *Blackw. t.* 271. *Plenck. ic. t.* 27.
- V. sylvestris major. *Bauh. pin.* 164. *Ger.* 917. 2. *emac.* 1075. 2. *Raii hist.* 388. *syn.* 200. *Mor. hist.* f. 7. *t.* 14. *f.* 2. *Tournef. inst.* 132.
- V. silvestris. *Dod. pempt.* 349. 2. *Clus. hist.* 2. 55. 1. —magna aquatica. *Bauh. hist.* 3. 2. 211.
- Phu. *Column. phytob.* 114.
- P. parvum. *Matth. valgr.* 1. 37. 40.
- P. germanicum. *Fuchs. hist.* 857.
- β. V. sylvestris major montana. *Bauh. pin.* 164. *Dill. in Raii syn.* 200—folio angustiore. *Rivin. mon.* 2. 1.
- Flowers three-stamened, all the leaves pinnate, leaflets lanceolate nearly uniform.
7. Valeriana Phu. *Garden Valerian.*  
*Lin. spec.* 45. *Reich.* 1. 86. *Willd.* 1. 177. *hort. cliff.* 15. *ups.* 13. *mat. med.* 42. *Hoffm. germ.* 11. *Roth. germ.* 1. 17. 2. 39. *Krock. files. n.* 50. *Villars dauph.* 2. 281. *Desfont. atlant.* 1. 29. *Ludw. est. t.* 98. *Kniph. orig. cent.* 5. *n.* 98. *Blackw. t.* 250. *Plenck. ic. t.* 28.
- V. hortensis. *Bauh. pin.* 164. *Dod. pempt.* 349. *Ger.* 917. *f.* 1. *emac.* 1075. *f.* 1.—Phu folio Olusatrici Dioscoridis. *Mor. hist.* f. 7. *t.* 14. *f.* 1. *Tournef. inst.* 132.
- V. hort. flore albo. *Rivin. mon.* 1. 3.
- V. major odorata radice. *Bauh. hist.* 3. 209. *Raii hist.* 388.
- V. major Phu. *Lob. ic.* 714. *Best. eyf. æst.* 9. 11. *f.* 1.
- Phu magnum. *Fuchs. hist.* 856. *Matth.* 39. *Camer. epit.* 21.
- P. ponticum. *Tabern. ic.* 164.
- P. majus f. Valeriana major. *Park. theat.* 120. *f.* 1.
- Flowers three-stamened, stem-leaves pinnate, root-leaves undivided.
- [8. Valeriana tripteris. *Three-leaved Valerian.*  
*Lin. spec.* 45. *synt.* 80. *Reich.* 1. 86. *Willd.* 1. 177. *Hall. belv. n.* 211. *Scop. carn. n.* 41. *Jacq. vind.* 201. *n.* 2. *austr.* 3. 38. *t.* 268. *Sauv. monsp.* 276. *Villars dauph.* 2. 282. *Allion. pedem. n.* 6. *Pluk. phyt. t.* 231. *f.* 7. 8. *Barrel. t.* 742.
- V. alpina. *Bauh. hist.* 3. 208. *Raii hist.* 390.
- V. alp. prima. *Bauh. pin.* 165. *prodr.* 86. *ic.* *Tourn. inst.* 131. *Mill. dist. vol.* 2. 1739. *n.* 2.—item altera. *Bauh. pin.* 165.
- V. alp. latifolia. *Ger. emac.* 1077. 9.  
Flowers three-stamened, leaves toothed, root leaves cordate, stem-leaves ternate ovate-oblong.
9. Valeriana montana. *Mountain Valerian.*  
*Lin. spec.* 45. *synt.* 80. *Reich.* 1. 87. *Willd.* 1. 178. *Hall. belv. n.* 212. *Scop. carn. n.* 42. *Jacq. vind.* 202. *austr.* 3. 38. *t.* 269. *Villars dauph.* 2. 283. *Allion. pedem. n.* 7. *Krock. files. n.* 51. *Gmel. fib.* 3. 121. *n.* 2.
- V. alpina scrophulariæ folio. *Bauh. pin.* 164. *prodr.* 87. *Raii hist.* 390. *Tournef. inst.* 131. *Secheuch. it.* 1. 51. *Mill. dist. vol.* 2. 1739. *n.* 4.
- V. montana subrotundo folio. *Bauh. pin.* 165.
- V. montana altera. *Bauh. phytot.* 292.
- V. sylvestris alpina prima. *Clus. hist.* 2. 55. *sec. Jacq.*  
Flowers three-stamened, leaves ovate-oblong somewhat toothed, stem simple.]
10. Valeriana celtica. *Celtic Valerian.*  
*Lin. spec.* 46. *synt.* 80. *Reich.* 1. 87. *Willd.* 1. 178. *mat. med.* 42. *Hall. belv. n.* 209. *Scop. carn. n.* 45. *Jacq. vind.* 203. *collect.* 1. 24. *t.* 1. *Villars dauph.* 2. 285? *Allion. pedem. n.* 8. *Tournef. inst.* 131. *Mill. dist. vol.* 2. 1739. *n.* 8.
- Nardus celtica. *Bauh. hist.* 3. 205. *Lob. adv.* 132. *Ger.* 919. 1. *emac.* 1079. 1. *Raii hist.* 391.
- N. ex Apulia.—item, N. celtica Dioscoridis. *Bauh. pin.* 165.—item, N. celt. altera. *Bauh. pin.* 166.
- N. f. spica celtica. *Park. theat.* 116. *n.* 2.
- Nardum celticum. *Matth. valgr. ed.* 1. 27. 2. 33.
- Nardus celtica f. alpina. *Clus. pann.* 514. 515.
- Flowers three-stamened, leaves ovate-oblong obtuse quite entire.
- [11. Valeriana tuberosa. *Tuberous-rooted Valerian.*  
*Lin. spec.* 46. *synt.* 80. *Reich.* 1. 87. *Willd.* 1. 178. *Ger. prov.* 218. 7. *Villars dauph.* 2. 285. *Allion. pedem. n.* 10.
- V. alpina minor. *Bauh. pin.* 165. *prodr.* 87. 5. *Tournef. inst.* 132. *Linn. mant.* 319.
- Nardus montana. *Ger. emac.* 1079. *f.* 4.—tuberosa. *Park. theat.* 117. *f.* 6.—radice olivari. *Bauh. pin.* 165. *Raii hist.* 392.—longius radicata. *Camer. epit.* 16.
- Flowers three-stamened, root-leaves lanceolate quite entire, the rest pinnatifid.
12. Valeriana saxatilis. *Rock Valerian.*  
*Lin. spec.* 46. *synt.* 80. *Reich.* 1. 87. *Willd.* 1. 179. *Scop. carn. n.* 43. *Jacq. vind.* 204. *austr.* 3. *t.* 267. *Villars dauph.* 2. 286. *Allion. pedem. n.* 11. *Krock. files. n.* 52. *t.* 6. *Pluk. phyt. t.* 232. *f.* 2.
- V. alpina nardo celticæ similis. *Bauh. pin.* 165.
- V. silvestris alpina 2 saxatilis. *Clus. hist.* 2. 56. *f.* 1.
- V. alpina minor. *Park. theat.* 120. *n.* 4. *at ic.* 121. *f.* 3. *Raii hist.* 389.
- V. alp. angustifolia. *Ger. emac.* 1077. 10.
- Nardo celticæ similis inodora. *Bauh. pin.* 165. *prodr.* 88. *Burf.* 8. 122.
- Flowers three-stamened, leaves somewhat toothed, root-leaves ovate, stem-leaves linear-lanceolate.
13. Valeriana elongata.  
*Lin. spec.* 1664. *synt.* 80. *Reich.* 1. 88. *Willd.* 1. 179. *Scop. carn. n.* 44. *Jacq. vind.* 205. *t.* 1. *austr.* 3. *t.* 219.
- Nardo celticæ similis alia. *Lin. amoen.* 1. 154.
- Flowers three-stamened, root-leaves ovate, stem-leaves cordate, sessile gasped and somewhat hastate.]
14. Valeriana pyrenaica. *Pyrenean Valerian.*  
*Lin. spec.* 46. *Reich.* 1. 88. *Willd.* 1. 179. *hort. cliff.* 15. *Monnier obs.* 235. *Pluk. phyt. t.* 232. *f.* 1.
- V. maxima pyrenaica, Cacaliæ folio. *Tournef. inst.* 131.
- V. canadensis. *Riv. mon.* 1. 6.
- V. orientalis, Alliariæ folio, flore albo. *Buxb. cent.* 2. 19. *t.* 11.
- Flowers three-stamened, stem-leaves cordate toothed petioled, uppermost ternate.
- [15. Valeriana scandens. *Climbing Valerian.*  
*Lin. spec.* 47. *Reich.* 1. 88. *Willd.* 1. 180. *Loefl. it.* 235.
- Flowers three-stamened, leaves ternate, stem scandent.
16. Valeriana mixta.



- Lin. spec.* 48. *Reich.* 1. 90. *Willd.* 1. 190. *Sauv. monsp.* 275.  
*Valerianella femine umbilicato hirsuto minore.* *Mor. umb.* 68.  
*Flowers three-stamened, stem quadrifid, lower leaves bipinnatifid, seed-down feathered.*
17. *Valeriana lupina.*  
*Lin. syst.* 81. *Reich.* 1. 91. *Willd.* 1. 180. *mant.* 27. *Jacq. misc.* 2. 114. *t.* 17. *f.* 2. *Ard. spec.* 2. 13. *t.* 3. *Roemer fl. europ. fasc.* 3.  
*V. faliunca.* *Allion. pedem.* n. 9. *t.* 10. *f.* 2.  
*V. alpina foliis integris, radice repente inodora.* *Raii hist.* 389.  
*V. montana minor italica, fol. integris, rad. repente.* *Barr. rar.* 15. *t.* 868.  
*Flowers four-stamened, involucrets six-leaved three-flowered, leaves entire.*  
 \*\* *Fediae G. with a three-celled crowned fruit.*
18. *Valeriana villosa.* *Hairy Valerian.*  
*Lin. syst.* 81. *Willd.* 1. 181. *Thunb. jap.* 32. *t.* 6.  
*Flowers four-stamened equal, lower leaves eared, upper toothed villose.*
19. *Valeriana polystachya.*  
*Lin. spec. ed. Willd.* 1. 181. *Smith ic. ined.* 3. *t.* 51.  
*Flowers three-stamened, leaves pinnate, spike compound whorled.]*
20. *Valeriana sibirica.* *Siberian Valerian.*  
*Lin. spec.* 48. *syst.* 81. *Reich.* 1. 91. *Willd.* 1. 181. *hort. upf.* 13. *Gmel. fib.* 3. 123. *t.* 24. *Kniph. orig. cent.* 5. n. 99.  
*V. rupestris.* *Pall. itin.* 3. 215.  
*Flowers four-stamened equal, leaves pinnatifid, seeds fastened to an oval chaff.*
21. *Valeriana ruthenica.* *Russian Valerian.*  
*Lin. spec. ed. Willd.* 1. 181.  
*V. lutea humilis.* *Amman. ruth.* 18. n. 25. *t.* 3.  
*Flowers four-stamened, leaves ovate fleshy pinnatifid-toothed, seeds fastened to an oval chaff.*
- [22. *Valeriana carnosa.* *Fleshy Valerian.*  
*Lin. spec. ed. Willd.* 1. 181. *Smith ic. ined.* 3. *t.* 52.  
*Flowers three-stamened, leaves oval toothed fleshy glaucous.]*
- *Valeriana Cornucopiæ.* *Purple Valerian.*  
*Lin. spec.* 44. *syst.* 79. *Reich.* 1. 84. *Willd.* 1. 181. *hort. cliff.* 15. *upf.* 13. *Desfont. atlant.* 1. 29. *Kniph. orig. cent.* 10. n. 91. *Sabb. hort.* 2. *t.* 19.  
*V. peregrina purpurea albave.* *Baub. pin.* 164. *prodr.* 87.  
*V. indica.* *Clus. hist.* 2. 54.—*f. mexicana.* *Park. theat.* 122. *f.* 6.  
*V. mexicana.* *Ger. emac.* 1076. *f.* 6. *Raii hist.* 394.  
*V. peregrina f. indica.* *Baub. hist.* 3. 212.  
*Valerianella cornucopioides flore galeato.* *Tournef. inst.* 133. *Riv. mon. t.* 5.  
*Pseudo-Valeriana cornucopioides annua purpurea.* *Mor. hist.* 3. 104. *f.* 7. *t.* 16. *f.* 27.  
*Fedia cornucopiæ.* *Gartn. fruct.* 2. 36.  
*Flowers two-stamened ringent, leaves ovate sessile.*
- [24. *Valeriana echinata.*  
*Lin. spec.* 47. *syst.* 81. *Reich.* 1. 90. *Willd.* 1. 182. *Ger. prov.* 218. 8. *Sauv. monsp.* 130. *Kniph. orig. cent.* 10. n. 92. *Desfont. atlant.* 1. 30. C.  
*Valerianella echinata.* *Baub. pin.* 165. *Raii hist.* 393.  
*V. cornucopioides echinata.* *Column. ecphr.* 1. 204. *t.* 206.  
*Flowers three-stamened regular, leaves toothed, fruit-linear three-toothed, outmost larger recurved.]*
25. *Valeriana olitoria.* *Common Corn-Salad or Lamb's Lettuce.*  
*Lin. spec. ed. Willd.* 1. 182. *Allion. pedem.* n. 12.  
*V. Locusta.* *Lin. spec.* 47. *syst.* 80. *Reich.* 1. 89. *f. suec.* n. 36. *vir. cliff.* 5. *hort. cliff.* 16. *upf.* 14. *Huds. angl.* 13. *Witber. arr. ed.* 3. 66. *Smith brit.* 39. *engl. bot.* t. 811. *Curt. lond.* 5. *t.* 4. *Relh. cant. ed.* 2. n. 29. *Sibth. oxon.* n. 60. *Abbot bedf.* n. 25. *Fl. dan.* t. 738. *Hoffm. germ.* 11. *Roth. germ.* 1. 17. 2. 39. *Leers herb. n.* 28. *Krock. filef.* n. 51. *Neck. gallob.* 19. *Villars dauph.* 2. 287. *Desfont. atlant.* 1. 30. *Berg. phyt.* 2. 235. *Plenck. ic. t.* 30. *Mill. dict.* n. 9. *Fl. rust.* t. 24.  
*V. campestris inodora major.* *Baub. pin.* 165. *Raii hist.* 392.  
*Valerianella olitoria.* *Pollich pal.* n. 32.  
*V. Hall. belv.* n. 214. *Kniph. cent.* 3. n. 95.  
*V. arv. præcox humilis, sem. compresso.* *Mor. umb. & f.* 7. *t.* 16. *f.* 36. *Raii syn.* 201. *Tournef. inst.* 132.  
*Lactuca agnina.* 1. *Tabern. ic.* 167. *Ger.* 242. *emac.* 310. 1.  
*Phu minimum Lobelii.* *Dalech. hist.* 1127.  
*Album olus.* *Dod. pempt.* 647. 1.  
*Locusta herba prior.* *Baub. hist.* 3. 323. 2.  
*Fedia olitoria.* *Gartn. fruct.* 2. 36.  
 β. *Lactuca agnina* 2. *Tabern. ic.* 167. *Ger.* 242. *emac.* 310. 2. *Park. theat.* 812. 3.  
*Phu minimum alterum.* *Lob. ic.* 717. *obs.* 412. 2.  
*Locusta minima.* *Riv. mon. t.* 6. *f.* 2. *Baub. hist.* 3. 324. 1.  
*Lactuca agnina. f. Valerianella foliis ferratis.* *Raii hist.* 392. *syn.* 201. 2. *Mor. hist. f.* 2.  
*Valerianella arv. præcox humilis, fol. ferratis.* *Tournef. inst.* 132.  
*Flowers three-stamened, stem dichotomous, leaves lanceolate (linear-tongue-shaped) obtuse entire (or the upper ones toothed.)*
- [26. *Valeriana dentata.* *Tooth-seeded Corn-salad.*  
*Lin. spec. ed. Willd.* 1. 183. *Allion. pedem.* n. 13. *Smith brit.* 1385.  
*V. Locusta δ dentata.* *Lin. spec.* 48. *Hoffm. germ.* 12. *Roth. germ.* 1. 17. 2. 39. *Scop. carn.* n. 46. *With. var.* 6.  
*V. altera nudo umbilicato et lævi femine.* *Column. ecphr.* 208. *t.* 209. *f.* 2.  
*Valerianella dentata.* *Pollich pal.* n. 33. *Hall. belv.* n. 215.  
*Flowers three-stamened, stem dichotomous, leaves linear-tongue-shaped, quite entire (or somewhat toothed,) fruit ovate acuminate three-toothed, two of the teeth very short.]*
27. *Valeriana vesicaria.* *Bladder-fruited Corn-salad.*  
*Lin. spec. ed. Willd.* 1. 183. *Mill. dict.* n. 10.  
*V. Locusta β vesicaria.* *Lin. spec.* 47. *hort. cliff.* 16. *Hoffm. germ.* 11. *Kniph. orig. cent.* 8. n. 98.  
*Valerianella cretica, fructu vesicario.* *Tournef. cor.* 6. *Boerb. lugdb.* 1. 75. *ic.*  
*Flowers three-stamened, stem dichotomous, leaves lanceolate toothed, fruit inflated globular.*
28. *Valeriana coronata.* *Crowned Corn-salad.*  
*Lin. spec. ed. Willd.* 1. 184. *Allion. pedem.* n. 14. *Ger. prov.* 219. n. 10. *Mill. dict.* n. 11.  
*V. Locusta γ coronata.* *Lin. spec.* 48. *hort. cliff.* 16.  
*V. Locusta coronata B.* *Desfont. atlant.* 1. 30.  
*Valerianella femine stellato.* *Baub. pin.* 165. *Raii hist.* 393.  
*V. altera tenuifolia femine Scabiosæ stellato, &c.* *Column. ecphr.* 1. 207. *t.* 209.  
*V. fem. stellato.* *Tournef. inst.* 133.  
*V. petræa.* *Ger. emac.* 1075. 4. *Park. theat.* 123. *f.* 8.  
*Fedia coronata.* *Gartn. fruct.* 2. 37.  
*Flowers three-stamened, stem dichotomous, leaves lanceolate toothed, fruit six-toothed.*
- [29. *Valeriana discoidea.*  
*Lin. spec. ed. Willd.* 1. 184.  
*V. Locusta ζ discoidea.* *Lin. spec.* 48.  
*Pseudo-Valeriana annua, femine coronato, major lusitanica.* *Mor. hist.* 3. 104. *f.* 7. *t.* 16. *f.* 29.  
*Flowers three-stamened, stem dichotomous, leaves lanceolate toothed, fruit twelve-toothed, teeth hooked.*
30. *Valeriana radiata.*  
*Lin. spec. ed. Willd.* 1. 184.  
*V. Locusta ε radiata.* *Lin. spec.* 48. *Walt. carol.* 66. *Gron. virg.* 10.  
*Valerianella marilandica, foliis oblongis obtusis.* *Raii hist. suppl.* 244.  
*Flowers three-stamened, stem dichotomous, leaves oblong obtuse, heads involucre.*
31. *Valeriana*



31. *Valeriana pumila*. Dwarf Corn-Salad.  
*Lin. spec. ed. Willd.* 1. 184. *Sauv. monsp.* 13.  
*Gouan. hort.* 23.  
*V. Locusta* n. *mutica*. *Lin. spec.* 1676.  
*V. femine-umbilicato rotundo nudo*. *Tournef. inst.*  
 132.  
*Phu minimum*. *Lob. ic.* 716.  
*Flowers three-stamened, stem dichotomous, lower leaves*  
*toothed, upper linear multifid.*]

## DESCRIPTIONS, &amp;c.

1. Roots perennial, woody, as thick as a man's finger, spreading very wide. Stems about three feet high, round, smooth, grayish, hollow. At each joint two (sometimes three,) smooth, spear-shaped leaves, near three inches long, and an inch broad. The upper part sends out branches by pairs, which, with the principal stem, are terminated by red flowers growing in corymbs.

[The whole herb is very smooth and even. The upper leaves are ovate and very long pointed. The flowers are disposed in a dense and very branching corymb; they are slender, make a good appearance, and are usually of a deep rose colour; but vary to pale flesh-colour and white<sup>k</sup>. Pericarp none, except the crust over the seed springing from the calyx. Seed inferior, ovate, narrowed upwards, compressed a little, having a single depressed streak on one side, and three ridges on the other, rufescent: down sessile, longer than the seed, composed of about twenty incurved feathered rays, united at the base into a membranaceous inversely conical cup<sup>l</sup>.

Native of France, Switzerland, Italy, the Levant and Barbary. In England on walls, but probably escaped by means of its downy seeds, from gardens. Gerarde says it grew plentifully in his garden, being a great ornament to the same, and not common in England. Parkinson, that it grows in our gardens chiefly, for we know not the natural place of it. It is not acknowledged as an English plant by Ray, nor by Dillenius. I have a specimen with a white flower from Ely Minster, gathered there by Professor John Martyn above seventy years ago; and I found it growing abundantly with a red flower on Merton Abbey walls in Surry, on the twenty-third of August 1758. Mr. Hudson says it is frequent in Devonshire and Cornwall, both among rubbish and on walls. Mr. Relham remarks it to grow at Coton and Babraham, as well as on Ely Minster and the walls adjoining, where I also have frequently seen it. Dr. Sibthorp observed it on Merton College walls, Oxford; and Dr. Smith in Bishopgate-street, Norwich. It flowers all the summer and autumn, from the end of may.]

2. The root of this is not so large as that of the preceding sort. Stems two feet high or more, branching on each side from the root to within six inches of the top. Leaves three or four inches long, but as narrow as those of flax. Upper part of the stem naked, and terminated by a compact corymb of bright red flowers, smaller than those of the former.

[It seems to be very distinct from the common Red Valerian, in having very narrow linear leaves. Native of the mountains of France, Switzerland, Italy and Barbary. Cultivated by Mr. Miller before 1743.]

3. This is an annual plant. The lower leaves, which spread on the ground, are cut into many obtuse segments; the stalks, when the plants are in good ground, will rise near a foot and half high, but upon dry stony soils not half so high, and when they grow out of the joints of old walls, not more than three inches in height: they are hollow, smooth, and round, sending out branches by pairs from the upper joints. The segments of the pinnatifid leaves are very narrow. Stem and branches terminated by tufts (corymbs) of flowers shaped like those of the Garden Valerian, but smaller and tinged with flesh-colour at the top.

[Stem upright, sometimes unbranched. Leaves very smooth; the lower ones smaller, on a long channelled petiole, ovate, obtuse, entire or with unequal blunt teeth; the middle and upper ones pinnatifid, with toothed pinnules. Flowers corymbed, then paniced,

directed one way, sessile on dichotomous branchlets. Bractes awl-shaped, pressed close. Corolla small, pale rose-coloured. Seed oblong, compressed, attenuated upwards, striated, crowned with a feathered down. It varies with the lower leaves pinnatifid; and flowers early in the spring<sup>m</sup>.

Native of the South of France, Italy; Portugal, the Levant, and Barbary. Cultivated by Mr. James Sutherland in 1683<sup>n</sup>.

4. Root perennial, jointed, creeping; the thickness of a crow-quill, white, but sometimes tinged with red. Stems from a span to a foot or a foot and half in height, upright, grooved, smooth. Leaves next the root ovate, petioled, undivided. Stem-leaves few, opposite, pinnatifid or lyrate pinnate, smooth, generally entire, but sometimes toothed or obtusely serrate; the end lobe or leaflet large and ovate in the lower stem-leaves, smaller and lanceolate in the upper ones. Flowers forming a kind of corymb, or rather cymose panicle, and having a tinge of red, but paler in the female flowers; these also are much smaller and in closer corymbs: the male flowers are considerably bigger and more loosely disposed; and the male plant is less and more tender. In the male flowers the filaments are longer than the corolla; the anthers, white or pale red; and sometimes there is a short minute pistil in the centre: their number varies from one to four, but is usually three. The female flowers have the germ ovate, flat, grooved, nearly the length of the corolla; the style white, somewhat thickened near the top, a little longer than the corolla, oblique; and the stigma trifid: sometimes imperfect rudiments of stamens are visible within the tube of the corolla. Seed ovate-oblong, pale brown, with a single rib on one side, and three ribs on the other, crowned with a feathery down. Dr. Withering says, that in Portugal he observed female flowers producing perfect seeds, on the same plant with the male flowers. Scopoli affirms that he never saw any plants truly dioecous, or without perfect seeds. That is certainly not the case in England.

This species with us is pretty regularly dioecous; or if there be any hermaphrodite flowers, they are such in structure only, both organs not being perfect<sup>o</sup>.

Native of Europe and the Levant, in wet meadows, marshes, and by the side of ditches and streams; flowering in may and june.

The roots have the same smell with the officinal and garden Valerian, and have like properties with them, but in a much weaker degree than the former.

5. Found at the Cape of Good Hope by Thunberg.]

6. Root perennial, composed of long fleshy slender fibres, uniting in heads, [and sending out from its crown one or more long-extended creeping shoots. Stems in dry ground from one foot to two feet in height, but in woods and hedges, moist ground, and gardens four or five feet high, upright, round, grooved, hollow, in some parts more or less hairy, terminating in flowering branches which are brachiate or disposed crosswise. Leaves opposite, connate, bearded at the base on the under side, all pinnate; the midrib somewhat downy; the pinnæ or leaflets eleven to thirteen, almost all equal, opposite or alternate, slightly decurrent, unevenly and distantly toothed, veiny, wrinkled, paler on the under side, slightly hairy, the terminating leaflet three-lobed not bigger than the others: the lower leaves on long petioles, the upper ones nearly sessile; the uppermost on the flowering-branches trifid, and sometimes entire. Flowers in a kind of corymb, of a pale flesh-colour, and having a singular odour. Flower-stalks much branched, and many times divided. Bractes lanceolate; acuminate, connate, whitish, with a green midrib. Calyx only a slight margin on the top of the germ. Filaments longer than the corolla, bending back when the anthers have shed their pollen; anthers of the same colour as the flower. Germ conic: stigma obtuse, white, and trifid. Seed ovate-oblong, compressed, furnished with a pappus or down, having twelve feathery rays, of a purplish colour at the base<sup>p</sup>.

<sup>k</sup> Smith brit.<sup>l</sup> Gærtner.<sup>m</sup> Desfontaines.<sup>n</sup> Hort. kew.<sup>o</sup> Curtis, Smith brit.<sup>p</sup> Curtis, Smith brit.

Relh.



Native of Europe and Siberia; in woods, hedges, marshes, and near rivers: it also grows among bushes in high pastures and on dry heaths, and is then much smaller and more hairy, with the leaves narrower, and the roots more highly aromatic and less nauseous. It flowers in June.

The root has a strong, and to most people a disagreeable smell; its taste is warm, bitterish and sub-acrid, communicating its properties to wine, water, and spirit; but it is best in substance, and may be taken from half a dram to two drams for a dose. There is no doubt of its possessing antispasmodic virtues in an eminent degree. It is often prescribed with advantage in hysterical cases; and instances are not wanting where it appears to have removed some obstinate epilepsies. In habitual costiveness it is an excellent medicine, and frequently loosens the bowels, when other stronger purgatives have been tried in vain<sup>2</sup>.

The unpleasant flavour of Valerian is best concealed by a small addition of mace. A tincture of the root in proof spirit, and in volatile spirit, are ordered in the London Pharmacopœia. Dr. Cullen says, that if it has sometimes failed, it is from the disease depending upon different causes, or the root being frequently employed in an improper condition, or in doses not large enough<sup>1</sup>. I have known very great effects produced in hysterical cases by Valerian; but then the root was procured from dry calcareous pastures, and it was given in considerable quantities during a long time.

It is well known that cats are much delighted with the roots. Dr. Stokes informs us that rats are equally fond of them, and that rat-catchers employ them to draw the rats together.]

7. Roots thick, fleshy, jointed, spreading near the surface in a very irregular manner, crossing each other, and matting together by their small fibres. Many of the root-leaves entire, others divided into three, five, or seven, obtuse lobes, of a pale green and quite smooth. Stems three or four feet high, hollow, sending out lateral branches by pairs. Stem-leaves opposite at each joint, composed of four or five pairs of long narrow leaflets, terminated by an odd one. Stem and branches terminated by corymbs of small white flowers. Seeds oblong, flat, with a pappus or downy crown.

[Linneus remarks, that this differs from the officinalis, in not having the stem grooved, and the outer leaflets being larger than the others.—The root-leaves are on long petioles oblong, glandular at the edge and sometimes slightly crenate. Petiole channelled. Stem-leaves remote; the lower ones often two-lobed or three-lobed, the middle and upper ones pinnate: pinnules lanceolate, acute, quite entire, except the end ones, which are sometimes toothed. Stem upright, smooth. Bractes linear-subulate. Segments of the corolla oblong, obtuse, crenulate. Stigmas three<sup>1</sup>.

Native of Alsace, Silesia, Dauphiné, Barbary near La Calle: flowering from May to July. Gerarde, in 1597, says it was then planted in our gardens.

The odour of the flowers is very pleasant, whereas that of the officinal Valerian is rather disagreeable. The root has the same smell, taste, and qualities with that, but is inferior to it as a medicine, at least with us. Where it grows wild, it may perhaps be as good.

8. Root perennial, long, unequal, brownish, strong-smelling. Root-leaves oblong-cordate, bluntish, smooth, obtusely serrate-toothed, on long petioles: the two first of these that come out are more inclined to roundish, and are only slightly crenate. Stem upright, undivided, about a foot high. Stem-leaves two or three pairs, smooth, ternate, on short petioles: leaflets confluent at the base, lanceolate, acute, unequally subserrate, the middle one larger than the others: they vary much, being gash-serrate, crenate, or even quite entire; the uppermost are sometimes lanceolate-linear and quite entire, sometimes pinnate with five leaflets. Flowers numerous, white, in loose corymbs. Seeds downy<sup>1</sup>.

Linneus remarks, that the proper involucre is two-leaved and bristle-shaped.—And Villars, that the roots

are thick, woody, and creeping, forming considerable tufts on the rocks; and that the leaves are of an ash green or glaucous.

Native of the Alps of Switzerland, Austria, Carniola, Dauphiné and Piedmont; flowering all the summer.—With us it flowers from March to May; and was cultivated by Mr. Miller in 1739<sup>1</sup>.

9. This agrees in stature and habit with the preceding; but this is more tufted, and has the root commonly creeping horizontally, more divided, and not smelling so strongly. All the leaves are acute, unequally serrate or toothed and smooth; the root-leaves are on long petioles, and are more or less attenuated at the base towards the petiole; the stem-leaves vary in number, are on short petioles, and rather oblong. Stem upright, simple, a foot or eighteen inches high. Flowers in a corymb, whitish or purplish. Seeds downy<sup>2</sup>.

Scopoli remarks, that the lower leaves are oval and blunter; the upper ones oblong-acuminate, toothed; the uppermost subsessile: and that the leaves being always subdivided, is a sufficient distinction of this from the preceding.

Native of the mountains of Switzerland, Austria, Carniola, Dauphiné, Piedmont, Silesia, Siberia: flowering there all the summer.—With us it flowers in June and July; and was cultivated by Mr. Miller in 1739<sup>1</sup>. These two species were in the second volume of Mr. Miller's Dictionary published in 1739. He had nineteen species there, besides seven species of Valerianella: many of which are omitted in the later editions of the Dictionary.

Villars has a species, which he names rotundifolia, but suspects that it may be a variety of this. He remarks that the montana is of a size between the tripteris and this; that it is greener than the first; but less green than the second; that the leaves are all petioled, and that there are three or four pairs on the stem; that the petioles of the root-leaves are shorter, and that it does not form tufts like the rotundifolia, that the flowers also are more widely separated, and the stem-leaves terminated by a lengthened point.

The rotundifolia is the least of the three, and its flowers approach a little to those of the elongata; but the leaves differ too much for it to be a variety of that: it has rarely any deep divisions in them, or even earlets at the base of the stem-leaves, any more than in the montana; whilst the tripteris has them sometimes entire. These three species are very nearly allied, and the varieties of montana and tripteris are distinguished with difficulty, whereas the rotundifolia is easily known by its large tufts, numerous green leaves, and low stems.

10. Root perennial, black, oblique, with long fibres, smelling very strong, aromatic, caulescent at top and scaly with the remains of the deciduous leaves. It is often in tufts with an upright stem, four or five inches high. All the leaves are quite entire and obtuse; the root-leaves subovate, and attenuated into the petiole at the base; stem-leaves two, opposite, linear and sessile, about the middle of the stem, but there are sometimes none. Stem slender, simple, terminated by a few small whitish flowers in a corymb. Seeds downy<sup>2</sup>.]

It is a very humble plant, the stalks trailing upon the ground among the moss, and putting out roots at their joints, which swell into knobs or tubers. The flower-stalks rise three or four inches high, and have two or three pairs of small ovate leaves. The flowers are small, of a pale flesh-colour, in a loose sessile corymb. It flowers in June.

Mr. Miller had it from Dr. Allione, who gathered it on the alps near Turin: [that author says that it is stronger than the officinal species. It is found also in Switzerland, Austria and Carniola; and cultivated by Mr. Miller in 1739.

11. Roots perennial, and tuberous, by which it is easily distinguished; there is a variety which has them longer; the plant is larger, and the leaves more cut and of a cinereous green; the other is greener, smaller, less cut, and the roots in form of an olive<sup>2</sup>.

<sup>1</sup> Withering. <sup>2</sup> Woodville. <sup>3</sup> Desfontaines. <sup>4</sup> Jacquin obs.

<sup>5</sup> Hort. kew. <sup>6</sup> Jacqu. vind. <sup>7</sup> Hort. kew. <sup>8</sup> Jacquin. <sup>9</sup> Villars.



According to Linneus, the stem-leaves have two pinnae on each side; whereas the preceding has two linear obtuse stem-leaves, and the flowers in whorls. — This is native of the south of Europe, and was cultivated in 1739 by Mr. Miller. It flowers in May and June<sup>b</sup>.

12. Root perennial, blackish, with numerous and long fibres, covered with the remains of leaves, having the smell and taste of officinal Valerian, but much more unpleasant and acrid, and leaving a bitterness on the tongue. The whole plant is shining, and about half a foot high. Root-leaves subovate, cut with few teeth, sometimes quite entire, blunt, three-nerved, thickish, almost insipid, attenuated into the petiole. Stem-leaves one pair, below the middle, linear or oval-linear, obtuse, quite entire or sometimes having a few teeth, almost an inch long, with sometimes a common peduncle from each axil. Stem simple, roundish, subdivided at top. The common peduncles are not more elongated in the flowering plant than in other species. Flowers white. Seeds downy<sup>c</sup>.

According to Monf. Villars, the nerved pointed leaves, and higher stems terminated by long racemes of flowers, sufficiently distinguish this species from the celtica.

Native of the mountains of Stiria, Austria, Silesia, Dauphiné and Piedmont.

13. Root perennial, with fewer fibrils, dirty white, having little taste or smell. It is a shining upright plant, with a simple stem half a foot or a span in height. Root-leaves ovate, quite entire or sometimes slightly toothed, blunt, on long petioles, attenuated at the base, thickish. Stem-leaves two or three pairs, sessile, embracing, resembling the root-leaves, but deeply cut or gash-haftate. Raceme terminating, erect, long; with the pedicels opposite, dichotomous, shortish. Or as Jacquin describes it, all the common peduncles at distances opposite, six on each side, corymbed, divided at top into two or three others, many times shorter than the primary common peduncle, forming, not a corymb or cyme, but a long pyramid, which rising from the upper leaves takes up half the height of the plant. Bractes linear. Corolla small, dusky, regularly five-cleft<sup>d</sup>.

Scopoli says it differs from montana by its radical gem, paniced stalk, and leaves under the first racemes mostly trifid: — from tripteris, by its leaves toothed all round; the stem-leaves ovate, the root-leaves always longer than the petiole.

Native of the mountains of Lower Austria; flowering in July.]

14. Root perennial, fibrous, from which come out many heart-shaped leaves, on petioles more than a foot in length; they are four inches over each way, bluntly serrate, smooth, and of a bright green on their upper surface, but pale and a little hairy underneath. The stalks rise three feet high, are hollow, channelled, and send out opposite branches towards the top. Stem-leaves opposite, shaped like the lower ones, but a little pointed; and frequently at the top there are ternate leaves standing upon short foot-stalks. The stem and branches are terminated by umbels of pale flesh-coloured flowers, having very short spurs. Seeds downy. It flowers in June; and the seeds ripen in August. Native of the Pyrenees. [Cultivated in 1692, by Charles Dubois, Esq.<sup>e</sup>

15. Panicles axillary. Down feathered. Native of Spain<sup>f</sup>.

16. Found about Montpellier.

17. Root perennial. Plant small, scarcely bigger than a Daisy, even when cultivated. Root-leaves obovate, petioled, quite entire: stem-leaves lanceolate, sessile. Corymb terminating, made up of opposite peduncles. Involucre six-leaved, linear, three-flowered<sup>g</sup>.

Ray first observed it on mount Saleve near Geneva. It was found about the same time by Barrelier in Italy. Arduini and Allione have since found it in Italy, and Wulfen in Carinthia and the Tyrol.

18. Root fibrous. The whole stem, leaves, and panicle, densely hirsute. Stem simple, upright, a foot high. Root-leaves petioled, aggregate, ovate, earlyrate, a hand long: two lobes in the middle of the petiole, alternate, linear, entire, a line in length, often wanting; two other eared lobes at the top of the petiole, opposite, ovate, toothed, half an inch long; terminating lobe very large ovate, unequally gash-ferrate, nerved, an inch wide, two inches long: stem-leaves sessile, opposite, ovate, acute, gashed or sublyrate, toothed, half an inch long. Petiole compressed, widening gradually into the leaf. Flowers axillary and terminating, paniced. Panicle trichotomous, compound. Bractes linear. Corolla subrotate, yellow. Anthers ovate, twin. Style shorter than the stamens. Stigma cup-shaped. It differs from sibirica by its eared leaves, and the hairiness of the whole plant. Native of Japan, in Jedo, Nagasaki, &c. flowering in September and October<sup>h</sup>.

19. Root perennial. Stem ascending, roundish, striated, smooth. Leaves opposite, unequally pinnate with nine or eleven leaflets, which are opposite, decurrent, linear-lanceolate, bluntish, quite entire except that the terminating leaflet is sometimes toothed a little, the lower ones smaller, smooth. Stipules none except a few small ciliate intrafoliaceous hairs. Spike terminating, erect, compound, brachiate, many-flowered: composed of many spikelets, which are opposite with a pair of leaflets at the base which are ciliate at bottom, acute, in whorls, the terminating one a little bigger than the rest: whorls many, from six to ten-flowered, decussated, supported by numerous, ovate, acute, subcarinated, smooth bractes. Calyx only a scarcely visible rim to the germ. Corolla white, scarcely gibbous at the base, with an equal border, shorter than the tube; segments subovate, obtuse, three nerved. Filaments a little longer than the corolla: anthers roundish, incumbent. Germ oblong, smooth: style shorter by half than the stamens, subclavate, pale: stigma small, bluntish. Seed oval, seeming to have no down. This species may be distinguished by its peculiar inflorescence, approaching to that of the spiked Mints. Found in watery places at Buenos Ayres in America by Commerfon<sup>i</sup>.

20. Root annual. Native of Siberia.

21. Root perennial. Native of Siberia. Willdenow has distinguished this species from the preceding at the persuasion of Pallas. Mr. Miller has thus described his sibirica.] Root biennial. Leaves pinnatifid: lobes of the lower ones oblong, oval, ending in roundish points. Stems a foot high. Stem-leaves opposite, sessile, smooth, of a pale yellowish colour; they have four or five pairs of lobes terminated by a broad one, which is cut into three or five points. The upper part of the stem has two pairs of branches; the lower pair near three inches long, the upper one not half that length: these and the principal stem are terminated by bright-yellow flowers, collected in a sort of umbel. They appear in July; and the seeds ripen in autumn. [Cultivated in 1759, by Mr. Miller<sup>k</sup>.

22. Root perennial, tufted. Stems a foot high, upright, round, smooth. Leaves grossly toothed especially towards the base, succulent: the root-leaves on long petioles, oval, obtuse; the stem-leaves smaller, subsessile, opposite, obovate. Stipules none. Flowers in a terminating, trichotomous, many-flowered cyme. Bractes at each branch opposite, lanceolate, acute, somewhat membranaceous. Partial peduncles once dichotomous, with one sessile flower at the divisions; then racemed, simple, from three to five-flowered: flowers sessile, bracteolate, upright and directed one way. Corolla purple: border almost regular; segments obtuse, concave. Filaments a little longer than the corolla: anthers subcordate. Germ ovate-oblong, curved, smooth: style club-shaped, of the same length with the stamens: stigma simple, obtuse. Seed scarcely striated, crowned with small teeth. Found by Commerfon in the Straits of Magellan<sup>l</sup>.]

23. Root annual. Stems pretty thick, channelled,

<sup>b</sup> Hort. kew. <sup>c</sup> Jacqu. vind. <sup>d</sup> Linn. spec. & Jacqu. vind.

<sup>e</sup> Hort. kew. <sup>f</sup> Loeffling. <sup>g</sup> Linn. mant.

<sup>h</sup> Thunberg.

<sup>i</sup> Smith.

<sup>k</sup> Hort. kew.

<sup>l</sup> Smith.



of a purplish colour, eight or nine inches high. At each joint is a pair of smooth leaves, of a lucid green, an inch and half long, and an inch broad. From each side of the stem spring slender branches; but the upper part divides into two spreading branches like the others. The joints are swelling and these branches divide again by pairs: these are terminated by clusters of red flowers, shaped like those of the red Valerian, (n. i.) but larger: there are two embracing leaves close under the bunches. When the flowers are past, the fruit stretches out in shape of a cornucopia.

[Stem hollow; striated, smooth, procumbent, dichotomous, with the peduncles very much thickened. Leaves very smooth, somewhat fleshy: the lower ones ovate-oblong, obtuse, decurrent; the upper ones sessile, ovate. Flowers aggregate, terminating, sessile. Bractes awl-shaped. Calyx margined, when the fruit is ripe pitcher-shaped. Corolla the same size as in *V. rubra*, and subbilabiate: segments unequal, obtuse: tube gibbous at the base, but not spurred. Stigmas three, very small. Seed oblong, closed and crowned by the calyx<sup>m</sup>.

According to Gärtner, who has adopted Adanson's name of *Fedia*, for these species which have no seed-down; the fruit is a capsule nearly of a parallelopiped form, compressed, a little fungose, crowned with the halved three-toothed calyx, slightly concave on one side, flattish on the other, having a raised line running along the middle on each side: the spurious cells very narrow, and almost obliterated. Seed ovate-acuminate, compressed, without any albumen: embryo inverted, yellow.

Native of Spain, Italy, Sicily, Armenia, Barbary. Cultivated by Gerarde in 1596. It flowers here from May to August<sup>n</sup>.

24. Root annual. Stem dichotomous. Leaves lanceolate, sessile, bluntly toothed. Flowers from the divisions, solitary, sessile. Fruit linear three-toothed at the tip; the outer tooth larger and recurved. Corolla regular, white. Stigma trifid. The upper flowers are digested into dichotomous, coadunate, obtuse spikes, with the bractes and peduncles thickened; as if it were produced from *V. Locusta* as a mother, and *V. Cornucopiae* as a father<sup>o</sup>.

Native of Italy, the south of France and Barbary, in shady places.

25. Root small, annual, fibrous, pale brown. Stem dichotomous, somewhat spreading, from four inches to a span, and even a foot or more in height, (in gardens;) round, grooved, or angular, tender, often tinged with purple on one side. Leaves glaucous, pale, obovate-lanceolate or rather linear-tongue-shaped. Bottom-leaves many, usually entire but sometimes very slightly toothed near the base, somewhat spreading, rather succulent, smooth, veiny, and a little wrinkled, from three quarters of an inch to two inches in length. Stem-leaves opposite at each subdivision, sessile, remote, usually more toothed than the bottom leaves: both these and the stem are ciliate or fringed at the edges with fine white hairs. The flowers are very small, of a pale blueish colour, and collected into a close little corymb, protected by an involucre<sup>p</sup>. There is one seed to each flower. Gärtner calls it a capsule, which he describes as subglobular, crowned with the calyx, which is obliquely truncate and unequally three-toothed, on one side twin by a groove along the middle, on the other side marked with three filiform streaks, three-celled, valveless; two of the cells inflated and barren, the third contains the seed, which is ovate-acuminate, compressed, transversely wrinkled, of a pale yellow or brownish colour.

Native of Europe and Barbary, in corn fields, on banks, and under hedges: flowering in April and May.

Early in the spring, and even during the greatest part of a mild winter, this little plant will furnish a tolerable material for salads. Dr. Withering says, the tender leaves are little inferior to young lettuce; but Mr. Miller observes] that having a strong taste which is not agreeable to many palates, it is not so much in use as it was formerly.

<sup>m</sup> Desfontaines.

<sup>n</sup> Hort. kew.

<sup>o</sup> Lin. spec.

<sup>p</sup> Fl. rust. Curtis, Smith.

[Gerarde, who says it may be called from the Dutch *White Pot-herb*, informs us, that since it hath grown in use among the French and Dutch strangers in England, it hath been sown in gardens as a salad herb. The French call it *Salade de Pretre*, from its being generally eaten in lent. Being common in corn fields, and appearing about the time when lambs are dropped, it has obtained in English the names of *Corn Salad*, and *Lamb's Lettuce*<sup>q</sup>.

β. There is a variety of this, which is smaller and has jagged leaves. Ray gives it as a different species. Several others which Linneus considered as varieties, are here given from Willdenow as distinct species.

26. This differs from the preceding in having the stem higher and more divaricating, the panicle dichotomous repeatedly, with a flower sessile at each division, and in the structure of the fruit, which is ovate, gibbous and polished on one side, navelled on the other, with very unequal teeth at top. It varies with the leaves toothed a little. Native of Germany, France, Italy, and England, among corn<sup>r</sup>. Found in Cornwall by Mr. E. Forster, jun. in 1799<sup>s</sup>.]

27. Stems six or eight inches high. Leaves much narrower than in the *olitaria*, ending in acute points and serrate. Flowers like those of the common sort, but having a swollen bladdery calyx inclosing the seed. [This has six bristle-shaped teeth, bent in; and the involucrets are five-leaved and three-flowered<sup>t</sup>. Native of Crete or Candia, and of Barbary.]

28. Bottom leaves three or four inches long, round-pointed, and deeply notched on their edges. Stem near a foot high, sending out branches by pairs from the joints below. Flowers in globular heads, of an herbaceous white colour.

[Capsule, according to Gärtner, coriaceous, villose, inversely pyramidal, three-cornered, scored with a deep groove, crowned by the calyx, which unfolds into a membranaceous circle variously and unequally toothed: spurious cells narrow; the fertile one twice as wide, and compressed. Seed ovate-acuminate, small; without any albumen: embryo inverted, whitish. Native of the South of France, Italy, Portugal, and Barbary. This and the preceding were cultivated by Mr. Miller in 1739.

29. Root-leaves succulent, narrow, little gashed, spreading on the ground. Stem half a foot high, solid, brachiate at top: having a pair of leaves at each joint, embracing the stem, and having three or four deep gashes. Flowers in terminating clusters, small, purplish-white. Seeds having a cartilaginous crown with six rays. Native of Portugal on the borders of fields<sup>u</sup>.

30. Native of North America.

31. This is a small plant, scarcely three inches high; found about Montpellier<sup>v</sup>.

These from n. 23. are annual, as are also the third and twentieth species; the rest are perennial.

Linneus has considered all the species from n. 25. to the end as varieties of one only: they are not changed by culture, and when raised from seed preserve their several appearances. The *Fediae* with a three-celled fruit, not downy, deserve to make a separate genus, in the opinion of some.

Most of the species have three stamens: but n. n. 1. 2, 3, have one stamen; n. 23. has two stamens; and n. n. 17, 18, 20, 21. have four.

The usual colour of the Corolla is either white or red. White in n. n. 7 to 13, 17, 19, 24, 28. Red in n. n. 1 to 4, 6, 14, 22, 23. Some of the Whites are tinged with red; and some of the Reds are only partially so, or very pale. N. n. 18, 20, 21 are yellow: and 25, 26, 27 have a blueish tinge.]

#### PROPAGATION AND CULTURE.

1. 2. Part the roots in autumn; or sow the seeds soon after they are ripe, in a shady border; where they will sometimes come up the same autumn, especially if the season prove moist, otherwise they will not appear till the following spring. When the plants are fit to remove, transplant them into beds, at about nine

<sup>q</sup> Fl. rust. Curtis. <sup>r</sup> Willdenow. <sup>s</sup> Smith brit. <sup>t</sup> Linn. syst.

<sup>u</sup> Morison. <sup>v</sup> Linn. spec.



inches or a foot asunder: water them, and keep them clean; and in autumn transplant them where they are to remain.

These plants grow large, and therefore are not proper for small gardens. When the seeds light on joints of old walls or buildings, the plants will thrive as well as in the ground, and will continue much longer; the seeds therefore may be scattered on grottos and rock-work, where the plants will flower from may till the frost stops them, and make a good appearance.

3. This will increase by its downy seeds without care.

6. Part the roots in spring or autumn, and plant them upon a dry, fresh, undunged soil, in which, though the roots will not make near so great progress as in a rich moist soil, yet they will be much preferable to them for use. The roots should be taken up when the leaves decay in autumn, and preserved dry until used. But the roots which grow wild upon dry chalky soils are much preferable to those which are cultivated in gardens; which is the case with all the aromatic plants.

7. Cultivate the garden Valerian in the same way. The plants should be set about two feet asunder in the beds, for they spread and multiply very fast. If the season be dry, they must be watered until they have taken root.

8 to 13. The Alpine forts are difficult to preserve in gardens; naturally growing on rocks covered with moss, where the snow continues six or seven months; they require therefore a cold situation and stony soil.

14. This delights in shade and a moist soil. Sow the seeds on a shady border soon after they are ripe, and when the plants come up, treat them as directed for the first fort.

20, 21. Sow the seeds where the plants are to remain, either in autumn, soon after they are ripe, or in the spring. When the plants come up, thin them where they are too close, and keep them clean from weeds.

25. When this is cultivated as a salad herb, sow the seeds in autumn, on the spot where they are to remain. If they are sown at the end of August, the first rains will bring up the plants; they should be hoed, to thin them where they are too close, and to destroy the weeds. Early in the spring the plants will be fit for use; and the younger they are when used, the less strong will be their taste. The seeds will lie in the ground many years, when they happen to be buried deep; and upon being turned up to the air, the plants will come up as thick as if the seeds had been newly sown.

23, 24, 26, &c. Sow the seeds in autumn, where the plants are to remain. When they come up thin them and keep them clean. The plants which rise in autumn, will live through the winter, and come early to flower in the following summer, so as to produce good seeds; whereas those which rise in the spring, do not ripen their seeds unless the season prove warm.

[VALERIANA. See *Eranthemum*, *Eupatorium*, *Polemonium*, *Selago*, *Stilbe*.

VALERIANELLA. See *Boerhaavia*, *Hebenstreitia*, *Hedyotis*, *Hydrocotyle*, *Linnaea*, *Phyllis*, *Valeriana*.

VALERIAN, GREEK. See *Polemonium*.

VALERIANOIDES. See *Arctopus*, *Eranthemum*, *Gnidia*, *Hebenstreitia*, *Verbena*.

VALLARIS. See *Pergularia*.

VALLIA-CAPO-MOLAGO. See *Capsicum*.

VALLIA-MANGA-NARI. See *Verbesina*.

VALLI-ONAPU. See *Impatiens*.

VALLI-PANNA. See *Ophioglossum*.

VALLISNERIA. (So named by Micheli, in honor of Antonio Vallisneri, Professor of Medicine at Padua, Archiater to the Emperor Charles VI. Fellow of the Royal Society of London, and many foreign Societies. Born 1661. Died 1730. Author of *Opere fisico-mediche*: published by his Son at Venice 1733, in three volumes fol.)

Lin. gen. n. 1097. Reich. n. 1199. Schreb. n. 1491. Mich. gen. t. 10. Juss. 67. Vallisneroides. Mich. 10.

VOL. II.

Class. 22. 2. Dioecia Diandria.

Nat. Order of *Palmae* β. *Hydrocharides* Juss.

GENERIC CHARACTER.

\* Male.

CAL. Common *Spathe* two-parted: segments oblong, bifid; reflexed:

Common *Spadix* compressed; covered all over with flowers, digested into a spike.

COR. One-petalled, three-parted. Tube none; segments obovate; spreading very much and bent back.

STAM. Filaments two, upright, length of the corolla:

Antbers simple:

\* Female.

CAL. *Spathe* one-flowered; cylindrical, long: with the mouth bifid; erect.

Perianth three-parted, spreading, superior: segments ovate.

COR. Petals three linear, very narrow, truncate; shorter than the calyx.

Nectary a spreading cusp placed under each of the stigmas:

PIST. Germ cylindrical, inferior, long: Style scarcely any. Stigma three-parted: segments semibifid, oval; convex, longer than the calyx, spreading; pubescent above:

PER. Capsule cylindrical, long; one-celled:

SEEDS numerous, ovate, fastened to the side of the capsule:

ESSENTIAL CHARACTER.

MALE. *Spathe* two-parted. *Spadix* covered with floccules. Cor. three-parted.

FEM. *Spathe* bifid; one-flowered. Cal. three-parted; superior. Stigma three-parted: Caps. one-celled; many-seeded.

SPECIES.

1. *Vallisneria spiralis*. Two-stamened *Vallisneria*.

Lin. spec. 1441. syst. 878. Reich. 4. 221. fl. lapp. n. 371. hort. cliff. 454. Gunn. norv. n. 1083. Hall. helv. n. 1309. Dalib. par. 296. Villars dauph. 2. 23.

V. palustris, algæ folio, italica, foliis in summitate denticulatis, flore purpurascens. Mich. gen. 12. t. 10. f. 1. (Fem.)

Potamogeton, algæ folio, pifanum. Bocc. mus. 1. 29.

Vallisneroides palustre, algæ folio, italicum, foliis summitate tenuissime denticulatis, flor. albis vix conspicuis. Mich. gen. 13. t. 10. f. 2.

Flowers two-stamened.

2. *Vallisneria octandra*. Eight-stamened *Vallisneria*. Roxb. corom. 2. 34. t. 165.

Flowers eight-stamened.

DESCRIPTIONS, &c.

1. This is an aquatic plant, with long, thin, almost transparent leaves, with parallel nerves and plaits dividing it transversely, very finely serrate at the end and floating on the water. The male flower is very small and white, and is borne on a very short scape at the bottom of the water: when it is mature it breaks loose, and floats on the surface. The female flower, which is larger and purple, grows on a spiral scape, which contracts or unfolds according to the depth of the water, so that the flower when it opens is always at the surface; and when flowering time is past, the scape contracts and the fructification is completed at the bottom of the water.

The œconomy of this singular plant is a remarkable confirmation of Linneus's doctrine of the sexes in vegetables. Micheli, who did not admit this doctrine, and considered the male plant not only as a distinct species but as a different genus from the female, remarks that it is wonderful in these flowers, and a singular instance, that before they open, they are separated from the plant, and being raised to the surface, open suddenly with a kind of elastic force, and the segments of the petals are bent downwards; in this state they swim at large upon the surface, and during summer and autumn are in such quantities in some places as to whiten the whole surface of the water.

With respect to the female plant, Micheli, who first observed, described and figured both, says that



it is in such quantities in the great ditches about Pisa, that the roots in some parts occupy the whole bottom, and the leaves cover the surface in such a manner as to impede the passage of the barges along them.

Linnaeus found it abundant in the rivulets of Finmark, but did not observe it to flower either there or at Upsal. Gunner also says it is every where in Finmark and Norland. La Chenal found it in Switzerland, but it is not said where. It grows in the Rhone near Orange<sup>r</sup>.

2. Root annual, fibrous. Leaves radical, linear, tapering to a fine point, smooth, from nine to twelve inches long, and half an inch or less broad.—In the Male, peduncle or rather scape axillary, straight, a little compressed, length of the leaves or more, so as to raise the flowers above the surface of the water. Spathe one-leaved, subcylindric, somewhat diaphanous, open at the top for the unexpanded flowers to pass through. Flowers numerous in succession, white, pretty large, pedicelled. The pedicels lengthen, when the flowers are ready to expand, so as to elevate them just above the mouth of the spathe. Perianth three-leaved; leaflets lanceolate. Corolla three-petalled: petals linear, recurved, more than twice the length of the calyx. Filaments eight, of unequal lengths, erect, shorter than the petals: anthers linear. Germ abortive, three-sided: styles three.—Female flower: scape shorter and thicker. Spathe as in the male, one-flowered. Flowers white, elevated above the germ, and above the mouth of the spathe, by a very long receptacle, style or pedicel, which makes up for the shortness of the scape, and brings the flower nearly up to the top of the leaves. Perianth three-parted. Corolla as in the male, only the petals are filiform. Germ cylindric, obsoletely three-sided, sessile in the bottom of the spathe, ending in the above-mentioned flower-elevating receptacle. Style three-cleft to near the base: divisions filiform, white.

Native of the East Indies, in stagnant shallow sweet water<sup>r</sup>.

The œconomy of this species is not so curious as in the European; but the end of impregnation is answered equally well.

VALLISNEROIDES. See *Vallisneria*.

VALSA. See *Sphaeria*.

VANDELLIA. (So named by Browne, in honour of Dominico Vandelli, professor of natural history at Lisbon.)

Lin. gen. Reich. n. 838. Schreb. n. 1040. Juss.

122. Matourea Aubl. t. 259. Juss. 119.

Class. 14. 2. Didynamia Angiospermia.

Nat. Order of *Persea*. *Scrophularia* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubulous, four-parted: parts subovate, equal, the uppermost subbifid: permanent.

COR. one-petalled, ringent: tube length of the calyx: border small; upper lip ovate, entire, lower dilated, two-lobed.

STAM. Filaments four; two outer from the disk of the lower lip, bowed upwards; two from the throat, higher. Anthers ovate, connected by pairs.

PIST. Germ oblong. Style filiform, length of the stamens. Stigmas two, ovate, membranaceous, reflexed.

PER. Capsule oblong, one-celled.

SEEDS numerous.

#### ESSENTIAL CHARACTER.

Cal. four-parted. Cor. ringent. Filam. the two outer from the disk of the lip of the corolla. Anthers connected by pairs. Caps. one-celled, many-seeded.

#### SPECIES.

1. *Vandellia diffusa*.

Lin. syst. 573. Reich. 3. 182. Willd. 3. 343. mant. 89. Vahl ecl. 2. 47.

Leaves roundish subsessile.

2. *Vandellia pratenfis*.

Lin. spec. ed. Willd. 3. 343. Vahl ecl. 2. 48.

Matourea pratenfis. Aubl. guian. 2. 642. t. 259.

Tupeicava. Pif. bras. 246.

Leaves petioled oblong acute crenate.

#### DESCRIPTIONS, &c.

1. Stem herbaceous, four-cornered, brachiate.

<sup>r</sup> Micheli, Linnaeus, Haller, Villars.

<sup>r</sup> Roxburgh.

Leaves ovate, sessile, crenate, bluntish. Flowers axillary, opposite, solitary. Habit of *Veronica serpyllifolia*<sup>a</sup>.

Stem filiform, pubescent. Leaves on short petioles, opposite, scarcely half an inch long, smooth above, the younger ones have a few hairs underneath, ferrate, veinless. Peduncles one-flowered, alternate, short<sup>b</sup>.

Native of the islands of Montserrat and Santa Cruz.

2. Root annual. Stem herbaceous, erect, four-cornered with the corners acute, brachiate. Branches of the same structure. Leaves opposite, half an inch long, hoary-green, a little bent back at the edge, the lower ones crenate, the upper ones often quite entire. Petioles very short. Flowers axillary, sessile, small. Bractes three at the base of the calyx, sessile, persistent: two lateral, roundish, more produced on one side, nearly erect, equal, concave on the lower surface; the third superior, twice as large as the others, flat, pressed to the corolla. Calyx deeply four-cleft: segments linear, acute, ciliate, two opposite to the larger bracte, wider than the others. Upper lip of the corolla depressed to the palate, then ascending and gaping, emarginate, crenulate, veined: lower lip larger, trifid, the middle segment narrower; palate convex, closing the throat. Stamens within the throat of the corolla, two outer very small, two inner bigger, ending in two pellucid cohering bodies resembling anthers, with which they form a bow. Anthers two, oval, adhering below to the bodies just mentioned, and one-celled. Germ ovate. Style a little shorter than the stamens, permanent. Stigma semiobicular, ascending obliquely towards the anthers. Capsule ovate, two-valved, opening from the top to the base, each externally semibifid. Seeds very small, subglobular; fastened to a proper receptacle, which is of a quadrangular-pyramidal form. Found in America from the island of Trinidad to Brasil; very frequent by way sides<sup>c</sup>.

VANGUERIA. (From the vernacular name.)

Juss. gen. 206. Vahl symb. 3. 36.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Aggregatae*. *Rubiaceae* Juss.

#### GENERIC CHARACTER.

CAL. very small, five-toothed, spreading.

COR. small, campanulate-globular, five-cleft, hairy at the throat.

STAM. five, with oblong anthers scarcely standing out.

PIST. one, with a bilamellate stigma.

PER. Berry inferior, pome-shaped, umbilicate, not crowned, five-celled.

Seeds four or five like almonds.

#### ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. tube globular, with a hairy throat. Stigma bilamellate. Berry inferior, four or five-seeded.

#### SPECIES.

1. *Vangueria edulis*.

Lin. spec. ed. Willd. 1. 976. Vahl symb. 3. 36.

Vavanga edulis. Vahl abt. soc. hist. nat. hafn. 2. 1.

208. t. 7.—chinensis von Rohr, ib. p. 207.

Vanguier, Voa-vanguier de Madagascar. Juss. gen. 206.

#### DESCRIPTION, &c.

A tree with round smooth branches. Leaves petioled, opposite, ovate, attenuated to both ends, smooth, quite entire. Stipules interpetiolar, connate, acuminate. Peduncles axillary, three or four times dichotomously branched. Flowers pedicelled. Fruit esculent<sup>d</sup>. Willdenow remarks, that it resembles *Calli-carpa* in habit. In the system it comes after *Chiococca*. According to Jussieu, it is a small tree, with the flowers corymb-cymed and axillary. He takes his character from Commerçon's description and figure.

Supposed to be a native of China. Cultivated in the botanic garden at Santa Cruz. More probably from Madagascar.

VANILLA. See *Epidendrum*.

VAN RHEEDIA. See *Rheedia*.

VANTANEA. See *Lemniscia*.

<sup>a</sup> Linn. mant.

<sup>b</sup> Vahl.

<sup>c</sup> Idem.

<sup>d</sup> Idem.



VARINGA. See *Ficus*.

VARNISH TREE. See *Rhus*.

VARRONIA. (So named by Browne, from Marcus Terentius Varro, the most learned of the Romans, author of a treatise de Re Rustica, &c. He died in the 27th year of the Christian Era.

Lin. gen. n. 258. Reich. n. 279. Schreb. n. 353.

Brown. t. 13. f. 2. Jacq. amer. 40.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Asperifoliae*. *Borragineae* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, five-toothed; with recurved teeth: permanent.

COR. one-petalled, tubular, cylindric: border five-parted, spreading.

STAM. Filaments five, awl-shaped, length of the corolla. Anthers incumbent, oblong.

PIST. Germ ovate. Style filiform, length of the corolla. Stigmas four, bristle-shaped.

PER. Drupe ovate, one-celled, inclosed by the calyx, free.

SEED. Nut four-celled, roundish.

#### ESSENTIAL CHARACTER.

Cor. five-cleft. Drupe with a four-celled nut.

#### SPECIES.

##### 1. *Varronia lineata*.

Lin. spec. 275. Reich. 1. 533. Willd. 1. 1079.

amoen. 5. 394. Swartz obs. 87. Brown. jam.

172. t. 13. f. 2. Pluk. phyt. t. 328. f. 5.

V. humilis. Jacq. amer. 41. 5.

Lantana corymbosa. Lin. spec. ed. 1. 628.

Leaves lanceolate marked with lines, peduncles lateral growing to the petiole, spikes globular.

##### 2. *Varronia bullata*.

Lin. spec. 276. fyst. 231. Reich. 1. 534. Willd.

1. 1079. amoen. 5. 394. Swartz obs. 88.

Leaves ovate veined and wrinkled, spikes globose.

##### 3. *Varronia mirabiloides*.

Lin. spec. ed. Willd. 1. 1080. Swartz prodr. 48.

descr. 1. 465. V. bullata. Jacq. amer. 41. t.

33. pict. 26. t. 43.

Leaves ovate wrinkled serrate, flowers racemed directed one way, corolla salver-shaped.

##### 4. *Varronia martinicensis*.

Lin. spec. 1671. fyst. 231. Reich. 1. 534. Willd.

1. 1080. Jacq. amer. 41. t. 32. pict. 26. t.

42.

Leaves ovate acuminate, spikes oblong.

##### 5. *Varronia globosa*. Globular-spiked *Varronia*.

Lin. spec. 276. fyst. 231. Reich. 1. 534. Willd.

1. 1080. Jacq. amer. 41. pict. 26.

Leaves lanceolate-oblong, stem dichotomous, peduncles axillary elongated naked, spikes globular.

##### 6. *Varronia curassavica*. Long-spiked *Varronia*.

Lin. spec. 276. fyst. 231. Reich. 1. 534. Willd. 1.

1080. Jacq. amer. 40. pict. 25. Swartz obs. 88.

Brown. jam. 172. 2.

Lantana bullata. Lin. spec. ed. 1. 627.

Periclymenum rectum, salviae folio rugoso majore oblongo bullato, flore albo, fructu longiore. Sloan. jam.

2. 81. Raii dendr. 31.

Leaves lanceolate, spikes oblong.

##### 7. *Varronia angustifolia*. Narrow-leaved *Varronia*.

Lin. spec. ed. Willd. 1. 1081. West St. Cruc. 202.

Leaves linear rugged somewhat toothed, spikes linear-oblong.

##### 8. *Varronia alba*. White-fruited *Varronia*.

Lin. spec. 276. fyst. 231. Reich. 1. 534. Willd.

1. 1081. Jacq. amer. 41. pict. 26. Comm.

hort. 1. 155. t. 80. (Mespilus.)

Leaves cordate, flowers cymed.

##### 9. *Varronia monosperma*. One-seeded *Varronia*.

Lin. spec. ed. Willd. 1. 1081. Jacq. hort. Schoenbr.

1. 18. t. 39.

Leaves ovate rugged quite entire at the base, spikes cymed.

#### DESCRIPTIONS, &c.

1. Leaves lanceolate, attenuated to both ends. Peduncles lateral, elongated, filiform, fastened to the petiole at the base.

<sup>c</sup> Linn. spec.

It is a shrub four feet in height, and branched so like the fifth sort, that it seems as if it were a variety of it growing on rocks. But according to Browne the nuts are two-celled. In this the fruit has two seeds.

Browne says, it seldom rises above three or four feet in height, and is furnished with a number of slender, crooked, intermixed branches.

Native of the West Indies: Common in the lower woody lands of Jamaica.

2. This is a shrub a fathom in height; warted; with round rough-haired branches. Leaves petioled alternate, scattered, acuminate, doubly serrate; rugged. Flowers clustered in little roundish balls. Peduncles terminating and axillary, shorter than the leaves; rugged. Corollas small, white. Calyx bell-shaped. Corolla larger than the calyx; the five parts are obtuse, crenate; erect. Anthers whitish, bifid at the base. Germ superior. Drupe scarlet, one-seeded. The rest as in the character. Native of Jamaica, in dry coppices near the sea: flowering in spring.

3. Stem from two to three feet high; frutescent; branched, erect; rough-haired. Branches nearly upright; stiff, hairy with the hairs pressed close. Leaves petioled acuminate, wider at the base, nerved, rough-haired. Racemes terminating, short, often subdivided, composed of many sessile flowers, all directed one way. Calyx half-five-cleft: segments acuminate, erect. Corolla salver-shaped: tube three or four times as long as the calyx, round, erect; border wheel-shaped, five-rayed, five-cornered. Filaments inserted into the tube near the border, very short. Anthers above the throat, marked with lines, blue. Germ oblong. Style length of the tube, four-cleft at the tip, permanent. Stigmas simple, yellow. Drupe roundish, small, surrounded at the base by the calyx, red. Nut roundish, with a single kernel. Native of St. Domingo, where the French call it *Dent de Chien blanc*. It flowers there in december and january.

Jacquin says it is the most elegant shrub of the genus; and often attains the height of twelve feet; that the leaves are two inches long; that the common peduncles terminate in roundish spiked heads, simple or compound; that the flowers in size and form resemble those of Marvel of Peru, (whence the trivial name;) that they are white, handsome, but void of smell; that the segments of the calyx end in long bristles; and that the drupe is red, the size of a pea, filled with sweet glutinous pulp.

4. This shrub is the height of a man; the leaves three inches long. The spikes are an inch or two in length. Swartz says, it is certainly not different from the curassavica, (n. 6.) which often varies with narrower and wider leaves, more or less pubescent; and with larger or smaller spikes.

Native of Martinico, on the borders of woods.

5. This shrub agrees with the preceding: but differs in having the spikes constantly globular, the segments of the corollas emarginate, and the stigma blunt and four-fold.—Linneus remarks, that there is a naked peduncle from the forks; and that the teeth of the calyx are linear, long, and recurved.

According to Swartz, it seems to be a variety of *V. bullata*, under which name there is a specimen of *V. globosa* in Linneus's herbarium.

Native of the West Indies, on the coast.

6. Stem shrubby, a fathom in height, upright; branches and branchlets, rugged, ferruginous. Leaves petioled, ovate-lanceolate, rounded at the base, having a blunt point at the end, subserrate, nerved, wrinkled, rugged above, tomentose beneath. Spikes terminating, upright, an inch long. Peduncle short, (on the branchlets,) thick. Flowers clustered, sessile, biggish, white. Calyx inferior, bell-shaped, somewhat ventricose, slightly five-cornered. Corolla longer than the calyx. Filaments from the middle of the tube, hirsute at the base: anthers ovate. Style longer than the corolla, cloven to the middle, and the two segments cloven, thickish at the tip. Drupe roundish, placed on the calyx, and half covered by it, scarlet, one-seeded.

<sup>f</sup> Jacquin.

<sup>g</sup> Browne.

<sup>h</sup> Swartz obs.

<sup>i</sup> Swartz descr.

<sup>k</sup> Jacquin. <sup>l</sup> Obs. 89. <sup>m</sup> Jacquin.

<sup>n</sup> Obs. 88.

<sup>o</sup> Swartz obs.

1

Accord-



# V A T

According to Jacquin, it attains fifteen feet in height. The spikes are close, two or three inches long, on a peduncle of two inches. Flowers small, void of scent. The subovate segments of the inflated calyx end in bristle-shaped teeth of the same length with themselves. Tube of the corolla as long as the calyx: border short and emarginate. Filaments a little shorter than the corolla. Style also short, with a headed simple stigma. Drupe small, red<sup>p</sup>.

Common in the lower woody lands of Jamaica, where it is generally found climbing or leaning on the neighbouring shrubs<sup>q</sup>: flowering in summer and autumn. It grows also in Curaçao.—Introduced about 1778, by John Hope, M. D.<sup>r</sup>

7. Leaves lanceolate-linear, blunt, rolled back at the edge, rugged above, tomentose beneath. Native of the island of Santa Cruz<sup>s</sup>.

8. This is a tree, often thirty feet in height, with a large head, and a trunk half a foot in diameter; but when planted in hedges becomes shrubby. Leaves ovate or roundish-ovate, subcordate at the base, four or five inches long. Cymes ample, not unfrequently half a foot in diameter, having numerous whitish flowers, without scent. Calyx at first entire, but when the corolla expands, separating horizontally into an upper valve which withers, and into a lower which is permanent, and has the margin very slightly five-toothed. Border of the corolla bell-shaped. Styles bifid, and the segments bifid terminated by obtuse stigmas. Drupe somewhat oblong, half an inch in length, whitish, subpellucid: pulp whitish, sweet, insipid, glutinous. Nut oblong, striated, black. Native of Carthagera and Curaçao, where the nut is eaten<sup>t</sup>.

9. Leaves ovate or ovate-lanceolate. Spikes roundish. Nut one celled. Native of the Caracas<sup>u</sup>.

Loureiro has a species, which he names *V. sinensis*. He describes it as a middle-sized tree with spreading branches: the leaves ovate-lanceolate, quite entire, shining, opposite and alternate, subpetioled. Flowers white, on many-flowered peduncles, lateral and terminating. Calyx subcampanulate, short. Corolla campanulate, with a short thick tube, and the segments of the border ovate, spreading, equal. Filaments inserted into the mouth of the tube, nearly equal to the corolla. Drupe small, smooth, red, acid, eatable. Nut four-celled. Native of China. The pulp of the fruit is in frequent use among the Chinese, as astringent, exsiccating, and cephalic.

VASCULIFERA. See *Nigrina*.

VATERIA. (So named by Linneus, from *Abrah. Vater*, professor of medicine and botany at Witteberg. Author of *Hortus Wittebergensis*, 1721 and 1724, &c. Born 1684, died 1751. He was son of *Christian Vater*, who was also professor of medicine at the same place.)

Lin. gen. n. 666. Reich. n. 722. Schreb. n. 906. Juss. 258.

Class. 13. 1. Polyandria Monogynia.

Nat. Order of *Guttiferae* Juss.

## GENERIC CHARACTER.

CAL. Perianth five-cleft, acute, small, permanent.

COR. Petals five, ovate, spreading.

STAM. Filaments numerous, shorter than the corolla. Anthers simple.

PIST. Germ roundish. Style simple, short. Stigmas capitate.

PER. Capsule turbinate, coriaceous, placed on the reflexed calyx, marked with three sutures, one-celled, three-valved.

SEED one, ovate.

## ESSENTIAL CHARACTER.

CAL. five-cleft. COR. five-petalled. Caps. three-valved, one-celled, three-seeded.

## SPECIES.

1. *Vateria indica*.

Lin. spec. 734. Reich. 2. 587. fl. zeyl. n. 204.

Pænoc. Rheed. mal. 4. 33. t. 15.

Native of the East Indies.

<sup>p</sup> Jacquin. <sup>q</sup> Browne. <sup>r</sup> Hort. kew. <sup>s</sup> Willdenow.  
<sup>t</sup> Jacquin. <sup>u</sup> Idem.

# V E L

VATICA. (Perhaps from *Vaticinium*; if it be in effect among the Chinese for the purposes of divination.)

Lin. gen. Reich. n. 649. Schreb. n. 812. mant.

152. Juss. 259. Smith ic. ined. t. 36.

Class. 11. 1. Dodecandria Monogynia.

Nat. Order of *Guttiferae* Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, obtuse at the base, erect: segments lanceolate, shorter than the corolla.

COR. Petals five, sessile, elliptic, large.

STAM. Filaments none. Anthers fifteen, sessile, very short, four-celled: the two outer cells terminated by a spine interposed between them; the two inner shorter by half, without any spine.

PIST. Germ conical, five-cornered. Style cylindrical, five-striated. Stigma obtuse.

PER. Capsule three-celled.

SEED one in each cell.

## ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Anthers fifteen, sessile, four-celled.

## SPECIES.

1. *Vatica chinensis*.

Lin. syst. 443. Reich. 2. 416. Willd. 2. 847. mant. 242. Smith ic. ined. 2. t. 36.

## DESCRIPTION, &c.

This is a tree having the same appearance with *Vateria indica*, and nearly allied to it, but differing in the anthers and perhaps in the fruit. Branchlets indistinctly angular, hoary with meal, leafy, many-flowered. Leaves alternate, ovate-oblong, bluntly acuminate, quite entire, smooth, with the veins standing out on both sides and alternate, and the veinlets netted and anastomosing. Petioles an inch long, angular, striated, hoary, below the point of junction with the leaf a little thickened and much wrinkled. Stipules none. Panicles axillary, sessile, compound, many-flowered. Bractes none. Peduncles alternate, branched, angular, hoary with meal, as are the calyx and corolla before they unfold. Pedicels short, thickened at the top, erect, one-flowered. Segments of the calyx ovate-lanceolate, acute, erect, only one third of the length of the corolla. Petals obovate, smooth within, half-hoary without, in some flowers, incumbent towards the left, in others towards the right, which is very singular. Anthers three, sessile on the claw of each petal, small, ovate, smooth. Germ superior, blunt, hoary. Style five-cornered, contorted. Stigma subtrilobate.

Native of China. A very rare plant, and as yet very obscurely known<sup>x</sup>.

VELAGA. See *Lagerstroemia*.

VELEZIA. (So named by Linneus, from *Christoval Velezius*, examiner, first physician, and demonstrator of botany, in the College of Apothecaries at Madrid. *Loefling* saw there his *Flora* of the plants about Madrid in manuscript.)

Lin. gen. n. 447. Reich. n. 350. Schreb. n. 448.

Gartn. fruct. t. 129. Juss. 302.

Class. 5. 2. Pentandria Digynia.

Nat. Order of *Caryophyllei*. *Caryophylleae* Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, filiform, five-cornered, permanent: mouth five-toothed, acuminate, erect, very small.

COR. Petals five, very short, emarginate-two-toothed; claws filiform, length of the calyx.

STAM. Filaments five, often six, capillary, scarcely the length of the calyx. Anthers cordate.

PIST. Germ cylindric, short, terminated by the receptacle of the styles. Styles two, filiform, length of the stamens. Stigmas simple.

PER. Capsule cylindric, covered, one-celled.

SEEDS numerous, in a single row.

Obs. There are often six stamens, but the natural number is five, as later observations have proved.

<sup>x</sup> Smith.

## ESSENTIAL



# V E L

## ESSENTIAL CHARACTER.

CAL. filiform, five-toothed. Cor. five-petalled, small. Caps. one-celled. Seeds numerous, in a single row.

## SPECIES.

1. *Velezia rigida*.  
*Lin. spec.* 474. *syft.* 266. *Reich.* 1. 635. *Willd.* 1. 1329. *Gärtn. fruct.* 2. 226. *Villars dauph.* 3. 658. *Ger. prov.* 412. *Gouan hort.* 185. *botan.* 232. *Allion. pedem. n.* 1563. *Desfont. atlant.* 1. 221. *Lamarck illustr. t.* 186. *Sauv. monsp.* 145. (Silene.)  
*Knawel minus, foliis caryophylleis.* *Buxb. cent.* 2. 41. t. 47.  
*Lychnis sylvestris minima, exiguo flore.* *Baub. pin.* 206. *prodr.* 103.  
*L. minima rigida Cherleri.* *Baub. hist.* 3. 352. *Raii hist.* 997. *Garid.* 298. *Magnol bot.* 171. *hort.* 126.  
*L. corniculata minor.* *Barr. rar.* 665. t. 1017. 1018. *Bocc. mus.* 2. 50. t. 43.  
*Paronychia orientalis humifusa, Serpylli folio.* *Tournef. cor.* 38.

## DESCRIPTION, &c.

Root annual. Stem very much branched. Calyxes sessile, cylindric, very narrow. Border of the petals very small, marked at the base with a purple crescent, as in the natural order of Caryophyllæi, to which this belongs<sup>1</sup>.

Stem upright, jointed, round, pubescent, three or four inches high. Branches slender, often divaricating. Leaves opposite, awl-shaped, striated, pubescent, sheathing at the base. Flowers axillary, solitary, or sometimes but seldom two or three together, along the stem and branches, on short pedicels. Calyx slender, pubescent, cylindric, very slightly striated; the teeth bristle-shaped, erect. Corolla small, a little longer than the calyx; border rose-coloured, slightly emarginate. Stamens five or six, sometimes seven, the length of the petals<sup>2</sup>.

Capsule very long, clothed with the permanent calyx, opening into four parts at the top. Receptacle bristle-shaped, central, free, almost the length of the capsule, covered with the subalternate seeds, incumbent downwards. Seeds as many as twelve, small oblong, produced at top into a short point, convex on one side, on the other concave from the margins bent back into a belly, and gaping with a wide longitudinal cleft, in other parts even, blackish or dark brown, inverted. —It differs from *Dianthus* chiefly in the definite situation of the seeds, the less number of stamens, and the absence of scales at the base of the calyx<sup>3</sup>.

Native of the South of Europe; and of Barbary, near Mascar. Cherler first observed it in the south of France, and Ray found it near Florence.

It was introduced in 1785, by Casimir Gomez Ortega, M.D. and flowers in July<sup>4</sup>.]

VELLA (of Galen. Derivation unknown.)

*Lin. gen. n.* 797. *Reich. n.* 861. *Schreb. n.* 1073. *Gärtn. t.* 141. *Juss.* 241.

Class. 15. 1. Tetradymania Siliculosa.

Nat. Order of *Siliquosa* or *Cruciformes*. *Crucifera* Juss.

## GENERIC CHARACTER.

CAL. Perianth four-leaved, erect, cylindric: leaflets linear, obtuse, deciduous.

COR. four-petalled, cruciform. Petals obovate, spreading: claws length of the calyx.

STAM. Filaments six, length of the calyx; of these two opposite a little shorter. Anthers simple.

PIST. Germ ovate. Style conic. Stigma simple.

PER. Silicle globose, entire, two-celled, with a partition twice as large as the silicle, ovate beyond it and erect.

SEEDS few, roundish.

OBS. *Vella Pseudo-Cytisus* has the four larger filaments castrated and coadunate by pairs.

## ESSENTIAL CHARACTER.

Silicle with a partition twice as large as the valves, ovate on the outside.

# V E L

## SPECIES.

1. *Vella annua*. *Annual Vella*, or *Cress-Rocket*.  
*Lin. spec.* 895. *syft.* 584. *Reich.* 3. 210. *Willd.* 3. 422. *hort. cliff.* 329. *ups.* 186. *Gärtn. fruct.* 2. 286. *Huds. angl.* 278. *Wither.* 564. *Smith* 675. *Kniph. cent.* 10. n. 93. *Trew. ic.* 10. t. 8. *Desfont. atlant.* 2. 64.  
*Nasturtium sylvestre, erucæ affine.* *Baub. pin.* 105. *Raii hist.* 826. *syn.* 304. *Petiv. brit. t.* 50. f. 5. *Mor. hist. f.* 3. t. 19. f. 8.  
*N. sylvestre valentinum.* *Clus. hist.* 2. 130. *Baub. hist.* 2. 920. *Park. theat.* 831. *Dalech. hist.* 657.  
*Eruca Nasturtio cognata tenuifolia.* *Ger. emac.* 247. *Leaves pinnatifid, filicles pendulous.*
2. *Vella Pseudo-Cytisus*. *Shrubby Vella*.  
*Lin. spec.* 895. *Reich.* 3. 210. *Willd.* 3. 422. *Cavan. ic. hisp.* 1. 32. t. 42.  
*Pseudo-Cytisus flore leucoli luteo.* *Baub. pin.* 390. *Cytisi facie Alysson fruticans quorundam.* *Lob. ic.* 2. 49. *Baub. hist.* 1. 374.  
*Leaves entire obovate ciliate, filicles erect.*

## DESCRIPTIONS, &c.

[1. Root annual, small, fibrous. Cotyledons obcordate, smooth. Stem branched, leafy, hispid with bristles bent down. Leaves alternate, bipinnatifid, somewhat hispid. Spikes terminating, many-flowered. Flowers pedicelled. Calyx tubular, closed with the leaflets converging longitudinally, shining, purple. Petals obovate, entire, whitish or very pale yellow with deep purple veins, and very slender claws. Silicle bent down, elliptic, hispid, with the partition standing out, smooth, spreading. Seeds on each side three or four, roundish<sup>c</sup>.

Gärtner describes the Silicle as subglobular, hard, hispid with soft bristles, two-celled, two-valved: valves crustaceous, with three raised streaks on the outside, from which the bristles spring; within polished and shining: partition parallel to the valves, very thin and diaphanous within the silicle, on the outside of it produced into an ovate opaque coriaceous screw-shaped lamina. Seeds three or four in each cell, subglobular, angular, of a dark ferruginous colour and mucilaginous.

First observed in the kingdom of Valentia in Spain, by Clusius. Mr. Lawson found it on Salisbury plain, not far from Stonehenge<sup>d</sup>. It flowers in June.

2. Stems shrubby, two feet high, somewhat rugged, very much branched. Leaves alternate, rugged, thickish, with two shorter leaves frequently coming out at the axils, so that the leaves appear to be ternate, as in *Cytisus sessilifolius*. Flowers in spikes terminating the stem and branches. Calyx-leaves closely converging. Petals yellow, orbicular, variegated with paler veins; claws filiform, slightly channelled within, a little longer than the calyx. Anthers yellow, oblong, all fertile; the longer pair of filaments connate at bottom, the shorter free or distinct. Between the germ and the shorter filaments a harder gland. Silicle erect, obovate, gibbous on one side at the base; valves hard, striated longitudinally; partition parallel to the valves, and twice as long as they are, erect, ovate, compressed beyond the silicle. Seeds ovate, one in each cell, and one of them frequently abortive. Near Aranjuez in Spain<sup>e</sup>: where it was first observed by Minuart<sup>f</sup>, and after by Cavanilles. It flowers and fruits there in May.

Cavanilles denies that the connate pair of filaments is castrated.

Mr. Miller cultivated it in 1759: and it flowers here in April and May<sup>g</sup>.]

## PROPAGATION AND CULTURE.

1. If the seeds be permitted to scatter, the plants will come up and thrive very well: or if they be sown in autumn, they will succeed much better than when sown in the spring, for these will frequently lie in the ground till the autumn; whereas those which are sown in autumn come up soon after, or early in the spring, and will more certainly produce ripe seeds. These plants should not be transplanted; the seeds therefore

<sup>c</sup> Smith. <sup>d</sup> Ray. <sup>e</sup> Cavanilles. <sup>f</sup> Linn. spec. <sup>g</sup> Hort. kew.

<sup>1</sup> Linn. syft. <sup>2</sup> Desfont. and Villars. <sup>3</sup> Gärtner. <sup>4</sup> Hort. kew.



should be sown where they are to remain, and require only to be kept clean and thinned.

2. This is increased by seeds like the former; and will continue two or three years.

[VELLENDAMARAUN. See *Croton*.

VELTHEIMIA. See *Aletris capensis*; under which name it is figured in Curtis's magazine, t. 501.—In Jacquin's *hort. Schoenbr.* 1. t. 78. it is figured under the name of *Veltheimia viridifolia*; and that name is adopted by Willdenow, *spec.* 2. 181. Gleditsch, in the Berlin Transactions for 1771, first constructed this genus.

VELUTTA-MANDARU. See *Baubinia acuminata*.

VELUTTA-MODELA-MUCU. See *Polygonum barbatum*.

VENTILAGO. (*From ventus; on account of its exposure to the winds, from its mountainous situation.*)  
Gartn. *fruct.* t. 49. Roxb. *corom.* t. 76. Willd. *spec.* n. 407.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. one-leafed, tubular, indistinctly ten-friated within the margin; which is quite entire and toothless.

COR. scales protecting the stamens.

STAM. Filaments five, inserted into the calyx.

PIST. one.

PER. Capsule superior, globular, surrounded near the middle with the remaining nectary, and terminating in a long linear, membranous wing; one-celled, not opening of itself.

SEED solitary, round.

ESSENTIAL CHARACTER.

Cal. tubular. Cor. scales protecting the stamens which are inserted into the calyx. Samara winged at the top and one-seeded.

SPECIES.

1. Ventilago maderaspatana.

Lin. *spec. ed.* Willd. 1. 1106. Gartn. *fruct.* 1. 223. Roxb. *corom.* 1. 55. t. 76.

Funis viminalis. Rumph. *amb.* 5. 3. t. 2.

DESCRIPTION, &c.

This is a large climbing shrub. Leaves alternate, on short petioles, two-faced, ovate, most slightly serrate, smooth, three or four inches long. Panicle terminating. Flowers very numerous, small, of a dirty greenish colour, smelling very strong and offensive, not unlike that of *Sterculia foetida*. Calyx, corolla, nectary, stamens and pistil as in *Rhamnus Jujuba*. Capsule the size of a pea<sup>b</sup>: smooth, fibrose-coriaceous. Seed of a red rusty colour<sup>i</sup>. This shrub is generally dioecious; and is a native of forests and other uncultivated places among the mountains in the East Indies; flowering during the cold season.

The natives of the mountains apply the bark in a green state to many useful purposes as cordage<sup>k</sup>.

VENUS'S COMB. See *Scandix*.

VENUS'S FLY-TRAP. See *Dionaea*.

VENUS'S LOOKING-GLASS. See *Campanula*.

VENUS'S NAVEL-WORT. See *Cynoglossum linifolium*.

VERATRUM. (*of Pliny. Derivation unknown.*)

Lin. *gen.* n. 1144. Reich. n. 1249. Schreb. n. 1564. Tournef. t. 145. Juss. 47. Gartn. t. 18.

Class. 23. 1. Polygamia Monoecia.

Nat. Order of *Coronariae*. Junci Juss.

GENERIC CHARACTER.

\* *Hermaphrodite*.

CAL. none, unless the corolla be considered as such.

COR. Petals six, oblong, lanceolate, thinner at the edge, ferrate, permanent.

STAM. Filaments six, awl-shaped, pressing the germs, more spreading at the tips, shorter by half than the corolla. Anthers quadrangular.

PIST. Germs three, erect, oblong, ending in scarcely apparent Styles. Stigmas simple, patulous.

PER. Capsules three, oblong, erect, compressed, one-celled, one-valved, gaping inwards.

SEEDS many, oblong, blunter at one end, compressed, membranaceous, fastened in a double row.

\* *Male flower* on the same plant, below the hermaphrodite.

CAL. COR. STAM. as in the Hermaphrodite.

PIST. an indistinct, vain Rudiment.

<sup>b</sup> Roxburgh.

<sup>i</sup> Gartner.

<sup>k</sup> Roxburgh.

ESSENTIAL CHARACTER.

Cal. none. Cor. six-petalled. Stam. six.

HERM. Pist. three. Caps. many-seeded.

MALE. Rudiment of a Pistil.

SPECIES.

1. Veratrum album. *White-flowered Veratrum, or White Hellebore.*

Lin. *spec.* 1479. *syft.* 902. Reich. 4. 296. *mat. med.* 220. Woodv. *med. bot.* 273. t. 100. Gartn. *fruct.* 1. 71. Gunn. *norv. n.* 315. t. 1. Hall. *helv. n.* 1204. Scop. *carn. n.* 1233. Jacqu. *aust.* 4. 18. t. 335. Villars *dauph.* 2. 279. Ger. *prov.* 142. Allion. *pedem. n.* 1907. Pallas *it.* 1. 49. Gmel. *fib.* 1. 75. Ludw. *est. t.* 137, 138. Mill. *illustr.* Mill. *fig. t.* 271.

V. flore subviridi. Tournef. *inst.* 273.

Helleborus albus. Camer. *epit.* 939. Bess. *exst. est.* 8. t. 9. f. 1. Ger. 356. 1. *emac.* 440. 1. Baub. *hist.* 3. 633. Raii *hist.* 168.

H. albus vulgaris. Park. *theat.* 216. n. 1. 217. f. 1.

H. albus flore subviridi. Baub. *pin.* 186. Mor. *hist.* 3. 485. f. 12. t. 4. f. 1. ord. 2.

H. albus exalbido flore. Clus. *hist.* 1. 274.

Helleborum f. Veratrum album. Dod. *pempt.* 383. Blackw. t. 74.

Elleborum album. Matth. 1219.

Raceme superdecompound, corollas erect.

[2. Veratrum viride. *Green-flowered Veratrum.*

Ait. *kw.* 3. 422.

Raceme superdecompound, corollas bell-shaped with the claws thickened at the side within.]

3. Veratrum nigrum. *Dark-flowered Veratrum.*

Lin. *spec.* 1479. *syft.* 902. Reich. 4. 297. Scop. *carn. n.* 1234. Jacqu. *aust.* 4. 18. t. 336. Gmel. *fib.* 1. 76. Kniph. *cent.* 4. n. 91.

V. flore atrorubente. Tournef. *inst.* 273.

Helleborus albus flore atrorubente. Baub. *pin.* 186. Mor. *hist.* 3. 485. f. 12. t. 4. f. 2. ord. 3.

H. alb. præcox atrorub. flore. Park. *theat.* 216. n. 2. 217. f. 2. Raii *hist.* 168.

H. alb. præcox. Ger. 356. f. 2. *emac.* 440. f. 2.

Raceme compound, corollas spreading very much.

4. Veratrum luteum. *Yellow-flowered Veratrum.*

Lin. *spec.* 1479. Reich. 4. 297.

V. caule simplicissimo. Gron. *virg.* 158.

Refeda foliis lanceolatis, caule simplicissimo. Gron. *virg.* 59.

Raceme quite simple, leaves sessile.

DESCRIPTIONS, &c.

1. Root perennial, composed of many thick fibres gathered into a head. Leaves oblong-ovate, ten inches long, and five broad in the middle, rounded at the end, and having many longitudinal plaits like those of *Gentian*. Stems three or four feet high, branching out on every side almost their whole length: under each of these branches is placed a narrow plaited leaf, and these diminish in size as they are near the top of the stem. The branches and principal stem are terminated by spikes of flowers set very close together, of a greenish white or herbaceous colour. They appear in July.

[The three capsules are superior, united at the base, but distinct above, end in a short filiform style, and open by the inner future. Seeds ten or twelve, ovate-oblong, narrower upwards, bracted, surrounded by a wide membranaceous margin, somewhat concave, variously wrinkled, of a bay colour: they are fastened in a double and in an erect position to the edges of the opening future<sup>l</sup>.

Native of Greece, Italy, Switzerland, Austria, the south of France and Russia.—Cultivated by Gerard in 1596<sup>m</sup>.

It appears that not only the roots of White Hellebore, but that every part of the plant is extremely acrid and poisonous. The leaves and seeds have proved deleterious to different animals.

Veratrum has been given internally in mania, epilepsy, &c. notwithstanding its virulence; but the diseases in which its efficacy seems least equivocal, are those of the skin, as scabies and different prurient eruptions, herpes, morbus pediculofus, lepra, scro-

<sup>l</sup> Gartner.

<sup>m</sup> Hort. kew.



phula, &c. in many of these it has been successfully employed both internally and externally.

As a powerful stimulant, and irritating medicine, its use has been resorted to only in desperate cases; and then it is first to be tried in very small doses, in a diluted state, and to be gradually increased, according to the effects. Greding, who employed it in a great number of maniacal cases, gave the bark of the root collected in spring, in powder, beginning with one grain, and gradually increasing the dose. He also sometimes used the extract, prepared after Stoeck's manner<sup>a</sup>.

2. Native of North America. Cultivated in 1763. by Peter Collinson, Esq. It flowers in July and August<sup>o</sup>.]

3. This has a perennial root like the first sort. The leaves are longer and thinner; they are plaited in like manner, but are of a yellowish green colour, and appear sooner in the spring; the stalks also rise higher. It has fewer leaves, and does not branch out into so many spikes. The flowers are of a dark red colour, with the petals spread open flat; and they appear almost a month sooner than those of album.

[It is very nearly allied to the first, but differs in place of growth, colour, villose peduncles, spreading corolla, and compound raceme not subdivided into a panicle<sup>p</sup>.]

This species seems not to be so strong and acrid as the first; for when both sorts are placed near each other, snails will entirely devour the leaves of this, when they will scarcely touch those of the other.

[Native of Austria and Siberia. Cultivated in 1596, by Gerard<sup>q</sup>.]

4. Root tuberous and large. Leaves oblong, shaped like those of Plantain, having several longitudinal furrows, or plaits; they are four or five inches long, and two broad in the middle, and spread themselves on the ground. Between these comes out a single stem, near a foot high, having a very few small leaves or sheaths placed on it alternately. The flowers are produced at the top, in a single thick close spike; they are small, and of a yellowish white colour. They appear in June, but are rarely succeeded by seeds here.

[Root bulbous. Radical leaves many, broad-lanceolate, nerved, firm, smooth. Stem a foot high, quite simple. Stem-leaves few, placed unequally, narrow, lanceolate, sessile but not sheathing as in the others, small. Raceme at first ovate, then the length of the stem, dense, composed of small yellow flowers<sup>r</sup>.

Native of North America. Cultivated by Mr. Miller in 1759<sup>s</sup>.]

PROPAGATION AND CULTURE.

Sow the seeds as soon as ripe, either in a bed or box filled with fresh light earth, and keep the ground constantly clean from weeds. In the spring the plants will appear; if the season then prove dry, refresh them now and then with water, and carefully clear them from weeds. The autumn following, when their leaves decay, prepare a bed of fresh light earth, take up the young plants carefully, without breaking their roots, and plant them about six inches square; let them remain until they are strong enough to flower, when they should be transplanted into the borders of the pleasure-garden: but as these plants seldom flower in less than four years from seeds, this method of propagating them is not much practised in England.

When these plants are once obtained, they may be increased by parting their roots in autumn, when their leaves decay; but they should not be parted too small, for that will prevent their flowering in the following summer. Plant them in a light, fresh, rich soil; and do not remove them oftener than once in three or four years. They are pretty ornaments, when planted in the middle of open borders of the pleasure-garden: if they be planted near fences which harbour snails, they will eat the leaves, especially of the third sort, and deface the plants very much.

[VERATRUM AMERICANUM. See *Helonias*.

———— NIGRUM *Clus*. See *Helleborus*.

VERBASI FOLIO. See *Buddlea*.

VERBASCULUM. See *Primula*.]

VERBASCUM. (of Pliny, who deduces it from *Verbena*. According to others it is *q*. *Barbascum*, from the leaves being bearded as it were. Hence in Italian it is *Barbassio*; and the first species is called *Thapsus barbatus* by some old authors.)

*Lin. gen. n.* 245. *Reich. n.* 262. *Schreb. n.* 331.

*Tournef. t.* 61. *Juss. 124.* *Gartn. t.* 55. *Blattaria.*

*Tournef.*

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Lurideæ*. *Solanææ* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-parted, small, permanent; segments erect, acute.

COR. one-petalled, wheel-shaped, a little unequal: tube cylindric, very short: border spreading, five-parted: segments ovate, obtuse.

STAM. *Filaments* five, awl-shaped, shorter than the corolla. *Anthems* roundish, compressed, erect.

PIST. *Germ* roundish. *Style* filiform, length of the stamens, inclined. *Stigma* thickish, obtuse.

PER. *Capsule* roundish, two-celled, two-valved, opening at top. *Receptacles* half ovate, fastened to the partition.

SEEDS numerous, angular.

OBS. In most of the species the stamens are inclined and unequal, and clothed at bottom with coloured villose hairs.

ESSENTIAL CHARACTER:

COR. wheel-shaped, a little unequal. *Caps.* two-celled, two-valved.

SPECIES.

1. *Verbascum Thapsus*. Great Mullein.

*Lin. spec.* 252. *synt.* 219. *Reich. 1.* 492. *Willd. 1.*

1001. *vir. cliff.* 13. *hort. cliff.* 55. *fl. succ. n.* 195.

*mat. med.* 63. *Woodv. med. bot.* 342. *t.* 125.

*Hudf. angl.* 89. *Wither. arr. ed.* 3. 248. *Smith*

*brit.* 249. *engl. bot. t.* 549. *Reich. cant. ed.* 2. n.

196. *Sibth. oxon. n.* 239. *Fl. dan. t.* 631.

*Hall. belv. n.* 581. *Hoffm. germ.* 76. *Roth. germ.*

1. 93. 2. 238. *Pollich pal. n.* 220. *Leers her-*

*born. n.* 149. *Neck. gallob.* 121. *Scop. carn. n.*

247. *Krock. fles. n.* 333. *Villars dauph.* 2.

489. *Allion. pedem. n.* 378. *Gmel. fib.* 4. 91.

*Blackw. t.* 3. 502. *Kniph. cent.* 9. n. 99.

*Ludw. ect. t.* 124. *Knorr. del.* 2. t. V. *Plenck.*

*ic. t.* 109.

V. *mas latifolium luteum*. *Baub. pin.* 239. *Mor. hist.* 2. 485. *f.* 5. *t.* 9. *f.* 1. *Raii hist.* 1094. *syn.* 287.

V. *latius*. *Dod. pempt.* 153. *Sabb. hort. rom.* 2. t. 53.

V. *vulgare*, flore luteo magno, folio maximo. *Baub. hist.* 3. 871.

V. *album vulg.* f. *Thapsus barbatus communis*. *Park. theat.* 60.

*Thapsus barbatus*. *Ger.* 629. 1. *emac.* 773.

*Leaves decurrent tomentose on both sides, stem simple.*

[2. *Verbascum Thapsoides*. Bastard Mullein.

*Lin. spec.* 1669. *synt.* 219. *Reich. 1.* 492. *Willd.*

1. 1001. *Allion. pedem. n.* 379.

V. *angustifolium ramosum*, flore aureo, folio crassiore. *Baub. hist.* 3. 860. *Raii hist.* 1095.

V. *album mas*, flore luteo. *Dalech. hist.* 1301.

V. *angustius*. *Dod. pempt.* 143.

V. *foliis viridibus crassioribus*. *Mor. hist.* 2. 436.

*Leaves decurrent, stem branched.*]

3. *Verbascum Boerhaavii*. Annual Mullein.

*Lin. synt.* 219. *Reich. 1.* 493. *Willd. 1.* 1002.

*mant.* 45. *Mill. fig.* 182. *t.* 273. *Boerb. lugdb.*

1. 228.

V. *luteum*. *Mill. dict. n.* 4.

V. *montanum tomentosum*. *Till. pis. t.* 50?

*Leaves sublyrate, flowers sessile.*

[4. *Verbascum hæmorrhoidale*. Madeira Mullein.

*Ait. kew. 1.* 236. *Willd. spec. 1.* 1002.

*Leaves ovate-oblong attenuated at the base tomentose indistinctly crenulate, racemes spike-form elongated, bundles of flowers without bractes.*]

5. *Verbascum*

<sup>a</sup> Woodville. <sup>o</sup> Hort. kew. <sup>p</sup> Linn. spec. <sup>q</sup> Hort. kew.

<sup>r</sup> Linn. spec. <sup>s</sup> Hort. kew.



5. *Verbascum phlomoides*. *Woolly Mullein*.  
*Lin. spec.* 253. *Reich.* 1. 493 *Willd.* 1. 1002.  
*Hall. helv.* n. 582. *Hoffm. germ.* 76. *Roth.*  
*germ.* 1. 93. 2. 239. *Krock. files.* n. 335.  
*Moench. bass.* n. 170. t. 4. *Villars dauph.* 2. 491.  
*Allion. pedem.* n. 380. *Kniph. cent.* 6. n. 99.  
*V. grandiflorum.* *Mill. dict.* n. 5.  
*V. femina*, flore luteo magno. *Bauh. pin.* 239.  
*V. montanum tomentosum & incanum*, folio subro-  
tundo, caule non alato, flaminibus purpureis. *Till.*  
*pif.* 171.  
*Leaves ovate tomentose on both sides; the lower ones pe-*  
*tioled.*
6. *Verbascum Lychnitis*. *White Mullein*.  
*Lin. spec.* 253.  $\beta$ . *Reich.* 1. 495. 5.  $\beta$ . *Willd.* 1.  
1003. 6.  $\beta$ . *fl. suec.* n. 196. *Huds. angl.* 90.  
*Wither. arr. ed.* 3. 249. var. 2. *Smith brit.* 250.  
*engl. bot.* t. 58. *Relb. cant. ed.* 2. n. 197. *Fl.*  
*dan.* t. 586. *Villars dauph.* 2. 490. *Pollich pal.*  
n. 221. *Hall. helv.* n. 583.  $\beta$ .  
*V. album.* *Mill. dict.* n. 3? *Moench. meth.* 447.  
*V. album* 2. *Tabern.* 864.  
*V. flore albo parvo.* *Bauh. hist.* 3. 873. 2. *Raii*  
*hist.* 1095. *syn.* 287.  
*V. lychnitis flore albo parvo.* *Bauh. pin.* 240.  
*V. candidum femina.* *Fuchs. hist.* 847.  
*V. Lychnite Matthioli.* *Ger.* 632. 3. *emac.* 775. 3.  
*Leaves wedge-oblong denudated above, stem angular*  
*panicled.*
7. *Verbascum pulverulentum*. *Yellow hoary Mullein*.  
*Villars dauph.* 2. 490. *Curt. cat. Salisb. prodr.*  
104. *Smith brit.* 251. *engl. bot.* t. 487.  
*V. Lychnitis.* *Lin. spec.* 253. *syft.* 219. *Reich.* 1.  
495. *Willd.* 1. 1003. *Hall. helv.* n. 583.  $\alpha$ .  
*Hoffm. germ.* 76. *Roth. germ.* 1. 93. 2. 239.  
*Scop. carn.* n. 248. *Moench. meth.* 446. *Mill.*  
*dict.* n. 2. -- *Huds. angl.* 90. 3.  $\beta$ . *Wither.* 249. var. 1.  
*V. pulv. flore luteo parvo.* *Bauh. hist.* 3. 872. *Raii*  
*hist.* 1094. *syn.* 287. *Tournef. inst.* 147.  
*V. mas*, angustioribus foliis, floribus pallidis. *Bauh.*  
*pin.* 239.  
*V. luteum.* *Tabern.* 565.  
*Leaves ovate-oblong subserrate mealy on both sides, stem*  
*round panicled.*
8. *Verbascum ferrugineum*. *Rusty Mullein*. *Ait. kew.*  
1. 237. *Willd. spec.* 1004.  
*Leaves subvillose wrinkled, stem-leaves subsessile*  
*equally crenate, root-leaves oblong cordate doubly*  
*crenate.*
9. *Verbascum nigrum*. *Dark Mullein*.  
*Lin. spec.* 253. *Reich.* 1. 494. *Willd.* 1. 1004. *fl.*  
*suec.* n. 197. *vir. cliff.* 13. *hort. cliff.* 54. *mat. med.*  
63. *Huds. angl.* 90. *Wither. arr. ed.* 3. 250.  
*Smith brit.* 251. *engl. bot.* t. 59. *Relb. cant. ed.*  
2. n. 198. *Sibth. oxon.* n. 240. *Hall. helv.* n.  
584. *Hoffm. germ.* 77. *Roth. germ.* 1. 94. 2.  
240. *Pollich pal.* n. 222. *Leers herb. born.* n. 151.  
*Krock. files.* n. 336. *Scop. carn.* n. 249. *Villars*  
*dauph.* 2. 492. *Allion. pedem.* n. 382. *Plenck*  
*ic.* t. 110.  
*V. nigrum*, flore ex luteo purpurascens. *Bauh. pin.*  
240. *Mor. hist. f.* 5. t. 9. f. 5. *ord.* 2.  
*V. nigrum flore parvo apicibus purpureis.* *Bauh. hist.*  
3. 873. 3.  
*V. nigrum.* *Ger.* 631. 2. *emac.* 775. 2. *Dod. pempt.*  
144. 1. *Lob. ic.* 562. *Trag.* 218.  
*V. sylvestre.* *Fuchs. hist.* 849.  
*V. 3.* *Matth.* 1145. *valgr.* 1. 560. *Camer. epit.* 880.  
*Dalech. hist.* 1299.  
*Leaves oblong-cordate petioled waved crenate subpube-*  
*scens.*
10. *Verbascum virgatum*. *Large flowered Mullein*.  
*Wither. arr. ed.* 3. 250. *Sym. syn.* 56. *Smith brit.*  
252. *engl. bot.* t. 550.  
*Blattaria flore amplo.* *Ger. emac.* 778.  
*B. magno flore.* *Bauh. hist.* 3. 859. *Lob. ic.* 564.  
*Raii hist.* 1096.  
*Leaves oblong-lanceolate toothed sessile, root-leaves subly-*  
*rate pubescent, stem branched, flowers aggregatè sub-*  
*sessile.*
11. *Verbascum phoeniceum*. *Purple Mullein*.

- Lin. spec.* 254. *syft.* 219. *Reich.* 1. 495. *Willd.*  
1. 1004. *hort. cliff.* 55. *Hoffm. germ.* 77. *Roth.*  
*germ.* 1. 94. 2. 241. *Scop. carn.* n. 250. *Jacqu.*  
*austr.* 2. 15. t. 125. *Krock. files.* n. 337. *Allion.*  
*pedem.* n. 384. *Pallas it.* 1. 183. *Gærtn. fruct.*  
1. 262.  
*Blattaria perennis*, flore violaceo. *Mor. hist.* 2. 497.  
*B. purpurea.* *Bauh. pin.* 241.  
*B. flore purpureo.* *Ger.* 633. 2. *emac.* 776. 2. *Park.*  
*theat.* 65. 6. *Mor. hist. f.* 5. t. 9. f. 1. *ord.* 3.  
*B. flore cæruleo vel purpureo.* *Bauh. hist.* 3. 875.  
*Raii hist.* 1096.  
*Leaves ovate naked crenate radical, stem almost naked*  
*racemed.*
12. *Verbascum Blattaria*. *Moth Mullein*.  
*Lin. spec.* 254. *Reich.* 1. 495. *Willd.* 1. 1005.  
*hort. cliff.* 15. *ups.* 46. *Huds. angl.* 91. *Wither.*  
*arr. ed.* 3. 251. *Smith brit.* 253. *engl. bot.* t. 393.  
*Hall. helv.* n. 585. *Hoffm. germ.* 77. *Roth. germ.*  
1. 94. 2. 241. *Pollich pal.* n. 223. *Krock. files.*  
n. 338. *Scop. carn.* n. 251. *Guett. stamp.* 2.  
309. *Sauv. monsp.* 276. *Ger. prov.* 314. 5.  
*Villars dauph.* 2. 492. *Allion. pedem.* n. 385.  
*Pallas it.* 1. 200.  
*Blattaria lutea*, folio longo laciniato. *Bauh. pin.* 240.  
*Tournef. inst.* 147. *Garid.* 63.  
*Blattaria.* *Matth.* 1151. *Dalech. hist.* 1305. *Dod.*  
*pempt.* 145. 1. *Lob. obs.* 304. 2.  
*B. lutea.* *Bauh. hist.* 3. 874. 1. *Raii hist.* 1096. *syn.*  
288.  
*B. Plinii.* *Ger.* 633. 1. *emac.* 776. 1. *Lob. ic.* 564.  
 $\beta$ . *Blattaria alba.* *Bauh. pin.* 241.  
*Verbascum glabrum.* *Mill. dict.* n. 8. *fig.* t. 67.  
*Leaves embracing oblong smooth serrate, peduncles one-*  
*flowered solitary.*
- [13. *Verbascum gallicum*. *French Mullein*.  
*Lin. spec. ed.* *Willd.* 1. 1005.  
*V. Chaixi.* *Villars dauph.* 2. 491. t. 13.  
*Leaves subvillose cordate petioled toothed, root-leaves*  
*pinnatifid at the base.]*
14. *Verbascum sinuatum*. *Scollop-leaved Mullein*.  
*Lin. spec.* 254. *Reich.* 1. 496. *Willd.* 1. 1006.  
*Sauv. monsp.* 276. *Ger. prov.* 313. *Villars*  
*dauph.* 2. 493. *Allion. pedem.* n. 383. *Desfont.*  
*atlant.* 1. 186.  
*V. nigrum*, foliis papaveris corniculati. *Bauh. pin.*  
240. *Camer. hist.* t. 403. *Tournef. inst.* 147.  
*Mor. hist. f.* 5. t. 9. f. 6.  
*V. crispum & sinuatum.* *Bauh. hist.* 3. 872. *Raii*  
*hist.* 1094.  
*V. aliud.* *Matth. valgr.* 1148. *Camer. epit.* 882.  
*V. laciniatum.* *Dalech. hist.* 1302. *Park. theat.* 61. 7.  
*V. intubaceum.* *Tabern. ic.* 565.  
*Root-leaves pinnatifid-repand tomentose, stem-leaves*  
*embracing almost naked, first branch-leaves opposite.*
- [15. *Verbascum pinnatifidum*.  
*Lin. spec. ed.* *Willd.* 1. 1006. *Vahl symb.* 2. 39.  
*V. græcum fruticosum*, folio sinuato candidissimo.  
*Tournef. cor.* 8. *itin.* 1. 335. *ic.* 2. 19. *ed. Lugd?*  
*Leaves linear-lanceolate pinnatifid, segments obtuse toothed,*  
*flowers sessile glomerate.*
16. *Verbascum Barnadesii*.  
*Lin. spec. ed.* *Willd.* 1. 1006. *Vahl symb.* 2. 39.  
*Stem almost naked, leaves lanceolate tooth-sinuate smooth,*  
*peduncles one-flowered.*
17. *Verbascum Osbeckii*.  
*Lin. spec.* 255. *Reich.* 1. 496. *Willd.* 1. 1006.  
*Obs. it.* 2. -- 1. 68. *ed. angl.*  
*Blattaria orientalis*, bugulæ folio, flore maximo vires-  
cente lituris luteis in semicirculum striato. *Tournef.*  
*cor.* 8. *it.* 2. 83. *ic.* *Buxb. cent.* 5. 17. t. 52.  
*Leaves gashed naked, stem leafy, calyxes woolly, peduncles*  
*two-flowered.*
18. *Verbascum spinosum*.  
*Lin. spec.* 255. *Reich.* 1. 496. *Willd.* 1. 1007.  
*amoen.* 4. 307. *Vahl symb.* 2. 39.  
*V. creticum spinosum frutescens.* *Tournef. cor.* 8.  
*V. spinosum creticum.* *Lob. illustr.* 113.  
*Leucoium creticum spinosum incanum luteum.* *Bauh.*  
*pin.* 201.

L. spinosum.



*L. spinosum.* *Alp. exot.* 37. t. 36.—creticum. *Ger. emac.* 459.

*Glaucidia* 1. cretica. *Pon. ital.* 114.

*Blattaria cretica spinosa.* *Park. theat.* 66. 10. *Raii hist.* 1097.

*Stem leafy spiny frutescent.*]

19. *Verbascum Myconi.* *Borage-leaved Mullein.*

*Lin. spec.* 255. *fig.* 220. *Reich.* 1. 496. *Willd.*

1. 1007. *Mill. fig.* t. 277. *Trew Ebr.* 26. t.

57. *Curt. magaz.* t. 236.

*Cortusa foliis ovatis sessilibus.* *Lin. hort. cliff.* 50.

*Sanicula alpina, foliis boraginis, villosa.* *Baub. pin.* 243.

*Auricula urfi Myconi.* *Dalech. hist.* 837. *Baub. hist.*

2. 869. *Raii hist.* 1084. 10.

*Auricula urfi flore cæruleo folio Boraginis.* *Park. par.* 236. n. 10. t. 237. f. 3.

*Leaves woolly radical, scape naked.*

#### DESCRIPTIONS, &c.

1. [Root biennial, spindle-shaped. Stem erect, simple, stiff, and straight, from three to five feet high, leafy, woolly, angular, winged. Leaves alternate, decurrent, oblong, nearly entire, very thickly clothed on both sides with white branched intricate villose hairs. Spike terminating, erect, cylindrical, many-flowered. Flowers sessile, closely set, bright yellow, sometimes but rarely white. Filaments yellow, hairy: anthers red. Stigma club-shaped<sup>c</sup>.

Leers remarks, that the two lower filaments are longer than the others, and naked; the three upper white-villose.

Native of Europe and Siberia, on banks in hedges and on waste ground, especially on a gravelly or calcareous soil, flowering in July and August.

The leaves and whole herb are mucilaginous, and recommended as emollients both internally and externally. A pint of Cow's milk with a handful of the leaves either of this or the pulverulentum, boiled in it to half a pint, sweetened with sugar, strained and taken at bed-time, is a pleasant emollient and nutritious medicine for allaying a cough, and more particularly for taking off the pain and irritation of the piles. It is often applied externally in this disorder: and is used as an injection in tenesmus with advantage. In diarrhoeas of an old standing a decoction of it is useful to ease the pains of the intestines: two ounces of the leaves are boiled in a quart of water, and four ounces are given every three hours. In pulmonary complaints of cattle it is found to be of great use, and hence its name of Cow's Lung-wort. It is well known to the country cow-leeches under the name of Murrain-grass, which is a corruption of Mullein. The French call it Bouillon blanc, and use an infusion of the flowers in coughs, supposing them to possess anodyne and pectoral virtues. It does not seem to have much of the narcotic powers for which most of its natural order are distinguished. The seeds, however, are said to stupify fish so much that they may be taken with the hand<sup>d</sup>.

In the East Indies the natives have a superstitious notion of the efficacy of this plant in protecting them from the visitation of evil spirits.

It has many names in English. Gerarde enumerates Mullein or rather Woolen, Hig-taper, Torch, long Woort and Bullockes Longwoort and Hares beard. Dr. Withering adds, Ladies Foxglove. It is probable that Gerarde's correction of Mullein to Woolen is right, especially since it is called in Dutch Wullkraut. Is the French *Molene* borrowed from our Mullein? Hig-taper is altered to High Taper in all modern books, supposing it to be so named from its high tapering stem: but in the north it is Hag-taper. Might not this be from its supposed efficacy in sorcery?

The *Verbascums* seem apt to produce varieties, especially mules. Mr. Robson communicated to Dr. Withering a hybrid or mule plant, produced under his own eye, from this species impregnated by the *nigrum*, in 1790. Hence he calls it *Thapso-nigrum*. It flowered five years successively, but produced no perfect seed. It is difficult to say to which of its parents it is most nearly allied. In *V. Thapsus*

the leaves are decurrent; in *nigrum* they are petioled: in this mule the lower leaves are petioled, and the upper decurrent. *V. Thapsus* has three of its stamens hairy, and two smooth; *nigrum* has all the stamens hairy: the mule has all its stamens hairy, but two of them only on one side<sup>e</sup>.

Murray (prodr. 47.) mentions a variety of this under the name of *Verbascum bicolle*, or n. 582 of Haller, which he describes as having the lower leaves petioled, and the upper sessile and decurrent, as in the other mule. The stigma is shortly two-necked<sup>f</sup>.

2. This is supposed by Linneus to be a mule plant, produced from *V. Lychnitis* as the mother, and *V. Thapsus* as the father. It appeared in the botanic garden at Upsal in 1761, in the same bed with its parents, and was barren. It agrees with the mother in its branched stem, flowers, and purple hairiness of the filaments, though less so than in *V. Lychnitis*. It agrees with the father in size, in the leaves being decurrent but not totally, and less white than in *V. Thapsus*, and in the calyxes, which are however more peduncled, though less so than in *V. Lychnitis*; of which it is rather a variety than a distinct species. The younger Linneus observed it. But it was long since remarked by Agerius, who sent it to John Bauhin, and from him subsequent authors have taken it<sup>g</sup>. Willdenow considers it as a distinct species. See *Verbascum Lychnitis*.

3. Root annual. Leaves sessile but not decurrent, spatulate, narrower at the base, sinuate but scarcely lyrate, almost naked above, somewhat tomentose beneath. Spike like that of the first species, with the flowers sessile, not crowded very much together, but several to each bract and bigger. Corollas yellow, with the stamens and pistils purple<sup>h</sup>.]

Lower leaves ovate, about a foot long, and six inches broad in the middle, ending in round blunt points, on thick footstalks, their upper side green, but their under side downy and of a hoary-white colour, with some strong longitudinal veins. Stem from three to four feet high. Stem-leaves oblong, of the same texture with those below, but sessile, longer, and ending in points. Flowers in a loose terminating spike, with one very narrow leaf under each. Corolla of a brimstone colour and larger than those of the common Mullein. The flowers have an agreeable scent at a little distance; but if smelt to long, or too near, it becomes less pleasant. They appear in June and July, and the seeds ripen in the autumn, when the plant decays, being biennial. The seeds were given to Mr. Miller by Boerhaave, who informed him that he had received them from Vienna<sup>i</sup>.

[Native of the South of Europe. Cultivated in 1758 by Mr. Miller.

4. Native of the island of Madeira; where it was found by Mr. Francis Masson, and introduced in 1777. It flowers from June to August, and is biennial<sup>j</sup>.

5. Root biennial. Stem erect, spiked, very tomentose. Leaves ovate, not at all cordate, crenate; the lower ones on a petiole which is flat above; the upper ones sessile, half embracing but not decurrent. Raceme spike-shaped, with scattered lanceolate bracts; within each of which are four flowers, the middle ones blowing first, then the lowest, and lastly the two lateral ones. Capsules oblong. Native of Italy<sup>k</sup>, Germany, and the south of France.—Cultivated in 1739 by Mr. Miller. It flowers in June and July<sup>l</sup>.

6. Root biennial. Stem erect, seldom more than three feet high, stiff and straight, angular, woolly, leafy, terminating in a panicle very much branched. Leaves elliptic-oblong, somewhat wedge-shaped, crenate, closely woolly beneath, but nearly smooth on the upper side, netted-veined; the radical ones attenuated at the base; the stem-leaves ovate, sessile but not decurrent. Branches of the panicle racemed, many-flowered. Flowers pedicelled, in bundles, cream-coloured with yellow filaments and saffron-coloured anthers<sup>m</sup>.

This species is remarkable for its straight wand-like

<sup>x</sup> Robson in Withering. <sup>y</sup> Reichard and Haller. <sup>z</sup> Linn. spec. app.

<sup>a</sup> Lin. mant.

<sup>b</sup> Mill. fig.

<sup>c</sup> Hort. kew.

<sup>d</sup> Linn. spec.

<sup>e</sup> Hort. kew.

<sup>f</sup> Smith brit.

<sup>g</sup> Smith.

<sup>h</sup> Woodville, Engl. bot. Withering.



angular stem; its leaves very white beneath, but green with a slight hoariness above, and its cream-coloured flowers, which are produced in great numbers in a compound clustered terminating raceme.

Our English specimens of White Mullein agree precisely with that in the herbarium of Linneus, which we learn, from certain marks and numbers, to be what he intended in the first edition of *Species Plantarum* for Verb. *Lychnitis*; though even in that work he seems to reckon our hoary yellow Mullein as the original species, making the white a variety<sup>8</sup>.

Native of Europe. With us found chiefly in Kent, and there plentifully. In lanes about Dartford very common. Dr. Stokes found it at Kinver in Staffordshire, near the Rock Houses.

Dr. Smith considers *V. Thapsoides* as a variety of this species, and adopts it on the authority of Linneus, and Hudson who says it grows in Kent.

The album of Miller cannot be this species. He says it grows naturally in Italy and Spain, and is six or seven feet high.

7. Root biennial. The whole herb is covered with a mealy down which easily rubs off, and when seen in a microscope is found to consist of numerous starry entangled tufts. Stem upright, three or four feet high, round, leafy, terminating in a pyramidal branched panicle, composed of many flowers. All the leaves sessile, mealy on both sides, slightly serrate or crenate: root-leaves elliptic-oblong, often above a foot in length; stem-leaves ovate, acuminate, almost embracing. It has the inflorescence of the preceding species, only more branched. The corolla is larger, and of a bright yellow. The filaments are bearded with pale or white hairs; and the anthers are vermilion<sup>9</sup>.

Native of Europe. Common in many parts of Norfolk and Suffolk, as about Norwich and Bury; in waste ground, hedges and the borders of fields: flowering in July, at which time it forms a golden pyramid a yard high, of many hundreds of flowers, and is one of the most magnificent of British herbaceous plants. Ray found it at Wollerton near Nottingham.

A singular instance of irritability in this and some other species of *Verbascum* has been pointed out by Mr. Correa. In still warm weather, if two or three smart blows be given to the stem with a stick, all the corollas which are then open, though not immediately loosened, fall off in a few minutes, separating one after another from their base, and the calyx closes round the germ, seeming as it were to push the blossom off.

Dr. Smith has observed a mule plant produced from this species impregnated with the pollen of Verb. *nigrum*; having the habit of the former, and purple-haired filaments like the latter; with the leaves more neatly crenate than in this species, the root-leaves petioled, the stem and petioles purple. It is frequent at Helleston near Norwich<sup>1</sup>.]

8. Root perennial. Bottom leaves ovate-oblong, indistinctly crenate, (doubly crenate, *Ait. kew.*) dark green above, pale green beneath, standing upon pretty long footstalks. The stalk rises three or four feet high, branching out on each side, and has a few sharp-pointed small leaves on the lower part, sitting close to the stalk. The flowers are disposed in a long loose spike on the upper part of the stalk; they come out upon short slender pedicels, three or four from the lower joints; above these there are two at each joint, and at the top they are single; they are of a rusty iron colour, and larger than those of the common sort. They appear in July and August, but do not produce seeds here. It is common in gardens, where it is known by the name of Iron-coloured Moth Mullein. [Mr. James Sutherland cultivated it in 1683. It is a native of the South of Europe<sup>2</sup>.

9. Root perennial. Stem stiff and straight, angular, striated, purplish, sometimes pubescent, little branched. Root-leaves cordate, on long petioles; stem-leaves cordate-lanceolate, petioled; uppermost almost sessile; all waved-crenate or subserrate, netted-veined, dark green, naked or sometimes hoary beneath, especially the upper ones. Spike terminating, for the most part

simple or solitary, many-flowered, but not very compact: longer and more simple than in most of the other species. Flowers in bundles, (about seven in a set,) pedicelled<sup>3</sup>. The beauty of its golden-coloured corolla is much enriched by the tints of purplish brown at the mouth of the tube, the purple-haired filaments, and the saffron-coloured anthers<sup>4</sup>.

Native of Europe in a calcareous or gravelly soil; flowering about midsummer, and lasting till September. Plentiful in Kent, and in the hedges of retired grassy lanes so frequent in Norfolk and Suffolk<sup>5</sup>. In the calcareous parts of Cambridgeshire, and the sandy parts of Bedfordshire. Nettlebed, Henley and Stokenchurch in Oxfordshire. Between Birmingham and Walsall. About Hampstead, near Richmond bridge, at Strand on the Green, and about Harefield in Middlesex. Crayford, Shooter's hill, Charlton, Blackheath, Lewisham, Woolwich warren, Bromley, West Wickham, Plumstead, Bexley, Westerham, Orpington, Dartford and Ospringe in Kent. Dupper's hill near Croydon, about Esher and Godalmin in Surrey. Tillington in Sussex.

It is pity that Linneus adopted its common name of *nigrum* or black as a trivial, because it tends to mislead, for it has nothing black about it, the leaves being only dark-coloured in comparison with the other species, *Thapsus*, *Lychnitis* and *pulverulentum*; the nap on all which may be used for tinder, or to make wicks for lamps, whence the name of *Lychnitis* to the sixth species.

This varies sometimes with white flowers; and Gmelin mentions a lower variety with a funnel-form herbaceous flower, that is prolific<sup>6</sup>.

10. Root biennial, thick, branched, whitish; bitter. Whole plant much larger and stronger than *Blattaria*, clothed generally all over, and the lower leaves constantly, with short prominent, often forked, glandular hairs. Stem erect, five or six feet high, branched from the bottom, leafy, round, but somewhat angular or winged from the leaves running down it. Radical leaves resembling those of the Primrose, lanceolate-oblong, wrinkled, unequally tooth-crenate, pinnatifid-gashed at the base, above shining a little and having scattered hairs beneath veined and woolly: stem-leaves oblong-lanceolate, toothed and gashed, subsessile; the upper ones heart-shaped, long-pointed, toothed, sessile, and even in some degree embracing. Flowers axillary, in bundles or clusters, on short woolly stalks, and some of them sessile, very large, yellow, purple about the centre, soon falling off. Filaments yellow, bearded in the middle with purple. Segments of the calyx ovate, larger and broader than in *V. Blattaria*. The woolliness of the stem and branches varies in degree, and weak plants have sometimes solitary flowers, but always on much shorter thicker stalks than the *Blattaria*.

First found by Mr. Waldron Hill of Worcester in a field on the south side of a lane leading from Gregory's mill to the turnpike road from Worcester to Ombersley, opposite to the lane leading to Bevery. It was cultivated for three years without any perceptible alteration, according to Dr. Stokes<sup>7</sup>.

In English Botany it is added, from the information of the Rev. Mr. Baker, that it was first observed growing plentifully in a field near Wrexham, by Mrs. Nash, who planted it in her garden near Bevery, whence probably its seeds got into the neighbouring turnpike road to Ombersley, and thence into the lane leading to Gregory's mill. This is omitted in Dr. Smith's posterior publication of his Flora.

Dr. Stokes first clearly ascertained this species, which in many respects is closely allied to *V. Blattaria*, but does not seem to be a variety of it, or a mule; for that does not grow where this is found, and it may be copiously propagated by seed. It flowers in August and September<sup>8</sup>.

11. Root biennial. Radical leaves ovate, subsessile, naked, even, wrinkled, scarcely crenate. Stem erect, simple, two feet high. Branches from the lowest axils,

<sup>1</sup> Smith brit.

<sup>2</sup> Wither and engl. bot.

<sup>3</sup> Engl. bot.

<sup>4</sup> Fl. fib. 4. 91. n. 46. t. 47. Reichard. syst.

<sup>5</sup> Stokes in Wither. Smith brit. and engl. bot.

<sup>6</sup> Engl. bot.

<sup>7</sup> Engl. bot.

<sup>8</sup> Smith brit.

<sup>9</sup> Engl. bot.

<sup>10</sup> Hort. kew.



erect, simple, length of the stem, all angular, subpubescent with hairs clammy at the tip. Stem leaves cordate, sessile, smooth, wrinkled and veined. Raceme of all terminating, simple, a foot long. Peduncles simple, solitary, one-flowered. Lower leaflets of the calyx commonly smaller than the others. Corolla deep purple. Filaments purple, bearded; in the three upper ones the beard is white. Anthers kidney form, compressed, blackish, with fulvous pollen. Pistil purple, bent down. Capsule ovate-acuminate, with a longitudinal streak on each side, of a stiff coriaceous substance, the valves when ripe cloven to the middle: partition doubled, formed from the edges of the valves bent in. Receptacle ovate-globular, spongy, placed in the axis of the fruit, deciduous when ripe. Seeds many, ovate-globular, somewhat angular, excavated, brown.

Native of the South of Europe, and of Germany. Cultivated in 1597, by Gerarde. It flowers from may to july.

12. Root annual fusiform. Stem about three feet high, erect, branched, leafy, angular, smooth. Leaves obovate-oblong, doubly-ferrate, smooth, embracing: root-leaves sublyrate. Racemes terminating, glandular-hairy, stiff, many-flowered. Flowers peduncled, solitary, yellow streaked more or less with purple, having each a single ovate bracte at the base of the peduncle. Stamens clothed with purple hairs. Germ globose. Capsule rather oblong. The upper part of the stem, as well as the germ, calyx, bractes, and upper leaves, clothed with short hairs tipped with a minute globe.

Native of the South of Europe, Germany, Switzerland and England, in clayey and gravelly soils. In Devonshire, Dorsetshire and Cornwall not uncommon, as about Plymouth and Ashburton. Near Rochester, by the river Medway. Between Deptford and Greenwich. In a lane between Mitcham common and Carshalton. In gardens it is frequently cultivated, and is very ornamental; flowering from july to november, or even later, if the weather be mild.

The Hon. Mrs. F. Howard gathered a specimen near Lynn in Norfolk, which is either a variety of this with a large purplish flower, or the *phœniceum*.

β. Leaves of white Moth Mullein oblong, smooth, dark green. Stem three or four feet high, sending out two or three side branches. Stem-leaves oblong, smooth, embracing. The flowers come out singly from the side of the stem, upon peduncles an inch long. Corolla white within, with a little blush of red on the outside. Capsule round. Native of the South of France and Italy.

[13. Root biennial. Stem about two feet high, divided at the upper part into several branches spreading out at right angles. Leaves notched all round, cordate, obtuse, lyrate at the base, and more pubescent than in *V. nigrum*. Flowers middle-sized, yellow with purple-haired filaments. Native of Dauphiné. It seems to have been confounded with the *nigrum*, from which it differs principally in the leaves, the disposition of the branches, and their pubescence.

14. Root biennial. Radical leaves repand, or obtusely sinuate-pinnatifid: stem-leaves oblong, waved, decurrent a little at the base on each side: branch leaves ovate or cordate, a little decurrent: the first of these are opposite, the rest alternate.

Leaves tomentose; those next the root elongated, waved, sinuate-repand; those on the stem sessile, a little decurrent. Stem low, erect, tomentose. Branches numerous, slender, wand-like, erect, tomentose. Flowers sessile, glomerate, in an interrupted spike. Corolla small, yellow. Bractes cordate, acuminate, refracted.

Native of the South of France, Italy and Barbary. Mr. Miller says Italy and Greece, and also the rocks of Gibraltar.—He cultivated it in 1731. It flowers in july and august.

Desfontaines has another species, which he names *Verbascum cordatum*. The leaves are thick, tomentose, hoary: the lower cordate, crenulate, obtuse, petioled; stem-leaves half-embracing, acute, quite entire.

Stem simple, or little branched, tomentose, erect, the thickness of a finger. He found it in Barbary about Tlemfen.

15. Stem erect, a foot high, tomentose at the base, becoming smooth by age, round, branched at bottom. Lower and stem-leaves petioled, two inches long, thickish, smooth above, tomentose beneath; segments unequal, oblong, obtuse, having frequently a single blunt tooth or two: leaves under the branches sessile, gash-toothed. Flowers sessile on the branches, alternate, remote, three or four together: floral leaves lanceolate, entire, longer than the calyxes. Calyx very tomentose hoary.

It differs from *V. sinuatum* in having the leaves deeply divided and petioled. It seems doubtful whether it be different from Tournefort's plant referred to above. This was found in the islands of the Archipelago by Forskahl.

16. Stem a foot high, smooth, quite simple, with a leaf or two at bottom. Radical leaves numerous, scarcely three inches long, petioled, lanceolate, tooth-sinuate or subpinnatifid, less deeply divided at the base, acute: segments lanceolate, toothed, the larger sinuses toothletted: stem-leaves entire. Peduncles from the bottom to the very top, solitary, remote, an inch long, one-flowered, floral-leaf cordate, small, cusped, at the base of each flower. Segments of the calyx unequal, three oblong, two roundish, larger, all slightly toothletted. Corolla yellow. Native of Spain, on hills towards Ortalesza; where it was found by Barnades.

*V. Osbeckii* differs in having a leafy stem, the stem-leaves oblong, petioled, gash-toothed, the peduncles and calyxes woolly.—*V. sinuatum* is distinguished by having the radical leaves very blunt, and tomentose, the flowers sessile and aggregate.

17. Stems spreading on the ground on all sides, undivided, triangular, nervose. Leaves oval, cut into irregular segments: the upper ones smaller, almost sessile; the lower petioled. Peduncles woolly, most of them bifid, from the bottom of the leaves. Calyx deeply five-cleft, woolly, with lanceolate segments. Filaments very short resting on a scale which covers the germ. Anthers oblong, erect, longer than the filaments. Germ almost round: style longer than the filaments: stigma entire and pointed. The whole plant had the smell of musk. Native of Spain; where it was found by Osbeck. Introduced in 1775, by Mons. Thouin. It flowers in july and august. Biennial.

18. This is a shrub, half a foot high, stiff, and very much branched: branches alternate, round, tomentose, hoary: the lower ones becoming naked by age. Leaves sessile, alternate, lanceolate, tomentose, attenuated at the base, obtuse, with two blunt segments on each side at bottom: a bundle of flowers in the axils: leaflets wedge-shaped, entire. Raceme terminating, flexuose, branched at bottom, rigid. Peduncle ending in a spine. Pedicels rigid sometimes one-flowered; (often instead of a pedicel a very spreading spine) alternate or opposite; under each a minute ovate bracte. Segments of the calyx ovate. Corolla small, tomentose on the outside. Capsule the size of a Coriander seed, smooth. Native of Candia or Crete.

19. Root perennial, composed of slender fibres. The leaves which spread flat on the ground, are of a thick fleshy substance, of an ovate shape, indented on their edges, woolly, and of a dark green colour; they are sessile or subsessile, embrace the crown of the root, and lie over each other; they continue in verdure all the year, but in winter change to a much darker green. From among these leaves arise several scapes or naked slender stalks, about four inches high, which divide into three or four pedicels at the top, hairy and of a brown-purplish colour, each sustaining one large flower, of a fine blue, so deeply divided as to appear to be five-petalled; the segments are oval, obtuse, and spread open flat, like the Auricula. Calyx funnel-shaped, cut into five obtuse segments. Filaments thick, erect. Anthers flat, clinging to the style, as in *Viola* and *Meadia*. Capsule oblong-ovate.

[No one would have guessed from the habit of this

• Vahl. • Osbeck's voyage. • Hort. kew. • Vahl. plant

• Linn. syst. • Gærtner. • Hort. kew. • Smith brit. • Engl. bot. • Idem. • Villars. • Linn. spec. • Desfontaines. • Hort. kew.



plant that it belonged to the Verbasiums, most of which are tall and showy, with leafy stems and long spikes of flowers generally yellow; whereas this is of very humble growth, its naked flowering stem even in gardens seldom exceeding six inches in height: its flowers are large in proportion to the size of the plant, of a bluish purple colour, and highly ornamental: they make their appearance in May, and continue successively in blossom for several months. Hence this is a desirable plant to cultivate, especially for decorating rock-work.

It grows spontaneously on the Pyrenees: in its wild state it is lower than in our gardens, with a more woolly foliage enriched with various tints<sup>8</sup>. It was cultivated by Mr. Miller in 1731<sup>h</sup>. Mr. Curtis thinks that Parkinson probably had it long before; but though he has figured and described it well in his Garden of pleasant flowers, he does not give the least hint that he possessed the growing plant. He places it with the Auriculas or Bear's-ears, rather in compliance with others, than from his own judgement.

Clusius, in his second appendix to his History of plants informs us, that Venerius sent it in the year 1600, from the Pyrenees, to John ab Hogelande, and Christian Porret, at Bourdeaux.]

PROPAGATION AND CULTURE.

Most of the sorts are biennial, and may be increased by sowing their seeds in August, on a bed of light earth, in an open situation, where the plants will sometimes come up the succeeding month, and will endure the winter's cold very well, provided they have a dry soil. In February transplant them where they are to remain, not nearer than two feet asunder. In June following they will flower and their seeds will be ripe in August or September. But as the seeds frequently lie in the ground a whole year, the ground should not be disturbed. These plants, as they require little care, may be allowed a place in the borders of large gardens, for the variety of their hoary leaves, and the sweetness of the flowers, which have a scent somewhat like Violets. If the seeds be permitted to scatter, they will come up without care. The fourteenth seldom produces good seeds in England.

Ferrugineum (n. 8.) and phœniceum (n. 11.) have perennial roots, and not producing good seeds here, are increased by offsets, which should be taken off in autumn, time enough to get good root before winter; otherwise they will not flower the following summer. These plants thrive best in a sandy loam, and should be planted in an east border, where they have only the morning sun, for they do not thrive well when they are much exposed to the sun.

19. This also is perennial, and is usually propagated by offsets, which come out from the side of the old plant; these should be taken off in autumn, and planted in small pots filled with light sandy earth: they must always have a shady situation, for they will not thrive when they are exposed to the sun.

[It is very hardy, but requires a north aspect in the summer, and to be carefully watered in dry weather. It will grow in almost any soil<sup>i</sup>.

VERBASCUM. See *Buchnera*, *Buddlea*, *Celsia*, *Phlomis*, *Primula*.]

VERBENA. (of Pliny. q. *Herbena*. Being the favourite herb used in the sacred rites of the heathen. Or, according to Pliny, from *verro*; being used to sweep and cleanse Jupiter's table or altar for sacrificing. Others derive it from *viriditas*: others again say it is q. *Veneris vena*. Such is the uncertainty of derivation. In Greek it is *Isoetaron*, the sacred herb, because bunches of it were suspended in lustrations. Any herb used in the sacred rites was called by these names.)

Lin. gen. n. 32. Reich. n. 35. Schreb. n. 43. Gært. t. 66. Tournef. t. 94. Vaill. Juss. 109. Sherardia Vaill. Blairia Houst. act. angl. Gært. t. 56.

Class. 2. 1. Diandria Monogynia. f. Didynamia Gymnospermia.

Nat. Order of *Personata*. Vitices Juss.

<sup>8</sup> Curtis.

<sup>h</sup> Hort. kew.

<sup>i</sup> Curtis.

GENERIC CHARACTER.

CAL. Perianth one-leafed, angular, tubular, linear, five-toothed, the fifth toothlet truncate, permanent.

COR. one-petalled, unequal: tube cylindrical, straight for the length of the calyx, then widening and curved in: border spreading, half-five-cleft: segments rounded, almost equal.

STAM. Filaments two or four, bristle-shaped, very short, lying within the tube of the corolla; two of them shorter (when there are four.) Anthers curved in, as many as there are filaments.

PIST. Germ four-cornered. Style simple, filiform, length of the tube. Stigma obtuse.

PER. very slender, and scarcely manifest, or almost none. Calyx containing the seeds.

SEEDS two or four, oblong.

OBS. Sherardia Vaill. contains the seeds and two anthers within a narrow calyx.

V. lappulacea bears echinated seeds and two anthers within an inflated calyx.

Verbena Vaill. produces obtuse seeds and four anthers.

ESSENTIAL CHARACTER.

Cor. funnel-shaped, almost equal, curved. Cal. one of the teeth truncate. Seeds two or four, naked or very thinly arilled. Stam. two or four.

SPECIES.

\* Two-stamened, two-seeded.

1. Verbena orubica. Betony-leaved Vervain.

Lin. spec. 27. Reich. 1. 52. Willd. 1. 115. hort. cliff. 10. Pluk. phyt. t. 228. f. 4. & t. 327. f. 7.

Sherardia urticae folio subtus incano, floribus violaceis, Ehret. pict. t. 5. f. 1.

Two-stamened, spikes very long leafy.

2. Verbena indica. Indian Vervain.

Lin. spec. 27. syst. 66. Reich. 1. 52. Willd. 1. 115. Jacqu. obs. 4. 7. t. 86.

Two-stamened, spikes very long fleshy naked, leaves lanceolate-ovate obliquely-toothed, stem even.

[3. Verbena jamaicensis. Jamaica Vervain.

Lin. spec. 27. syst. 66. Reich. 1. 52. Willd. 1. 115. hort. cliff. 10. Jacqu. obs. 4. 6. t. 85. Brown. jam. 116. n. 2. Sloan. jam. 1. 171. t. 107. f. 1.

Valerianoides. Boerb. lugdb. 2. 270.

Two-stamened, spikes very long fleshy naked, leaves spatulate-ovate serrate, stem rough-haired.

4. Verbena mutabilis. Changeable Vervain.

Lin. spec. ed. Willd. 1. 115. Jacqu. collect. 2. 334. icon. rar.

Two-stamened, spikes very long fleshy naked, leaves ovate produced at the base toothed rugged tomentose beneath, stem shrubby.

5. Verbena aristata. Awn-bracted Vervain.

Vahl ecl. 2. 2.

Two-stamened, leaves oblong serrate, spikes elongated, bractes ovate acuminate longer than the seed, stem shrubby.

6. Verbena prismatica. Prism-calyxed Vervain.

Lin. spec. 27. Reich. 1. 53. Willd. 1. 116. Jacqu. collect. 2. 301. icon. rar. Brown. jam. 115. n. 1. Sloan. jam. 1. 172. t. 107. f. 2. Pluk. phyt. t. 70. f. 1.

Two-stamened, spikes loose, calyxes alternate prismatic truncate awned, leaves ovate obtuse.]

7. Verbena mexicana. Mexican Vervain.

Lin. spec. 28. Reich. 1. 53. Willd. 1. 116. V. mex. trachelii folio, fructu aparines. Dill. elth. 407. t. 302. f. 389.

Blairia mexicana. Gært. fruct. 1. 265.

Two-stamened, spikes loose, calyxes of the fruit reflexed rounded-twin hispid.

8. Verbena stoechadisfolia.

Lin. spec. 27. Reich. 1. 53. Willd. 1. 116. Brown. jam. 116. n. 4. t. 3. f. 2. Pluk. spec. 6. ic. 162. f. 1. (Lavandula.)

Sherardia nodiflora stoechadis ferratifolii folio. Vaill. sex. 49.

Two-stamened, spikes ovate, leaves lanceolate serrate-plaited, stem shrubby.



9. *Verbena globiflora*. Globe-flowered Vervain.  
*Lin. spec. ed. Willd.* 1. 116: *L'Herit. stirp.* 1. 23.  
*t.* 12.  
*Nepeta maxima*, flore albo, spica habitiore. *Sloan.*  
*jam.* 1. 173. *t.* 108. *f.* 1.  
*Four-stamened*, spikes in globular heads, leaves lanceolate  
*crenate wrinkled rugged, stem shrubby.*
10. *Verbena javanica*. Java Vervain.  
*Lin. spec. ed. Willd.* 1. 117. *Burm. ind.* 12. *t.* 6. *f.* 2.  
*Blairia javanica*. *Gärtn. fruct.* 1. 265.  
*Four-stamened*, spikes cylindrical, leaves rhomb-ovate  
*crenate, stem erect.]*
11. *Verbena nodiflora*. Creeping Vervain.  
*Lin. spec.* 28. *syst.* 66. *Reich.* 1. 54. *Willd.* 1. 117.  
*hort. cliff.* 11. *fl. zeyl. n.* 399. *Burm. ind.* *t.* 6. *f.*  
*1.* *Brown. jam.* 116. *n.* 3. *Gron. virg.* 7. *Swartz*  
*obs.* 17. *Forst. prodr. n.* 17. *Desfont. atlant.* 1. 15.  
*V. nodiflora*. *Bauh. pin.* 269. *prodr.* 125. *Matth.*  
*742.* *Dodart ic.* *Imperati* 673. *ic.* *Bauh. hist.* 3.  
*444.* *Raii hist.* 536. *Mor. hist. f.* 11. *t.* 25. *f.* 8.  
*V. nodifl. cap. obl. f.* *V. nodifl. Imperati, Barr. ic.*  
*855.*  
*V. repens nodiflora*. *Park. theat.* 675.  
*Blairia nodiflora*. *Gärtn. fruct.* 1. 266.  
*Zapania nodiflora*. *Lamarck illustr. n.* 248. *t.* 17. *f.* 2.  
*Four-stamened*, spikes conical-headed, leaves wedge-  
*shaped, toothed, stem creeping.*
12. *Verbena bonariensis*. Cluster-flowered Vervain.  
*Lin. spec.* 28. *Reich.* 1. 54. *Willd.* 1. 117. *hort.*  
*cliff.* 11. *ups.* 8. *Gärtn. fruct.* 1. 315. *Kniph.*  
*orig. cent.* 2. *n.* 98. *Dill. elth.* 406. *t.* 300. *f.*  
*387.*  
*Four-stamened*, spikes in bundles, leaves lanceolate em-  
*bracing.*
13. *Verbena hastata*. Halberd-leaved Vervain.  
*Lin. spec.* 29. *Reich.* 1. 54. *Willd.* 1. 118. *hort.*  
*ups.* 8. *Herm. parad.* 242. *ic.*  
*Four-stamened*, spikes long acuminate, leaves hastate.
14. *Verbena triphylla*. Three-leaved Vervain.  
*Lin. spec. ed. Willd.* 1. 118. *L'Herit. stirp.* 1. 21.  
*t.* 11. *Curt. magaz. t.* 367.  
*Aloysia citrodora*. *Ortega et Pal. diff.*  
*Four-stamened flowers* paniced, leaves in threes, stem  
*shrubby.*
15. *Verbena lappulacea*. Burry Vervain.  
*Lin. spec.* 28. *syst.* 66. *Reich.* 1. 53. *Willd.* 1. 118.  
*Jacqu. obs.* 1. 37. *t.* 24. *amer. pict.* 10. *t.* 9.  
*Swartz obs.* 16. *Brown. jam.* 116. *n.* 5. *Sloan.*  
*jam.* 1. 174. *t.* 110. *f.* 1. (*Sco. & Mia.*)  
*Burseria Loeff. it.* 194. *n.* 69.  
*Blairia Houst.* *Amm. herb.* 277.  
*Four-stamened*, fruiting calyxes roundish inflated, seeds  
*echinate.*
16. *Verbena Forskælii*. Arabian Vervain.  
*Lin. spec. ed. Willd.* 1. 118. *Vahl symb.* 3. 6.  
*Phryma Forsk. cat. Arab.* 115.  
*Four-stamened*, fruiting calyxes roundish beak-acumi-  
*nate reflexed, seeds rounded, wrinkled.]*
17. *Verbena carolina*. Carolina Vervain.  
*Lin. spec.* 29. *syst.* 66. *Reich.* 1. 54. *Willd.* 1.  
*119.* *Dill. elth.* 407. *t.* 301. *f.* 388. *Raii suppl.*  
*app.* 249. *n.* 10.  
*Four-stamened*, spikes filiform, leaves undivided lanceolate  
*serrate bluntish subsessile.*
18. *Verbena urticifolia*. Nettle-leaved Vervain.  
*Lin. spec.* 29. *syst.* 66. *Reich.* 1. 55. *Willd.* 1. 119.  
*hort. cliff.* 11. *ups.* 9. *Gron. virg.* 7. *Sabb. hort.*  
*rom.* 3. *t.* 55. *Kniph. orig. cent.* 11. *Mor. hist.*  
*3.* 418. *f.* 11. *t.* 25. *f.* 3.  
*V. peregrina*. *Dod. pempt.* 125.  
*V. urticæ folio canadensis*. *Hort. par. & Mor. prælud.*  
*Raii hist.* 536.  
*Four-stamened*, spikes filiform paniced, leaves undivided  
*ovate serrate acute petioled.*
19. *Verbena scabra*. Rugged-leaved Vervain. *Vahl*  
*ecl.* 2. 2.  
*Four-stamened*, spikes filiform, fruiting calyxes patu-  
*lous ovate, leaves ovate very rugged serrate, upper-*  
*most alternate.*
20. *Verbena Aubletia*. Cut-leaved Rose Vervain.  
*Lin. syst.* 66. *Willd.* 1. 119. *suppl.* 86. *Ait. kew.*  
*1.* 33. *Jacqu. hort.* 2. 82. *t.* 176. *Retz. act.*

- holm.* 1773. 144. *t.* 5. *Medicus act. palat.* 3.  
*phys.* 194. *t.* 7. *Curt. magaz. t.* 308.  
*Obletia*. *Journ. de Rozier, introd.* 1. 367. *t.* 2.  
*Buchnera canadensis*. *Lin. mant.* 88. *syst. ed.* 13. 478.  
*Four-stamened*, spikes loose solitary, leaves trifid gasbed.]
21. *Verbena spuria*. Canadian Vervain.  
*Lin. spec.* 29. *Reich.* 1. 55. *Willd.* 1. 119. *hort. ups.* 8.  
*V. humilior, foliis incis.* *Clayt. virg.* 8.  
*V. urticæ folio canadensis, foliis incis.* *flore majore.*  
*Hort. reg. par.*  
*Four-stamened*, spikes filiform, leaves multifid-laciniate,  
*stems numerous.*
22. *Verbena officinalis*. Common Vervain.  
*Lin. spec.* 29. *syst.* 67. *Reich.* 1. 55. *Willd.* 1.  
*120.* *hort. cliff.* 11. *fl. succ. n.* 30. *mat. med.* 38.  
*Woodv. suppl. t.* 218. *Huds. angl.* 249. *Wither.*  
*arr. ed.* 3. 520. *Smith brit.* 609. *engl. bot. t.*  
*767.* *Curt. lond.* 1. *t.* 41. *Relb. cant. ed.* 2. *n.*  
*476.* *Sibth. oxon. n.* 515. *Abbot. bedf. n.* 423.  
*Fl. dan. t.* 628. *Hall. belv. n.* 219. *Hoffm.*  
*germ.* 9. *t.* 2. *Roth. germ.* 1. 254. *Pellich pal.*  
*n.* 26. *Krock. fles. n.* 40. *Neck. gallob.* 15.  
*Scop. carn. n.* 749. *Crantz austr.* 328. *Seuv.*  
*monsp.* 279. *Villars dauph.* 2. 362. *Allien.*  
*pedem. n.* 160. *Desfont. atlant.* 1. 16. *Thunb.*  
*jap.* 22. *Lour. cochinch.* 27. *ed. Willd.* 33. *Ludw.*  
*est. t.* 149. *Kniph. orig. cent.* 4. *n.* 92. *Sabb.*  
*hort. rom.* 3. *t.* 56. *Bulliard herb. t.* 215. *La-*  
*mark illustr. n.* 236. *t.* 17. *f.* 1. *Plenck ic. t.* 17.  
*Blackw. t.* 41. *Regnault bot. ic.*  
*V. communis cœruleo flore.* *Bauh. pin.* 269. *Tournef.*  
*inst.* 200. *Dodart ic.* *Mor. hist. f.* 11. *t.* 25. *f.* 1.  
*Verbena.* *Riv. mon. t.* 56.  
*V. vulgaris.* *Bauh. hist.* 3. 443. *Clus. hist.* 2. 45. 2.  
*Raii hist.* 535. *syn.* 236.  
*V. communis.* *Ger.* 580. 1. *emac.* 718. 1.  
*V. mascula.* *Brunf.* 1. 119.  
*V. mas f. recta & vulgaris.* *Park. theat.* 675. 1.  
*Verbenaca.* *Matth.* 1052. *Camer. epit.* 797. *Trag.*  
*210.*  
*V. recta.* *Dod. pempt.* 150. 1.  
 3. *V. lusitanica latifolia procerior.* *Tournef. inst.* 200.  
*Miller.*  
*Four-stamened*, spikes filiform paniced, leaves multifid-  
*laciniate, stem subsolitary.*
23. *Verbena supina*. Trailing Vervain.  
*Lin. spec.* 29. *syst.* 67. *Reich.* 1. 55. *Willd.* 1.  
*120.* *Desfont. atlant.* 1. 17. *Kniph. cent.* 12. *n.* 99.  
*Clus. hist.* 2. 46. *Dod. pempt.* 150. 2. *Bauh.*  
*hist.* 3. 444. *Raii hist.* 536.  
*V. supina f. femina.* *Park. theat.* 675. 2.  
*V. sacra.* *Ger.* 580. 2. *emac.* 718. 2.  
*V. tenuifolia.* *Bauh. pin.* 269. *Tournef. inst.* 200.  
*Mor. hist. f.* 11. *t.* 25. *f.* 7.  
*Four-stamened*, spikes filiform solitary, leaves bipinnatifid.

## DESCRIPTIONS, &amp;c.

1. This arises with a shrubby stalk near three feet high, divided into three or four branches. Leaves oblong-ovate, placed by pairs, deeply serrate, deep green above, but hoary beneath; their foot-stalks are short, and have leafy borders running from the base of the leaves. The flowers grow in thick terminating spikes about a foot in length; they are large, of a fine blue colour, and have small acute-pointed leaves intermixed with them. They come out in June and July, and when the season proves warm, the seeds ripen in autumn. It is biennial, and a native of South America. The seeds were sent to Mr. Philip Miller by Mr. Robert Millar, from Panama.

2. [This is an annual plant, very much resembling the jamaicensis, but easily distinguished from it by the stem and branches being smooth, except the base of the leaves and the part of the branches between the leaves, which are ciliate. The leaves also are much narrower, being truly lanceolate and drawn to a point at both ends. The spike is the same, but the colour of the corolla is purple.]

Linneus distinguishes this from the next species, by the stem being green, and the leaves being waved, and not at all ciliate. Whereas in that the stem is purple, and the leaves serrate, and ciliate at the base.

\* Jacquin.

Native



Native of Ceylon. Flowers in august, and was cultivated by Mr. Miller in 1732<sup>1</sup>. But Mr. Miller's *indica* seems to be the *jamaicensis*; for he says it is a native of most of the islands in the West Indies, and quotes Sloane's name. What he calls *jamaicensis* (n. 12.) he says is a perennial plant, with shorter spikes, and small white flowers, and that it was said to come from Senegal in Africa. Here is some unaccountable blunder; but it cannot be the *jamaicensis* of Linneus.

3. Stem three or four feet high, very much branched and diffused, and being suffrutescent at the base it seems to be more than annual. Stem and branches rough with hairs. Leaves opposite, ovate, obtuse or acute, serrate, gradually and for a considerable length attenuated at the base. From the axil between two opposite branches comes forth a fleshy spike, a foot long, unequally cylindrical, stiff and green; the flowers blow in succession, beginning at the bottom, very few together, violet-coloured, with the throat and long slender incurved tube white: Anthers sulphur-coloured. After the corolla is fallen, the style stands out of the spike<sup>m</sup>.

After each flower follows in a greenish-brown calyx or husk, one seed or rather husk, something like wheat in shape and colour, only smaller, and easily divisible into two, both being close covered with the same membrane: they are in a cavity on the side of the spike, and are covered with three sharp, brownish, membranous leaves.

Native of Jamaica, Barbadoes, and other islands of the West Indies.

It is much used in clysters for the belly-ach, and by some in poultices, with onions, for the dropsy. A decoction of it with or without Lime-roots, drank very warm, is counted a powerful sudorific, and good in the dropsy. It is much in repute among the Indians and Negroes, for the cure of most diseases<sup>n</sup>. Jacquin remarks that the plant has an herbaceous taste, somewhat like the green pod of the kidney-bean, with a slight pungency on the tongue.

Cultivated in 1714, by the Dutchess of Beaufort. Biennial<sup>o</sup>.

4. This is an upright branchy shrub with a somewhat square trunk of about six feet high; the younger branches are sharply tetragonal, greener, and more villose: the leaves are opposite, footstalked, ovate, sharp, serrated, wrinkled, roughish and villose above, tomentose beneath: their length is about five inches: the spike is terminal, fleshy, cylindric, somewhat villose, leafless, and at length about a foot and half long: the flowers are at first extremely deep scarlet, and afterwards rose or flesh-coloured: the bractes are longer than the calyxes, green, villose, and upright, with the two exterior teeth longer than the rest and setaceous. Native of South America<sup>p</sup>.

5. This is a shrub, with four-cornered branches, of a somewhat ash-coloured purple colour. Leaves opposite, on short petioles, an inch and half long, attenuated to both ends, acute at the tip, equally serrate, quite entire at the base, having minute villose hairs scattered over them, nerved above, nerved and veined beneath; nerves hoary. Spikes terminating, often half a foot long, imbricate. Bractes ovate, subciliate, acuminate, drawn out into an awn almost as long as the bracte. Rachis hollowed out alternately. Calyx shorter than the bracte: flowering calyx spreading a little and curved outwards; fruiting concealed within the cavity of the rachis, angular, the side opposite to the cavity of the rachis convex, the other flat and margined. Style twice as long as the calyx: stigma slightly bifid. Seeds two.—It differs from *V. mutabilis* in having the leaves gradually narrowing into the petiole, not suddenly acuminate; the bractes ovate, ending in an awn, not lanceolate and acute; the calyxes shorter than the bracte. Found in South America by von Rohr<sup>q</sup>.

6. This is a shrub growing in the Caribbee islands: the stem and branches are round, smooth, and armed with straight, scattered, black spines: the leaves are bipinnate, often of four pair, sometimes of five or three; with an uncertain number of pinnules, twelve, more or

less: they are linear-oblong, sharpish, smooth, subsessile, and small: the racemes are lax, terminal, and axillary; about half a foot long; with the proper footstalks about two inches long, spreading, and at the tips collecting the flowers, which are of a pale yellow, into a roundish head: they are sessile, and of a fragrant smell.

Native of Jamaica. Annual<sup>r</sup>.]

7. This has a shrubby stalk, which rises five or six feet high, and divides into several branches. Leaves sessile, oblong, serrate, ending in acute points, two inches long, one inch broad near the base, of a light green colour on both sides. The branches are terminated by slender loose spikes of small pale flowers, the calyxes of which afterwards become swelled and almost globular; they are reflexed, and set with stinging hairs.

[Stem four-cornered, rugged at the edges. Branches opposite, dichotomous at top. Racemes at the forks long. Leaves cordate, oblong, rugged, on very short petioles<sup>s</sup>.

The leaves, stem, and especially the seeds are so hispid as to adhere obstinately to the fingers and clothes. Flowers pale purple. Spikes mostly three together, from a long span to a foot or even two feet in length, unbranched. Seeds two, inclosed in a hispid calyx, resembling the fruit of *Galium Aparine*. At first they are erect and quadrangular, but afterwards become round, and hang down, so that many of the seeds fall out. Native of Mexico. It flowered in the Eltham garden in 1726, in september; but in the following years in july and august<sup>t</sup>.

Gartner describes the two seeds as bony, united into an ovate globule, on one side convex and tubercled, on the other smooth, flattish or slightly concave, pale; they are fastened to the bottom of the calyx, which covers them, and serves for a pericarp.]

It flowers late, but in good years the seeds ripen in England.

8. This rises with a shrubby branching stalk five or six feet high. Leaves opposite on short footstalks, lanceolate, two inches long, and half an inch broad, serrate, the teeth of the jags coming from the point of a fold or plait. Flowers on long naked stalks from the axils, blue, and collected in oval heads. They appear late in autumn, and unless the season prove warm the seeds rarely ripen in England; but the plants may be kept two or three years in a warm stove.

[Browne says it is biennial or triennial, and stretches by a slender woody stalk to the length of five or six feet. It has a great number of oblong serrate veined leaves, that have a fine down underneath.

Native of Jamaica, and the continent of America.]

Mr. Miller had the seed from La Vera Cruz by Dr. Houstoun. He therefore cultivated it before 1733, in which year Dr. Houstoun died.

[9. This is a fragrant shrub. Stem erect, branched, ash-coloured, the height of a man. Branches erect, round, like the stem. Branchlets rugged, pithy, bay-coloured. Shoots villose, rugged, from four-cornered round, green at top. Leaves opposite, seldom three together, spreading, sharp at both ends, crenate or bluntly serrate, except at the base, where they are entire, attenuated into the petiole, marked with lines above, and with erect, alternate, prominent nerves beneath, very much veined, wrinkled, villose, rugged, reclining, permanent, fragrant. Petioles shorter than the leaf, round on one side, grooved or flat on the other, villose, edged with the decurrent leaf. Heads terminating, axillary, peduncled, roundish, bracted, imbricate. Peduncles erect, single or two from each axil, scarcely longer than half the leaf, villose, rugged. Flowers sessile, one to each bracte, very close, compressed, white. Bractes imbricate, ovate, acute, hirsute, longer than the calyxes, permanent. Calyx two-parted, compressed, very small: segments roundish, one sometimes two-toothed, concave, erect, hirsute; becoming two roundish concave membranaceous villose arils, each clothing one of the seeds, which are hemispherical, pressed close, flat on one side, gibbous and smooth on the other. The perianth becomes a bipartile or two-leaved aril not only in this, but in *mexicana* and *nodiflora*.

<sup>1</sup> Hort. kew. <sup>m</sup> Jacquin. <sup>n</sup> Sloane. <sup>o</sup> Hort. kew.  
<sup>p</sup> Jacquin. <sup>q</sup> Vahl.

<sup>r</sup> Jacquin.

<sup>s</sup> Linn. spec.

<sup>t</sup> Dill. elth.



This species differs from *V. stoechadifolia* in having flat lanceolate leaves, whereas in that they are linear and plaited:—from *V. triphylla* in having the flowers in heads, not paniced, the leaves opposite, not in whorls:—from *V. nodiflora*, in having a shrubby stem. Native of South America, probably about Buenos Ayres. Cultivated many years back in the Paris garden; where it is in flower or fruit the whole year<sup>a</sup>.

10. Spikes subcylindrical, thicker at the base. Calyx, when ripe, two-valved. Seeds united into a globe, plano convex, smooth, whitish<sup>x</sup>. Native of Java.

11. Roots simple, filiform. Stems herbaceous, creeping, ascending, from three inches to a foot in length, subdivided, roundish, marked with lines, smooth. Leaves opposite and decussated, on short petioles, cuneate-obovate, serrate-toothed, nerved, thickish, smooth on both sides, having pores underneath. Peduncles solitary, terminating, erect, angular. Spike terminating, roundish, composed of small whitish or rose-coloured flowers, separated by bractes, which are sessile, imbricate, square, acuminate, concave, coloured. Calyx compressed a little, two-toothed: teeth erect, keeled, ciliate at the back. Tube of the corolla longer than the calyx, but scarcely curved in: border slightly five-cleft; the upper segment emarginate, almost upright, shorter; the anterior ones equal, spreading; the middle one three-notched. Anthers twin, yellow. Germ two-grooved: style short, thick: stigma subcapitate, green. Seeds two, roundish, flatter on one side, covered by a membrane forming a sort of thin capsule<sup>y</sup>. Native of the four continents: found near Naples, and in the island of Sicily; in the East Indies and the island of Ceylon; in Barbary near Casfa; in America in the province of Virginia, and some of the West India islands; and in the isle of Tanna in the South seas. Mr. Miller had the seeds from Jamaica by Dr. Houstoun; he therefore cultivated it before 1733.]

12. This has four-cornered stalks which rise to the height of five or six feet, sending out side branches by pairs. Leaves three inches long, and about three quarters of an inch broad, of a pale green colour, and serrate. Spikes terminating, clustered, the longest about two inches, the others about half as long. Flowers blue, appearing late in summer, and not often succeeded by good seeds in England.

[Seeds four, oblong, on one side a little convex, striated, ferruginous, on the other somewhat angular, whitish, rugged with minute callose dots, surrounded by a prominent rim<sup>z</sup>.

Native of Buenos Ayres. First raised in the Eltham garden from seeds taken from dried specimens sent from thence. The flowers are small, slightly curved in, tinged with purple<sup>a</sup>.]

13. This sends up many four-cornered furrowed stalks from the root, which rise five or six feet high. Leaves opposite, oblong, about three inches long, and an inch broad near the base, ending in acute points, deeply serrate on slender petioles. From the same joints come out short branches, set with smaller leaves of the same form. The stalks are terminated by spikes of blue flowers in clusters, which appear in august; and if the autumn prove favourable, the seeds will ripen about the middle of October. Native of Canada. Mr. Miller says it grows naturally in most parts of North America.—[It was cultivated by him in 1731<sup>b</sup>.

14. This is a very sweet-smelling under-shrub. Stem upright, branched, round, ash-coloured, a fathom in height. Branches three or four in a whorl, spreading very much, rugged. Branchlets six-cornered, bay-coloured. Leaves generally three together, sometimes four, spreading, linear-lanceolate, sharp at both ends, entire, scarcely apparently muricate on the upper surface and especially at the edges, rugged, nerved; the nerve channelled above, prominent beneath; nervelets spreading, parallel, simple; of a bright green-colour, and very pleasant smell like that of the lemon. In younger plants the leaves are lanceolate, loosely toothed or serrate. Petioles very short, round on one side, channelled on the other. Flowers in an erect terminating panicle, composed of spikes, striated, villose,

bracted, with a few leaves intermixed at bottom. Spikes whorled by threes, spreading; the lower ones axillary; the upper ones sometimes vertically double. Each flower is erect; sessile, very pale violet, sweet. Bractes ovate, acuminate, concave, under the flowers; and there are other smaller ones under the spikes. Calyx four-toothed, villose, dusky: segments acute, erect; Tube of the corolla pubescent, hairy within, violet; length of the calyx: border four-parted, spreading, nearly equal; segments roundish, obtuse, somewhat waved: the upper one simple, entire or bifid, the lower three-parted, wider but scarcely longer. Anthers ovate, acute, two-celled, the lower within the throat, the upper within the tube. Germ superior, twin obovate, two-grooved, villose, dusky: style shorter than the stamens: stigma thickish, subbilobate. Pericarp none; but the calyx contains the seeds at its bottom, and is two-valved and splits from back to front. Seeds two joined, but separating like the calyx, oblong, flat, and hoary on one side, rounded and pubescent on the other.—It is known by its shrubby stem, leaves in whorls, flowers in panicles, its four stamens and two seeds, and the smell of the whole plant like lemon.

Native of South America. Found in Chili by Dombey, and by Commerçon at Buenos Ayres; whence it was introduced into the Spanish gardens, where it flowers in the open air. Ortega and Palau, professors of botany at Madrid first described this plant, and named it *Aloysia* in memory of Louis Prince of the Asturias<sup>c</sup>. It was introduced here in 1784, by Professor John Sibthorp, who obtained it at Paris, on his return from Greece.

Monf. L'Heritier has subdivided the tetrandrous Vervains from the seed. This and *globiflora*, *stoechadifolia*, and *nodiflora* have two seeds: *bonariensis*, *hastata*, *carolina*, *urticifolia*, *officinalis*, *supina* and *Aubletia* have four seeds.

15. Stem herbaceous, a foot high, erect, somewhat branched, brittle, quadrangular, more contracted at the base of the petioles, striated, pubescent. Leaves opposite and decussated, ovate, acute, serrate, nerved, hispid, on four-cornered pubescent petioles. Racemes long, loose, composed of scattered flowers, directed one way, of a very pale blue colour, on short pedicels, having minute bractes under them. Calyx equal, hispid. Corolla almost equal: tube twice as long as the calyx; segments of the border acute, three superior a little distinct, two inferior. Germ ovate: style short: stigma globular. Capsule four-cornered, spiny at the corners, ovate at the base, bipartite, four-celled, covered with the inflated calyx. Seeds four, oblong<sup>d</sup>.

The obtuse stigma is reflected. Each of the seeds is two-celled, and contains two kernels<sup>e</sup>.

In the West Indies it is reputed a fine vulnerary and subastringent, and is commonly applied to bleeding wounds in men or cattle by the inhabitants of the country in Jamaica; where it is thought to be so powerful a styptic or astringent, as to stop the hæmorrhage even when some of the more considerable arteries are cut; and it may be esteemed an excellent application in all manner of sores, where the habit is relaxed<sup>f</sup>. Native of the West Indies, in stony waste places. Different enough, according to Loeßling, Houstoun, &c. to form a distinct genus.

16. Stem herbaceous, erect, four-cornered, smooth. Leaves petioled, those on the stem ovate, those on the branchlets oblong; all rugged, somewhat strigose, obtusely serrate, acute. Racemes terminating, quite simple, a foot long. Flowering calyxes spreading very much, villose, attenuated to both ends, shortly pedicelled; having a bristle-shaped bracte, the length of the pedicel: fruiting calyxes reflexed, roundish, terminated by a neck, villose. Seeds two, cohering, rounded, compressed, very much wrinkled, having two or three small teeth on the outer sides.

Very nearly allied to the preceding, but more robust, the stem stiffer, the leaves more rugged above, the serratures of the leaves deeper, the seeds not oblong and echinate, but roundish and toothed, convex on the outer side, and bent in at the tips. In the calyx it ap-

<sup>a</sup> L'Heritier. <sup>x</sup> Gærtner. <sup>y</sup> Swartz. <sup>z</sup> Gærtner.

<sup>a</sup> Dill. elth.

<sup>b</sup> Hort. kew.

<sup>c</sup> L'Heritier.

<sup>d</sup> Swartz.

<sup>e</sup> Jacquin.

<sup>f</sup> Browne.

proaches



proaches to the mexicana, but the seeds are not hispid. Native of Arabia Felix<sup>g</sup>.]

17. Root perennial. Lower leaves heart-shaped and rough, five inches long, and three inches and a half broad near the base, ending in acute points; they are of a dark green colour and ferrate. The stalks rise six feet high, are four-cornered, branch towards the top, and are terminated by slender spikes of white flowers, formed into panicles.

[According to Dillenius, the stem is only a foot and half or two feet high, obtusely quadrangular; the lower leaves resemble those of Baulm, all are rough to the touch, though they are not very hairy, except on the lower part; the flowers are small, pale slightly tinged with purple, divided into five segments which are nearly equal; the seeds are oblong, smooth, black when ripe. Native of Carolina.] Mr. Miller says, the seeds were sent him from Philadelphia, by Dr. Bensel, and he does not quote the Hortus Elthamensis.

18. Stems four-cornered about three feet high. Leaves three inches long, and an inch broad in the middle, ending in acute points, ferrate, and placed by pairs. Panicles terminating, long, slender, composed of small white flowers ranged loosely, appearing in July, and succeeded by seeds which ripen in autumn. Native of most parts of North America. [Cultivated by Mr. Miller in 1731<sup>h</sup>. He says it is biennial; but it is marked in Linneus and the Kew Catalogue as perennial.

19. Stem herbaceous, erect, four-cornered, villose. Leaves petioled, the lower opposite, the upper alternate, an inch and half long, diminishing gradually upwards, ovate, grossly and equally ferrate, acute, the upper surface rugged with minute raised dots, marked with lines along the nerves, beneath less rugged, villose along the nerves. Spikes from the uppermost axils, solitary; the terminating one elongated, with three branches at the base that are much shorter, filiform. Flowers alternate or opposite, copious, small, approximating. At the base of the calyx a bristle-shaped bracte. Fruiting calyx scarcely bigger than a mustard seed, angular. Seeds four, smooth, linear-three-sided, slightly wrinkled at the back. Allied to Verbena urticifolia. Native of South America, where it was found by von Rohr<sup>i</sup>.

20. Root annual, (or rather biennial.) Stem a foot high, (or seldom more than two feet in our gardens,) erect, four-cornered, somewhat hispid, dichotomous, brachiate. Branches from each axil. Leaves opposite, petioled, subcordate, sublobate, gash-ferrate, wrinkled, somewhat rugged. Stipules none. Spikes terminating, solitary, oblong, peduncled: flowers in bundles. Bractes linear, the length of the calyx, to each. Calyx five-cornered: teeth acute, the two upper ones shorter. Tube of the corolla filiform, twice as long as the calyx: throat gibbous downwards, closed by hairs: border flat, almost equal; segments oblong, emarginate, obtuse, blood-red. Two stamens in the throat, two within the tube. Stigma thickish, bifid; the lower segment acute. Seeds four, close, shorter than the calyx. Linneus had first made it a Buchnera; but it differs from that genus, in having four, distinct, naked seeds. Native of America<sup>k</sup>.—Introduced in 1774, by Mons. Richard. It flowers in June and July<sup>l</sup>. The extreme brilliancy of its colour renders it a very ornamental greenhouse plant<sup>m</sup>.]

21. Root biennial. Bottom leaves six inches long, deeply jagged, and ferrate, rough, and of a deep-green colour. Stalks two feet high, having a pair of smaller leaves of the same shape at each joint. The upper part branches out into numerous foot-stalks, forming panicles of blue flowers; appearing in July and August. If the season prove favourable, the seeds will ripen in autumn. Native of North America.] Cultivated by Mr. Miller in 1759.

22. Root perennial, branching, woody. From each of its summits rises a single stem, curved at the base, then erect, from one to two feet high, square, leafy, rough with little prickles, panicked at the top with

several opposite slender spikes of flowers. Leaves opposite, deeply cut and jagged; the uppermost three-cleft or simple. Spikes terminating in pairs, forming a panicle. Flowers many, small, sessile, each accompanied by a little bracte. Calyx rough. Corolla very pale lilac; its tube inclosing the four short curved stamens. Seed when young enfolded in one common skin, which is almost obliterated as they ripen, and then each appears marked with excavated dots at its upper part<sup>n</sup>.

Native of Europe, Barbary, China, Cochinchina and Japan. With us, by road sides, in dry sunny pastures and waste places about villages.] Mr. Miller remarks, that although Vervain is very common, yet it is never found above a quarter of a mile from a house, which has occasioned its being called Simpler's Joy. It is indeed pretty general near the entrances into towns and villages, but it is by no means confined to such situations, and Dr. Withering observes, that it is very plentiful at the foot of St. Vincent's rocks, all along the course of the river. It begins to flower in July, and continues through the autumn.

Among the ancients, the Verbena was held sacred, and was employed in making leagues, by ambassadors, in sacrificial rites, and in incantations; hence it was suspended about the neck as an amulet, and was thought to be good against serpents and venomous bites, and was recommended as a sovereign medicine for a variety of diseases<sup>o</sup>.

Though Vervain is destitute of odour, and manifests to the taste but a slight degree of bitterness, and astringency, yet even in modern times it has been accounted a sovereign remedy in a multitude of disorders. Schroder recommends it in upwards of thirty complaints. Bruised and appended to the neck, it was used in inveterate head-achs, and Forestus relates a remarkable instance of its service in this respect. In still later times we are told that the most severe and obstinate head aches have been cured by applying it as a cataplasm. It has however fallen into disuse in Britain, nor has Mr. Morley's pamphlet, written professedly to recommend its use in scrophulous cases, had any effect in restoring its medical character. He directed the root to be tied with a yard of white sattin ribband round the neck, and to remain there till the patient recovered. But he had recourse also to infusions and ointments prepared from the leaves of the plant; and occasionally called in the aid of the most active medicines of the Materia Medica<sup>p</sup>.

This species having four stamens, two of which are longer than the two others, our English authors have placed it in the class Didynamia. And the majority of the species having four stamens, they would all seem more naturally to appear in that class, among other plants to which they are closely allied<sup>q</sup>.]

β. The Portugal variety, noticed by Tournefort, is taller, the leaves are broader, and the flowers larger. Mr. Miller himself does not think it specifically different from the common sort.

23. Root biennial, (others say annual.) Stalks near two feet high, branching out greatly. Leaves sessile. Flowers disposed in long loose spikes singly at the end of the branches; they are of a light blue colour, and larger than those of the common sort. It flowers in July and August, and the seeds ripen in autumn.

[Stem roundish, compressed a little, and somewhat pubescent. Flowers blueish<sup>r</sup>.

It is allied to the common sort, but is much smaller; and differs in having the stems prostrate and villose; the leaves small and pinnatifid-lacinate; the flowers more closely clustered and only half the size. Desfontaines observed a variety in the Paris Garden that was erect and almost smooth<sup>s</sup>.

Native of Spain, Portugal and Algiers.—It appears from Parkinson, that it was cultivated here in 1640<sup>t</sup>.

Mr. Miller has some other species from America, all diandrous or belonging to the first section.]

<sup>g</sup> Vahl.

<sup>h</sup> Hort. kew.

<sup>i</sup> Vahl.

<sup>k</sup> Linn. suppl.

<sup>l</sup> Hort. kew.

<sup>m</sup> Curtis.

<sup>n</sup> Engl. bot. <sup>o</sup> Pliny, l. 25. c. 9. <sup>p</sup> Virg. Georg. 4. 131. and Martyn's note. <sup>q</sup> Woodville.

<sup>r</sup> Engl. bot. Curtis. <sup>s</sup> Linn. syst. <sup>t</sup> Desfontaines. <sup>u</sup> Hort. kew.



24. *Verbena americana*. *Panama Vervain*. Mill. *dict. n.* 10.

*Sherardia americana*, *verbenæ folio subrotundo crasso, floribus cæruleis, spica longissima & crassissima*. Millar.

*Two-stamened, spikes fleshy almost naked, leaves ovate obtuse indistinctly crenate petioled.*

Annual. Stalks about a foot high. Leaves on long foot-stalks, and from the same joints branches sustaining three or four small leaves of the same shape; they are of a light green colour. The stalks are terminated by thick fleshy spikes of blue flowers, which appear late in autumn, so that unless the season prove warm, the seeds will not ripen in England. They were sent him from Panama, where it grows in moist places.

25. *Verbena senegalensis*. *Senegal Vervain*.

*V. jamaicensis*. Mill. *dict. n.* 12.

*Two-stamened, spikes shorter, leaves ovate serrate hoary underneath.*

Perennial. Stalk branching, near two feet high. Leaves in pairs, two inches and a half long, and almost two inches broad, deep green above but hoary underneath, on pretty long foot-stalks. Flowers in fleshy spikes at the end of the branches; these spikes are shorter and not so thick as those of the former sorts. The flowers are small and white, and make no great appearance: they appear in June and July, and the seeds ripen in autumn, but the plants may be preserved two or three years in a warm stove. The seeds were sent from Paris, and were said to come from Senegal in Africa. It cannot be the same with *jamaicensis*, *n.* 3.

26. *Verbena fruticosa*. *Shrubby Vervain*.

Mill. *dict. n.* 14.

*Sherardia nodiflora fruticosa, foliis subrotundis serratis, Houstoun MSS.*

*Two-stamened, spikes round, leaves ovate serrate, stem shrubby branched.*

Stem three or four feet high. Leaves opposite, of a light green colour, about an inch and half long, and near an inch broad. Flowers pale blue, collected into oval heads, standing upon long naked axillary peduncles. They come out late in autumn, and are not followed by seeds in England. Found at Campeachy by Dr. Houstoun, who sent the seeds to England.

27. *Verbena angustifolia*. *Narrow-leaved Vervain*.

Mill. *dict. n.* 15.

*Sherardia spicata, folio angusto serrato, flore cæruleo. Houst. MSS.*

*Two-stamened, spikes fleshy almost naked, leaves linear-lanceolate indistinctly serrate.*

Annual. Stalk branching, a foot and half high. Leaves pale-green, three inches and a half long, and half an inch broad, ending in acute points. The branches are terminated by fleshy spikes of blue flowers, appearing in August, and in warm seasons producing seeds. Found at La Vera Cruz by Dr. Houstoun, who sent the seeds.

28. *Verbena rugosa*. *Wrinkled-leaved Vervain*.

Mill. *dict. n.* 18.

*Sherardia arborescens nodiflora foliis serratis & rugosis, flore purpureo. Houst. MSS.*

*Two-stamened, spikes ovate, leaves roundish serrate and wrinkled, stem shrubby branched.*

This has a strong woody stalk, ten or twelve feet high, covered with a light-brown bark, and sending out many woody branches on every side. Leaves of a light green colour, on short foot stalks. Flowers small, pale blue, collected into ovate heads, and standing on naked axillary peduncles. They seldom appear in this country, and do not produce seeds here. It was discovered by Dr. Houstoun growing naturally at Campeachy, whence he sent the seeds to England.

#### PROPAGATION AND CULTURE.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 15. 19. 24. 25. 26. 27. 28. These being natives of hot climates, (chiefly South America and the West Indian islands,) require care and protection. The seeds should be sown upon a hot-bed early in the spring, and when the plants are fit to remove, they should be each transplanted into a separate small pot, and plunged into a

fresh hot-bed, to bring them forward, shading them in the day time with mats until they have taken new root, and then treating them as other tender plants from the same countries.

The annual sorts must be kept in the stove or a good glass case, when they are become too tall to remain longer under the frames; for if they are placed abroad in the open air, they will not ripen their seeds here, unless the summer be very warm: and where there is a convenience of having a bark-bed in a glass-case, for plunging some of these tender annual plants, they will thrive much better, and come to greater perfection than those which are placed on shelves.

The perennial sorts may be kept in such a glass case till autumn, allowing them a large share of air in warm weather, to prevent their drawing up weak, as they increase in size; but this must be done with caution. If they be put into pots too large, they will not thrive.

Such of these as do not produce seeds here, may be increased by cuttings during the summer months, and may thus be preserved many years in a good stove.

13. 17. May be propagated by seeds sown in autumn, or by parting their roots at the same season. They are hardy enough to thrive in the open air, and love a soft loamy soil not too dry.

[14. This elegant shrub, so delightful for its fragrance, may easily be increased by cuttings, and requires only the protection of a good greenhouse or glass case. Mr. Curtis suggests, that in some parts of our island, especially near the sea, it would in all probability succeed very well in the open border. Monf. L'Heritier informs us, that it bears the open air very well in Spain, and that it may be increased by seeds and suckers as well as cuttings.]

18. 21. 23. Sow the seeds in autumn: keep them clean from weeds, and thin the plants when they are too close. Or if the seeds be permitted to scatter, the plants will come up the following spring.

[20. In favourable seasons this ripens its seeds readily, and by them it is usually propagated, being a biennial. It is preserved in the green-house.]

VERBENA. See *Achyranthes*, *Illecebrum*, *Phryma*.

curassavica. See *Ghinia*.

mas. See *Erysimum*.

VERBENACA. See *Phryma* and *Salvia*.

VERBENÆ AFFINIS. See *Petiveria*.]

VERBESINA. (Corrupted or distorted from *Forbesina*, which I suppose is from *φορβον*, food, from *φορβω*, to feed or nourish.)

Lin. gen. n. 975. Reich. n. 1058. Schreb. n. 1317.

Gært. t. 171. Juss. 188. *Synedrella*. Gært. t. 171.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. Order of *Compositæ Oppositifoliæ*. *Corymbiferae*. Juss.

#### GENERIC CHARACTER.

CAL. Common concave: leaflets oblong, channelled-concave, erect, commonly equal, in a double row.

COR. Compound radiate. Corollets hermaphrodite, many, in the disk: females about five in the ray. Proper of the hermaphrodite funnel-form, five-toothed, erect.

Female ligulate, trifid and wide or simple and very narrow.

STAM. in the Hermaphrodites: Filaments five, capillary, very short. Anthers cylindrical, tubular.

PIST. of the Hermaphrodite: Germ somewhat oblong. Style filiform, length of the stamens Stigmas two, reflexed.

In the Females: Germ somewhat oblong. Style filiform, length of the hermaphrodite. Stigmas two, reflexed.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites solitary, thickish, angular. Pappus of two awl-shaped unequal awns.

In the Females very like the others.

REC. chaffy.

#### ESSENTIAL CHARACTER.

Cal. in a double row. Florets of the ray about five: Pappus awned. Recept, chaffy.



# V E R

## SPECIES.

1. *Verbesina alata*. *Wing-stalked Verbesina*.  
*Lin. spec.* 1270. *Reich.* 3. 876. *hort. cliff.* 411.  
*upf.* 262. *Gärtn. fruct.* 2. 457. *Swartz obs.*  
313. *Brown. jam.* 319. 1. *Kniph. cent.* 4. n.  
93. *Herm. par. t.* 125. *Comm. hort.* 1. 5. t. 3.  
*Sloan. jam.* 1. 261. *Pluk. phyt. t.* 84. f. 3. *Volk.*  
*norib. t.* 106. (*Chrysanthemum*).  
*Cannabina indica*, foliis integris, alato caule. *Magn.*  
*hort.* 40. ic.  
*Leaves alternate decurrent waved obtuse.*
- [2. *Verbesina chinensis*. *Chinese Verbesina*.  
*Lin. spec.* 1270. *Reich.* 3. 876.  
*Leaves alternate petioled ovate-lanceolate serrate.*
3. *Verbesina virginica*. *Virginian Verbesina*.  
*Lin. spec.* 1270. *Reich.* 3. 876. *Gron. virg.* 138.  
*Leaves alternate lanceolate petioled, flowers corymb.*
4. *Verbesina pinnatifida*. *Pinnatifid-leaved Verbesina*.  
*Swartz prodr.* 114.  
*Bidens frutescens*, sphondylii foliis & facie. *Plum.*  
*spec.* 10. ic. 41. t. 51.  
*Leaves alternate pinnatifid.*
5. *Verbesina dichotoma*. *Forked Verbesina*.  
*Lin. syst.* 779. *Murr. in. comm. goit.* 1779 p. 15.  
t. 4.  
*Leaves opposite ovate tomentose petioled, stem dichotomous*  
*at top, the outmost internode compressed.*
6. *Verbesina biflora*. *Two-flowered Verbesina*.  
*Lin. spec.* 1272. *syst.* 779. *Reich.* 3. 877.  
*Eclipta.* *Rumph. amb.* 6. 43. t. 13. f. 1.  
*Valliamanga-nari.* *Rheed. mal.* 10. t. 79.  
*Leaves opposite oblong-ovate triple-nerved acuminate*  
*serrate, peduncles double two-flowered.*
7. *Verbesina calendulacea*.  
*Lin. spec.* 1272. *syst.* 779. *Reich.* 3. 877. *fl. zeyl.*  
n. 311. *Lour. cochinch.* 506. ed. *Willd.* 619.  
*Burm. zeyl.* 52. t. 22. f. 1. (*Caltha*).  
*Pec-Cajoni.* *Rheed. mal.* 10. 83. t. 42.  
*Leaves opposite lanceolate bluntish, peduncles long one-*  
*flowered, calyxes simple.]*
8. *Verbesina nodiflora*. *Sessile-flowered Verbesina*.  
*Lin. spec.* 1271. *Reich.* 3. 877. *amoen.* 4. 290.  
*Swartz obs.* 312. *Brown. jam.* 319. 3. *Sloan.*  
*jam.* 1. 262. t. 154. (*Chrysanthemum*).  
*Synedrella nodiflora.* *Gärtn. fruct.* 2. 456.  
*Bidens nodiflora folio Tétrahit.* *Dill. elth.* 53. t. 45.  
f. 53.  
*Leaves opposite ovate serrate, calyxes oblong sessile, cauline*  
*lateral.*
9. *Verbesina fruticosa*. *Shrubby Verbesina*.  
*Lin. spec.* 1271. *Reich.* 3. 878. *hort. cliff.* 391.  
(*Bidens*).  
*Bidens frutescens*, ilicis folio, flore luteo. *Plum. spec.*  
10. ic. 52.  
*Leaves opposite ovate serrate petioled, stem shrubby.*
- [10. *Verbesina gigantea*. *Tree Verbesina*.  
*Lin. syst.* 799. *Ait. kew.* 3. 245. *Jacqu. collect.* 1.  
53. icon. var.  
*Leaves alternate deeply pinnatifid, stem shrubby.]*
11. *Verbesina mutica*.  
*Lin. syst.* *Reich.* 3. 878. *Swartz obs.* 314. t. 8.  
f. 1.  
*Anthemis americana.* *Lin. spec. ed.* 1. 895. *syst.* 777.  
*Bidens apiifolia.* *Lin. amoen.* 5. 405.  
*Bupthalmum.* *Lin. hort. cliff.* 414.  
*Chrysanthemum.* *Sloan. jam.* 1. 263. t. 155. f. 1.  
*Raii suppl.* 315. *Plum. spec.* 10. ic. 86. f. 2.  
*Leaves trifid-laciniate serrate, stem creeping.*
- [12. *Verbesina Bosvallea*.  
*Lin. syst.* 780. *suppl.* 379.  
*Leaves multifid-capillary, stems prostrate, florets six,*  
*female one.*

## DESCRIPTIONS, &c.

1. This is a herbaceous plant, with an upright stem about two feet high, subdivided, round, winged, rough-haired. Branches alternate, erect, axillary. Leaves oblong, acuminate, angular-toothed, nerved, somewhat rugged, rough-haired. The stem has four wings formed by the leaves running down it; hence its trivial name. Peduncles elongated, terminating, pubescent, with flowers in single heads, of a deep orange

# V E R

colour. Common calyx subimbricate: the outer scales longer, obtuse, linear; inner shorter, membranaceous. In the hermaphrodite florets the style is cloven at the tip, and the stigmas are thicker and compressed. The female florets in the ray are numerous, ovate, and emarginate; the germ ovate, margined; the style cloven; and the stigmas reflexed. All the seeds are obovate, wedge-shaped, with white membranaceous wings; pappus two-awned; one awn longer than the other, hooked. Chaffs of the receptacle linear, acute, membranaceous, compressed\*.

Gärtner remarks, that the leaflets of the calyx are scarcely to be distinguished from the chaffs of the receptacle, which is oblong, nearly awl-shaped; that the petal of the radial florets are shorter than the diameter of the disk; that the chaffs are oblong, concave, pubescent on the outside; that the seeds are obovate, compressed, brown with a pale rim; that the awns of the pappus or seed-crown are bristle-shaped, the longer incurved, the shorter straight: and that this genus is *Spilanthus* with the addition of a ray.

This is a perennial plant; though Mr. Miller says it is annual.

Native of South America, and the islands; common in Jamaica, Curassao, Surinam, &c.—Cultivated in 1714, by the Dutchess of Beaufort. It flowers most part of the summer†.

Linneus remarks, that it differs very much in habit and structure from the other species, and perhaps might form a distinct genus.

2. This is a shrub, with a single, round, subtomentose stem and undivided branches from the upper axils of the leaves; which are somewhat tomentose, bluntish, petioled. Flowers terminating, solitary, peduncled. Calyx hemispherical, imbricate, tomentose. Corolla yellow: florets of the ray lanceolate, entire, many; of the disk abundant, separated by chaffs. Seeds crowned with a rim and four smooth bristles. Found in China by Osbeck‡. By the Chinese called Kaling-fa§.

3. Native of Virginia.

4. Native of Jamaica¶.

Cavanilles, in his *Icones plantarum in Hispania*, p. 67. n. 109. t. 100. has a different species under this name which he says came from Mexico, and flowered in the Royal garden at Madrid, in december, january and february.

He characterizes it by having opposite, pinnatifid leaves, running down the stem, and the flowers in corymbs.

The stem is a fathom high, round, somewhat tomentose, putting forth opposite branches. Leaves somewhat rugged, narrowed at the base, each border decurrent and forming a curled wing, so that the stem is four-winged: the segments of the leaves are serrate. The flowers are numerous, forming corymbs at the top of the stem and branches. Calyx obovate, imbricate; scales ovate-acute, brown at the tip, the inner ones longer. Corolla yellow: females in the ray about fourteen, linear, trifid, with the middle toothlet shorter. Germ in all small, turbinate: stigmas revolute, yellow. Receptacle flat: chaffs the length of the florets, keeled, oblong, with a sharp point. Seeds ovate, emarginate and crowned with two fine awns; the central ones girt longitudinally with two wings, those of the ray with three.

Cavanilles remarks, that by these winged seeds this plant approximates to *Bupthalmum*, and that the habit, receptacle, flowers, and seed-crown direct that it should be placed at the end of the *Verbesinas*.

5. Stem upright, about three feet high, rough with horizontal hairs, and about the thickness of a swan's quill towards the root: it is of a purple colour marked with green spots: branches opposite and decussating, dividing at their upper part, and spotted with green and purple: leaves ovate, of about a palm's length, obtusely and unequally serrated at some distance from the base and continuing so to the tip: they are sharp-pointed, of a pale green, tomentose, three-nerved, and veiny, horizontal or slightly depending: the foot-stalks

\* Swartz.

† Hort. kew.

‡ Linn. spec.

§ Osbeck.

¶ Swartz.

‡ Murray.



are four times shorter than the leaves and stem clasping: flowers solitary, or very rarely two, springing from the divarications of the branches: corolla white, rather larger than the calyx: floscules in the disk numerous, funnel-shaped, five-toothed, with the cylinder of anthers violet-coloured.

6. Stature of *Sigesbeckia*. Leaves petioled, acutely serrate, somewhat rugged. Branches opposite. Terminating peduncle shorter than the leaves, two-flowered: axillary peduncles two on each side, two-flowered with another leaflet opposite to the pedicel. Flowers yellow. Seeds gibbous, three-sided, awnless. Allied to *Lavenia*<sup>d</sup>; and perhaps not properly of this genus. Native of the East Indies.

7. Seeds almost awnless, crowned only with a very short four-toothed margin. Calyx five-toothed<sup>e</sup>.

Herb seemingly procumbent. Leaves subsessile or ending in the petioles, rugged, three-nerved, the nerves springing within the base, quite entire or having only one or two serratures at the sides. Peduncle axillary, naked, very long. Common calyx single, composed of ten lanceolate bluntish erect leaflets, the five outer wider and somewhat longer, all permanent. Corolllets of the ray ten, cloven at the tip. Germ oblong, widish, crowned with a permanent bell-shaped calycle, a cloven style, and revolute stigmas<sup>f</sup>.

Stem herbaceous, annual, a foot high, nearly erect, smooth, whitish. Leaves quite entire, smooth. Flowers yellow, terminating, solitary, on a very long peduncle. Calyx hemispherical, single. Ray ten-flowered. Seeds with a short, awned crown. Receptacle convex; with chaffs as long as the tube of the florets<sup>g</sup>.

Native of the East Indies, and China near Canton.

8. Root annual. Stem herbaceous, branched, a foot high, round, even. Leaves sessile, mostly terminating, cuneate-ovate, acuminate, nerved, hispid. Flowers sessile in the axils of the terminating leaves, two or three together. Calyx single, of four scales, two of which are longer, lanceolate, hairy. Hermaphrodite florets five. Female florets four or five, short, blunt, emarginate. Seeds of the disk black, with two long awns; of the ray wider, toothletted at the edge, and membranaceous, awnless at the tip<sup>h</sup>.

Gärtner, who separates this from the *Verbesinas*, describes the seeds as difform: two exterior larger, ovate, flat, smooth, of a livid bay colour, girt with a membranaceous toothed white rim; many interior, wedge-oblong, compressed, rugged with indistinct dots or tubercles, without any rim. Both have a two-awned crown: in the outer seeds, the awns are somewhat membranaceous, flexible, innocuous; in the inner awl-shaped, pungent, diverging, nearly equal to the seed in length. Receptacle narrow, flat, within the interior calyx.

According to Gærtner, this plant cannot be associated with the *Verbesinas*, because the receptacle is manifestly naked, the ray two-flowered exterior, and the seeds clearly difform. The calyx also is double; the outer two-leaved, the leaflets ovate acute opposite equal, containing each a single female floret; the inner eight-leaved in a single row. The petal of the outer female florets entire or slightly emarginate.]

Miller says it is more than three feet high, the leaves near two inches long, and an inch broad; the flowers yellow, appearing in july, and succeeded by others till the frost stops them.

[Native of the West Indies. Cultivated in 1732 by James Sherard, M.D.<sup>i</sup>.]

9. This rises with a shrubby stalk seven or eight feet high. Leaves deeply serrate and cut somewhat like those of the *Ilex* or *Evergreen Oak*. The flowers are yellow, produced from the side of the stalks, and appear in july. Native of the West Indies.

[Linneus remarks, that the seeds are wide, as in *Coreopsis*.—Cultivated by Mr. Miller, in 1768.

10. Stem fifteen feet high, and the thickness of a thumb at the lower part, smooth, green, and viscid: it is filled without interruption, by a white inodorous pith as in a rush: it is simple, or at least but very

<sup>d</sup> Linn. spec. <sup>e</sup> Idem. <sup>f</sup> Linn. zeyl. <sup>g</sup> Loureiro.  
<sup>h</sup> Swartz. <sup>i</sup> Hort. kew.

slightly divided at top; and the whole stem is aphyllous, the leaves occupying only the upper part and branchlets: they are alternate, foot-stalked, and the largest are about a foot and a half long; they are villose and pinnatifid, with distant oblong lobes: from the bosoms of the upper leaves spring round whitish-villous peduncles, bearing at their tips the flowers, which are slightly foot-stalked, and closely heaped together, forming a kind of panicle: the corolllets are white and the anthers black<sup>k</sup>. Native of the West Indies. Cultivated by Mr. Miller in 1758<sup>l</sup>.

11. Root annual. Stem herbaceous, procumbent and creeping, branched, striated, smooth. Branchlets alternate. Leaves alternate: the upper ones three-parted; leaflets wedge-shaped, toothed, blunt; the lower ones entire or subtrifid, toothed, ovate, blunt, smooth, glaucous beneath. Petioles decurrent, embracing, the length of the leaves, smooth. Peduncles terminating, one-flowered. Flowers small, yellow. Common calyx double or calyced: outer of five linear scales; inner also of five, which are larger, membranaceous, whitish. The four or five middle florets of the disk are five-toothed; the rest, nearer to the ray, smaller and four-toothed. Germ compressed: style cloven: stigmas slender, reflexed. Female corolllets of the ray two-toothed, spreading: stigma bifid. Fruiting calyx more spreading. Inner seeds of the disk oblong, compressed, with a membranaceous serrate margin; outer round, striated, obtuse, toothed, having a point in the middle. Seeds of the female florets compressed, minute; but commonly wanting. Seed-crown none. Chaffs linear: but none in the middle.

Native of the West Indies, in moist pastures.

The genus of this plant is difficult to determine: for having no seed-crown it is not properly a species either of *Verbesina* or *Bidens*, and should rather be referred to *Anthemis*, but the habit is different<sup>m</sup>. Mr. Miller cultivated it in 1768.

Loureiro has a species, which he names *Verbesina spicata*, and says that it agrees with the *mutica* in having no seed-crown, but that in the calyx and corolla it agrees perfectly with this genus, whereas the *mutica* does not.

He characterizes it as having palmate-gashed leaves which are serrate, and the flowers in terminating spikes: and describes the stem as herbaceous but perennial, four feet high, nearly upright, sometimes creeping, branched, striated, of a dusky red colour: the lower leaves palmate-gashed, the upper ovate-lanceolate, all serrate, beneath tomentose, dusky green, odorous, juicy, alternate, on long red petioles. Flowers very white and small, in linear heaped long erect terminating spikes: leaflets of the calyx awl-shaped, erect, in a double row: florets of the disk short and many; of the ray about five, verging to one side, the petal not longer than the calyx. Receptacle with very few chaffs. Seeds turbinate, bluntly four-cornered, short without any crown.

Native of China and Cochinchina, and cultivated in those countries, where it is brought to the table with other salad-herbs.

12. Stems prostrate, half a foot long, somewhat branched, herbaceous. Leaves alternate, petioled, resembling those of *Abrotanum*, naked. Flowers subsolitary, on short peduncles. Calyx oblong, cylindrical, containing five or six florets, leaflets as many, elliptic, awnless, scarious at the edge. Corollas four-cleft, except one female, which is ligulate and separate from the others: chaff lanceolate, smooth, shining. Seeds oblong, compressed, two-awned. It is an esculent plant, with the smell and taste of Fennel. Native of the East Indies, where it was found by Koenig<sup>n</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds upon a moderate hot-bed in the spring, and when the plants are fit to remove, transplant them on to a fresh hot-bed to bring them forward; shading them till they have taken new root, and then treating them in the same way as other tender annual plants, taking care not to draw them up too weak. In june take them up with balls of earth, and plant them in a warm border, where they may be shaded

<sup>k</sup> Jacquin. <sup>l</sup> Hort. kew. <sup>m</sup> Swartz. <sup>n</sup> Linn. suppl.



and watered till they have again taken new root, after which they will require little care. These will produce good seeds in autumn; but several of them may be kept through the winter in a stove.

[VERBESINA. See *Bidens*, *Coreopsis*, *Eclipta*, *Lavenia*, *Phaetusa*, *Spilanthus*.

VERMICULARIS. See *Sedum album*.

VERMICULATA. See *Scleranthus*.

VERNIX. See *Rhus*.

VERNONIA. (Is it so named from William Vernon, fellow of St. Peter's College in Cambridge, who with Dr. David Kreig, a Saxon physician, collected many new plants in Maryland, inserted in the supplement to Rays's history? He was also skilful and assiduous in the pursuit of English plants, especially of the class Cryptogamia.)

Lin. gen. Schreb. n. 1262. *Serratula*. Dill. elth. t. 261.—264.

ESSENTIAL CHARACTER.

Cal. ovate, imbricate with ovate-lanceolate, acuminate, coloured scales. Down capillary, coloured, sessile, longer than the calyx, surrounded at the base by a very short chaffy many-bristled crown. Recept. naked.

SPECIES.

The species which Schreber has separated under this title, have been already described under *Serratula*. See *S. noveboracensis*, *præalta* and *glauca*.]

VERONICA. (Derivation uncertain. Linneus says it is changed or corrupted from *Vetonica*, from the *Vettones*, a people of Spain: but that confounds it with *Betonica*. Hoffman says it is quasi *pegonixn*, because it bears the bell, as we say, among other plants. If this derivation be admitted, the penultima must be long. Lemery derives it from *ver*, the spring. There is a Romish female Saint of this name.)

Lin. gen. n. 25. Reich. n. 26. Schreb. n. 32.

Tournef. t. 60. Juss. 99. Gærtn. t. 54.

Class. 2. 1. Diandria Monogynia.

Nat. Order of *Personatæ*. *Pediculares* Juss.

GENERIC CHARACTER.

CAL. Perianth four-parted, permanent: segments lanceolate, acute.

COR. one-petalled, wheel-shaped: tube length almost of the calyx: border four-parted, flat, with ovate segments; the lowest narrower, the segment opposite to this wider.

STAM. Filaments two, narrower at bottom, ascending. Anthers oblong.

PIST. Germ compressed. Style filiform, length of the stamens, declined. Stigma simple.

PER. Capsule obcordate, compressed at the top, two-celled, four-valved.

SEEDS numerous, roundish.

OBS. Tube of the corolla different in the several species, but in most very short, in the spiked ones long.

Calyx five-cleft in *V. sibirica*, *Teucrium*, *prostrata*, *pectinata*, *austriaca*, *multifida*, *latifolia*. Capsule of *V. pinnata* oval. Fruit of *V. montana* orbicular, emarginate at top and bottom. Capsule of *V. biloba* compressed, two-parted with diverging semiorbicular lobes.

ESSENTIAL CHARACTER.

Cor. four-cleft, wheel-shaped, with the lowest segment narrower. Caps. superior two-celled.

SPECIES.

\* Spiked.

[1. *Veronica sibirica*. Siberian Speedwell.

Lin. spec. 12. syst. 58. Reich. 1. 24. Willd. 1. 54. Gmel. fib. 3. 217.

*V. spicata altissima*, foliis verticillatim dispositis. *Amm. ruth.* 20. t. 4.

Spikes terminating, leaves seven in whorls, stem somewhat rough-haired.]

2. *Veronica virginica*. Virginian Speedwell.

Lin. spec. 13. Reich. 1. 24. Willd. 1. 54. hort. cliff. 7. Gron. virg. 4. Cold. noveb. 3. Thunb. jap. 20. Kniph. orig. cent. 10. n. 97. Pluk. phyt. t. 70. f. 2.

*Veronicastrum* Heist. Fabric. helmst. 205.

Spikes terminating, leaves in fours or fives.

3. *Veronica spuria*. Bastard Speedwell.

Lin. spec. 13. Reich. 1. 24. Willd. 1. 55. hort. upf. 7. Hoffm. germ. 4. Roth. germ. 1. 2. 2. 5. Pollich pal. n. 6. Krock. files. n. 10. Crantz austr. 335. Gmel. it. 1. 169. t. 39. Berg. phyt. t. 219.

*V. spicata angustifolia*. Baub. pin. 246. Mor. hist. f. 3. t. 22. f. 3.

*V. mas surrecta elatior*. Barr. ic. 891.

Spikes terminating, leaves lanceolate equally serrate.

4. *Veronica maritima*. Sea Speedwell.

Lin. spec. 13. syst. 58. Reich. 1. 24. Willd. 1. 55. fl. suec. n. 8. lapp. n. 4. vir. cliff. 2. hort. cliff. 7. Fl. dan. t. 374. Hoffm. germ. 4. Roth. germ. 1. 5. 2. 6. Krock. files. n. 11. Gmel. fib. 3. 218. *Amm. ruth.* n. 34 and 35. Knorr del. hort. 2. t. V. 2. Kniph. orig. cent. 4. n. 94.

*V. glabra*. Ebrb. herb. 11.

*V. spicata cærulea*. Mor. hist. f. 3. t. 22. f. 1.

*Lyfimachia spicata cærulea*. Baub. pin. 246.

*Pseudo-Lyfimachium cæruleum*. Dod. pempt. 86.

β. *Veronica nitida*. Ebrb. herb. 21.

Spikes terminating, leaves subcordate-lanceolate unequally serrate.

5. *Veronica longifolia*. Long-leaved Speedwell.

Lin. spec. 13. Reich. 1. 25. Willd. 1. 56. hort. upf. 7. fl. suec. n. 9. Hoffm. germ. 4. Roth. germ. 1. 5. 2. 7. Crantz austr. 334. Georgi it. 1. 95. Sabb. hort. rom. 2. 48.

*V. elatior*. Ebrb. herb. 51.

*V. spicata latifolia*. Baub. pin. 264. Ger. emac. 628. 7. Raii hist. 845. Mor. hist. f. 3. t. 22. f. 2. —major. Park. theat. 550. 3.

*V. i. erectior latifolia*. Clus. hist. 1. 346.

β. *V. spicata longifolia altera*. *Amm. ruth.* 26.

γ. *V. spic. urticæ folio*. *Amm. ruth.* 26.

Spikes terminating, leaves lanceolate acuminate serrate ending in the petiole.

6. *Veronica incana*. Hoary Speedwell.

Lin. spec. 14. Reich. 1. 25. Willd. 1. 56. hort. upf. 7. Gmel. fib. 3. 220. n. 35. Kniph. orig. cent. 7. n. 98.

*V. bellidis folio major*. *Amm. ruth.* 23.

*V. spicata lanuginosa et incana*, floribus cæruleis. *Amm. ruth.* 30.

Spikes terminating, leaves opposite crenate obtuse, stem erect tomentose.

7. *Veronica spicata*. Spiked Speedwell.

Lin. spec. 14. syst. 58. Reich. 1. 25. Willd. 1. 56. hort. cliff. 8. fl. suec. n. 10. Hudf. angl. 3. Wither. arr. ed. 3. 12. Smith brit. 15. engl. bot. t. 2. Relb. cant. ed. 2. n. 9. Fl. dan. t. 52. Hall. helv. n. 542. Hoffm. germ. 4. Roth. germ. 1. 5. 2. 7. Pollich pal. n. 7. Krock. files. n. 13. Villars dauph. 2. 8. Allion. pedem. n. 263. Kniph. orig. cent. 4. n. 96. Gmel. fib. 3. 221. Berg. phyt. t. 221.

*V. spicata minor*. Baub. pin. 247. Vaill. par. t. 33. f. 4. Mor. hist. f. 3. t. 22. f. 4.

*V. spicata recta minor*. Baub. hist. 3. 274. Raii hist. 846. syn. 279.

*V. recta minima*. Ger. emac. 627. 4. Lob. obs. 250. 3. Dalech. hist. 1319.

*V. spic. foliis Veronica officinarum*. Dillen. in eph. nat. cur. cent. 5. & 6. obs. 38. t. 11.

Spike terminating, leaves opposite bluntish crenate-serrulate quite entire at the tip, stem ascending quite simple.

8. *Veronica hybrida*. Welsh Speedwell.

Lin. spec. 14. syst. 58. Reich. 1. 26. Willd. 1. 57. mant. 316. fl. suec. n. 11. Wither. arr. ed. 3. 12. Smith brit. 16.

*V. spicata β*. Hudf. angl. 3.

*V. spicata Cambrobritannica*, Bugulæ subhirsuto folio. Raii syn. 278. t. 11.

Spikes terminating, leaves opposite elliptic obtuse unequally crenate-serrate, stem nearly upright.

[9. *Veronica pinnata*. Winged-leaved Speedwell.

Lin. syst. 58. Reich. 1. 26. Willd. 1. 57. mant. 24. Ait. kew. 1. 19. Laxmann in act. petrop. 1770. 553. t. 29. f. 1.



- Spike terminating, leaves linear pinnatifid subfascicled, segments filiform divaricating.*
10. *Veronica laciniata*. Jagged-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Ait. kew. 1. 19.*  
*V. spuria*. *Jungb. iv. cent. 1. f. 2.*  
*Raceme subspiked terminating, leaves pinnatifid lacinate.*
11. *Veronica incisa*. Cut-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Ait. kew. 1. 19.*  
*Spikes terminating, leaves lanceolate gasb-pinnatifid smooth.*
12. *Veronica Catarractæ*.  
*Lin. spec. ed. Willd. 1. 58. Forst. prodr. n. 9.*  
*Racemes terminating flexuose, stem suffruticose, leaves lanceolate serrate.*
13. *Veronica elliptica*. Elliptic-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Forst. prodr. n. 10.*  
*Racemes lateral, stem shrubby, leaves elliptic quite entire.*
14. *Veronica macrocarpa*. Long-fruited Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Vahl symb. 3. 4.*  
*Racemes subterminating erect, leaves lanceolate quite entire smooth flat, stem shrubby.*
15. *Veronica salicifolia*. Willow-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Vahl symb. 3. 4. Forst. prodr. n. 11.*  
*Racemes lateral nodding, leaves lanceolate quite entire, stem shrubby.*
16. *Veronica parviflora*. Small-flowered Speedwell.  
*Lin. spec. ed. Willd. 1. 58. Vahl symb. 3. 4.*  
*Racemes subterminating, leaves linear-lanceolate quite entire smooth mucronate, stem shrubby.]*
17. *Veronica officinalis*. Common Speedwell.  
*Lin. spec. 14. syst. 58. Reich. 1. 26. Willd. 1. 59.*  
*hort. cliff. 8. fl. lapp. n. 5. suec. n. 12. mat. med. 37. Woodv. med. bot. t. 219. Gertn. fruct. 1. 257. Hudf. angl. 4. Wither. arr. ed. 3. 13. Smith brit. 16. engl. bot. t. 765. Curt. lond. 3. t. 1. Relb. cant. ed. 2. n. 10. Sibth. oxon. n. 7. Abbot bedf. n. 5. Fl. dan. t. 248. Gunn. norv. n. 46. Hall. belv. n. 540. Hoffm. germ. 4. Roth. germ. 1. 5. 2. 9. Pollich pal. n. 8. Krock. filsf. n. 16. Scop. carn. n. 21. Crantz austr. 336. Neck. gallob. 13. Villars dauph. 2. 10. Allion. pedem. n. 264. Riv. mon. t. 93. Ludw. est. t. 100. Knorr del. hort. 2. t. V. 1. Kniph. orig. cent. 4. n. 95. Berg. phyt. t. 85. Plenck ic. t. 12.*  
*V. mas supina & vulgarissima*. *Baub. pin. 246. Camer. epit. 461. Raii hist. 851. syn. 281. Mor. hist. f. 3. t. 22. f. 7. Tournef. inst. 143.*  
*V. mas*. *Fuchf. hist. 166. Matth. 693. Blackw. t. 143.*  
*V. vera & major*. *Ger. 502. 1. emac. 626. 1.*  
*V. mas vulgaris supina*. *Park. theat. 550. 2.*  
*V. vulgarior folio rotundiore*. *Baub. hist. 3. 282. 1.*  
*Spikes lateral peduncled, leaves opposite rugged, stem procumbent.*
- [18. *Veronica Allionii*. Shining-leaved Speedwell.  
*Linn. spec. ed. Willd. 1. 59. Smith in transf. Linn. soc. 1. 190. Villars dauph. 2. 8. Ger. prov. 332. n. 2. Pluk. phyt. t. 233. f. 1.*  
*V. pyrenaica*. *Allion. pedem. n. 265. t. 46. f. 3. spec. 1. 21. t. 4. f. 3.*  
*V. officinalis β*. *Linn. spec. 14. syst. 58. Reich. 27.*  
*Spikes lateral peduncled, leaves opposite roundish shining rigid, stem smooth creeping.*
19. *Veronica decussata*. Cross-leaved Speedwell.  
*Ait. kew. 1. 20. Lin. spec. ed. Willd. 1. 60. arb. berol. 400. Moench. Weissenst. 137. Smith spicil. 23. t. 25. Curt. magaz. t. 242.*  
*I Hebe magellanica*. *Gmel. syst. 27. Juss. gen. 105.*  
*Racemes axillary few-flowered, leaves elliptic perennial quite entire, stem shrubby.*  
\*\* *Corymb-racemcd.*
20. *Veronica aphylla*. Naked-stalked Speedwell.  
*Lin. spec. 14. Reich. 1. 27. Willd. 1. 60. Hall. belv. n. 541. Scop. carn. n. 8. Jacqu. vind. 2. Crantz austr. 336. Villars dauph. 2. 10. Allion. pedem. n. 266.*  
*V. alpina pumila, caule aphylo*. *Bocc. mus. 2. 17. t. 1. & 9.*  
*V. parva saxatilis, cauliculis nudis*. *Pluk. phyt. t. 114. f. 3. Segu. veron. 241. t. 3. f. 2. Raii syll. 261. hist. 846.*  
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- Chamædrys alpina minima hirsuta*. *Baub. pin. 243.*  
*Teucrium minimum*. *Clus. hist. 1. 350.*
- β. *Veronica kamtschatica*. *Lin. suppl. 83. Smith in Lin. transf. 1. 190.*  
*Corymb terminating, scape naked.*
21. *Veronica bellidioides*. Daisy-leaved Speedwell.  
*Lin. spec. 15. syst. 59. Reich. 1. 27. Willd. 1. 60. mant. 316. Krock. filsf. n. 17. t. 2. Hall. belv. n. 543. t. 15. f. 1. Villars dauph. 2. 10. Allion. pedem. n. 267.*  
*V. alpina Bellidis folio hirsuta*. *Baub. pin. 247. prodr. 116. Raii hist. 847. Tournef. inst. 144.*  
*V. minima Bellidis folio*. *Park. theat. 551. n. 6.*  
*Corymb terminating, stem ascending two-leaved, leaves obtuse crenate, calyxes hirsute.*
22. *Veronica gentianoides*. Gentian-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 61. Vahl symb. 1. 1. Smith in Lin. transf. 1. 194.*  
*V. orientalis erecta gentianellæ folio*. *Tournef. cor. 7.*  
*V. erecta Blattariæ facie*. *Buxb. cent. 1. 23. t. 35.*  
*Corymb terminating, stem ascending, leaves lanceolate cartilaginous at the edge, the lower connate, sheathing.*
23. *Veronica Pona*. Pona's Speedwell.  
*Lin. spec. ed. Willd. 1. 61. Gouan illustr. 1. t. 1. f. 1.*  
*V. petræa sempervirens*. *Pon. bald. 336. Tournef. inst. 144. Segu. veron. 1. 235. Pluk. phyt. t. 233. f. 3.*  
*V. non ramosa pyrenaica*. *Pluk. phyt. t. 233. f. 2?*
- β. *Veronica pumila*. *Allion. pedem. n. 270. t. 22. f. 5. spec. 19. t. 3. f. 3.*  
*Raceme terminating, stem quite simple, leaves cordate-ovate toothed sessile.*
24. *Veronica fruticulosa*. Flesh-coloured Shrubby Speedwell.  
*Lin. spec. 15. syst. 59. Reich. 1. 28. Willd. 1. 61. mant. 316. Smith brit. 18. engl. bot. t. 1028. Hall. belv. n. 545. t. 16. f. 1. Comm. nor. 1734. p. 243. Allion. pedem. n. 268.*  
*V. fruticulosa*. *Jacqu. collect. 4. 229. t. 5.*  
*V. frutescens*. *Scop. carn. n. 20. Villars dauph. 2. 11.*  
*V. alpina frutescens*. *Baub. pin. 247. Scheuch. it. 1. 51.*  
*Corymb terminating many-flowered spiked, leaves elliptic lanceolate, stems erect, capsule ovate four-valved.]*
25. *Veronica saxatilis*. Blue Rock Speedwell.  
*Lin. syst. 59. Willd. 1. 62. suppl. 83. Smith brit. 17. engl. bot. t. 1027. Wither. arr. ed. 3. 14. n. 9. Jacqu. collect. 3. 25. Baub. hist. 3. 284.*  
*Veronica*. *Hall. belv. n. 545. β.*  
*V. fruticulosa*. *Fl. dan. t. 342. Gunn. norv. n. 829. Jacqu. enum. obs. 1. p. 200. Hudf. angl. 4? Mill. dict. n. 13.*  
*V. tertia fruticans*. *Clus. hist. 347.*  
*V. alpina frutescens*. *Mor. hist. f. 3. t. 22. f. 5.*  
*V. alpina con foglia di Serpillo*. *Pon. bald. 181.*  
*V. fruticans serpillifolia*. *Ger. emac. 628.*
- β. *Veronica Nummularia*. *Gouan. illustr. 1. t. 1. f. 2.*
- γ. *Veronica pygmæa*. *Schrank. Salisb. n. 11. t. 1. f. 1.*  
*Corymb terminating few-flowered, leaves elliptic, stems dif-fused, capsule ovate four-valved.*
- [26. *Veronica alpina*. Alpine Speedwell.  
*Lin. spec. 15. syst. 59. Reich. 1. 28. fl. lapp. n. 7. t. 9. f. 4. suec. n. 15. Lin. transf. 1. 191. & 2. 287. Smith brit. 18. engl. bot. t. 484. Wither. arr. ed. 3. 14. Fl. dan. t. 16. Gunn. norv. n. 45. Hall. belv. n. 544. t. 15. f. 2. Scop. carn. n. 13. Villars dauph. 2. 12. Allion. pedem. n. 169. Pallas it. 3. 33. Schrank. Salisb. n. 9.*  
*Teucrium Etscherianum*. *Clus. pann. 616. Crantz austr. 337.*  
*Corymb terminating subspiked, leaves ovate smooth sub-ferrate, calyx ciliate, stem ascending simple.*
27. *Veronica integrifolia*. Entire-leaved Speedwell.  
*Lin. spec. ed. Willd. 1. 63. Schrank. Salisb. n. 10.*  
*V. alpina*. *Krock. filsf. n. 28. t. 3.*  
*Corymb terminating, leaves opposite elliptic obtuse quite entire, calyxes hairy.*
28. *Veronica serpyllifolia*. Smooth Speedwell or Paul's Betony.  
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- Lin. spec.* 15. *syft.* 59. *Reich.* 1. 29. *Willd.* 1. 64. *fl. suec.* n. 16. *lapp.* n. 6. *hort. cliff.* 9. *Huds. angl.* 4. *Witber. arr. ed.* 3. 14. *Smith brit.* 19. *engl. bot. t.* 1075. *Curt. lond.* 1. t. 3. *Lightf. scot.* 73. *Relb. cant. ed.* 2. n. 11. *Sibth. oxon.* n. 8. *Abbot bedf.* n. 6. *Fl. dan. t.* 840. *Hall. belv.* n. 546. *Hoffm. germ.* 5. *Roth. germ.* 1. 6. 2. 9. *Pollich pal.* n. 9. *Krock. files.* n. 18. t. 4. *Neck. gallob.* 7. *Scop. carn.* n. 10. *Crantz austr.* 342. n. 10. *Jacqu. vind.* 3. *Villars dauph.* 2. 13. *Allion. pedem.* n. 271. *Gmel. fib.* 3. 223. n. 39. *Desfont. atlant.* 1. 10. *Gron. virg.* 54. *Cold. noveb.* 1. *Berg. phyt.* 1. 215.
- V. *pratensis.* *Dod. pempt.* 41. 1.—minor. *Park. theat.* 551. n. 5. *Raii hist.* 848. *syn.* 279.
- V. *minor.* *Ger. emac.* 627. 2.
- V. *prat. serpyllif.* *Baub. pin.* 247. *Tournef. inst.* 144.
- V. *fæmina quibusdam, aliis Betonica Paulli, serpyllifolia.* *Baub. hist.* 3. 285. 1.
- V. *minima repens.* *Rivin. mon. t.* 99. f. 1.
- β. V. *humifusa.* *Dicks. in Lin. transf.* 2. 288. *Witber.* 15. *Sym. syn.* 4. *Smith brit.* 19.
- V. *alpina.* *Lightf. scot.* 72. & 1138.
- Raceme terminating subspiked, leaves ovate subcrenate three-nerved smooth, capsule obcordate shorter than the style.*
29. *Veronica tenella.*  
*Lin. spec. ed.* *Willd.* 1. 64. *Allion. pedem.* n. 272. t. 22. f. 1. *Vabl symb.* 3. 5.
- V. *nummulariæ folio pyrenaica.* *Tournef. inst.* 145.
- V. *pratensis nummulariæ folio, flore cæruleo.* *Pluk. phyt. t.* 233. f. 4.
- V. *prat. numm. folio.* *Dill. giff.* 67.  
*Leaves oblong crenate, stems creeping, calyxes villose.]*
30. *Veronica Becabunga.* *Broad-leaved Brooklime or Water Speedwell.*  
*Lin. spec.* 16. *syft.* 59. *Reich.* 1. 30. *Willd.* 1. 64. *fl. suec.* n. 14. *hort. cliff.* 8. *mat. med.* 38. *Woodv. med. bot.* 20. t. 7. *Huds. angl.* 5. *Witber. arr. ed.* 3. 15. *Smith brit.* 20. *engl. bot. t.* 655. *Curt. lond.* 2. t. 3. *Lightf. scot.* 73. *Relb. cant. ed.* 2. n. 12. *Sibth. oxon.* n. 9. *Abbot bedf.* n. 7. *Fl. dan. t.* 511. *Gunn. norv.* n. 59. *Hall. belv.* n. 534. *Hoffm. germ.* 5. *Roth. germ.* 1. 6. 2. 10. *Pollich pal.* n. 10. *Krock. files.* n. 19. *Leers herborn.* n. 9. *Scop. carn.* n. 11. *Jacqu. vind.* 3. *Neck. gallob.* 11. *Crantz austr.* 341. *Villars dauph.* 2. 13. *Allion. pedem.* n. 273. *Gmel. fib.* 3. 224. *Desfont. atlant.* 1. 11. *Gron. virg.* 4. *Ludw. est.* t. 30. *Kniph. orig. cent.* 9. n. 100. *Sabb. hort. rom.* 2. t. 50. *Berg. phyt.* 1. t. 211. *Plenck. ic.* t. 14.
- V. *aquatica rotundifolia, Becabunga dicta minor.* *Raii syn.* 280.
- V. *aquat. major & minor folio subrotundo.* *Tourn. inst.* 145. *Mor. hist. f.* 3. t. 24. f. 24.
- Beccabunga.* *Riv. mon. t.* 100. f. 1.
- Anagallis f. Becabunga.* *Ger.* 496. *emac.* 620. 1.
- A. *aquatica.* *Dod. pempt.* 593. 1. *Lob. obs.* 248. 3. *ic.* 466. *Blackw. t.* 48.
- A. *aquat. vulgaris, f. Becabunga.* *Park. theat.* 1236. 1.
- A. *aquat. major & minor folio subrotundo.* *Baub. pin.* 252. *Raii hist.* 852.
- A. *aquat. flore cæruleo, folio rotundiore, major & minor.* *Baub. hist.* 790, 791.
- Sium.* *Fuchs. hist.* 725.
- Sion non odoratum.* *Trag. hist.* 188.
- Berula f. Anagallis aquatica.* *Tabern. ic.* 719.  
*Racemes lateral, leaves elliptic flat, stem creeping.*
- [31. *Veronica Anagallis.* *Long-leaved Brooklime or Water Speedwell.*  
*Lin. spec.* 16. *Reich.* 1. 30. *Willd.* 1. 65. *fl. suec.* n. 13. *Huds. angl.* 5. *Witber. arr. ed.* 3. 15. *Smith brit.* 20. *engl. bot. t.* 781. *Curt. lond.* 5. t. 2. *Lightf. scot.* 73. *Relb. cant. ed.* 2. n. 13. *Sibth. oxon.* n. 10. *Abbot bedf.* n. 8. *Fl. dan. t.* 903. *Hall. belv.* n. 533. *Hoffm. germ.* 5. *Roth. germ.* 1. 6. 2. 11. *Pollich pal.* n. 11. *Krock. files.* n. 20. *Neck. gallob.* 10. *Scop. carn.* n. 12.

- Crantz austr.* 342. *Villars dauph.* 2. 14. *Allion. pedem.* n. 274. *Gmel. fib.* 3. 224. *Thunb. jap.* 20. *Desfont. atlant.* 1. 11. *Gron. virg.* 4. *Berg. phyt.* 1. 209.
- V. *aquatica longifolia media.* *Raii syn.* 280. *Petiv. brit. t.* 51. f. 12.
- V. *aquat. major & minor, folio oblongo.* *Tournef. inst.* 145. *Mor. hist. f.* 3. t. 24. f. 25.
- Beccabunga minor.* *Riv. mon. t.* 100. f. 2.
- Anagallis aquatica major.* *Ger.* 496. 3. *emac.* 620. 2.
- A. *aquat. major & minor, folio oblongo.* *Baub. pin.* 252. *Raii hist.* 852. 3.
- A. *aquat. folio oblongo crenato.* *Park. theat.* 1237. 3.
- A. *aquat. flore cæruleo, folio oblongo, major.* *Baub. hist.* 3. 791. 1.
- Berula major.* *Tabern. ic.* 719. *hist.* 1094.
- β. With a single raceme, and lanceolate crenate leaves.  
*Willd. prodr.* n. 31.
- γ. V. *tenerrima.* *Schmidt bohém.* 1. n. 23.  
*Racemes lateral opposite, leaves lanceolate serrate, stem erect.*
32. *Veronica scutellata.* *Narrow-leaved Brooklime or Water Speedwell.*  
*Lin. spec.* 16. *syft.* 59. *Reich.* 1. 30. *Willd.* 1. 65. *fl. lapp.* n. 9. *suec.* n. 17. *hort. cliff.* 10. *Huds. angl.* 5. *Witber. arr. ed.* 3. 16. *Smith brit.* 21. *engl. bot. t.* 782. *Curt. lond.* 5. t. 3. 333. *Lightf. scot.* 74. *Relb. cant. ed.* 2. n. 14. *Sibth. oxon.* n. 11. *Abbot bedf.* n. 9. *Fl. dan. t.* 209. *Hall. belv.* n. 532. *Hoffm. germ.* 5. *Roth. germ.* 1. 6. 2. 12. *Pollich pal.* n. 12. *Leers herborn.* n. 11. *Krock. files.* n. 21. *Neck. gallob.* 12. *Scop. carn.* n. 22. *Crantz austr.* 343. *Jacqu. vind.* 3. *Villars dauph.* 2. 14. *Allion. pedem.* n. 275. *Desfont. atlant.* 1. 12. *Kniph. orig. cent.* 10. n. 95. *Berg. phyt.* 1. 207.
- V. *aquatica angustifolia minor.* *Raii syn.* 280.
- V. *aquat. angustiore folio.* *Tournef. inst.* 145.
- V. *aquat. angustifolia.* *Mor. hist. f.* 3. t. 24. f. 27.
- V. *palustris angustifolia.* *Riv. mon. t.* 96. f. 1.
- Anagallis aquat. angustif.* *Baub. hist.* 3. 791. 2. *Raii hist.* 852. 5.—*scutellata.* *Baub. pin.* 252.—f. *quarta Lobellii.* *Park. theat.* 1237. 6.
- A. *aquat. quarta Lob.* *ic.* 467. *Ger. emac.* 621. 4.
- Racemes lateral alternate, pedicels divaricating, leaves linear toothletted.*
33. *Veronica Teucrium.* *Hungarian Speedwell.*  
*Lin. spec.* 16. *syft.* 59. *Reich.* 1. 31. *Willd.* 1. 66. *Hall. belv.* n. 537. *Hoffm. germ.* 5. *Roth. germ.* 1. 7. 2. 13. *Pollich pal.* n. 13. *Leers herborn.* n. 12. *Villars dauph.* 2. 14. *Krock. files.* n. 23. *Allion. pedem.* n. 276.
- V. *montana.* *Riv. mon. t.* 95.
- V. *spuria angustifolia.* *Baub. hist.* 3. 285.
- V. *supina facie Teucrii pratensis.* *Tournef. inst.* 144.
- Chamædrys vulgaris mas.* *Fuchs. hist.* 871.
- C. *spuria major altera f. frutescens.* *Baub. pin.* 248.
- C. *spuria major frutescens.* *Park. theat.* 106. 8.
- C. *falsa maxima, an Teucrium i. f. majus pannonicum Clusio.* *Baub. hist.* *Raii hist.* 849.
- Teucrii IV. tertia species.* *Clus. hist.* 1. 349.
- Teucrium majus pannonicum.* *Ger. emac.* 659. 3.
- Racemes lateral very long, leaves ovate wrinkled toothbed bluntish, stems procumbent.*
34. *Veronica pilosa.* *Hairy Speedwell.*  
*Lin. spec. app.* 1663. *syft.* 59. *Reich.* 1. 31. *Willd.* 1. 66.
- Chamædrys spuria minor latifolia.* *Baub. pin.* 249.
- Chamædrys falsa species; Teucrium 2. f. 5. Clusii.* *Baub. hist.* 3. 286.
- Racemes axillary, leaves ovate obtuse plaited deeply toothed, stem prostrate hairy in two rows.*
35. *Veronica prostrata.* *Trailing Speedwell.*  
*Lin. spec.* 17. *syft.* 59. *Reich.* 1. 32. *Willd.* 1. 67. *Hall. belv.* n. 538. *Pollich pal.* n. 15. *Villars dauph.* 2. 15. *Krock. files.* n. 25.
- V. *angustifolia minor.* *Riv. mon. t.* 95. *Mor. hist. f.* 3. t. 23. f. 16.



- Chamædrys incana spuria minor angustifolia.* *Baub. pin. 249. prodr. 117. Baub. hist. 3. 237.*  
*Racemes lateral, leaves oblong-ovate ferrate, stems prostrate.*
36. *Veronica pectinata.* *Comb-leaved Speedwell.*  
*Lin. syst. 59. Reich. 1. 32. Willd. 1. 68. mant. 24.*  
*V. constantinopolitana incana, chamædryos folio.*  
*Tournef. cor. 7. Buxb. cent. 1. 25. t. 39.*  
*Racemes lateral leafed, leaves oblong pectinate-ferrate, stems prostrate.*
37. *Veronica montana.* *Mountain Speedwell.*  
*Lin. spec. 17. syst. 59. Reich. 1. 32. Willd. 1. 68. mant. 316. suppl. 83. amoen. 4. 263. Hudf. angl. 6. Wither. arr. ed. 3. 16. Smith brit. 21. engl. bot. t. 766. Lightf. scot. 74. Relb. cant. ed. 2. n. 15. Sibthorp oxon. n. 13. Abbot bedf. n. 11. Curt. lond. 4. t. 2. 220. Hall. belv. n. 539. Hoffm. germ. 5. t. 1. Roth. germ. 1. 7. 2. 15. Pollich pal. n. 14. Schreb. spicil. 10. Leers herborn. n. 13. Jacqu. austr. 2. 6. t. 109. Krock. files. n. 22. Villars dauph. 2. 16.*  
*V. subbiscutata.* *Crantz austr. 343.*  
*V. procumbens.* *Riv. mon. t. 93.*  
*V. supina Teucrit folio.* *Tournef. inst. 145.*  
*V. chamædryoides, foliis pediculis oblongis insidentibus.* *Raii syn. 281. Petiv. brit. t. 51. f. 4.*  
*V. procumbens biscutata hederæ folio.* *Mor. hist. f. 3. t. 23. f. 15.*  
*Chamædrys spuria affinis rotundifolia scutellata.* *Baub. pin. 249.*  
*C. spuria foliis pediculis oblongis insidentibus.* *Raii hist. 850.*  
*Alysum Dioscoridis montanum.* *Col. ecphr. 1. 286. t. 288. Park. theat. 58. 3. Merr. pin.*  
*Racemes lateral elongated filiform few-flowered, leaves ovate petioled ferrate, stem hairy all round.*
38. *Veronica Chamædrys.* *Germander Speedwell.*  
*Lin. spec. 17. syst. 60. Reich. 1. 33. Willd. 1. 69. fl. suec. n. 18. lapp. 8. hort. cliff. 8. mant. 317. Hudf. angl. 6. Wither. arr. ed. 3. 16. Smith brit. 22. engl. bot. t. 623. Curt. lond. 1. t. 2. Lightf. scot. 74. Relb. cant. ed. 2. n. 16. Sibth. oxon. n. 12. Abbot bedf. n. 10. Fl. dan. t. 448. Gunn. norv. n. 47. Hall. belv. n. 536. Hoffm. germ. 6. Roth. germ. 1. 7. 2. 16. Pollich pal. n. 16. Leers herborn. n. 14. Krock. files. n. 24. Neck. gallob. 9. Villars dauph. 2. 15. Allion. pedem. n. 279. Thunb. jap. 20. Kniph. cent. 11. Berg. phyt. 1. t. 83. Fl. rust. t. 66.*  
*V. pratensis latifolia.* *Riv. mon. t. 94.*  
*V. Chamædrys sylvestris dicta.* *Raii syn. 281.*  
*V. minor foliis imis rotundioribus.* *Mor. hist. 2. 220. f. 3. t. 23. f. 12. Tournef. inst. 144.*  
*Chamædrys.* *Brunf. herb. 1. 125.*  
*C. sylvestris.* *Ger. 530. 4. emac. 657. 3. Raii hist. 850.*  
*C. spuria sylvestris.* *Park. theat. 107. n. 11.*  
*C. spuria latifolia.* *Baub. hist. 3. 286. 1.*  
*C. spuria minor rotundifolia.* *Baub. pin. 249.*  
*C. quorundum sylvestris.* *Clus. hist. 1. 352. 1.*  
*Hierobotane mas.* *Dalech. hist. 1337.*  
*Racemes lateral, leaves ovate sessile wrinkled gash-ferrate, stem hairy in two rows.]*
39. *Veronica orientalis.* *Oriental Speedwell.*  
*Ait. kew. 1. 23. Lin. spec. ed. Willd. 1. 69.*  
*V. heterophylla.* *Salisb. ic. 1. 7. t. 4.*  
*V. austriaca β.* *Lin. spec. 17.*  
*V. montana folio vario.* *Buxb. cent. 1. 4. t. 38.*  
*Racemes lateral, leaves pinnatifid smooth acute attenuated at the base, calyxes unequal, pedicels capillary longer than the bracte.*
- [40. *Veronica multifida.* *Multifid-leaved Speedwell.*  
*Lin. spec. 17. syst. 60. Reich. 1. 34. Willd. 1. 69. Smith in Lin. transf. 1. 191. Georg. it. 1. 195. Gmel. sib. 3. 222. Amm. ruth. 25. n. 33.*  
*Racemes lateral, leaves many-parted, segments pinnatifid, lobes decurrent, peduncles short, calyx very smooth, stem villose.]*
41. *Veronica austriaca.* *Austrian Speedwell.*  
*Lin. spec. 17. syst. 60. Reich. 1. 34. Willd. 1. 70. Jacqu. vind. 3.*  
*V. multifida.* *Ait. kew. 1. 23.*

- Veronica austriaca & multifida.* *Jacqu. austr. 4. 15. t. 329.*  
*V. pratensis var. α.* *Crantz austr. 344.*  
*Chamædrys austriaca, foliis tenuissime laciniata.* *Baub. pin. 248. 9. prodr. 117. 2. Mor. hist. f. 3. t. 23. f. 17.*  
*C. spuria tenuissime laciniata.* *Baub. hist. 3. 287. Raii hist. 849.*  
*Racemes lateral, leaves somewhat hairy linear pinnatifid, the lowest segments longer divaricating, calyxes somewhat hairy, peduncles longer than the bracte.*
- [42. *Veronica taurica.* *Tauric Speedwell.*  
*Lin. spec. ed. Willd. 1. 70.*  
*V. rosea.* *Desfont. atlant. 1. 13.*  
*Racemes lateral, leaves somewhat hairy linear undivided and pinnatifid toothblotted, peduncles longer than the bracte, calyx four-cleft smooth.*
43. *Veronica urticæfolia.* *Nettle-leaved Speedwell.*  
*Lin. syst. 60. Willd. 1. 70. suppl. 83. Ait. kew. 1. 24. Jacqu. austr. 1. 37. t. 59. Hall. belv. n. 535.*  
*V. pratensis omnium maxima.* *Buxb. cent. 1. 23. t. 34.*  
*V. maxima latifolia. f. Quercus folio.* *Mor. hist. 2. 322. f. 3. t. 23. f. 18.*  
*Chamædrys falsa maxima.* *Baub. hist. 3. 286. Raii hist. 849.*  
*C. spuria major latifolia.* *Baub. pin. 248.*  
*Racemes lateral, leaves cordate sessile sharply ferrate acuminate, stem stiff, calyx-leaves four.]*
44. *Veronica latifolia.* *Broad-leaved Speedwell.*  
*Lin. spec. 18. syst. 60. Reich. 1. 34. Willd. 1. 71. hort. cliff. 9. Reyg. gedan. 2. 28. Villars dauph. 2. 16. Krock. files. n. 29. Allion. pedem. n. 278. Scop. carn. n. 13. Retz. obs. 1. 9. n. 5. & 6. 19. n. 9.*  
*V. maxima.* *Mill. dict. n. 11.*  
*V. Pseudo-chamædrys.* *Jacqu. austr. 1. 37. t. 60.*  
*Racemes lateral, leaves cordate sessile wrinkled bluntly ferrate, stem stiff, calyx-leaves five.*
- [45. *Veronica paniculata.* *Panicled Speedwell.*  
*Lin. spec. 18. syst. 60. Reich. 1. 35. Willd. 1. 71. Pallas it. 1. 196. Lepech. it. 1. 206.*  
*V. dentata.* *Schmidt bohém. 1. 31.*  
*V. angustifolia, floribus paniculatis.* *Amm. ruth. 32.*  
*Racemes lateral very long, leaves lanceolate tern ferrate, stem ascending.*  
 \*\*\* *Peduncles one-flowered.*
46. *Veronica biloba.* *Two-lobed Speedwell.*  
*Smith in Lin. transf. 1. 193. Willd. spec. 1. 72. Reich. 1. 35. Vahl symb. 1. 1. Lin. mant. 172.*  
*V. arvensis annua, chamædryos folio.* *Buxb. cent. 1. 24. t. 36.*  
*V. orientalis, ocymi folio, flore minimo.* *Tournef. cor. 7.*  
*Flowers solitary, leaves cordate-lanceolate toothed, calyx-leaves equal ovate acuminate three-nerved.*
47. *Veronica agrestis.* *Procumbent Speedwell.*  
*Lin. spec. 18. syst. 60. Reich. 1. 35. Willd. 1. 73. fl. suec. n. 20. hort. cliff. 9. Hudf. angl. 7. Wither. arr. ed. 3. 17. Smith brit. 23. engl. bot. t. 783. Curt. lond. 1. t. 1. Relb. cant. ed. 2. n. 17. Sibth. oxon. n. 14. Abbot bedf. n. 12. Fl. dan. t. 449. Hall. belv. n. 549. Hoffm. germ. 6. Roth. germ. 1. 8. 2. 17. Pollich pal. n. 17. Krock. files. n. 31. Neck. gallob. 7. Scop. carn. n. 23. Crantz austr. 349. n. 16. Villars dauph. 2. 17. Allion. pedem. n. 284. Berg. phyt. 1. t. 9. Desfont. atlant. 1. 13.*  
*V. folio chamædryos.* *Riv. mon. t. 99. f. 2.*  
*V. chamædryfolia flosculis oblongis pediculis insidentibus.* *Mor. hist. f. 3. t. 24. f. 22. Tournef. inst. 145.*  
*V. floribus singularibus, in oblongis pediculis, chamædryfolia.* *Raii syn. 279.*  
*Alfine chamædryfolia, flosc. pedic. obl. insid.* *Baub. pin. 250.*  
*A. media.* *Fuchs. hist. 22.*  
*A. fol. Triflaginis.* *Tabern. hist. 1089. Ger. emac. 616. 1. Park. theat. 764. 4. Raii hist. 847.*  
*A. ferrato folio glabro.* *Baub. hist. 3. 367. 1.*  
*A. spuria altera.* *Dod. pempt. 31. 2.*  
*Flowers solitary, leaves ovate gash-ferrate shorter than the peduncle, stems procumbent, seeds cupped.*
48. *Veronica*



48. *Veronica arvensis*. Wall Speedwell or Speedwell Chickweed.  
*Lin. spec.* 18. *syft.* 60. *Reich.* 1. 36. *Willd.* 1. 73. *fl. suec. n.* 19. *hort. cliff.* 9. *Huds. angl.* 6. *Wither. arr. ed.* 3. 12. *Smith brit.* 24. *engl. bot. t.* 734. *Curt. lond.* 2. t. 2. 133. *Lightf. scot.* 75. *Relb. cant. ed.* 2. n. 18. *Sibth. oxon. n.* 15. *Abbot bedf. n.* 13. *Fl. dan. t.* 515. *Hall. belv. n.* 548. *Hoffm. germ.* 6. *Roth. germ.* 1. 8. 2. 19. *Pollich pal. n.* 18. *Neck. gallob.* 6. *Krock. files. n.* 32. t. 5. *Scop. carn. n.* 18. *Crantz austr.* 350. *Villars dauph.* 2. 350. *Allion. pedem. n.* 285. *Desfont. atlant.* 1. 14. *Thunb. jap.* 20. *Gron. virg.* 4. *Berg. phyt.* 1. 213.
- V. flosculis singularibus, cauliculis adhærentibus.* *Raii syn.* 279.
- V. flosc. cauliculis adhærentibus.* *Tournef. inst.* 145.
- Alfine *Veronicae foliis, flosculis cauliculis adhærentibus.* *Baub. pin.* 250.
- A. foliis Veronicae.* *Ger.* 489. 8. *emac.* 613. 7. *Raii hist.* 847.
- A. fol. subrotundis Veronicae.* *Park. theat.* 762. 4.
- A. ferrato folio hirsutior, &c.* *Baub. hist.* 3. 367.
- Alyssum.* *Column. phytob. t.* 28.
- Elatine polyschides.* *Dalech. hist.* 1239.
- Flowers solitary, leaves ovate gash-ferrate, floral leaves lanceolate longer than the peduncle, stem erect.
49. *Veronica hederifolia.* Ivy-leaved Speedwell or Small Henbit.  
*Lin. spec.* 19. *syft.* 60. *Reich.* 1. 36. *Willd.* 1. 73. *fl. suec. n.* 21. *hort. cliff.* 9. *Huds. angl.* 7. *Wither. arr. ed.* 3. 17. *Smith brit.* 24. *engl. bot. t.* 784. *Curt. lond.* 2. 1. 110. *Lightf. scot.* 76. *Relb. cant. ed.* 2. n. 19. *Sibth. oxon. n.* 16. *Abbot bedf. n.* 14. *Fl. dan. t.* 428. *Hall. belv. n.* 550. *Roth. germ.* 1. 8. 2. 20. *Pollich pal. n.* 19. *Krock. files. n.* 33. *Neck. gallob.* 8. *Scop. carn. n.* 24. *Crantz austr.* 350. n. 18. *Villars dauph.* 2. 17. *Allion. pedem. n.* 286. *Desfont. atlant.* 1. 14. *Berg. phyt.* 1. 11.
- V. flosculis singularibus, Hederulæ folio, Morsus gallinæ minor dicta.* *Raii syn.* 280.
- V. folio hederæ.* *Riv. mon. t.* 99. f. 3.
- V. cymbalaræ folio verna.* *Tournef. inst.* 145.
- V. hederulæ folio.* *Baub. pin.* 250. *Tabern. hist.* 1080. *Mor. hist. f.* 3. t. 24. f. 20.
- Alfine hederacea. *Ger.* 493. 3. *emac.* 616. 3. *Raii hist.* 848.
- A. hederulæ folio minor.* *Park. theat.* 762. 3.
- Alfines genus *Fuchfio folio hederulæ hirsuto.* *Baub. hist.* 3. 368. 2.
- Alfines quartum genus. *Fuchf. hist.* 13.
- Alfine spuria prior. f. *Morsus gallinæ.* *Dod. pempt.* 31.
- β. *Veronica chia, cymbalaræ folio, verna, flore albo, umbilico virescente.* *Tournef. cor.* 7. *Buxb. cent.* 1. 25. t. 39. f. 1.
- V. cymbalarifolia.* *Gmel. tub.* 6.
- Flowers solitary, leaves cordate flat five-lobed, calycine segments cordate, seeds cupped.
50. *Veronica filiformis.* Long peduncled Speedwell.  
*Smith in Lin. trans.* 1. 195. *Willd. spec.* 1. 74.
- V. orientalis, foliis hederæ terrestres magno flore.* *Tournef. cor.* 7. *Buxb. cent.* 1. 25. t. 40. f. 1.
- Flowers solitary, leaves cordate crenate, shorter than the peduncle, calyx-leaves lanceolate.
51. *Veronica triphyllus.* Trifid-leaved Speedwell, or upright Chickweed.  
*Lin. spec.* 19. *syft.* 60. *Reich.* 1. 37. *Willd.* 1. 74. *fl. suec. n.* 20. *hort. cliff.* 9. *Huds. angl.* 7. *Wither. arr. ed.* 3. 17. *Smith brit.* 25. *engl. bot. t.* 26. *Curt. lond.* 6. t. 2. 68. *Fl. dan. t.* 627. *Hall. belv. n.* 551. *Hoffm. germ.* 7. *Roth. germ.* 1. 9. 2. 21. *Pollich pal. n.* 20. *Krock. files. n.* 34. *Neck. gallob.* 6. *Scop. carn. n.* 25. *Crantz austr.* 351. *Villars dauph.* 2. 18. *Allion. pedem. n.* 287. *Kniph. orig. cent.* 11. n. 99. *Berg. phyt.* 1. 217.
- V. flosculis singularibus, foliis laciniatis, erecta.* *Raii syn.* 280.
- V. triphyllus cærulea.* *Mor. hist. f.* 3. t. 24. f. 23.
- V. folio rutæ.* *Riv. mon. t.* 96.
- V. verna, trifido vel quinquefido folio.* *Tournef. inst.* 145.

Alfine recta. *Ger. emac.* 612.—triphyllus f. laciniata. *Park. theat.* 1260. 6.

*A. triphyllus cærulea.* *Baub. pin.* 250.

*A. parva erecta folio alfine hederaceo.* *Lob. ic.* 464.

*A. folio profunde secto flore purpureo seu violaceo.* *Baub. hist.* 3. 368. 1.

Flowers solitary, upper leaves digitate, peduncles longer than the calyx, seeds flattened.

52. *Veronica verna.* Vernal Speedwell.

*Lin. spec.* 19. *syft.* 60. *Reich.* 1. 37. *Willd.* 1. 75.

*fl. suec. n.* 23. *Huds. angl.* 8. *Wither. arr. ed.*

3. 13. *Smith brit.* 26. *engl. bot. t.* 25. *Rose elem.*

*app.* 444. t. 2. f. 1. *Dickf. ficc.* 10. 1. *Fl. dan.*

t. 252. *Hall. belv. n.* 552. *Hoffm. germ.* 7.

*Roth. germ.* 1. 9. 2. 22. *Pollich pal. n.* 21. *Krock.*

*files. n.* 35. *Villars dauph.* 2. 18. *Allion. pedem.*

n. 281. *Dill. gieff. app.* 38.

*V. Dillenii.* *Crantz austr.* 332.

β. *Veronica succulenta.* *Allion. pedem. n.* 283. t. 22.

f. 4.

Flowers solitary subsessile, leaves finger-parted, peduncles shorter than the calyx, stem stiff and straight.

53. *Veronica digitata.* Finger-leaved Speedwell.

*Lin. spec. ed. Willd.* 1. 75. *Vahl symb.* 1. 2.

*V. succulenta.* *Schmidt bohém.* 1. n. 43.

Flowers solitary sessile, all the leaves finger-parted, stem stiff and straight.

54. *Veronica acinifolia.* Thyme-leaved Speedwell.

*Lin. spec.* 19. *Reich.* 1. 38. *Willd.* 1. 75. *Hoffm.*

*germ.* 7. *Roth. germ.* 1. 9. 2. 29. *Pollich pal.*

n. 22. *Leers herb. n.* 20. *Hall. belv. n.* 547.

*Dill. gieff. app.* 39. *Allion. pedem. n.* 288.

*V. præcox.* *Schmidt bohém.* 1. n. 44.

*V. minima, Clinopodii minoris folio glabro, romana.*

*Boc. mus.* 2. 29. t. 102. *Raii suppl.* 423. *Vaill.*

*par.* 201. t. 33. f. 3.

β. *Veronica romana.* *Allion. pedem. n.* 289. t. 85. f. 2.

*Schmidt bohém.* 1. n. 45. *Villars dauph.* 2. 19. *Scop.*

*carn. n.* 17.

Flowers peduncled solitary, leaves ovate smooth crenate, stem erect somewhat hairy.

55. *Veronica peregrina.* Knotgrafs-leaved Speedwell.

*Lin. spec.* 20. *syft.* 60. *Reich.* 1. 38. *Willd.* 1. 76.

*fl. suec. n.* 24. *Fl. dan. t.* 407. *Hoffm. germ.* 7.

*Roth. germ.* 1. 9. 2. 29. *Krock. files. n.* 36. *Vil-*

*lars dauph.* 2. 19. *Smith in Linn. trans.* 1. 192.

*V. terrestris annua, folio polygoni, flore albo.* *Mor. hist.* 2. 322. f. 3. t. 24. f. 19.

β. *V. romana.* *Lin. spec.* 19. *syft.* 60. *Reich.* 1. 38.

*mant.* 317. *Smith in Linn. trans.* 1. 192.

Flowers solitary sessile, leaves oblong bluntish toothed and entire, stem erect.

56. *Veronica Bellardi.* Linear-leaved Speedwell.

*Lin. spec. ed. Willd.* 1. 76. *Allion. pedem. n.* 282.

t. 85. f. 1.

Flowers solitary peduncled, leaves linear quite entire rough-haired longer than the flower, stem quite simple erect.

57. *Veronica marilandica.* North American Speedwell.

*Lin. spec.* 20. *syft.* 61. *Reich.* 1. 38. *Willd.* 1. 76.

*Murr. in comm. gott.* 1782. p. 11. t. 3. *Gron.*

*virg.* 4.

Flowers solitary sessile, leaves linear, stems diffused.

#### DESCRIPTIONS, &c.

1. Root perennial. Stem four feet high, rough-haired. Leaves six or seven in whorls, twice as wide as those of *V. virginica*. Peduncles terminating solitary; the lateral ones with two opposite oval leaflets. Calyxes five-cleft. Corollets blue, with an oblong tube, and small acute border. Stamens and pistil twice as long as the Corolla.

Gmelin says, that the leaves vary from five to nine in a whorl, but that six is the most common number; and that the fruit is like that of *Salicaria*.

Native of Siberia. Introduced in 1779, by Chevalier Thunberg. It flowers in July and August.

2. Stems erect, four or five feet high, having four or five lanceolate leaves in whorls at each joint, ferrate and ending in acute points. The stems are terminated by long slender spikes of white flowers, which appear

° *Lin. spec.* and *syft.*

° *Hort. kew.*



late in July. [It varies with bluish-coloured flowers. Native of Virginia (and Japan.) Cultivated in 1714, by the Dutchess of Beaufort<sup>a</sup>.]

3. Root perennial, sending out many offsets. Lower leaves two inches long, and half an inch broad, pale green and hairy. Stems a foot high, with very narrow lanceolate leaves, placed opposite, and having a few slight serratures on their edges. Stems terminated by long spikes of blue flowers, which appear in June and July. There is a variety of this also with a flesh-coloured flower.

[Native of Siberia and Germany. Cultivated by Mr. Miller in 1731<sup>r</sup>.]

4. Stalks not so long as those of the preceding. Leaves by fours and threes round the stalk, on longer foot-stalks; they are broader at the base, run out into long acute points, are unequally serrate, and of a bright green colour. The flowers are of a bright blue, and appear in July.

[It varies, like the preceding and following species, with leaves opposite, in threes or in fours; also with blue, bluish, flesh-coloured and white flowers.

Roth describes the calyx as unequal, with two of the leaflets linear and longer, the two others shorter, wider and bifid. Willdenow remarked them to be always undivided; he doubts therefore whether Roth's plant be the same with this<sup>s</sup>.

Native of the sea coasts of Europe. Cultivated, as we learn from Lobel, (adv. 145.) in 1570, by Mr. Hugh Morgan<sup>t</sup>.

Ehrhart has a variety with broader leaves<sup>u</sup>.]

5. Lower leaves two inches long, and an inch broad in the middle, drawing to a point at each end, serrate, and of a lucid green colour. Stems a foot and a half high, with leaves of the same shape but smaller, and placed opposite; they are terminated by long spikes of blue flowers which appear in June.

[Native of Germany, Austria, and Russia. Cultivated in 1731, by Mr. Miller<sup>x</sup>.]

6. Stems very white and woolly, about a foot high. Leaves oblong, hoary, two inches and a half long, three quarters of an inch broad, sessile. Flowers deep blue in terminating spikes, and from the upper axils. They appear in June and July.

[Native of Russia, (Mr. Miller says Ukraïn Tartary.) Cultivated by him in 1759<sup>y</sup>. According to Gmelin, it varies with white flowers.

7. Root perennial. Stems a span high, ascending, simple, round, leafy, somewhat woody, pubescent. Leaves mostly blunt, but sometimes sharpish, hairy. Spike erect, many-flowered. Corolla deep blue, with the orifice of the tube bearded<sup>z</sup>.

Dr. Withering remarks, that the leaves are narrower in proportion to their length, and more pointed than in the hybrida; that the stamens are much longer than the corolla; and that the anthers, as well as that, are blue.

In gardens it becomes much more luxuriant. There the stalks rise a foot and half high, but never branch; the lower leaves are an inch and half long, and three quarters of an inch broad. Mr. Miller asserts that the upper ones are alternate.

[It varies with linear almost entire leaves: with flesh-coloured and white flowers: and according to Haller, with several spikes, which is *V. major angustifolia* of Clus. pann. 617. 619. and Bauh. hist. 3. 284.

Native of Europe and Siberia; in dry calcareous pastures; flowering from July to September. With us not common, but where it is found, it is abundant. Ray observed it in several closes adjoining to Newmarket heath beyond Botolphsham, and in a close near the beacon. Mr. Relhan—among the furze near Hare Park, about Horseheath hall, and on the walls of St. John's College, Cambridge. Mr. Woodward—on Cavenham heath, near Bury, in Suffolk; and near Penny bridge, Lancashire. Dr. Withering—about Penzance in Cornwall. Its bright blue flowers agreeably enliven the barren places where it generally grows.

The figure in Flora Danica is so incorrect, that it is difficult to decide whether this, or one of the species nearly allied to it was intended<sup>a</sup>.

<sup>a</sup> Idem. <sup>r</sup> Idem. <sup>s</sup> Willdenow. <sup>t</sup> Hort. kew. <sup>u</sup> Willdenow. <sup>x</sup> Hort. kew. <sup>y</sup> Idem. <sup>z</sup> Smith brit. <sup>a</sup> Engl. bot.

8. The difference between this and the preceding is not easily defined, and yet they seem to be distinct, though some have thought otherwise. It is twice as large; with rougher stem and leaves; the latter are more strongly serrate or notched, of a much broader elliptical form, and of a more grassy green. The winged foot-stalk is common to both. The stem of this generally produces three spikes, when luxuriant. It always grows erect. The root is creeping and perennial. The flowers appear in July and August<sup>b</sup>.

Willdenow remarks, that the leaves are ovate, acuminate, bluntish, attenuated at the base into the petiole, pubescent but yet green. He refers the *V. mas recta latifolia spica cærulea* of Barr. ic. 682. to this species; but informs us that all the German authors have taken a variety of the spicata for the hybrida.

Mr. Lhwyd first found it in Ray's time on the side of a hill in Montgomeryshire called Craig Wreidhin. Mr. Bingley has since gathered it near Cartmel Wells, Lancashire, on Humphrey head, a steep rock jutting into the sea, where Mr. Crow and Mr. Woodward observed it eighteen years before. Dr. Withering says that Mr. Hall saw it growing plentifully there. On comparing my wild specimen of this plant from Wales, with that of the spicata from Newmarket heath, I find it to be stouter but not so tall; the radical leaves are truly elliptic and extremely blunt, certainly not acuminate, only the upper stem-leaves are acute. The petioles of the radical leaves can scarcely be called winged in either species. My Welsh specimen has the stems rather ascending than erect, and there is no sign of more than one spike at the end of each stem, of which there are two fertile and two barren on my specimen.

Mr. Miller's description is from a very luxuriant garden plant.

9. Root perennial. Stems diffused erect. Leaves opposite, somewhat crowded, having commonly three linear elongated teeth on each side, and smooth. Raceme the length of the stem. Calyxes equal. Flowers blue. Style capillary, permanent. Capsules oval. Native of Siberia, where it was found by Laxmann<sup>c</sup>. Introduced in 1776, by Chevalier Murray. It flowers in July<sup>d</sup>.

It varies with filiform aggregate leaves<sup>e</sup>.

10. Native of Siberia. Introduced in 1780, by William Pitcairn, M.D. It flowers in June and July<sup>f</sup>.

11. This differs from the preceding, in having the spikes never solitary but aggregate, the flowers bigger, the leaves an inch long, lanceolate wedge-shaped, at the base, with lanceolate segments<sup>g</sup>.

Native of Siberia. Introduced in 1779, by Mess. Kennedy and Lee. It flowers in July and August<sup>h</sup>.

12. 13. Natives of New Zealand<sup>i</sup>.

14. Stem shrubby. Branches round, smooth, jointed, covered with a brown bark. Leaves sessile, four inches long, even, without veins or nerves, flat at the edge, attenuated outwards. Racemes from the uppermost axils, opposite, length of the leaves: pedicels alternate, copious, somewhat villose. Bracte linear, minute, obtuse, subciliate. Calyx-leaves small, lanceolate, acuminate. Tube of the corolla twice as long as the calyx: segments of the border oblong, obtuse. Capsules ovate, acute, three times as long as the calyx. The leaves are wider at the base than in the species next following. Native of New Zealand.

15. Branches round, smooth, covered with a brown bark, jointed, marked with rings after the leaves are fallen, the thickness of a goose quill. Leaves opposite, four or five inches long, sessile, attenuated to both ends, somewhat waved, smooth and very even, veinless. Racemes axillary, opposite, longer than the leaf. Peduncles round, very smooth, an inch and half long. Pedicels capillary, very abundant, several from the same point; when fruiting bent back. Bractes at the base of the pedicels, awl-shaped. Calyx four-leaved: leaves shorter than the corolla, equal, awl-shaped. Tube of the corolla twice as long as the calyx: segments of the border lanceolate, acute. Capsule oblong, acute, twice as long as the calyx<sup>k</sup>. Native of New Zealand<sup>l</sup>.

<sup>b</sup> Idem. <sup>c</sup> Lin. mant. and syst. <sup>d</sup> Hort. kew. <sup>e</sup> Willdenow. <sup>f</sup> Hort. kew. <sup>g</sup> Willdenow. <sup>h</sup> Hort. kew. <sup>i</sup> Forster. <sup>k</sup> Vahl. <sup>l</sup> Forster.



16. Branches round, smooth. Leaves sessile, approximating, an inch long, rigid, even, mucronate with a plaited tip. Racemes from the uppermost axils, opposite, an inch and half long. Peduncle round short. Pedicels opposite, short. Bracte minute at the base of each. Calyx four-leaved: leaves oblong, obtuse, smooth, subciliate. Segments of the corolla obtuse. Style longer than the corolla. Capsules oval, twice as long as the calyx. Native of New Zealand<sup>m</sup>.

17. Root perennial, fibrous. Stems widely diffused, from three to seven inches or a foot in length, round, hirsute, stiffish, creeping. Leaves hirsute with short spreading hairs, that appear when magnified, finely jointed, and rugged, ferrate, about an inch in length, the lower ones narrowed at the base, the upper ones oblong or oval, obtuse, sessile or nearly so, the lower ones somewhat smaller and petioled. Spikes axillary, solitary, on long peduncles, many-flowered, hairy; some so nearly terminating, that at first view they seem to be so, but upon more accurate examination we find one or more pairs of leaves beyond them. Under each flower is a linear bracte, obtuse, downy, longer than the pedicel, but scarcely the length of the calyx, and upright. Calyx deeply divided into four segments, beset with rough glandular hairs; segments ovate-lanceolate and nearly equal. Corolla tube half as long as the calyx, white, border pale purple or faint violet, with deeper veins or streaks; the segments ovate, obtuse, three larger and nearly equal, the fourth half the width of the others. Anthers blueish with a white pollen. Germ somewhat ovate, obtuse, flattened, clammy, grooved on each side, surrounded at its base by a gland. Style a little thickened towards the top, violet. Stigma truncate<sup>n</sup>. Capsule small, a little longer than the calyx, obcordate, with a groove on each side, compressed, somewhat villose, opening at top transversely: partition very narrow, contrary to the valves. Seeds six or eight in each cell, elliptic, compressed, smooth, yellow or pale brown<sup>o</sup>.

Native of Europe, on dry sandy pastures, and heaths. In England not uncommon; flowering from may or june to august or later. It varies in the colour of the flowers, pale blue, pale red, and white; but what is much more remarkable, it has been found abroad with double flowers.

The leaves have a weak not disagreeable smell, which is dissipated in drying; they give it over in distillation with water, but without yielding any separable oil. They are bitterish and roughish to the taste. An extract made from them by rectified spirit is moderately bitter and astringent.

It has been much recommended, especially in Germany and Sweden, as a substitute for Tea, than which it is more astringent and less grateful. As a medicine it has had a considerable share of fame, particularly in disorders of the lungs, as coughs, asthmas, consumptions, &c. in which it was said not only to prove expectorant, but to heal internal ulcers. If we may judge of its utility by its sensible qualities, it is only to be recognized as an astringent; and even as such it is entirely disregarded in England by medical practitioners<sup>p</sup>. Mr. Miller says, it is one of the vulnerary herbs which are imported from Switzerland. It is very common in that country, and Haller speaks well of its effects. In France it is still called Thé de l'Europe.—“We do call these plants in English, says Gerarde, Paul's Betonie or Speedwell: in Welsh it is called Fluellen, and the Welsh people attribute great virtues to the same.”

18. Root perennial, creeping. Stem round, smooth, procumbent, creeping very far. Leaves roundish or obovate, firm, rigid, totally different in substance from those of the officinalis, smooth, shining, crenate, paler on the under side. Spikes oval, dense, on long footstalks. Flowers very numerous, violet-coloured, of a different figure from those of *V. officinalis*<sup>q</sup>.

Villars says it is easy to know this species by its creeping hard woody stems, which run on the surface in the moist turf of the Alps. Its blue flowers form tufted spikes thickly set an inch in length. The divisions of the corolla are often rolled obliquely.

It is plentiful on the Alps of Switzerland, France and Italy: also on the Pyrenees. Dr. Smith says that he has frequently compared it, in its native soil, with the common *V. officinalis* growing in the same place; and that it is most certainly a distinct species. He has never seen the variety with hairy leaves and stem mentioned by Villars, under the name of *V. Tournefortii*.

19. This is a bushy shrub about two feet high. Stem upright, round, very much branched. Branchlets alternate, spreading, round or indistinctly quadrangular, closely leaved on every side, having a pubescent line on each side running down from the oppositions of the leaves; which spread very much, are scarce an inch long, acute, coriaceous, smooth and even, one-nerved, paler underneath, evergreen, border cartilaginous, on very short concave smooth petioles, gibbous at the base on the outside. The regular growth of these leaves, decussated or crosswise, distinguishes this species immediately. Racemes single, short; few-flowered, towards the end of the branches, not terminating, but just below the top. Pedicels alternate, short, quadrangular, one-flowered. Bractes solitary, lanceolate, obtuse, keeled, subciliate. Calyx deeply four-parted; segments ovate, acute. Corolla milk-white, with the divisions nearly equal, spreading, and the orifice beardless. Filaments shorter than the corolla, divaricating, white. Anthers cordate, purple. Germ ovate-oblong, smooth, scored with a line on each side, and having four nectareous glands at the base. Style awl-shaped, declined, length of the stamens. Stigma acute<sup>r</sup>.

Dr. Smith remarks, that the flowers having no scent, and little beauty, this shrub would not be worth cultivating, were it not for the amenity, abundance and singularity of the perennial leaves. Mr. Curtis on the other hand says it is entitled to our admiration, on account of the most delicious fragrance of the blossoms, similar to that of the *Olea fragrans*. He observes that the corolla is sometimes divided into five segments; and there being a greater equality in these than is usually found in the corolla of this genus; the seed-vessel also differing in its form, being longer, more oval, and scarcely emarginate, he is induced to think that this plant has more affinity with *Olea*, one species of which it resembles in fragrance.

Jussieu and Gmelin have ranged it in a new genus named *Hebe*. But Dr. Smith asserts that it differs in no respect from *Veronica*, except in its arborecent habit, and in having the fruit compressed the contrary way to what it is in the other species. The flower corresponds in almost all respects.

Native of Falkland Islands, whence John Fothergill, M.D. received it in 1776<sup>s</sup>. It flowers about the middle of june, and continues during the summer.

20. Stem not longer than a finger, very slender, somewhat villose, leafless, few-flowered. Leaves at the base four or five, ovate, soft, subcrenate. Corolla tinged inelegantly with blue. Seeds in each cell as far as ten, yellow, compressed, rounded<sup>t</sup>.

Villars remarks that it varies considerably; commonly appearing as a single tuft of villose rounded leaves; but sometimes with several stems creeping to right and left, forming tufts here and there, and bearing only two or three flowers on each.

Haller describes it in this latter state, and says that there are not more than seven flowers in a raceme; and that the leaves are roundish, crenate, not hard, and hirsute with longish hairs.—These hairs are characteristic of the species, being jointed like a *Conserva*.

Native of the Alps of the southern part of Europe, and the north of Asia.—Introduced in 1775, by the Doctors Pitcairn and Fothergill. It flowers in may.

β. Is only a variety of this, differing in the greater size of all its parts. The circumstances of the hairs being articulated like a *Conserva*, and the leaves being ferrate, are common to both<sup>u</sup>.

21. Leaves obtuse, crenate, commonly three pairs on the stem. Calyx-leaves very hirsute, glandular-viscid at the tip<sup>x</sup>.

The leaves are like those of the Daisy, whence its

<sup>m</sup> Vahl.

<sup>n</sup> Curtis, Withering, Smith.

<sup>o</sup> Gartner.

<sup>p</sup> Woodville.

<sup>q</sup> Smith in Linn. trans.

<sup>r</sup> Smith spicil.

<sup>s</sup> Hort. kew.

<sup>t</sup> Scopoli.

<sup>u</sup> Smith in Linn. trans.

<sup>x</sup> Linn. mant.



trivial name. Stem straight, four or six inches high, villose, hard, having leaves at its base, two or three pairs, besides others smaller, terminated by a close spike of small reddish dark flowers. Capsules villose, elongated<sup>7</sup>.

Native of the Alps of Switzerland, especially about Aigle, Piedmont, Dauphiné, Silesia, and the Pyrenees. — Introduced in 1775, by the Doctors Pitcairn and Fothergill. It flowers in June and July<sup>2</sup>.

22. Root perennial. Radical leaves opposite, lanceolate, acute, irregularly crenate, marked with three nerves, perfectly smooth, pale, and somewhat cartilaginous in the margin, very much resembling those of *Gentiana acaulis*, whence the trivial name. Those on the stem are strikingly different, obtuse and hairy. Stem ascending, smooth below, hairy in the upper part. Corymb somewhat spiked, consisting of many flowers. Footstalks hairy. Calyx hairy, quadrifid, equal. Corolla large, beautiful, of a deep blue. Anthers heart-shaped, large.

Gathered by Tournefort in Cappadocia. By Buxbaum in Armenia. Dr. John Sibthorp also found it in his tour to the east<sup>3</sup>.

23. Root perennial. Stems several, quite simple, a hand high or a little more, hispid with close-pressed hairs, round or bluntly four-cornered. Lower leaves orbicular, sessile, crenate; the middle stem-leaves a little longer, acuminate, and more acutely crenate; the two or three uppermost alternate, half-embracing. Raceme loose, terminating, containing about fifteen flowers, with a very small ligulate bracte to each<sup>4</sup>. Native of the Pyrenees and Monte Baldo.

β. *V. pumila* of Allione seems to differ only in size. Native of the Piedmont alps.

24. In strong woody roots, and stems branching and intricate at their base, this agrees with the *saxatilis*, but the flowering-branches are perfectly upright, six inches or more in height, each bearing a spike rather than a corymb, composed of a considerable number of flesh-coloured flowers, (never blue,) on pedicels scarcely exceeding the bractes in length. The leaves also are rather paler, much more numerous, oblong, a little downy on their edges and veins: they are sometimes quite entire, sometimes crenate or serrate. The calyx and capsule agree much with those of *V. saxatilis*, and the pedicels are lengthened out as the fruit ripens, but never in so great a degree as in that species.

In both these Speedwells the flowering branches are merely annual, though the stem below is woody and truly perennial, so that the latter ought rather to be esteemed the naked crown of the root.

Native of the mountains of Switzerland, Austria, Piedmont, Dauphiné, and of the Pyrenees. First found in Cruachan Argyleshire in Scotland, by the Rev. Dr. Walker, and communicated to Dr. Smith in 1782. Also on Ben Lawers with the *saxatilis*, by Mr. Brown; both flowering at the same season.

25. The roots run deep into fissures of rocks, and the woody branching entangled stems form small tufts, whence the simple leafy round downy flowering-branches, three or four inches long, spread in every direction. Leaves opposite, small, elliptic or oblong, blunt, always entire at their base and extremity, but often serrate in some degree about their middle: they are a little thick or fleshy, smooth, of a dull darkish green, turning black when dry. From three to six large handsome dark-blue flowers grow in a short terminating corymb, the pedicels of which are twice or thrice as long as their corresponding bractes. Calyx in four nearly equal blunt downy segments. Orifice of the corolla elegantly tinged with red. Capsule longer than the calyx, ovate, downy, splitting as it ripens into four lanceolate valves, so that the fruit differs much from the heart-shaped form of our common species<sup>5</sup>.

It differs from the preceding in having broader leaves, more diffused stems, larger flowers of a blue colour; but especially by its peduncles being longer and fewer, in a corymb, never in a spike<sup>6</sup>.

Native of Switzerland, Austria, Denmark, Norway

and Scotland. Found on Ben Lawers by Mr. G. Donn, Mr. J. Mackay, and Mr. Dickson.

This beautiful little plant has long been known in the more curious English gardens by the name of *V. fruticulosa*, with which many botanists, (even Linneus, Haller, and Jacquin originally,) have confounded it<sup>7</sup>. It was cultivated by Mr. Miller in 1748<sup>8</sup>, under the name of *fruticulosa*.

According to Willdenow *V. Nummularia* of Gouan; and *V. pygmæa* of Schrank, are varieties of this species.

26. Root perennial, of long simple fibres. Stems branched and procumbent at the base, whence they throw out roots, then obliquely upright, three or four inches high, leafy, round, simple, smooth or hairy. Leaves opposite, on short petioles, rather obtuse, often entire but generally with a few dispersed notches, dark green, thin, polished. Flowers small in a short dense blunt spike or corymb, afterwards lengthened out into a raceme; the lowermost peduncles longer. Calyx in four rather unequal bluntish hairy and ciliate segments. All the hairs are finely jointed. Corolla bright blue, with a white tube. Capsule elliptic, compressed, emarginate, hairy, tipped with the short permanent style<sup>9</sup>.

Native of the mountains of Europe. Discovered by Mr. Dickson in the highlands of Scotland, about Garway-moor, and on Ben Nevis in 1786, and not before in this island. Mr. J. Mackay has since found it on the mountains of Badenock. It flowers in July and August. What has been taken for it before, was either a large variety of *V. serpyllifolia*, or *V. fruticulosa*.

Mr. Dickson supposed the *V. alpina* of Lightfoot to be a new species, which he named *humifusa*, but Dr. Smith makes it a variety of the *serpyllifolia*; consequently the description in the *Flora Scotica*, compiled from Linneus's *Flora Lapponica*, is there misapplied, and belongs to the species here before us<sup>10</sup>.

27. Willdenow has distinguished this from the preceding by his dried specimens, it appearing to differ from that in its habit. All the leaves are opposite, quite entire, more rigid and very blunt. Schmidt (in fl. bohém. 1. n. 16.) confounds it with the preceding, but it differs from it in having the leaves blunt and quite entire, and the calyxes very hairy. The leaves in both are ciliate at the edge, and the hairs are jointed like a *Conferva*<sup>11</sup>.

Krocker describes the lower leaves on very short petioles, the upper ones sessile and smaller, all ovate, quite entire or indistinctly toothed, by no means smooth but truly villose. Corymb very short, of five or six flowers on very short pedicels, with a green lanceolate very narrow bracte to each. Calyx hairy. Corolla small, blue or white. Capsule obtuse, less compressed, villose, large in proportion to the plant, roundish, cordate. Native of the Palatinate, Bohemia and Silesia.

28. Roots perennial, fibrous; and the prostrate stems throw out numerous radicles by which the plant is much increased. The flowering-branches are mostly erect, bearing a few pairs of opposite, roundish, slightly crenate, three-ribbed leaves, on shortish footstalks. Each branch terminates in a lax spike or raceme of small pale blue, sometimes flesh-coloured flowers, accompanied by elliptical sessile bractes. Segments of the calyx equal, obovate, blunt, scarcely pubescent. Corolla, however pale, always marked with dark-blue streaks. Capsule obcordate, deeply divided, about as long as the style. In wet places the whole herb is very smooth and shining, rather fleshy; when it occurs in very dry spots, it becomes all over downy: indeed the peduncles and bractes are frequently liable to this alteration.

Native of Europe, Siberia, Barbary and North America. Common with us in pastures which are rather moist; sometimes in the shady parts of cultivated grounds, flowering in the early part of summer<sup>12</sup>.

Mr. Curtis informs us that he has counted sixty seeds in one capsule; they are of a yellowish brown colour, and nearly of an ovate form.

β. From a comparison of specimens of Mr. Dickson's *V. humifusa*, found in the mountainous rills of

<sup>7</sup> Villars. <sup>8</sup> Hort. kew. <sup>9</sup> Smith in Linn. transf. <sup>10</sup> Gouan illustr. <sup>11</sup> Engl. bot. <sup>12</sup> Smith brit.

<sup>1</sup> Engl. bot. <sup>2</sup> Hort. kew. <sup>3</sup> Smith brit. and engl. bot. <sup>4</sup> Smith in Linn. transf. and engl. bot. <sup>5</sup> Willd. spec. <sup>6</sup> Engl. bot. Scotland,



Scotland, Dr. Smith has ventured to make it a variety of this species, which is liable to many variations with respect to the position of its stems and form of its leaves. —The stem of the humifusa is prostrate, and the raceme shorter<sup>1</sup>: having few flowers crowded together on short pedicels, of a pleasant blue. Lower leaves petioled, opposite, often by threes or fours: upper ones mostly sessile and alternate<sup>m</sup>.

29. This seems to differ little from the preceding except in having the upper part of the stem and the calyxes villose; but it is entirely different from Gouan's *V. nummularifolia*, which seems to be a variety of *V. fruticulosa*<sup>n</sup>. —It is given above as a variety of *saxatilis*.

Native of the Piedmont Alps, and the Pyrenees.

30. Roots perennial, of long simple fibres. Stems procumbent or floating, taking root from their joints, branched, round, leafy, smooth and shining, as is every other part of the herb. Leaves on short petioles, blunt, slightly ferrate, of a bright green, somewhat fleshy. Clusters axillary, opposite, erect, longer than the leaves, composed of numerous blue flowers, in perfection about June or July. Bractes linear-lanceolate, shorter than the pedicels. Segments of the calyx ovate, acute, shorter than the corolla. Capsule cloven, almost twin<sup>o</sup>.

Withering remarks that there are glands at the serratures of the leaves; and that the germ sits on a thick yellowish-green glandular substance.

Native of Europe, Siberia and Barbary. Common in ditches and limpid brooks, most commonly the companion of Water Cresses; with which it is gathered for medical purposes, and both together with Scurvy-grass enter into that nauseous composition called Spring-juices, supposed to be a powerful antiscorbutic<sup>p</sup>.

The leaves are mild and succulent, and may be eaten with water-cresses as a salad in the spring<sup>q</sup>. They have a bitterish subastringent taste, but manifest little or no acrimony, nor any peculiar odour. To derive any advantage from it the juice must be used in large quantities, or the fresh plants eaten as food<sup>r</sup>.

31. Root perennial, creeping. The whole herb much agreeing in habit with the preceding, except that the stem is erect, and leaves lanceolate, acute, and longer than in that species. The clusters are also longer, sharper, composed of more numerous (thirty to forty or more) and smaller flowers. Every part of the plant is smooth. Corolla of a pale dull blue, occasionally flesh-coloured, with darker veins. Capsules small, roundish, slightly notched. Seeds very small and numerous.

No notice is taken of this plant in a medical or æconomical view. Its qualities are probably akin to those of the broad-leaved Brooklime, to which it is nearly allied in botanical characters, though unquestionably a distinct species.

Native of the four quarters of the world: most parts of Europe, Siberia, Barbary and North America. Very common in our ditches, and muddy watery places, flowering in July, and like other aquatics which are tenacious of life or easily propagated, it is often found out of the water on the neighbouring banks, merely diminished in luxuriance<sup>s</sup>. It is singular that Linneus and Curtis consider this as annual.

32. Root slender perennial, throwing out creeping runners, and a few weak, spreading, simple stems, six or eight inches long, clothed with opposite linear or linear-lanceolate leaves, which are generally but slightly toothed, sometimes ferrate, and sometimes entire. The racemes or clusters are always alternate, single, lax, divaricating, varying in length, and consisting of a few pale flesh-coloured or whitish purple-veined, rather elegant flowers, the slender pedicels of which are bent backwards after the corolla fades, and then the ripening capsules, which are brown, and larger than in *V. Anagallis*, become conspicuous, and have given rise to the name *scutellata*, as resembling small shields. They are deeply emarginate.

Though for the most part smooth, yet it has been found in a downy state on St. Faith Newton bogs near Norwich, and in other places<sup>t</sup>.

<sup>1</sup> Smith brit. and engl. bot. <sup>m</sup> Dickson in Wither. <sup>n</sup> Vahl.  
<sup>o</sup> Engl. bot. <sup>p</sup> Idem. <sup>q</sup> Withering. <sup>r</sup> Woodville.  
<sup>s</sup> Engl. bot. <sup>t</sup> Idem.

Native of many parts of Europe, and Barbary, in bogs and on the edges of ponds on heaths and moors; flowering from June to September. It is not uncommon with us in such situations, especially where the soil is sandy, though much less so than the other Brooklimes. Cambridgeshire, on the Hill of health, Barnwell, by the road to Histon, Teversham moor, pits near Gamlingay bogs; Fenlake, Stevington and Ampt-hill, Bedfordshire; Peat-bogs on Bullington Green, and Otmore in Oxfordshire. Boggy meadows near Buntingford. Broadmore near Hales Owen. Ditches about Tamworth. On Poole and Canford heaths, in Purbeck, &c. Dorsetshire; observed by the late Dr. Pulteney, who informs that this elegant species was first noticed in England by How, phyt. brit. 7. On Streat-ham common, in Surrey, where I observed it many years, the plant is smooth, and the flowers white. Near London, it is also found on Hampstead heath. Bogs on Harefield common, by Mr. Blackstone.

33. Racemes dense, strict, subspiked. Leaves very bluntly ferrate. The calyxes seem to be five-cleft. There is a variety with a double flower<sup>u</sup>.

Dr. Smith says it seems to belong to *V. latifolia*, but there being no original specimen of it in the Linnean herbarium, he cannot determine the matter with absolute certainty<sup>x</sup>. Willdenow informs us, that he has always seen the *latifolia* or a larger variety of the prostrata under this name, and that it must therefore remain a dubious plant.

34. This also is conjectured by Dr. Smith to belong to the *latifolia*, and as he informs us, that Linneus erased his long description of it from his copy of the *Species Plantarum*, I have omitted it.

Willdenow says that he has a specimen from Bohemia, which is certainly distinct from all the other species. It resembles the prostrata in its habit and the form of the corolla, but is different, in having the leaves deeply toothed at the base and more ovate, and the stem hairy in two rows: it differs from *V. Chamædryas* in having smaller leaves deeply toothed at the base, the stem prostrate, the calyxes unequal, the segments of the corolla acute and converging. —The stem is prostrate, round, bifariously pubescent; leaves ovate, the lower petioled, the upper sessile and obtuse, hairy, bluntly toothed, the lower teeth elongated; racemes axillary in the upper part of the stem as in *V. prostrata*; bractes lanceolate, quite entire, hairy, longer than the peduncle; peduncles short; calyx four-cleft, with the two outer segments bigger. Native of Austria and Bohemia.

35. Root perennial. Stems hardish, hoary, somewhat tomentose. Leaves obtuse, subpetioled except the upper ones, from the axils of which proceed long racemes. Calyxes five-cleft, unequal. Flowers bright violet, crowded<sup>y</sup>. Native of Germany, Italy and Switzerland, on hills. —Introduced in 1774, by Chevalier Murray. It flowers in May and June<sup>z</sup>.

36. Root perennial. Stems prostrate, suffruticose at the base, pubescent. Leaves like those of *Chamædryas*; elliptic, oblong, very deeply and equally ferrate, so as to resemble the teeth of a comb, subpetioled, opposite, pubescent. Flower-stalk lateral, a hand in length, having five or six similar leaves on it, but alternate and sessile: it is terminated by a corymb elongated into a raceme<sup>a</sup>. Calyx five-cleft<sup>b</sup>. Native of the neighbourhood of Constantinople.

37. Root fibrous, perennial. Stems decumbent, weak, hairy all over, leafy. Leaves petioled, ovate, gash-ferrate, thin, shining, somewhat hairy. Racemes axillary, alternate, lax, few-flowered. Flowers pale blue painted with purple. Capsule orbicular-twin, compressed, acutely margined, ciliate<sup>c</sup>.

The hairiness of the stem being general, and not confined to two longitudinal lines, is a sufficient distinction of this from *V. Chamædryas*: to this we may add, that the leaves are petioled, thinner and more shining; that the corolla is much smaller and less beautiful; and that the capsule is thrice as big, more compressed and

<sup>u</sup> Linn. spec. and syst. <sup>x</sup> Linn. trans. 1. 191. <sup>y</sup> Linn. spec. and syst.  
<sup>z</sup> Hort. kew. <sup>a</sup> Linn. mant. <sup>b</sup> Linn. syst.  
<sup>c</sup> Smith brit.



dilated, and formed as it were of two orbicular portions joined together instead of being heart-shaped<sup>d</sup>.

Dr. Withering remarks that besides the leaves being petioled, they are reddish underneath, heart-shaped but blunt, the stem and leaf-stalks hairy, the flowers smaller purplish-streaked.

Mr. Relhan adds, that the capsules not only differ in size and form from those of the *Chamædrys*, but are acutely margined and ciliate, and that the flowers are fewer in the racemes. And Dr. Abbot—that the root is greatly creeping, the leaves deeply notched, the fruitstalks distinct and very long, the flowers paler and fewer than in *V. Chamædrys*.

Native of Germany, Austria, Switzerland, France, Italy and Britain. With us it is not so rare as it was formerly supposed, in shady and moistish woods, particularly on a chalky soil: flowering in may and june. It is still found growing copiously in Charlton wood, where Sherard first discovered it. Dr. Goodenough gathered it near Virginia water. In Cambridgeshire it is seen in several places, as the woody part of the Devil's ditch, on Newmarket heath, in Hall wood, about Linton, and in Gamlingay park. In Bedfordshire at Eversholt. In Shotover plantations, Stokenchurch and Nettlebed woods. Near Worcester. At Shortwood, Pucklechurch, Gloucestershire. By the river side under Hod hill, Dorsetshire. About Kirkstall Abbey near Leeds, and in other parts of Yorkshire common. In the woods at Dunglass, near the river, Scotland.

38. Root perennial, fibrous, a little creeping. Stems spreading, but slightly raised from the ground, simple, round, hard, waving, leafy, branched, marked longitudinally, as Linneus well remarks, with a line of long white hairs, very thick set together, on each side. Leaves opposite, spreading, deeply and acutely serrate, strongly veined, most hairy about the margin, the lower smaller than the upper ones. Racemes axillary, generally opposite, simple, upright, long, rising above the top of the stem, their common peduncle hairy in every direction. Flowers as many as twenty in a raceme, on slender pedicels, with a lanceolate bracte at the base of each; they are large, the corolla bright blue elegantly veined of a deeper blue, pale and somewhat flesh-coloured on the outside; the orifice is white, as are also the base and the point of the filaments, the pollen, and the base of the style. The stamens are spreading, and the style is spontaneously directed first to one and then to the other. Stigma reddish. Germ woolly, flattish, and surrounded by a nectariferous gland at the base. Capsule exactly obcordate, small, a little shorter than the calyx, light brown, slightly hairy at the edge. Seeds flat, of a yellowish-brown colour<sup>e</sup>.

Native of Europe and Japan. Few of our wild flowers can vie in elegance and brilliancy with this; and many plants with far less beauty are cultivated in our gardens. In may and june every hedge-bottom and grassy bank is adorned with it. At night, or under the influence of moisture, the corolla closes, but in dry bright weather appears fully expanded, and though each flower is short-lived, there is a copious succession<sup>f</sup>.

Mr. Curtis remarks, that when growing wild, the leaves are usually sessile; but when cultivated, these become larger, and have footstalks of a moderate length; thus approaching to *V. montana*, which it much resembles. At the end of summer a white hairy knob is frequent on this plant; it is the nest of some insect.

This pretty plant is neither very useful nor injurious to the husbandman. The leaves, according to Dr. Withering, are a better substitute for tea than those of *V. officinalis*, being more grateful and less astringent<sup>g</sup>.]

39. This has slender branching declining stalks, with narrow leaves on them, which are acutely cut on their edges, and are regular on both like the lobes of pinnatifid leaves; they are of a pale green colour, and smooth. The flowers are disposed in loose spikes (racemes) on the top and sides of the stalks; they are of a pale blue colour, and appear at the end of april. Native of the Levant.

[Cultivated in 1759, by Mr. Miller. It flowers in july and august<sup>h</sup>. It was confounded by Linneus with the *austriaca*.

40. Leaves multipartite, their laciniae pinnatifid, with the lobes decurrent. Calyx quinquefid, perfectly smooth. It appears not to turn black or brown in drying. It is only known by an original specimen from Siberia, its native country, by which it appears to be totally distinct from *V. austriaca*, with which it is generally confounded, and all the varieties of that plant<sup>i</sup>. Willdenow remarks that the stem is covered with spreading whitish hairs.]

41. Lower leaves narrow, cut into fine segments. Stalks slender, inclining downward. Stem leaves linear, acutely notched. Flowers in long loose axillary spikes (racemes;) they are of a bright blue colour, and stand upon pedicels, [which are the length of the bractes or nearly so.

The leaves are almost like those of *Coronopus*. These and the stem are covered with very minute hairs pressed close to them. Calyxes five-cleft and somewhat hairy. Corolla blue<sup>k</sup>.

Native of Austria, Carniola, Silesia.—Cultivated by Mr. Miller in 1748; it flowers from june to august<sup>l</sup>.

42. The stem seems ascending, round, somewhat hairy. Leaves bright green, half an inch long, crowded, linear, entire, and subcuneiform three toothed at the tip, and linear pinnatifid-toothed. Racemes long, axillary. Peduncles several times longer than the bractes. Calyx four-cleft smooth, unequal. Corolla rose-coloured. Native of Tauris<sup>m</sup>.

*V. rosea* of Desfontaines seems to agree with this species in many respects. Stems filiform, pubescent, ascending, many from the same tuft. Leaves smooth; the lower cuneiform, toothed, obtuse, decurrent into the petiole; the middle and upper ones pinnatifid, with the segments unequal, sharpish, and the terminating lobe a little bigger. Racemes mostly two or three, naked at bottom. Flowers numerous, crowded, pedicelled. Bracte linear, a little shorter than the pedicel. Calyx four-parted; segments linear-lanceolate, unequal. Corolla rose-coloured, the same size as in *V. Teucrium*, with ovate obtuse segments, the lowest smaller, as in most of the species. It is allied to *V. austriaca*, but differs in having a shrubby stem, and terminating racemes<sup>n</sup>.—In these two respects it differs from *V. taurica*, and also in the comparative length of the pedicels and bractes; in other respects the two descriptions agree. This is a native of Mount Atlas near Tlemfen.

43. Root perennial. Stem filiform, erect, even, a foot high or more. Leaves opposite, subsessile, ovate-lanceolate, like those of Nettle very finely rough-haired. Racemes from the uppermost leaves, filiform, slender, in flowering time the length of the leaves and more, lax, on capillaceous pedicels. Calyx four-leaved. Corolla flesh-coloured<sup>o</sup>.

Native of Switzerland, Bithynia, Austria and Bavaria.—Introduced in 1776, by Jos. Nich. de Jacquin, M. D. it flowers in june and july<sup>p</sup>.

44. This rises with simple stems about a foot high, sometimes shooting into one or two branchlets from the upper parts; the leaves are sessile, except the lowest, which have very short footstalks: they are ovate, of a dark green, generally cordate at the base, unequally serrated and of a glossy surface: the racemes are villose and upright; growing to the length of half a foot: the flowers are large and elegant, the tube is whitish, but the border of an elegant blue with deeper stripes. Native of Austria growing in shrubby places and about hedges, &c. and sometimes in meadows<sup>q</sup>.

Gouan remarks, that it has five ovate, equal calyx-leaves<sup>r</sup>.

Retzius informs us that he received two plants from England under the name of *V. latifolia*. The first he describes as having wider leaves, hirsute, equally serrate, subsessile, the younger ones more manifestly petioled. Stem weak, hispid in two rows. Racemes la-

<sup>h</sup> Hort. kew.

<sup>i</sup> Smith in Linn. transf.

<sup>k</sup> Linn. spec. syst. and Willdenow.

<sup>l</sup> Hort. kew.

<sup>m</sup> Willdenow.

<sup>n</sup> Desfontaines.

<sup>o</sup> Linn. suppl.

<sup>p</sup> Hort. kew.

<sup>q</sup> Jacquin.

<sup>r</sup> Linn. syst.

<sup>d</sup> Engl. bot. and Curt. lond.

<sup>e</sup> Engl. bot. and Fl. rust.

<sup>f</sup> Engl. bot.

<sup>g</sup> Fl. rust.



teral, long. Calyxes four-leaved, equal, three-nerved, ciliate, lanceolate as well as the bractes.

The second has the stem erect, stiff, slightly tomentose. Leaves sessile, hirsute, unequally crenate, but commonly, especially whilst the plant is in flower, so deeply cut, that it may fairly be called pinnatifid. Racemes lateral, but much overtopping the stem; and so dense that they ought rather to be named spikes. Calyxes five-leaved: leaves unequal, lanceolate, hairy, scarce manifestly nerved; the fifth very small and linear. Bractes oblong, often toothed. Corolla large blue-purple, turning red in drying.—The latter of these is the *latifolia* and the *Pseudochamædrys* of Jacquin described above.

Native of Germany, Austria and Switzerland. Introduced in 1775, by Jos. Nich. de Jacquin, M. D. It flowers in may and june<sup>1</sup>.

Miller seems to have intended this by his *V. maxima*. which he describes as having] the stalks slender stiff and upright; the leaves opposite, heart-shaped, rough, indented, the lower ones small, the middle ones much larger and diminishing again in size toward the top; the flowers in long bunches from the upper axils, of a bright blue and appearing in may. He attributes it to Monte Baldo in Italy.

45. Stature of the preceding, but the leaves very narrowly lanceolate, mostly in threes. Racemes very long, with deep-blue flowers, in threes at the three upper joints. Calyxes four-cleft. Native of Tartary and Bohemia<sup>1</sup>.

46. Root fibrous, annual. Stem three or four inches high, erect, branched, downy. Leaves on short footstalks, acute, serrate, scarcely hairy. Flowers alternate, peduncled, about the top of the stem and branches. Bractes lanceolate, acute, entire, slightly ciliate, a little longer than the peduncles. Calyx of the fruit much enlarged, of four ciliate equal ovate acute leaves, marked with three nerves, and not unlike the leaves of some species of *Rubia* or *Galium*: they much exceed the corolla and capsule in length. Corolla small, white. Capsule obcordate, downy<sup>2</sup>.

According to Vahl, the stem is quite simple; the leaves ovate, smooth, having three or four serratures on each side: floral-leaves alternate, sessile, lanceolate; flowers drooping; peduncle shorter than the floral leaf; segments of the calyx ovate, acute, almost equal, twice as long as the fruit. It differs from *V. arvensis* in having the leaves exactly ovate, acute, smooth, serrate, and the segments of the calyx almost equal, twice as long as the fruit.

Tournefort gathered this plant in the corn-fields of Cappadocia.

47. Root annual, small, fibrous. Stems several, procumbent, long, leafy, round, hairy, not branched except at their base. Leaves on short foot-stalks cordate-ovate, deeply serrate, a little rough and hairy. Flowers on simple axillary peduncles, exceeding their corresponding leaves in length, and finally curved downwards. Segments of the calyx four, ovate-lanceolate, obtuse, ciliate, generally quite entire but sometimes irregularly toothed. Corolla small, bright blue, falling off on the least touch. Capsule of two round swelling lobes, rough-haired; according to Curtis, like that of *V. serpyllifolia*, but larger and rounder. Seeds about six in each cell. (Linneus says four, Curtis six, Scopoli eight to ten, Withering four to eight) externally rugged, cupped or hollowed out on the other side, in which hollow the little stalk is fixed that attaches them to the seed-vessel. Their whole structure is curious, and totally different from that of *V. arvensis*<sup>3</sup>; with which this species is apt to be confounded, in some degree from their similarity, but more perhaps from the similitude of their Latin, and the ambiguity of their English names. They may be thus distinguished: the *agrestis* is procumbent, the leaves are petioled, the flowers are on long peduncles, each cell of the Capsule is large and round; and if the form of the seeds be adverted to, we shall see the reason of this construction, for instead of being small and flat, as in the other species, they are large, convex on one

side, hollow on the other, and wholly different in appearance. The *arvensis* is upright, the leaves are sessile, and the flowers are on very short peduncles. With us at least it is commonly found on walls<sup>4</sup>; whereas the *agrestis* is a most common weed in arable fields and gardens, where it is always to be found in some stage or other, and in flower from the beginning of spring to the end of autumn<sup>5</sup>.

48. Root annual, fibrous. Whole herb generally paler than in *agrestis* and *hederifolia*, and not so apt to turn black in drying. Stem about six inches high, (from three to nine,) upright, stiff and dry, round, purplish, hairy, generally branched at the base. Leaves opposite, hairy, strongly serrate; the lower ones chiefly on short foot-stalks; the upper ones, from whose axils the flowers are produced, are lanceolate narrow and entire, so as more properly to be called bractes; and hence Dr. Withering has removed this and the *verna* to the spiked section of this genus, to which however they are not naturally akin, nor ought they to be separated from the other annual species. The flowers of *V. arvensis* stand on short pedicels, and are small, pale blue, with four lanceolate, entire, glandular-hairy, rather unequal segments to the calyx; the two lowest, according to Curtis, almost twice as large and long as the two others. Capsule obcordate, compressed, ciliate, pale brown; containing several, (about fourteen) seeds, which are elliptical, flat, with a little dimple in the middle of one side. The form of the seeds and of the calyx-leaves will be found to afford the most certain marks of specific distinction, particularly of the annual species, in this genus<sup>6</sup>.

Mr. Curtis remarks, that it varies in size from an inch to six or eight inches, that on walls the bottom leaves are frequently purple, that the capsules are much smaller than in *agrestis*, and when ripe form a spike.

Dr. Smith informs us, that about Rome, the flowers of this and the preceding species, are always white<sup>7</sup>.

Native of Europe, Barbary, Japan, and North America. With us in dry gravelly fields, waste sandy places, dry pastures, and on walls; flowering in may.

49. Root annual, small, fibrous. Stems prostrate, wide spreading, round, thickish, tender, covered with soft hairs; they are hollow, surrounded by a strong elastic thread-like fibre, as in *Alfine media* or Chickweed: unbranched according to Dr. Smith, but Mr. Curtis says—somewhat branched. Leaves alternate on foot-stalks various in length, divided into lobes from three to six, but five-lobed when perfect, the central lobe being much the largest; they are a little fleshy, and hairy on both sides. Peduncles longer than the leaves, spreading and finally bending downward. The four segments of the calyx are large, heart-shaped, acute, edged with long white hairs. Corolla pale-blue, shorter than the calyx; mouth villose within. Capsule large, swelling, resembling two united globes, rather than heart-shaped. Seeds two large rugged concave in each cell<sup>8</sup>; or as Curtis describes them, in form not unlike the nectary of the Ladies Slipper, pale brown, hollow within, with a navel-like appearance, externally convex, and grooved or notched.

This has the greatest affinity to the *agrestis*, in habit and place of growth, and in the peculiar formation of its seed-vessels and seeds; in which they differ totally from the other British species: but though the capsules are nearly of the same size, yet the seeds are considerably larger, which accounts for the remarkably large seed-leaves which occur in this species. The leaves also are more thinly placed on the stems than in the *agrestis*, and have seldom more than two or four notches on them; and the flowers are of a very pale blue colour<sup>9</sup>.

Native of Europe and Barbary, in gardens and corn-fields, where the soil is light, in great abundance, flowering in april and may. It flourishes so through the winter, that it is known in Norfolk by the name of Winter-weed. The old names were Ivy Chickweed and Small Henbit.

<sup>1</sup> Hort. kew. <sup>2</sup> Linn. spec. and syst. <sup>3</sup> Smith in Linn. transf. <sup>4</sup> Engl. bot.

<sup>5</sup> Curtis. <sup>6</sup> Engl. bot. <sup>7</sup> Idem. <sup>8</sup> Linn. transf. 1. 192. <sup>9</sup> Smith brit. and engl. bot. Curtis, Withering. <sup>10</sup> Curtis.



The leaves are sometimes more deeply cut than ordinary, and in that state young botanists often take this plant for the triphyllous: but if the seeds be attended to, no mistake can happen<sup>c</sup>.

β. This variety as Linneus supposed it to be, is really a distinct species, and has the segments of the calyx elliptic, obtuse, rough-haired all over, not ciliate<sup>f</sup>. It was found by Tournefort in the Archipelago.

50. Root annual. Stems filiform, procumbent. Leaves alternate, on short footstalks, roundish-cordate, having about three notches on each side, but not deeply cut or lobed, clothed with a few scattered jointed hairs, as in the preceding species. Flowers axillary, large. Peduncles filiform, downy, three times as long as the leaves. Calyx-leaves equal, lanceolate, slightly downy. Corolla twice as long as the calyx, spreading, blue. Capsule obcordate, reticulated.

It is like *V. hederifolia* in many respects, but is sufficiently distinguished by its leaves being crenate and not five-lobed, the segments of the calyx lanceolate not ovate, and by the very long filiform peduncles.

Gathered by Tournefort in the east. Buxbaum says it grows about hedges in Bithynia<sup>g</sup>.

51. Root annual fibrous. Stem mostly branched; branches divaricate-patulous, flexuose. Lower leaves entire scarcely lobed; upper subsessile, trifid to the base, the central lobe largest and obovate, the side ones mostly two-parted. Flowers on peduncles shorter than the leaves, erect as are also the fruits. Segments of the calyx obovate-oblong, obtuse, ciliate, unequal. Corolla deep blue. Capsule orbicular, emarginate, compressed. Seeds numerous, obovate, flattened. The herb turns black in drying<sup>h</sup>.

Stems viscid on the upper part, pale green or reddish, drooping a little during the period of flowering. Leaves spreading, rather remote, alternate and opposite, thickish, hairy on both sides, often reddish on the under side; the lowermost cordate-ovate, on very short petioles; the upper ones sessile, fingered, or divided deeply into five and three parts. Corolla smaller than the calyx, both deeply divided into four segments. Capsule large. Seeds blackish-brown, convex, gibbous, and wrinkled on one side, hollow on the other.

Its divided leaves, the deep rich blue colour of the flowers, and the largeness of its seed-vessels obviously distinguish this from any other British species. Its name triphyllous is not always strictly applicable, the leaves, in young plants particularly, being often divided into more than three segments<sup>i</sup>.

The stem is sometimes unbranched. Branches from the bottom of the stem or near it, and rising to the same height. Root-leaves undivided, rarely found; well represented in John Bauhin's figure. Lower stem-leaves heart-shaped, jagged. Although these sometimes resemble those of the *hederifolia*, the deep finger-like divisions of the upper leaves, and the want of leafstalks, prevent all possibility of their being mistaken<sup>k</sup>. *V. triphyllous* is always much larger and more diffuse than the *verna*, its leaves more deeply divided, and their segments more or less obovate; neither is it quite so rare a plant. It flowers early, and like the *verna*, varies much in size, according to the share of nourishment it meets with<sup>l</sup>.

This plant, which is common to most parts of Europe, and chiefly found in corn-fields where the soil is light, is of very partial growth in this country, being found principally in the sandy tract, which connects Norfolk and Suffolk. Thomas Willisell found it in several parts of this tract. Sir John Cullum and his brother Sir Thomas Gery Cullum have observed it about Bury: and Mr. Woodward both there and near Cockley Cley in Norfolk. Mr. Tosfield gathered it near Rossington in Yorkshire; and Sir Thomas Frankland in the same county. It flowers in march and april, and the seeds ripen in june<sup>m</sup>.

52. In habit, paleness of colour, never drying black, form of the seeds, and situation of the flowers, this is very nearly allied to *V. arvensis*, but it is abundantly different from it in the deep division of the leaves, with

the central lobe obovate, obtuse as in the preceding; the floral ones also three-parted. Stem scarcely a finger's length, stiff, often branched. Segments of the calyx lanceolate, acute, nearly equal. Capsule obcordate, compressed<sup>n</sup>.

Calyx much longer than the corolla, and deeply divided into four lanceolate blunt unequal segments. Corolla blue, with a green base. Floral leaves lanceolate, blunt. Peduncles very short, indeed so short as to give the assemblage of flowers the appearance of a spike<sup>o</sup>.

Native of many parts of Europe. First found in England by the late Sir John Cullum, Bart. in dry sandy fields near Bury in Suffolk; flowering in april and may. It has been since found in Norfolk, at Foulden, by James Crowe, Esq. Mr. Woodward remarks, that this little plant is sometimes near buried in the driving sand.

Dr. Smith suggests, that from its near resemblance at first sight, especially when luxuriant, to *V. arvensis*, it may perhaps have been overlooked for that plant<sup>p</sup>.

β. *V. succulenta* of Allione is considered as a variety of this. He describes the stem as filiform, erect, hardish, the height of a finger or a span. Leaves opposite, petioled, thickish, green, smooth, linear, toothed on each side; above the third or fourth pair of stem-leaves comes out a long thin spike. Floral leaves alternate, quite entire; from the axil of each a one-flowered peduncle. Fruit cordate, wider and shorter than the calyx, containing from six to eight darkish, compressed seeds. It differs from *V. verna*, to which it is very nearly allied, by its succulent leaves with the teeth not sharp, and all the floral leaves quite entire.

53. Root annual. Stem herbaceous, erect, hairy at top, having two or four quite simple opposite branches at the base almost the height of the stem. Leaves thickish, all parted: the lower of two pairs, opposite, trifid; with the segments ovate, the lateral ones shorter, narrower: the stem-leaves or rather floral leaves, for the stem bears flowers almost from the base, are alternate and hairy at their base: the lower ones are five-parted; the uppermost three parted, with linear obtuse segments, a little narrower at the base. Flowers axillary sessile, the lower more remote, the upper more crowded. Calyx four-parted, length of the capsule, with lanceolate, ciliate segments, two of them shorter. Capsule obcordate, with diverging lobes.

It differs from *V. triphyllous* in having sessile flowers, the segments of the leaves linear, and the capsules obcordate; from *V. verna* in having all the leaves parted.

Native of the south of France about Montpellier, of Spain and Bohemia<sup>q</sup>.

54. Stem upright, round, pubescent, with opposite branches. Stem-leaves conjugate; floral leaves alternate: each pair of the former is distant from the next; they are almost orbicular, obtuse, widely and bluntly toothletted, slightly hairy, on short petioles<sup>r</sup>.

Native of Germany, Switzerland, Piedmont, &c. It flowers in may.

This seems to be the *romana* of Allione, Schmidt, Villars and Scopoli.

55. This resembles the preceding, but the leaves are straight and entire, and the flowers are sessile; the stem is smooth<sup>s</sup>.

Stem erect, simple, or sometimes branched only from the lower axils. Leaves lanceolate-linear, sessile, the upper ones alternate, the lower opposite, here and there bluntly toothed, the rest quite entire, blunt. Flowers axillary, sessile among the bractes. Calyx four-leaved<sup>t</sup>.

Native of the North of Europe, Germany, Dauphiné and Italy. Gathered also by Commerçon at Buenos Ayres.—Cultivated in 1680, according to Morison. It flowers in may and june<sup>u</sup>.

*V. romana* of Linneus ought to be excluded. All its synonyms in the first edition of *Species Plantarum*, belong to *V. acinifolia*; and the specimen in the Linnean herbarium, from which the specific difference and

<sup>c</sup> Engl. bot. <sup>f</sup> Smith brit. <sup>g</sup> Smith in Linn. trans. <sup>h</sup> Smith brit. <sup>i</sup> Curtis. <sup>k</sup> Woodw. in With. and Withering. <sup>l</sup> Engl. bot. <sup>m</sup> Curtis. Smith brit. and Engl. bot. Withering.

<sup>n</sup> Smith brit. <sup>o</sup> Withering. <sup>p</sup> Engl. bot. <sup>q</sup> Vahl. <sup>r</sup> Pollich. <sup>s</sup> Villars. <sup>t</sup> Krocher. <sup>u</sup> Hort. kew. description



description in the Mantissa were made, is most certainly nothing else than *V. peregrina* \*.

56. Stem simple, a finger's length, flowering from top to bottom. Leaves on short petioles, alternate, blunt, shorter than the calyxes, quite entire except the two leaves next the root, in which a tooth or two may be discovered by means of a magnifying glass. In each axil is a small flower, bright blue, on a very short peduncle, less than the calyx. Calyx-leaves equal, linear, longer than the internodes. Fruit cordate, large in proportion to the plant, shorter than the calyx-leaves, but much wider. The whole plant is hirsute.

It approaches to the verna, but differs in the stem being simple and covered with flowers, the leaves linear not parted, all alternate. It differs also from *V. peregrina* in the stem being quite unbranched, the leaves shorter and the calyxes longer than the fruit.

Native of Piedmont, in pastures \*.

57. Native of North America.]

#### PROPAGATION AND CULTURE.

The perennial sorts may be increased by parting their roots which may be done every other year; for if they are not often divided, many of them will grow too large for the borders of small gardens: yet they should not be parted too small, because when there is not a number of stems so as to form a good bunch, the plants have but a mean appearance. Michaelmas is the best time to part the roots, that they may be well established before winter: and when they are removed in the spring, they seldom flower strong the same year, especially if the season prove dry. Those which grow pretty tall are proper to plant in the borders of ornamental plantations; but those with trailing branches are fit for banks or irregular shady slopes. They are mostly hardy, and require only to be weeded, and transplanted every second or third year.

The annual sorts may be propagated by seeds sown in autumn: and many of them will maintain their ground, if their seeds be permitted to scatter.

If these plants are placed in a shady border, they will thrive much better than when they are more exposed to the sun, and their flowers will continue much longer in beauty.

[19. *V. decussata* is a hardy greenhouse plant, and may be placed with the Myrtles. In mild winters it will even stand secure in the open air, in a warm soil and sheltered situation. It is usually and readily increased by cuttings \*.

VERONICA. See *Antirrhinum*, *Barbisia*, *Capraria*, *Mentha*, *Pederota*, *Scoparia*.

VERONICÆ AFFINIS. See *Knoxia* and *Rhinanthus*.

VERONICASTRUM. See *Veronica*.

VERVAIN. See *Verbena*.

VERVAIN MALLOW. See *Malva* and *Urena*.

VERUTUM. See *Centaurea*.

VESICARIA. See *Alyssum* and *Cardiospermum*.

VESLINGIA. See *Aizoon*.

VESPERTILIO. See *Passiflora*.

VETCH. See *Vicia*.

—— Bitter. See *Orobanch*.

—— Chichling. } See *Lathyrus*.

—— Crimson Grass. }

—— Hatched. See *Coronilla*.

—— Horse-shoe. See *Hippocrepis*.

—— Milk. See *Astragalus*.

VETCHLING. See *Lathyrus Aphaca*.]

VIBURNUM. (From *vire* to bind; some of the shrubs having twigs fit for bands.)

Lin. gen. n. 370. Reich. n. 400. Schreb. n. 503.

Tournef. t. 377. Vaill. mem. acad. 1722. Juss.

213. Gært. t. 27. Tinus Tournef. t. 377. Vaill.

mem. acad. 1722. Opulus Tournef. t. 376. Vaill.

mem. acad. 1722.

Class. 5. 3. Pentandria Trigynia.

Nat. Order of *Dumofæ*. *Caprifolia* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, superior, very small, permanent.

COR. one-petalled, bell-shaped, five-cleft: segments blunt, reflexed.

Smith in Linn. trans. \* Allion. \* Smith spicil. and Curt. magaz.

STAM. Filaments five, awl-shaped, length of the corolla: anthers roundish.

PIST. Germ inferior, roundish. Style none, but in its stead a turbinate gland. Stigmas three.

PER. Berry roundish, one-celled.

SEEDS bony, roundish.

#### ESSENTIAL CHARACTER.

Cal. five-parted, superior. Cor. five-cleft. Berry one-seeded.

#### SPECIES.

1. *Viburnum Tinus*. *Laurustinus* or *Laurestine*.

Lin. spec. 383. Reich. 1. 732. Willd. 1. 1486.

hort. upf. 69. Sauv. monsp. 136. Allion. pedem.

n. 477. Kniph. cent. 1. n. 95. Berg. phyt. 1.

87. Curt. magaz. 38. Affo. arag. n. 273. Des-

font. atlant. 1. 268.

Tinus Lin. hort. cliff. 109.

α. *hirtum* Ait. kew. 1. 370. Hairy *Laurustinus*.

V. Tinus. Mill. dict. n. 4.

Tinus I. Clus. hist. 1. 49. Tournef. inst. 607.

*Laurus sylvestris Corni feminae foliis subhirsutis*. Baub.

pin. 461. Raii hist. 1690.

*Laurus Tinus lusitanica cærulea bacca*. Park. theat.

206. f. 1.

Leaves oval-oblong, beneath and along the edge, rough-haired.

β. *lucidum*. Ait. kew. 1. 370. Mill. dict. n. 5. Shining *Laurustinus*.

Tinus II. Clus. hist. 1. 49. fig. Tournef. inst. 607.

*Laurus sylvestris, foliis venosis*. Baub. pin. 461. Raii

hist. 1690.

*Laurus Tinus alter, vel 2. Clusii*. Park. theat. 206.

f. 2.

*Tinus alter & sylvestris*. Baub. hist. 1. 428. 429.

Leaves ovate-oblong, smooth and shining on both sides.

γ. *virgatum*. Ait. kew. 1. 370. Common *Laurustinus*.

Tinus III. Clus. hist. 1. 49. fig. Tournef. inst. 607.

*Laurus sylvestris folio minore*. Baub. pin. 461. Raii

hist. 1690.

L. *Tinus sylvestris alter f. tertius*. Park. theat. 207.

n. 3.

Leaves lanceolate-oblong, hairy beneath along the edge

and veins.

δ. *striatum*. Ait. kew. 1. 370. Upright *Laurustinus*.

Leaves ovate, all over rough-haired and rigid.

Leaves quite entire ovate, ramifications of the veins vil-

lose-glandular.

[2. *Viburnum Tinoides*.

Lin. syst. 294. Willd. 1. 1486. suppl. 184.

Leaves elliptic smooth quite entire, branches and cymes

round hirsute.

3. *Viburnum villosum*. Hoary *Viburnum*.

Lin. spec. ed. Willd. 1. 1487. Swartz prodr. 54.

descr. 1. 564.

Leaves quite entire ovate hoary-villose beneath.

4. *Viburnum scandens*. Climbing *Viburnum*.

Lin. syst. 294. Willd. 1. 1487. suppl. 184.

V. *virens*. Thunb. jap. 123. Lin. syst. 294.

Shrubby scandent, leaves oblong serrate, cymes terminat-

ing, rays terminated by a very large flower.]

5. *Viburnum nudum*. Oval-leaved *Viburnum*.

Lin. spec. 383. syst. 294. Reich. 1. 733. Willd. 1.

1487. Ait. kew. 1. 370. Mill. fig. 183. t. 274.

Du Roi barbecc. 2. 484.

*Tinus foliis ovatis in petiolos terminatis integerrimis*.

Gron. virg. 33.

Leaves oval somewhat wrinkled rolled back at the edge

and obscurely crenulate.

6. *Viburnum prunifolium*. Plum-leaved *Viburnum*.

Lin. spec. 383. Reich. 1. 733. Willd. 1. 1487.

Ait. kew. 1. 371. Gron. virg. 33. Wangenh.

amer. 98. Pluk. phyt. t. 46. f. 2.

V. *Lentago*. Du Roi barbecc. 2. 485. Moench hort.

weissenst. 140. t. 8.

V. *canadense glabrum*. Vaill. mem. acad. 1722. p. 200.

Leaves obovate roundish and oval smooth sharply serrate,

petioles margined.

[7. *Viburnum dauricum*.

Lin. spec. ed. Willd. 1. 1488. Pallas rofs. 2. 30.

*Lonicera mongolica*. Pallas rofs. 1. 59. t. 38. Gmel.

fib. 3. 135. n. 8. t. 25.

Leaves



- Leaves ovate ferrate dotted-hairy, cymes dichotomous few-flowered.]
8. *Viburnum dentatum*. *Tooth-leaved Viburnum*.  
*Lin. spec.* 384. *syft.* 294. *Reich.* 1. 733. *Willd.* 1. 1488. *arb.* 403. *Jacqu. hort.* 1. 13. t. 36.
- α. *lucidum*: shining-leaved. *Ait. kew.* 1. 372.  
*With leaves smooth on both sides.*
- β. *pubescens*: downy-leaved. *Ait. kew.* 1. 372.  
*With acuminate leaves downy beneath.*  
*Leaves ovate tooth-ferrate plaited.*
- [9. *Viburnum plicatum*. *Plaited-leaved Viburnum*.  
*Thunb. in Lin. transf. Lond.* 2. 332. *Willd.* 1. 1488.  
*V. dentatum. Thunb. jap.* 122.  
*Leaves ovate obtuse tooth-ferrate plaited.*
10. *Viburnum erodium*.  
*Thunb. jap.* 124. *Lin. syft.* 295. *Willd. spec.* 1. 1488.  
*Leaves ovate acuminate erose-ferrate smooth, petioles tomentose.]*
11. *Viburnum Lantana*. *Wayfaring Tree*.  
*Lin. spec.* 384. *syft.* 294. *Reich.* 1. 733. *Willd.* 1. 1489. *vir. cliff.* 45. *hort. cliff.* 107. *upf.* 68. *Huds. angl.* 129. *Wither. arr. ed.* 3. 315. *Smith brit.* 334. *engl. bot.* 1. 331. *Lightf. scot.* 170. *Relb. cant. ed.* 2. n. 279. *Sibth. oxon. n.* 318. *Abbot bedf. n.* 236. *Jacqu. austr.* 4. 21. t. 341. *Hall. helv. n.* 669. *Hoffm. germ.* 109. *Roth. germ.* 1. 136. 2. 364. *Pollich pal. n.* 310. *Krock. files. n.* 475. *Scop. carn. n.* 369. *Sauv. monsp.* 136. *Villars dauph.* 2. 543. *Allion. pedem. n.* 475. *Du Roi barbecc.* 2. 481. *Kniph. cent.* 2. n. 94. *Jungh. ic. cent.* 1. t. 6. *Plenck ic.* 231.
- Viburnum. Park. theat.* 1448. *Raii hist.* 1590. *syn.* 460. *Matth.* 217. *Tournef. inst.* 607. *Dubam. arb.* 2. t. 103.
- V. vulgo. Bauh. pin.* 249. *Camer. epit.* 122.
- Lantana. Dod. pempt.* 781.
- L. vulgo, aliis Viburnum. Bauh. hist.* 1. 558.
- L. f. Viburnum. Ger.* 1305. *emac.* 1490.
- α. *europæum*, *Common Wayfaring Tree*.  
*Ait. kew.* 1. 372.  
*Leaves smaller dark green.*
- β. *grandifolium*. *Large-leaved Wayfaring Tree*.  
*Ait. kew.* 1. 372.  
*Leaves larger bright green.*  
*Leaves cordate ferrate veined tomentose beneath.*
- [12. *Viburnum tomentosum*. *Downy Viburnum*.  
*Thunb. jap.* 123. *Lin. syft.* 295. *Willd.* 1. 1489.  
*Leaves ovate acuminate ferrate veined tomentose beneath, umbels lateral.*
13. *Viburnum hirtum*. *Rough Viburnum*.  
*Thunb. jap.* 124. *Lin. syft.* 295. *Willd.* 1. 1489.  
*Leaves ovate ferrate villose, petioles rough-haired.*
14. *Viburnum acerifolium*. *Maple-leaved Viburnum*.  
*Lin. spec.* 384. *Reich.* 1. 733. *Willd.* 1. 1489.  
*Wangenb. amer.* 99.
- Opulus. Gron. virg.* 149.  
*Leaves three-lobed acuminate sharply ferrate, petioles hairy without glands.*
15. *Viburnum orientale*. *Oriental Viburnum*.  
*Lin. spec. ed. Willd.* 1. 1490. *Pallas roff.* 2. 31. t. 58. f. H.  
*Opulus orientalis folio amplissimo tridentato. Tournef. cor.* 42.  
*Leaves three-lobed acuminate grossly and bluntly toothed, petioles smooth and without glands.]*
16. *Viburnum Opulus*. *Water Elder*.  
*Lin. spec.* 384. *syft.* 294. *Reich.* 1. 734. *Willd.* 1. 1490. *fl. suec. n.* 264. *Gærtn. fruct.* 1. 133. *Huds. angl.* 130. *Wither. arr. ed.* 3. 315. *Smith brit.* 335. *engl. bot.* 1. 332. *Lightf. scot.* 170. *Relb. cant. ed.* 2. n. 280. *Sibth. oxon. n.* 319. *Abbot bedf. n.* 237. *Fl. dan.* 1. 661. *Gunn. norv. n.* 7. *Hoffm. germ.* 109. *Roth. germ.* 1. 136. 2. 364. *Pollich pal. n.* 311. *Krock. files. n.* 476. *Neck. gallob.* 155. *Scop. carn. n.* 370. *Villars dauph.* 2. 544. *Allion. pedem. n.* 476. *Du Roi barbecc.* 2. 477.
- α. *europæa. Ait. kew.* 1. 372.
- Opulus. Lin. hort. cliff.* 109. *Hall helv. n.* 668. *Dubam. arb.* 1. *Ruellii* 281. *Tournef. inst.* 607. *Raii syn.* 460.
- VOL. II.

- Sambucus aquatica. Bauh. hist.* 1. 502. *Camer. epit.* 977. *Matth.* 1269.—*flore simplici. Bauh. pin.* 450.
- S. palustris. Dod. pempt.* 846. 1.—*f. aquatica. Park. theat.* 209. 5.
- S. aquatilis f. palustris. Ger.* 1236. 1. *emac.* 1424. 1. *Raii hist.* 1586.  
*Twigs green opaque.*
- β. *americana. Ait. kew.* 1. 373.  
*Viburnum americanum. Mill. dict. n.* 8.  
*Twigs red shining.*
- γ. *rosea. Ait. kew.* 1. 373. *Guelder Rose*.  
*All neuter flowers in a ball.*
- Sambucus aquatica, flore globoso pleno. Bauh. pin.* 456. *Dubam. arb.* 3. *Knorr. del. hort.* 2. t. 8. 6.
- S. rosea. Ger.* 1236. 2. *emac.* 1424. 2. *Raii hist.* 1586.  
*Leaves three-lobed acuminate-toothed, petioles glandular smooth.*
- [17. *Viburnum dilatatum*.  
*Thunb. jap.* 124. *Lin. syft.* 295. *Willd.* 1. 1490.  
*Leaves obovate acuminate unequally-toothed villose.*
18. *Viburnum macrophyllum. Long-leaved Viburnum*.  
*Thunb. jap.* 125. *Lin. syft.* 295. *Willd.* 1. 1491.  
*Leaves obovate acuminate toothed smooth.*
19. *Viburnum cuspidatum*.  
*Thunb. jap.* 125. *Lin. syft.* 295. *Willd.* 1. 1491.  
*Leaves cuspidate ferrate villose.*
20. *Viburnum Lentago. Pear-leaved Viburnum*.  
*Lin. spec.* 384. *syft.* 294. *Reich.* 1. 734. *Willd.* 1. 1491. *arb.* 402. *Wangenb. amer.* 100. *Ait. kew.* 1. 372.  
*Leaves broad-ovate, acuminate sharply ferrate, petioles margined curled.*
21. *Viburnum Cassinoides. Thick-leaved Viburnum*.  
*Lin. spec.* 384. *Reich.* 1. 734. *Willd.* 1. 1491.  
*Ait. kew.* 1. 370.  
*Leaves lanceolate even rolled back at the edge indistinctly crenate.*
22. *Viburnum nitidum. Shining-leaved Viburnum*.  
*Ait. kew.* 1. 371. *Lin. spec. ed. Willd.* 1. 1492:  
*Leaves linear-lanceolate shining above indistinctly ferrate or entire.]*
23. *Viburnum lævigatum. Cassioberry Bush*.  
*Ait. kew.* 1. 371. *Lin. spec. ed. Willd.* 1. 371. *arb.* 401.
- V. Cassinoides. Mill. dict. n.* 9. *Du Roi barbecc.* 2. 486.
- Cassine Peragua. Lin. syft.* 295. *Reich.* 1. 735. *mant.* 220. *mat. med.* 88.
- Cassine. Lin. hort. cliff.* 72.
- C. veræ perquam similis arbuscula, foliis antagonisticis. Pluk. mant.* 56.  
*Leaves lanceolate even remotely ferrate quite entire at the base.*

## DESCRIPTIONS, &amp;c.

1. α. The leaves of the small or hairy-leaved *Laurustinus* are seldom more than two inches and a half long, and an inch and quarter broad; they are rounded at their base; but end in acute points, are veined and hairy on their under side, and not of so lucid a green colour as the next variety on their upper. The umbels (cymes) of flowers are smaller, and appear in autumn, continuing all the winter. The plants are much hardier.

β. The stalks of the Shining-leaved *Laurustinus* rise higher, and the branches are much stronger. The bark is smoother, and turns of a purplish colour. The leaves are larger, of a thicker consistence, and of a lucid green colour. The umbels (cymes) are much larger, and so are the flowers. These seldom appear till the spring, and when the winters are sharp, the flowers are killed, and never open unless they are sheltered.

There is a variety of this with variegated leaves; [both gold and silver striped, and some other trifling varieties.]

The branches are warted, the younger ones four-cornered. Leaves opposite, ovate, on short petioles, rigid, shining, perennial; the younger ones hirsute



with short ferruginous villose hairs. Flowers in crowded cymes, with little bractes between them. Corolla white. Berries, when ripe, blue<sup>b</sup>.

γ. Leaves narrower, hairy only on the edge and veins underneath. Fruit smaller.

δ. Difference given in the character.

Native of the South of Europe and of Barbary. α β in Portugal and Spain: α in the county of Nice: β about Algiers and in mount Atlas: γ in Italy, about Rome, Tivoli, and near Montpellier, observed by Ray. —Cultivated by Gerarde in 1596<sup>c</sup>.

The old authors gave it the name of Laurustinus, from a supposition that it was a smaller species of Bay; accordingly Gerarde and Parkinson name it the wild Baye tree; but the Latin name has obtained, and this shrub is generally known by that of Laurustinus in England. Τυρος or τυρνος is small; and hence our English word *tine* or tiny.

The berries are very hot and inflame the fauces violently, like those of Mezereon and Spurge Laurel; they purge violently according to Parkinson. Yet Lobel asserts that the Starlings frequent the shrubs in great flocks, and devour the berries greedily<sup>d</sup>: which is not improbable as Blackbirds and Thrushes do the same by those of Mezereon.

2. This is very like the preceding, but the leaves of V. Tinus are exactly ovate, the petioles are longer, the peduncles and stem angular, and smooth. Native of South America, where it was found by Mutis<sup>e</sup>.

3. This shrub is a fathom in height, with an ash-coloured bark. Branches round, hoary. Leaves petioled, opposite, acute, smoothish above, but hoary-villose beneath. Petioles of a middling length, four-sided, channelled, hoary: the hoariness consisting of stellate villose hairs heaped together. Cymes terminating, compound, six-rayed, subdivided by threes. Common peduncles length of the leaves, solitary, erect, hoary: rays or partial peduncles an inch long, angular, three-cornered; pedicels one-flowered on the third subdivision. Calyx ferruginous-villose. Corolla whitish, with roundish spreading segments. Filaments longer than the corolla. Germ villose. Berry ovate, oblique, crowned by the calyx at the side. Seed oblique—are there not two abortive? Native of Jamaica, on the mountains in the southern part. It flowers in autumn<sup>f</sup>.

4. Leaves narrower, oblong, acuminate both ways, on short petioles. Cymes terminating the shorter branches, villose. Rays spreading, with the flowers turned upwards and small. Each ray is terminated by a larger white flower, as in V. Opulus, with unequal petals, the outer one largest and obcordate<sup>g</sup>.

Stem frutescent, branched. Branches and branchlets alternate, round, ash-coloured, smooth, climbing. Leaves opposite, ovate-oblong, entire at the base and point, very finely serrate in the middle, thin, quite smooth, bright green, paler beneath, equal, an inch and half long. Calyx reflexed. Filaments ten. Styles three, divaricating. It differs from V. Cassinoides in having the petioles not at all keeled, and the leaves serrate. Native of Japan<sup>h</sup>.]

5. This has a strong stem, covered with a brown smooth bark, and rising to the height of ten or twelve feet, sending out woody branches on every side the whole length, which have a smooth purplish bark. Leaves opposite, five inches long and two and a half broad, smooth and of a lucid green above, veined and of a light green beneath, entire at the edges, (indistinctly notched,) and rounded at both ends; of the same thickness with those of the broad-leaved Laurustinus. The flowers are produced in large umbels (cymes) at the end of the branches: they are in shape and colour like those of the common Laurustinus, but smaller; and the stamens are much larger than the corolla. They appear in July, and are succeeded by roundish berries, which, when ripe, are black; but these rarely ripen in England. There seem to be two varieties of this shrub; one growing in the northern parts of Virginia and Mary-

land, which casts its leaves in winter; the other in Carolina, which is an evergreen. [This apparent difference is probably owing to climate. And by Mr. Miller's confession, they are so much alike in summer, as scarcely to be distinguished.—Cultivated by him in 1758. It flowers in May and June<sup>i</sup>.

The cymes in this are naked; in the preceding species they are involucred<sup>k</sup>.]

6. This rises with a woody stalk ten or twelve feet high, covered with a brown bark, and branching its whole length: the branches when young, are covered with a smooth purple bark. Leaves two inches long, and an inch and quarter broad, slightly serrate, and on short slender footstalks, opposite or without order. Flowers in small umbels (cymes) lateral and terminating; these are white, and smaller than in the V. Lantana, appear in June, and are sometimes succeeded by berries; but they do not ripen here. It grows naturally in most parts of North America, where it is commonly called Black Haw. [Cultivated in 1731, as appears from the first folio edition of Mr. Miller's Dictionary<sup>l</sup>.

7. A shrub smaller than Lonicera Xylosteum, upright, with slender, jointed, straight, opposite, spreading branches, covered with a whitish-gray bark. Leaves fewer, opposite, petioled, hoary underneath. Peduncles terminating, between the last pair of leaves, length of the petioles bifid, each sustaining two, four or five sessile flowers. Calyx none, except a rim crowning the germ, which is cylindrical and striated. Corollas yellowish-white, equal, small, bell-shaped, five-toothed at the edge. Stamens length of the corolla, with large twin anthers. Germ prominent within the flower with a very short navel, and a truncate stigma. Berry globular, large, ovate-depressed, convex on the outside, containing five or six, sometimes seven seeds<sup>m</sup>. Native of Russia and Siberia.

Pallas at first made this shrub a species of Lonicera, but afterwards corrected himself, and brought it into this genus.]

8. Stalks soft and pithy, branching out greatly from the bottom upward, and covered with a gray bark. Leaves three inches long, and nearly as broad, strongly veined, of a light green colour, placed opposite upon pretty long footstalks. Flowers in terminating corymbs, white and almost as long as those of V. Lantana, appearing in June, but not succeeded by berries in England.

[This is a small shrub, with ovate, acuminate, opposite, footstalked leaves, smooth above, and very slightly pubescent beneath, sharply serrated; at their first expansion much plaited in the direction of the fibres, but afterwards much more plain or flat: on the younger flowering branches they are sometimes ternate. Cymes terminal: Flowers white<sup>n</sup>.

Native of North America. Introduced in 1736, by Peter Collinson. There are two varieties of it, one with the leaves smooth on both sides; the other with the leaves downy underneath and drawn out to a point<sup>o</sup>.

9. Leaves more round, and the teeth more tender than in the preceding, for which Thunberg at first took it: they are plaited, especially before they are well opened. Flowers radiate. Native of Japan, about Fammatats, in Fakona, and elsewhere; flowering in April and May<sup>p</sup>.

10. Stem upright, shrubby: branches opposite, angular, ash-coloured, smooth, from spreading upright. Leaves opposite, thin, smooth, pale beneath, unequal, the lowest entire at the base, the uppermost larger, two inches long, on very short petioles. Flowers in a decomposed umbelled panicle terminating the branchlets, not radiate. Peduncles and pedicels angular, hairy. Bractes bristle-shaped, hairy. It differs in having ovate leaves thickly toothed with sharp teeth, and drawn out at the end into a very long point. Native of Japan.

Viburnums vary: 1. With radiate and non-radiate

<sup>b</sup> Desfontaines. <sup>c</sup> Hort. kew. <sup>d</sup> Ray hist. <sup>e</sup> Linn. suppl. <sup>f</sup> Swartz descr. <sup>g</sup> Linn. suppl. <sup>h</sup> Thunberg.

<sup>i</sup> Hort. kew. <sup>k</sup> Linn. spec. <sup>l</sup> Hort. kew. <sup>m</sup> Pallas rech. 1. 59. <sup>n</sup> Jacquin. <sup>o</sup> Hort. kew. <sup>p</sup> Thunb. in Linn. trans. and Fl. japon.



flowers. 2. With a single style and three pistils. 3. With five and ten stamens<sup>a</sup>.

11. This is a thickly-branched shrub or small tree, having round, pliant, mealy twigs, (whence one of its English names, Pliant Mealy Tree,) with the same kind of tufted stellated pubescence as is found on the flower-stalks, backs and even upper surfaces of the leaves. Leaves opposite, as in the whole genus, somewhat elliptical, cordate, obtuse, ferrate, strongly veined, turning dark red before they fall in autumn. Stipules none. Flowers in large terminating, solitary, many-flowered cymes. Corolla white, cloven half way down, spreading. Stamens inserted between the segments. Anthers yellowish. Stigmas sessile, very short, obtuse. Berries compressed, having a little mealy astringent pulp, when young red on the outside, yellow on the other, when ripe black. Seed large, cordate, flat and furrowed<sup>c</sup>.

Native of most parts of Europe, except the most northern countries; with us chiefly in a calcareous soil, in woods and hedges, flowering in may. Dr. Withering says that the bark of the root is used to make bird-lime.

It is commonly taken to be the *Viburnum* of Virgil, but the Poet says nothing by which it can be ascertained, except that being contrasted with the tall Cypress, we may suppose it to be a low shrub. *Viburna* in the plural seems to have been taken by the ancients for any shrubs which were used for binding or tying. In the north of England, Ray says, it grows to a larger size than in the south, which seems odd, as it is rather a southern than a northern shrub. Mr. Miller says it rises near twenty feet high, but he gives the leaves nine inches in length, which is certainly much beyond the truth.

There is a variety in North America, with much larger leaves, that are bright green.] And there is another in our nurseries with variegated leaves; but they become plain, when the shrubs are removed into good ground, and grow vigorously.

[12. Branches round, smooth, tinged with red, divaricating, subdivided. Leaves opposite, ovate not cordate, nerved, downy beneath especially the upper ones. Petioles, branchlets and peduncles downy. Umbels axillary at the ends of the branchlets, with radiant flowers. It differs from *V. Lantana* in having ovate leaves, not cordate, and lateral crowded umbels. Native of Japan, in woods between Miaco and Jedo. It is also cultivated; and flowers in april and may<sup>a</sup>.

13. Stem flexuose-erect, round, smooth. Branches and branchlets alternate, round, smooth at the base, rough-haired at the top. Leaves opposite, resembling those of the Nettle, acute, deeply and equally ferrate, veins rough with white decumbent hairs, an inch long. Petioles and peduncles rough with horizontal hairs. Umbels terminating, composed of very small flowers not radiating. Stigma two-lobed. Native of Japan<sup>c</sup>.

14. Native of Virginia. Introduced in 1736 by Peter Collinson. It flowers in july<sup>a</sup>.

15. So nearly allied to the preceding as to be scarcely distinct, but the leaves are grossly toothed instead of being sharply ferrate as that is; the seed also is oval, on each side two-channelled and triconvex as in *V. Lantana*, not cordate as in the preceding<sup>x</sup>. Native of the Levant and Russia.

16. It is a small bushy tree, smooth in all its parts, and very much branched: branches opposite, round. Leaves subcordate, with three great unequally ferrate lobes, veined, paler beneath; their petioles bearing several cup-like glands towards the top, and a pair or two of erect linear appendages, scarcely to be called stipules, near the base. Cymes terminating, solitary, composed of many white flowers, radiant; the inner perfect, small, resembling those of Elder, those in the margin abortive, consisting merely of a large irregular flat petal without any organs of fructification. Stigmas nearly sessile, close together. Berries drooping, globular, crowned with five very small scales of the calyx, red, very succulent. Seed flat, heart-shaped, the breadth of the berry, prominent on one side, grooved on the other, testaceous<sup>y</sup>.

<sup>a</sup> Thunb. jap. <sup>r</sup> Smith brit. and engl. bot. <sup>s</sup> Thunberg.  
<sup>t</sup> Idem. <sup>u</sup> Hort kew. <sup>x</sup> Willdenow.  
<sup>y</sup> Smith brit. and engl. bot. Gärtner.

The neuter florets in the circumference expand first, and drop before the perfect florets do so. The cymes have five or seven rays<sup>z</sup>.

Native of Europe; common with us in woods and hedges in watery places, flowering early in june; the bright-red berries ripen about september, and towards the middle of october the leaves assume a beautiful pink colour, affording another instance, in addition to the Cornel of a genus, mostly American, the leaves of which turn red in autumn<sup>a</sup>.

β. The American shrub has the twigs of a shining red colour; whereas in the european they are green and opaque. Mr. Miller makes a distinct species of this variety. He describes it as] rising eight or ten feet high, with many side branches, covered with a smooth purple bark: the leaves cordate-ovate, ending in acute points, deeply ferrate, having many strong veins, and standing upon very long slender foot-stalks. Cymes, flowers and berries as in the European shrub. Native of South Carolina, and some other parts of North America.

γ. [The beautiful variety so common in plantations, bearing large round bunches of abortive flowers only, and grouping so elegantly with Lilac and Laburnum in the early part of summer<sup>b</sup>,] will rise to the height of eighteen or twenty feet, if permitted to stand. The stem becomes large; the branches grow irregular and are covered with a gray bark. The leaves are divided into three or four lobes, somewhat like those of the Maple: they are about three inches long, and two and a half broad, jagged on their edges, and of a light green colour. The flowers come out in a large corymb, are very white, and being all neuters, are barren. From their extreme whiteness, and swelling out into a globular form, some country people have given this shrub the name of Snow-ball tree, [which surely is preferable to the common appellation of Guelder Rose, and is conformable to the Schneeball of the Germans. Probably we had this singular variety from the Dutch, who call it Ghelderfche Rooſe. Gerard calls it "Elder Rose and Rose Elder, says it groweth in gardens, and the flowers are there doubled by art, as it is thought." It is more probable that accident originally produced the variation, and that it was improved by art.

17. Stem upright, somewhat angular, ash-coloured, villose. Leaves nerved, villose on both sides, unequally toothed and as it were gnawn, two inches long, the lower ones smaller. Petiole round, villose, half an inch long. Flowers in panicles, not radiate. Panicle axillary, superdecompound, four-cleft and trichotomous, spreading very much. Peduncles and pedicels tomentose. Style simple, very short, with an obtuse stigma. Native of Japan.

18. The whole plant is smooth. Stem and branches round. Leaves nerved, paler beneath, a hand wide and a little more in length. Petioles three times shorter than the leaf. Umbel terminating, compound, with radiant flowers. Native of Japan.

19. Leaves equally and acutely ferrate, villose with scattered hairs, almost a hand broad, and a little more in length. Umbel superdecompound, terminating with radiant flowers. Native of Japan<sup>c</sup>.

20. Branches bent or hanging down. Petioles waving on the edge. Leaves thick, like those of *V. Tinus*, smooth, ferrulate with very small teeth. Germ terminating, awl-shaped, ventricose at the base. Native of North America; found in Canada by Kalm<sup>d</sup>. Cultivated in 1761, by Mr. James Gordon. It flowers here in july<sup>e</sup>.

21. Lowest leaves obovate; the next ovate; the upper ones lanceolate. Native of North America<sup>f</sup>. Cultivated here at the same time by Mr. Gordon. It flowers in june<sup>g</sup>.

22. Native of North America. Cultivated in 1758, by Mr. Christopher Gray. It flowers in may and june<sup>h</sup>.

23. Leaves petioled, broad-lanceolate, sharpish, without any raised veins. Petioles decurrent along

<sup>z</sup> Withering. <sup>a</sup> Engl. bot. <sup>b</sup> Idem. <sup>c</sup> Thunberg.  
<sup>d</sup> Linn. spec. <sup>e</sup> Hort. kew. <sup>f</sup> Linn. spec.  
<sup>g</sup> Hort. kew. <sup>h</sup> Idem.



the back, whence the twigs are ancipital. Corymbs short<sup>i</sup>.]

Stem twelve or fourteen feet high, sending out branches from the bottom to the top. Leaves about an inch long, and more than half an inch broad, of a light green colour, opposite on short footstalks. Peduncles axillary, very short, supporting small umbels of white flowers, which appear in July; but are rarely followed by seeds in England. Native of South Carolina. [Cultivated in 1724, as appears from Furber's catalogue<sup>k</sup>.]

#### PROPAGATION AND CULTURE.

1. The Laurustinuses are propagated by laying down their young branches, which put out roots very freely, so that when they are layed in autumn, they will be well rooted by that time twelve months, when they should be taken from the old plants, and may either be planted where they are to remain, or into a nursery for two years to get strength. The best season to transplant these is at Michaelmas, that they may get new root before winter; for as those plants begin to flower early in winter, it is a plain indication of their growing at that season, and they will more surely succeed then, than at any other time of the year: but they may be removed in the spring with balls of earth to their roots, provided it is done before they begin to shoot: they may also be removed at the end of July or the beginning of August, if rain should happen at this season; for after they have done shooting, which is soon after midsummer, they will be in no danger, provided they are not kept too long out of the ground.

These plants may also be increased by seeds, which should be mixed with earth in autumn, soon after they are ripe: these should be exposed to the open air, and receive the rain in winter, and in the spring they may be sown upon a gentle hot-bed, which will bring up the plants; they should remain in the bed till autumn, and then may be transplanted, and treated in the same way as the layers. I have raised many of these plants from seeds, and find them hardier than those raised by layers.

Some persons train up the Laurustinus with naked stems to round heads; but if these are planted in the open air, they will be in more danger of suffering by severe frosts, than those that have the branches growing rude from the bottom; for if the frost kills the outer part of the shoots, the stems will be protected, and will soon put out new branches; but where the stems are naked, the frost frequently kills them to the root.

[We scarcely recollect a plant, says Mr. Curtis, whose blossoms are so hardy as those of the Laurustinus; they brave the inclemency of our winters, and are not destroyed but in very severe seasons. The smoke of London is highly detrimental to its growth. It thrives best in sheltered situations and a dry soil. The shining-leaved variety is the most ornamental, but at the same time the most tender.]

8. This is generally propagated here by layers, for the seeds do not ripen in England. The young shoots take root very freely. The cuttings will also take root, if planted in autumn. The seeds, when brought to England, almost remain in the ground a year, so that this is a tedious method.

11. The Wayfaring tree may be propagated either from seeds or layers; but the former method is seldom practised, because the seeds rarely grow the first year, and the branches easily put out roots.

The best time for laying those branches is in autumn, just as the leaves begin to fall. By the succeeding autumn they will be rooted, when they may be removed into a nursery for two or three years, and then planted where they are to remain. This sort is very hardy.

The striped variety may be propagated by inarching or budding upon the plain sort; but there is no great beauty in it.

The American variety is much superior to the European.

<sup>i</sup> Linn. mant.

<sup>k</sup> Hort. kew.

16. The Water Elder may be increased in the same way as the Laurustinus, and requires the same treatment; it loves a soft loamy soil, and should have a sheltered situation.

β. The American variety is easily propagated by layers or cuttings.

γ. The Guelder Rose sends out plenty of suckers, by which it is frequently increased; but the plants so raised being very subject to put out suckers, they are not so good as those which come from layers or cuttings. It loves a moist soil, in which it will make much greater progress, and produce flowers in greater plenty than on a dry soil.

23. This is tender whilst young, and requires to be sheltered under a common frame in winter; till the plants have obtained good strength; when, if they are planted against a warm wall, they will resist the cold of our ordinary winters very well, and make good progress; but as they are liable to be killed by severe cold, it will be proper to keep a plant or two in pots, to be sheltered in winter. This may be propagated by laying down the branches, which will take root in one year.

[The other North American sorts (6. 14. 20. 21. 22.) are hardy enough, and may be increased by layers or cuttings.]

VIBURNUM. See *Hydrangea* and *Lantana*.]

VICIA (of Pliny, Virgil, &c. According to Varro, à vinciendo, because it has tendrils like the vine, by which it binds other plants. But Vossius rather thinks it is from the Greek, for the Asiatic Greeks call it Βίσιον, according to Galen; other derivations, less probable, may be seen in Vossius, etym.)

Lin. gen. n. 873. Reich. n. 947. Schreb. n. 1187.

Tournef. t. 221. Juss. 360. Gært. t. 151.

Faba Tournef. t. 212.

Class. 17. 4. Diadelphia Decandria.

Nat. Order of Papilionaceæ or Leguminosæ.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, erect, half-five-cleft, acute: upper teeth shorter, converging, all of equal breadth.

COR. papilionaceous. Banner oval, with a broad oblong claw, at the tip emarginate with a point, bent back at the sides, with a longitudinal compressed raised line. Wings two, oblong, erect, half-cordate, with an oblong claw; shorter than the banner. Keel with an oblong two-parted claw, the belly compressed semiorbicular; shorter than the wings.

STAM. Filaments diadelphous, single and nine-cleft. Anthers erect, roundish, four-grooved. A nectareous gland springs from the receptacle between the compound stamen and the germ, short, acuminate.

PIST. Germ linear, compressed, long. Style filiform, shorter, ascending at an erect angle. Stigma obtuse, transversely bearded below the tip.

PER. Legume long, coriaceous, one-celled, two-valved, terminated by a point.

SEEDS several, roundish.

OBS. Faba Tournef. has oval compressed seeds. Vicia Rivin. has roundish seeds.

#### ESSENTIAL CHARACTER.

Stigma transversely bearded on the lower side.

#### SPECIES.

\* With elongated peduncles.

[1. Vicia pisiformis. Pale-flowered Vetch.

Lin. spec. 1034. syst. 663. Reich. 1. 469. hort. cliff.

369. Gært. frubl. 2. 326. Hall. herb. n. 428.

Pollich pal. n. 682. Krock. filif. n. 1170. Allion.

pedem. n. 1193. Jacqu. austr. 4. 33. t. 364. Crantz.

austr. 384. Pallas it. 1. 192. Kniph. cent. 10. n. 99.

Pisum sylvestre. Clus. hist. 2. 129. Raii hist. 894.—

perenne. Baub. pin. 343. Ger. 1046. 6. emac.

1220. f. 6.

Cracca flore ochroleuco. Rivin. tetr. t. 52.

Peduncles many-flowered, petioles many-leaved, leaflets ovate, the lower sessile.

2. Vicia dumetorum. Great Wood Vetch.

Lin. spec. 1035. Reich. 3. 470. fl. suec. n. 649.

Hall.



- Hall. herb. n. 427. Krock. fles. n. 1171. Crantz. austr. 385. Sauv. monsp. 234. Villars dauph. 3. 446. Allion. pedem. n. 1194. Gmel. fib. 4. 9. tub. 221. Retz. obs. 1. 24. n. 81.
- V. maxima dumetorum. Baub. pin. 345.
- V. sylvatica max. pifo similis. Baub. hist. 2. 315. Raii hist. 900. Tournef. inst. 398.
- Cracca sylvatica. Riv. tetr. t. 50.
- Peduncles many-flowered, leaflets bent back ovate mucronate, stipules somewhat toothed.]
3. Vicia sylvatica. Common Wood Vetch.  
Lin. spec. 1035. syst. 664. Reich. 3. 470. fl. lapp. n. 270. fues. n. 650. Hudf. angl. 318. Wither. arr. ed. 3. 635. Smith brit. 768. engl. bot. t. 79. Hull. 161. Lightf. scot. 393. Relb. cant. suppl. 3. 5. ed. 2. n. 591. Sibth. oxon. n. 623. Abbot bedf. n. 516. Dickf. hort. succ. 6. 14. Fl. dan. t. 277. Gunn. norv. n. 16. Leers herb. n. 565. Krock. fles. n. 1172. Hall. herb. n. 426. t. 12. f. 2. Scop. carn. n. 898. Sauv. monsp. 234. Ger. prov. 497. n. 3. Villars dauph. 3. 447. Allion. pedem. n. 1195. Gmel. fib. 4. 11. Pallas it. 1. 370. Pluk. phyt. t. 71. f. 1.
- V. sylvatica multiflora maxima. Phyt. Brit. Raii hist. 903. syn. 322.
- V. bathoniensis, vel maxima sylvatica. Merr. pin.
- V. perennis multiflora spicata major. Mor. hist. 2. 61. inter 1. et 2.
- Peduncles many-flowered, leaflets elliptic, stipules crescent-shaped toothed.
4. Vicia cassubica. Cassubian Vetch.  
Lin. spec. 1035. syst. 664. Reich. 3. 470. fl. suec. n. 653. hort. cliff. 369. Fl. dan. t. 98. Pluk. phyt. t. 72. f. 2. Retz. obs. 1. 24. n. 82.
- V. Gerardi. prov. 497. n. 5. t. 19. Jacqu. austr. 3. 16. t. 229. Allion. pedem. n. 1197.
- V. incana. Villars dauph. 3. 449.
- V. militaris Crantzii. An, multiflora Pollichii? ac Leyseri?—absque dubio. Krock. fles. n. 1173.
- Peduncles about six-flowered, leaflets ten ovate acute, stipules entire.
5. Vicia Cracca. Tufted Vetch.  
Lin. spec. 1035. syst. 664. Reich. 1. 471. hort. cliff. 368. fl. suec. n. 652. Hudf. angl. 317. Wither. arr. ed. 3. 636. Smith brit. 769. engl. bot. t. 1168. Hull. 161. Curt. lond. 5. t. 54. 310. Lightf. scot. 394. Relb. cant. ed. 2. n. 592. Sibth. oxon. n. 624. Abbot bedf. n. 517. Fl. dan. t. 804. Hall. herb. n. 424. Pollich pal. n. 684. Neck. gallob. 307. Krock. fles. n. 1174. Scop. carn. n. 899. Crantz austr. 387. Sauv. monsp. 234. Villars dauph. 3. 448. Allion. pedem. n. 1196. Desfont. atlant. 2. 162. Kniph. cent. 10. n. 98. Fl. rust. t. 117.
- V. multiflora. Baub. pin. 345. Tournef. inst. 397. Raii hist. 903.
- V. perennis multiflora cærulea sepium. Mor. hist. f. 2. t. 4. f. 1.
- V. multiflora f. spicata. Park. theat. 1072.
- V. mult. nemorensis perennis f. dumetorum. Baub. hist. 2. 314.
- Cracca. Riv. tetr. t. 50. Raii syn. 322.
- Aracus. Tabern. ic. 506.—f. Cracca minor. Merr. pin.
- Peduncles many-flowered, flowers imbricate, leaflets lanceolate pubescent, stipules semisagittate mostly entire.
- [6. Vicia onobrychoides.  
Lin. spec. 1036. syst. 664. Reich. 3. 471. Hall. herb. n. 425. Sauv. monsp. 235. Ger. prov. 498. n. 6. Villars dauph. 3. 449. Allion. pedem. t. 42. n. 1198. Desfont. atlant. 2. 163.
- V. onobrychidis flore. Baub. pin. 345. prodr. 149. Raii hist. 903.
- Peduncles many-flowered, flowers distant, leaflets linear, stipules toothletted at bottom.
7. Vicia nissolia. Red-flowered Vetch.  
Lin. spec. 1036. Reich. 1. 472.
- V. orientalis, flore suaverubente, siliquis brevissimis. Boerh. lugdb. 2. 44?
- Peduncles many-flowered, leaflets oblong, stipules entire, legumes villose ovate-oblong.]
- VOL. II.
8. Vicia biennis. Biennial Vetch.  
Lin. spec. 1036. syst. 664. Reich. 1. 472. hort. upf. 219. Gertn. fruct. 2. 326. Gmel. fib. 4. 10. t. 2.
- Peduncles many-flowered, petioles grooved, having about twelve leaflets, which are lanceolate and smooth.
- [9. Vicia altissima. Tall Vetch.  
Desfont. atlant. 2. 163.
- Stipules toothed, leaflets elliptic truncate very smooth, flowers racemed, peduncles longer than the petiole.
10. Vicia benghalensis.  
Lin. spec. 1036. syst. 664. Reich. 1. 472. hort. cliff. 368. upf. 219. Ger. prov. 498. n. 7.
- V. benghalensis hirsuta & incana, siliquis pisi. Herm. lugdb. 624. t. 625.
- Peduncles many-flowered, leaflets quite entire, stipules entire, legumes nearly erect.
11. Vicia atropurpurea.  
Desfont. atlant. 2. 164.
- V. argentea, flore atro-sanguinea ex insulis floechadibus. Vaill. herb.
- Leaflets linear-lanceolate, racemes many-flowered directed one way, calyxes extremely villose with bristle-shaped teeth, legumes ovate-oblong drooping very hirsute.
12. Vicia canescens. Hoary Vetch.  
Billardiere syr. 1. 17. ic.
- Peduncles many-flowered, upper leaves subcirrhose, stipules semisagittate entire, leaflets oval-oblong hoary.]
- \*\* Flowers axillary subsessile.
13. Vicia sativa. Common Vetch or Tare.  
Lin. spec. 1037. syst. 664. Reich. 1. 472. hort. cliff. 368. upf. 218. fl. suec. n. 654. Gertn. fruct. 2. 325. Hudf. angl. 318. Wither. arr. ed. 3. 636. Smith brit. 769. engl. bot. t. 334. Lightf. scot. 395. Hull. 161. Relb. cant. ed. 2. n. 593. Sibth. oxon. n. 625. Abbot bedf. n. 518. Fl. dan. t. 522. Leers herb. n. 567. Neck. gallob. 307. Crantz. austr. 391. Krock. fles. n. 1175. Allion. pedem. n. 1200. Desfont. atlant. 2. 164. Thunb. jap. 284. Kniph. cent. 1. n. 96. Blackw. t. 429. Fl. rust. t. 116.
- Vicia. Lob. ic. 2. 75. Camer. epit. 320. Clus. hist. 2. 235. Dod. pempt. 531. Fuchf. hist. 172. Ger. emac. 1227. 1. Park. theat. 1072. 1. Riv. tetr. t. 55. Raii hist. 900.
- V. vulgaris sativa. Baub. hist. 2. 310. 2.
- V. major sativa. Mor. hist. f. 2. t. 4. f. 12.
14. Vicia sylvestris f. Cracca major. Ger. emac. 1227. 4. Park. theat. 1071. 1. Raii hist. 902. syn. 321.
- V. sativa. Scop. carn. n. 895. Pollich pal. n. 685. Villars dauph. 3. 450. Hall. herb. n. 430.
- V. lathyroides. Hudf. angl. 318. a. Dickf. hort. succ. 4. 12.
- V. angustifolia. Riv. tetr. t. 56. Allion. pedem. n. 1201.
- V. vulgaris sylvestris, femine parvo & nigro, frugum. Baub. hist. 2. 312.
- Aracus, Araca & Cracca major. Lob. ic. 2. 75.
15. Vicia sylvestris flore ruberrimo, siliqua longa nigra.  
D. Bobart. Raii syn. 321.
- V. angustifolia. Sibth. oxon. n. 626. Abbot bedf. n. 519.
- V. folio angustiore, flore rubro. Dill. giff. app. 47.
- Legumes sessile subbinate nearly erect, lower leaves retuse, stipules toothed marked, seeds smooth and even.
- [14. Vicia lathyroides. Little Spring Vetch.  
Lin. spec. 1037. syst. 664. Reich. 1. 473. Wither. arr. ed. 3. 638. Smith brit. 771. engl. bot. t. 30. Hull. 161. Lightf. 396. Abbot bedf. n. 521. Fl. dan. t. 58. Jacqu. misc. 2. 299. t. 18. Retz. obs. 1. 24. n. 83. et 6. 33. n. 63.
- V. minima. Riv. tetr. t. 56.—præcox. Parisiensium. Dill. in Raii syn. 321. Tournef. inst. 397.
- V. lath. purpureo-cæruleis floribus. Herm. par. t. 242.
- V. pratensis verna f. præcox, femine hexaedro. Mot. hist. f. 2. t. 3. f. 14.
- V. montana minima, flosculo purpureo. Amoen. acad. 1. 167.
- Ervum soloniense. Lin. spec. 1040. Hudf. angl. ed. 1. 279. Diet. nostr.
- Legumes sessile solitary erect smooth, leaflets six, the lower ones obcordate, seeds cubic warty.
- 19 C



15. *Vicia lutea*. *Rough-podded Yellow Vetch*.  
*Lin. spec.* 1037. *syft.* 664. *Reich.* 1. 473. *Huds.*  
*angl.* 319. *Wither. arr. ed.* 3. 639. *Smith brit.*  
772. *engl. bot. t.* 481. *Hull.* 161. *Pollich pal. n.*  
687. *Sauv. monsp.* 235. *Villars dauph.* 3. 450.  
*Allion. pedem. n.* 1203. *Desfont. atlant.* 2. 165.  
*V. sylvestris lutea*, filiqua hirsuta. *Baub. pin.* 345.  
*Tournef. inst.* 398.  
*V. luteo flore sylvestris*. *Baub. hist.* 2. 313. *Raii*  
*hist.* 901.  
*V. flore luteo pallido*, filiquis hirsutis crassis brevibus  
propendentibus. *Mor. hist.* 2. 62. *f. 2. t. 21. f. 5.*  
*Legumes sessile reflexed hairy solitary five-seeded, banner*  
*of the corolla smooth.*  
16. *Vicia hybrida*. *Hairy-flowered Yellow Vetch*.  
*Lin. spec.* 1037. *syft.* 664. *Reich.* 3. 474. *Gertn.*  
*fruct.* 2. 326. *Smith brit.* 772. *engl. bot. t.* 482.  
*Hull.* 162. *Jacqu. hort.* 2. 68. *t. 146.* *Allion.*  
*pedem. n.* 1204. *Desfont. atlant.* 2. 165.  
*V. luteo flore sylvestris*. *Baub. hist.* 2. 313. *Raii*  
*hist.* 901. *syn.* 321 ?  
*Legumes sessile solitary reflexed hairy, banner villose, leaf-*  
*lets emarginate.*  
17. *Vicia lævigata*. *Smooth-podded sea Vetch*.  
*Smith brit.* 773. *engl. bot. t.* 483. *Hull.* 162.  
*V. hybrida*. *Huds. angl.* 319. *Wither. arr. ed.* 3.  
639.  
*Legumes sessile solitary reflexed smooth, stem nearly upright,*  
*leaves very smooth.*  
18. *Vicia peregrina*. *Broad-podded Vetch*.  
*Lin. spec.* 1038. *Reich.* 1. 474. *Ger. prov.* 499.  
*n. 12.* *Villars dauph.* 3. 451. *Allion. pedem. n.*  
1206.  
*V. angustifolia*—purpureo—violacea, filiqua lata gla-  
bra. *Magn. monsp.* 276.  
*V. per. angustissimis foliis*, fil. lata glabra. *Pluk. phyt.*  
*t.* 233. *f. 6.*  
*Legumes subseffile pendulous smooth four-seeded, leaflets*  
*linear emarginate.*  
19. *Vicia sepium*. *Bush Vetch*.  
*Lin. spec.* 1038. *syft.* 664. *Reich.* 1. 474. *mant.* 443.  
*hort. cliff.* 362. *f. suet. n.* 651. *Huds. angl.* 320.  
*Wither. arr. ed.* 3. 637. *Smith brit.* 773. *Hull*  
161. *Lightf. scot.* 397. *Relh. cant. ed.* 2. *n.*  
594. *Sibth. oxon. n.* 627. *Abbot bedf. n.* 520.  
*Fl. dan. t.* 699. *Hall. helv. n.* 428. *Pollich pal.*  
*n.* 688. *Krock. files. n.* 1177. *Neck. gallob.* 307.  
*Scop. carn. n.* 897. *Crantz austr.* 391. *Sauv.*  
*monsp.* 234. *Ger. prov.* 499. *n. 12.* *Villars dauph.*  
3. 452. *Allion. pedem. n.* 1205. *Riv. tetr. t.* 57.  
*Kniph. cent.* 5. *n.* 100.  
*V. sepium perennis*. *Baub. hist.* 2. 313. 2. *Raii*  
*hist.* 901. *syn.* 320.  
*V. sep. folio rotundiore acuto*. *Baub. pin.* 345.  
*V. maxima dumetorum*. *Ger.* 1052. 1. *emac.* 1227. 2.  
*Cracca major*. *Tabern.* 506.  
*Aphace*. *Fuchs. hist.* 110.  
β. *Vicia folio subrotundo brevi obtuse mucronato, pedi-*  
*culo brevi insidente flore Viciæ sepium f. dumetorum*  
*vulgaris*. *Raii syn.* 321.  
*Legumes pedicelled mostly four together erect smooth, leaf-*  
*lets ovate obtuse, the outer ones smaller.*  
20. *Vicia bithynica*. *Rough-podded purple Vetch*.  
*Lin. spec.* 1038. *syft.* 664. *Reich.* 3. 475. *Huds.*  
*angl.* 320. *Wither. arr. ed.* 3. 630. *Smith brit.*  
774. *Hull* 162. *Jacqu. hort.* 2. *t. 147.* *Allion.*  
*pedem. n.* 1199. *t. 26. f. 2.*  
*Lathyrus pedunculis unifloris, cirrhis tetraphyllis, sti-*  
*pulis dentatis*. *Roy. lugdb.* 363.—*slip. fetaceis, caule*  
*ancipiti*. *Amoen. acad.* 1. 166.  
*Cracca floribus albis, foliis circa caulem denticulatis.*  
*Buxb. cent.* 3. 25. *t. 45. f. 2.*  
*Clymenum bithynicum, filiqua singulari, flore minore.*  
*Boerb. lugdb.* 2. 43.  
*Legumes peduncled solitary erect rugged, leaflets two-*  
*paired elliptic-lanceolate, stipules toothed.*  
21. *Vicia narbonensis*. *Broad-leaved Vetch*.  
*Lin. spec.* 1038. *Reich.* 3. 475. *hort. cliff.* 369. *upf.*  
218. *Gouan. illustr.* 48. *Sauv. monsp.* 234.  
*Allion. pedem. n.* 1207. *Desfont. atlant.* 2. 166.  
*Kniph. cent.* 4. *n.* 98. *Knorr. del.* 2. *t. L.* 1.  
*Riv. tetr. t.* 40.

- V. supina latissimo folio non serrato*. *Tournef. inst.*  
397.  
*Faba sylvestris*. *Matth.* 421. *Ger.* 1036. 2. *emac.*  
1209. 2. *Park. theat.* 1054. 2. *Raii hist.* 903.  
24.—*fructu rotundo atro*. *Baub. pin.* 338.  
*Aracus fabaceus, et Faba Kairina, cui femina minora.*  
*Baub. hist.* 2. 288.  
*Bona sylvestris*. *Dod. pempt.* 516.  
*Legumes subseffile about three together erect, leaflets six*  
*subovate, stipules toothletted.*  
22. *Vicia Faba*. *Bean*.  
*Lin. spec.* 1039. *syft.* 665. *Reich.* 3. 475. *hort. cliff.*  
369. *upf.* 218. *mat. med.* 172. *Thunb. jap.* 284.  
*Lour. cochinch.* 443. *ed. Willd.* 540.  
*Faba*. *Mill. dict.*  
α. *Faba*. *Baub. pin.* 338. *Raii hist.* 909.  
*F. major hortensis*. *Ger.* 1036. 1. *emac.* 1209. 1.  
*F. sativa*. *Park. parad.* 523. *f. 1.*  
*Bona f. Phaselus*. *Dod. pempt.* 513. *ic.*  
*Garden Bean*.  
β. *F. minor f. equina*. *Baub. pin.* 338. *Raii hist.* 909.  
*Mill. dict.*  
*Bona f. Faselus minor*. *Dod. pempt.* 515.  
*Common Beane*. *Ger. emac.* 1210.  
*Field or Horse Bean*.  
*Stem upright, petioles without tendrils.*  
[23. *Vicia ferratifolia*.  
*Lin. syft.* 665. *Jacqu. austr.* 5. *app. t.* 8.  
*Stem upright, petioles without tendrils, leaflets serrate.*  
24. *Vicia biflora*.  
*Desfont. atlant.* 2. 166. *t. 197.*  
*Leaflets linear, peduncles two-flowered axillary.*  
25. *Vicia calcarata*.  
*Desfont. atlant.* 2. 166.  
*Leaflets linear-lanceolate obtuse, stipules forked, peduncles*  
*one-flowered, shorter than the leaf, having a short spur*  
*below the flower, legumes smooth drooping.*

## DESCRIPTIONS, &amp;c.

1. The lowest leaflets approximate to the stem, are sessile, and conceal the very small stipules. Flowers very pale yellow<sup>1</sup>.

Root perennial. Stem upright, not seldom climbing to the height of a man among bushes, angular, grooved, bright green, smooth, branched. Leaves composed of four or five pairs of leaflets, the lowest pair inserted into the stem itself at the base of the rib; the other leaflets are subseffile, almost two inches long, and from an inch to an inch and half in breadth, blunt, with a spinule, quite entire, glaucous, smooth. Stipules at the base of the rib, lanceolate, acuminate, toothletted at the base, pale green, smooth. Peduncles axillary, almost as long as the midrib, grooved, smooth, in fruiting time straight, bent down, horizontal. Flowers small, striated. Legumes pendulous, an inch and half long, three lines and more broad, terminated in front by a beaked point, swelling in the middle, but flattish next the futures, smooth, yellowish-brown when ripe. Seeds three, four or five, orbicular or nearly so, quite smooth, brown, or rusty black, with a whitish streak on one side, the size of a pea<sup>m</sup>.

Haller says that this is the largest of the European species of Vetch, having a stem several feet high, branching and full of leaves: stipules large, yet covered by the lowest leaflets, which are from four to six or eight, very large, scarcely ovate, but almost oval, emarginate, smooth and nerved; those next the stem so large that they seem to be perfoliate: tendrils branched; flowers pendulous, to thirty in a raceme: all the teeth of the calyx awned, the two upper ones shorter: claw of the banner wide, but the end not wide, ovate, reflexed, emarginate; wings a little shorter, ovate with large hooks; keel a little shorter, cloven, with a blunt beak curved a little. Legumes short and broad, scarcely longer than the leaf.

Native of Germany, and Austria.—Cultivated in 1758 by Mr. Miller. It flowers here in july and august<sup>n</sup>.

2. This differs from the preceding in the flowers not being yellow; in the leaflets being longer, and the lowest not adhering to the stem<sup>o</sup>.

<sup>1</sup> Linn. spec. and syft. <sup>m</sup> Pollich. <sup>n</sup> Hort. kew. <sup>o</sup> Linn. spec.



Stems angular, branched and high. Stipules half-mooned, toothed with a thread at the end of each tooth: Leaflets large, an inch long, oval, smooth, tender, deep green, six or eight, almost alternate and obtuse, with a salient nerve at the end. Flowers large, six or eight, purplish blue. Legumes smooth, flattened, pendulous, containing five or six seeds. Root perennial<sup>p</sup>.

Native of France, Germany, Austria, Switzerland, Piedmont and Siberia.—Cultivated by Mr. Miller, in 1759. It flowers in May<sup>q</sup>.

3. Stems numerous, and so much branched as to choak whatever they grow near. Leaves with eight or nine pairs of leaflets, and terminated by a long and very much branched tendril. Leaflets ovate, oftener alternate than opposite. Stipules in pairs, small, deeply divided into several awl-shaped segments. Peduncle long, large, four-cornered and striated, growing erect, and bearing on its upper part numerous flowers, growing in an irregular manner, but mostly by twos and threes with interruptions, pendulous. Teeth of the calyx awl-shaped, uppermost shortest. Corolla rather large: standard and wings whitish beautifully streaked with blue; keel pale blue<sup>r</sup>.

The perennial root throws out many weak smooth grooved zigzag stems, climbing six or seven feet high. Leaflets exactly oval, or rather a little obtuse, tipped with a minute bristle, smooth. Flowers very ornamental. Pods lanceolate, smooth, pale brown<sup>s</sup>.

Dr. Withering remarks, that the standard of the corolla is without a sharp point in the notch, the keel not shorter than the wings; the style and stigma so slender, that one cannot certainly discern the beard on the under side at the end.

Mr. Swayne observes, that it is the most beautiful climber of this island, both leaves and flowers being extremely elegant. It flowers from the end of June through August.

According to Dr. Abbot, the fringes of the leaf-scales, (by which I suppose he intends the stipules,) set this plant apart from all the others.

This Vetch was long supposed peculiar to the mountainous parts of England, Scotland and Wales, in our island; as in several woods and thickets in Westmoreland, Cumberland, Yorkshire and Worcestershire; under Salisbury-Craigs, and at Cartland-rocks, near Lanerk, &c. in Scotland. Near Caerwent, in Monmouthshire. Yorkshire; near Hackness, about Greta bridge, Malham near Settle, &c. Westmoreland, about Kirby Lonsdale and Kendal. Orton in Cumberland. Woods about Newton Cartmel. Urswick woods, climbing up the trees for several yards. Derbyshire, on hedges behind Matlock bath. Worcestershire on the north side of Bredon hill, and in the woods about Clifton-upon-Teme, in moist places. On Shelton bank near Salop. In a hedge going down Stoke hill from Bull-barrow, Dorsetshire, by Dr. Pulteney. Beech wood, close by the monument on Lansdown, Bath; in Smokhall wood, Bath. About the Devizes in Wiltshire. It has lately been found in the less mountainous parts of England, as in Hall wood, Wood Ditton near Newmarket by the Rev. Mr. Hemsted; Sheerhatch wood, and Eversholt in Bedfordshire, by Dr. Abbot; Medley grove, Oxfordshire, by Dr. Sibthorp; and Merley wood near Whiteham, Berks, by the late Mr. Israel Lyons. It is found in most parts of Europe, from Sweden and Denmark to the South of France and Italy; also in Siberia.]

4. Root woody, creeping. Stems trailing, three feet long, their lower part becoming more woody towards autumn but dying to the root in winter. Leaves composed of ten pairs of ovate acute-pointed leaflets. Flowers disposed in short axillary spikes; each containing for the most part, six pale-blue flowers, which appear in July, and are succeeded by short smooth pods, like those of Lentils, including three or four round seeds which ripen in autumn.

[Native of Denmark, Germany, Austria, the South of France, &c.—Cultivated in Chelsea garden, in 1711<sup>t</sup>.

5. Root perennial, creeping. Stems two, three or four feet high, and even more when climbing on bushes; quadrangular, slender, weak, striated or grooved; slightly hairy, brittle and snapping when broken. Branches numerous, short, alternate, from the axils of the upper leaves. Leaves alternate, very long, consisting of eight, ten or twelve pairs of leaflets, and terminated by a long branched and very curling tendril. Leaflets oftener alternate than opposite, more or less hoary on both sides with silky hairs, commonly rounded at the end and terminated by a short point. At the base of each leaf is a pair of small villose semisagittate, acute stipules, most frequently entire, but occasionally toothed. Peduncles the length of the leaves, angular, hairy; bearing numerous, closely imbricate, rather drooping flowers, on one side of the common peduncle. The two upper teeth of the calyx extremely short, the lowest longest, blueish. Corolla has the standard emarginate, reflexed, without any sharp point in the notch, of a violet or blueish purple colour, striped with veins of a deeper colour: wings closing: keel whitish marked on each side at the tip with a deep-violet spot. Style hairy all round. Legume half an inch long, pale brown, smooth, flattened on each side; containing four or five globular, black seeds, the size of a lentil.

Native of Europe and Barbary. Common with us in hedges and among bushes, especially in a black boggy soil on a gravelly bottom, about osier-grounds. In such places the dense long spikes of purple flowers are most conspicuous. In open pastures and fields it is found of a much lower stature. It flowers from July to September; and is easily distinguished by its leaves being covered with a fine silky down, giving them a manifest whiteness; and the flowers being of a rich deep-purple colour, growing in long racemes and thickly crowded together: the whiteness however is most manifest in such plants as grow in dry exposed situations.

Dr. Plot, in his history of Staffordshire, says that this, and the sylvatica or wood Vetch, advance starved or weak cattle, above any thing yet known. These perennial Vetches yield such abundance of food, that they seem to deserve the notice of agriculturists. But it is well observed in English Botany, that to gather from their native situations would be impracticable, so firmly do they cling to their neighbours; and if cultivated, they would probably choak themselves for want of support<sup>u</sup>.]

Mr. Miller also says, that this and other perennial tares have been recommended to be sown in fields as fodder for cattle, but as their stalks are slender and less succulent than those of the common Tare or Vetch, it is doubtful whether these will answer the purpose of farmers to cultivate them. Their stalks trailing to a great length, if they have not support, they will be subject to rot by lying upon the ground; and although their roots are perennial, yet as it is late in the spring before they shoot to a height sufficient to cut for use, they do not come into use till there is a sufficiency of other green food for cattle.

[6. This has the stature of the preceding. Leaflets commonly fourteen, very narrow, and the pairs distant. Peduncles axillary, three times as long as the leaves, striated. Flowers ten or twelve, subsessile, very remote, three times as big as those of *V. Cracca*, and purple. Legumes very wide<sup>x</sup>.

Stem erect, angular, striated, pubescent. Stipules forked, often toothed, awl-shaped. Leaflets ten to sixteen, truncate, acuminate, pubescent; some increasing from the base upwards, others equal. Flowers loosely disposed all one way. Calyx-teeth sharp, the three lower longer. Corolla blue, a little bigger than in *V. sativa*: standard elongated, obtuse, erect, longer than the wings, with the margin bent back upwards: wings obtuse, obversely lanceolate, longer than the keel. Legume compressed, smooth, lanceolate, attenuated to both ends, acute, many-seeded. Flowers a little larger than in the European plant<sup>y</sup>: Native of France, Switzerland, Piedmont, and Mount Atlas.

<sup>p</sup> Villars. <sup>q</sup> Hort. kew. <sup>r</sup> Woodw. Mff. <sup>s</sup> Smith brit. and engl. bot. <sup>t</sup> Hort. kew.

<sup>u</sup> Curt. lond. <sup>v</sup> Smith brit. and engl. bot. <sup>w</sup> Withering, Woodw. Mff. <sup>x</sup> Fl. russ. <sup>y</sup> Linn. spec. and syst. <sup>z</sup> Desfontaines.



Desfontaines has a species which he names *V. polyphylla*; but suspects may be a variety of *V. Cracca*. He found it in hedges about Algiers, and refers *V. orientalis multiflora incana, angustissimo folio, Tournef. cor. 27.* to it.—Stem striated, erect, scarcely pubescent. Leaflets sixteen to twenty-two, linear-lanceolate, mucronate, villose; the hairs very short and pressed close. Stipules two-parted, lanceolate, acute. Peduncles axillary, twice as long as the leaf, striated. Flowers like those of *V. Cracca*, but larger and paler; racemed, all directed one way, crowded, subsessile, nodding.

7. Root annual. Stem grooved. Leaflets six pairs, scarcely retuse, terminated by a point, subvillose. Stipules lanceolate, very narrow. Flowers five or six on a peduncle, very small and dark purple. Legumes nodding, compressed, containing five seeds. Native of the Levant<sup>2</sup>. Introduced in 1773, by John Earl of Bute. It flowers in June and July<sup>3</sup>.

8. Root biennial. Plant very tall, above twelve feet high. Leaflets rolled in<sup>b</sup>. Legume like that of *pisiformis*, but narrower, and attenuated into the peduncle. Seeds globular, dirty yellow spotted with black<sup>c</sup>.]

According to Mr. Miller, the stalks rise only five or six feet high; and the leaves are composed of five or six pairs of leaflets, on footstalks deeply furrowed. The flowers are produced in axillary spikes, upon long peduncles; they are of a light blue colour, appear in July; and are succeeded by short compressed pods, containing three or four round seeds, which ripen in autumn.

Native of Siberia, and promises fairly to become a useful plant for fodder, the stalks growing to a great length, and being well furnished with leaves: they do not decay in autumn, but continue green through the winter, in defiance of the most severe frost; so that in February and March, when there is often a scarcity of green feed for ewes and lambs, this may be of great service.

[Cultivated in 1759, by Mr. Miller<sup>d</sup>.

9. The whole plant very smooth. Stem scandent, striated. Leaflets ten or twelve, on short petioles, alternate. Peduncles axillary, angular. Flowers numerous, all on one side, pedicelled, nodding. Calyx-teeth minute, the three lower acute and longer, the two upper very short. Corolla pale blue, the size of those in *V. sepium*, or scarcely bigger. Legume lanceolate, compressed, containing many seeds.—It is allied to the preceding, but differs in having the leaflets truncate at the top, and the stipules toothed. Native of Barbary, in hedges near Arzeau<sup>e</sup>.

10. Root annual. Corollas of a very deep red colour, with the apex of the keel black<sup>f</sup>.

First found by Tournefort on the Hieres islands, off the coast of France.

11. Annual. Stem four-cornered, striated, villose. Leaflets twelve to eighteen, villose, obtuse, acuminate, subpedicelled. Petiole angular, hirsute, cirrhose at the end. Stipules large, semisagittate, acute, often toothed on one side of the base. Peduncles axillary, length of the leaf. Flowers nodding. Calyx-teeth bristle-shaped, twice or thrice as long as the body of the calyx. Corolla smooth, very dark purple at the tip, the size of *V. sepium*. Hairs on the legume short, very close, rufescent. Quite different from Hermann's plant, which is cultivated in the Paris garden. Hermann's figure represents the leaves sharper and smaller, the peduncles few-flowered, and the calyxes obtuse without the bristle-shaped teeth. The plant here described grows wild in Isles d'Hieres, was gathered there by the late Dr. John Sibthorp, who gave a specimen of it to Mons. L'Heritier, in whose herbarium it is, under the name of *V. benghalensis*. But if it be really that species of Linneus, Hermann's name ought to be excluded. Linneus's diagnosis however does not agree with the plant found by Sibthorp or Desfontaines, which has more numerous flowers, the stipules not entire but toothed, and the legumes not nearly erect but pendulous. Mons. Desfontaines gathered it near Algiers<sup>g</sup>.

12. The whole plant hoary with a woolly nap. Stem

herbaceous, erect, a foot high and more, four-cornered, somewhat striated. Lower leaves unequally pinnate, upper with a subcirrhose thread. Leaflets five to twenty-two or twenty-three alternate, some opposite, sessile. Flowers in loose spikes, all one way, blue. Calyx subcampanulate, gibbous above, with the two upper teeth shorter and converging. Wings of the corolla as long as the standard: keel shorter. The single filament connate into the sheath towards the middle, but loose at the base. Legume almost boat-shaped, compressed, tomentose. Seeds three or four, roundish. Native of Mount Libanus, towards the top. Annual<sup>h</sup>.

13. Root annual. Stems various in size, weak and procumbent if the tendrils meet with nothing to cling to, but supporting one another tolerably well when sown thick enough, angular and grooved, as are also the common foot-stalks of the leaves. The herb is more or less pubescent. Leaves terminated by a bifid or trifid tendril. Leaflets about six pairs, some opposite others alternate, varying much in form and breadth, most commonly retuse, but sometimes, at least the upper ones elliptic-lanceolate, terminated by a point. Stipules in pairs, semisagittate, more or less toothed, having a depressed mark on the outside, which looks as if it were made with a hot iron, and varies in colour from black to brown, and even yellow. Flowers solitary or in pairs, subsessile, reddish purple of different shades. Calyx-teeth nearly equal. Legumes more generally horizontal than erect<sup>i</sup>; oblong, two inches long, compressed a little, swelling where the seeds lie; seven-celled, being divided by very thin partitions but permanent. Seeds six or seven irregularly round, turgidly lens-shaped, brown and rust colour variegated, fastened to the strait future by a thread which is forked at the tip<sup>k</sup>.

Native of Europe, Barbary and Japan, in pastures and corn-fields. In dry soils it has a procumbent stem, sharper leaflets, the flowers mostly solitary, and the stipules spotted but obscurely. It varies also in the colour of the pods, and of the seeds from black to brown and white<sup>l</sup>. The figure in English Botany from a wild specimen, and that in Flora Rustica from a cultivated one, appear so different, that they would scarcely be recognized for the same species, if we had not every reason to suppose them both to be accurate representations of individuals, and if we did not know that this plant varies much in the leaves.

β. The variety noticed above is not uncommon in hedges among bushes and grass, in a barren sandy soil. It is the *lathyroides α* of Hudson, and seems to be the common variety of *fativa* mentioned in Withering, and which Mr. Woodward says may be traced through all its stages from its smallest size, up to the largest plants of this species. Dr. Withering describes the stems as scored and undivided, the tendrils as three-cleft, the leaflets of the lower leaves heart-shaped, two or three pairs, those of the upper four or five pairs, linear blunt at the end, the mid-rib lengthened out into a thorn-like point, corolla purple, seeds ten to twelve.

γ. This variety was noticed by Bobart on Shotover hill. Dr. John Sibthorp found it in the same place, and in Stow wood. Sir Thomas Gery Cullum observed it at Weymouth. Dr. Withering, in the lanes in the vallies of Dartmoor. Dr. Smith among short grass in Richmond gardens. It commonly grows in a chalky or gravelly soil, and is the *lathyroides β* of Hudson. The flowers are somewhat larger, handsomer, and of a deep red colour, the legumes longer and black. Dr. Sibthorp distinguishes it as a species under the name of *V. angustifolia*, with the following specific character—Legumes subsessile subbinate spreading, lower leaflets obcordate emarginate and mucronate, upper linear. Roth also, (fl. germ. 310.) has adopted the same idea.

*V. fativa* is so called because it has been long cultivated under the names of Tares and Vetches, (provincially Fitches) for the seeds, which are an excellent food for pigeons, and also for green feed of horses, kine and sheep, particularly for foaling horses. For this

<sup>1</sup> Desfontaines. <sup>2</sup> Linn. spec. <sup>3</sup> Hort. kew. <sup>4</sup> Lin. spec. and syst. <sup>5</sup> Gartner. <sup>6</sup> Hort. kew. <sup>7</sup> Desfontaines. <sup>8</sup> Lin. spec. <sup>9</sup> Desfontaines

<sup>10</sup> Billardiere.

<sup>11</sup> Smith brit. and engl. bot. Woodw. Mss.

<sup>12</sup> Gartner.

<sup>13</sup> Fl. rust.



latter purpose, and as a meliorating crop, it has obtained very much within a few years past<sup>m</sup>.

Tares are said to produce good milk and butter, only they dry cows when they are too near maturity, and are therefore best for horses in their advanced state.

They are very useful in may, or for keep till midsummer, at which time, in a dry season, thin soils are apt to burn up.

Winter tares are admirable for soiling beasts, and to spare grass: for if bullocks are turned to graze as soon as the grass rises in the spring, they keep the ground so bare, that if a hot season ensues, it is burnt up, and the farmer has no resource, but to turn them to hay a second time.

By an experiment of Hutcheson Mure, Esq. eighty-one beasts eat just half an acre of tares every day, and thrive on them very well. It appeared that a beast of fifty stone weight got one stone a month on straw in the winter; two stones and a half by the first grass in the spring; three stones a month by grass in summer; and above four stones a month by soiling in tares.

Spring tares with oats sown early in march, and cut green for horses in july, are good for cleaning light land, and preparing it for Wheat or Rie.

Winter Tares sown with a little Rie in autumn for soiling, give time to destroy weeds by tillage till autumn: or they may produce a second crop; turneps if it be designed for spring corn: but the land should be manured for the tares if it be not very rich<sup>n</sup>.

Nine acres of Tares sown in drills, and five or six broad-cast, fed twelve and sometimes thirteen draught horses, during part of the spring, and all the summer, in all about four months, except some few beans and bran, when they worked hard. Five milch cows also, and a bull, were fed with these tares in the farm-yard. The milk of the cows was greatly increased in quantity, and the horses were healthy<sup>o</sup>.

Spring Tares are grown in Northumberland principally for cutting as green food for horses, to supply the vacancy between the first and second cutting of red clover used for the same purpose<sup>p</sup>.

Winter Tares are sown in Kent, either to feed off with cattle and sheep in april, or to mow for soiling in may. The spring Tares, either for soiling in july and august, or to stand for a crop of seed.

Sowing winter and spring tares to fold sheep on in the spring and summer, is reckoned among the greatest improvements on the strong soil of the weald of Kent, where turneps hardly ever answer. It is said that they make an excellent tilth for wheat; but this is disputed<sup>q</sup>.

Many farmers in Middlesex, especially near London, grow a few acres of tares, for soiling horses and feeding milch cows, and the culture of them has been extended every year, from their importance having been better understood. Mr. Middleton, in his view of the Agriculture of that county, observes that they may be made the principal means of enabling the arable farmer to support as much live stock as the grazier. For during the time they occupy the ground, they produce more green food of the best quality than Romney-marsh or Pevensey-level, and the ground may be cleared of them in the month of june, in such time as to admit of loamy sands producing a crop of clean turneps in the same year, and of clayey loams being prepared for and sown with wheat. They support cattle, will make both sheep and bullocks of every size and breed fat, suit every situation, and will flourish on all soils. They do not depend on a market, and above all, they manure the land fit for the immediate reception of turneps; whereby a succession of green crops can be kept up, that would fat a very increased quantity of live stock, and be the means of raising, in situations the most distant from towns, an abundance of dung. A judicious combination of tares with turneps, clover and saintfoin, may be the means of rendering poor sheep-walks, downs and wastes, of from ten to thirty times their present value to the community.

<sup>m</sup> Idem. <sup>n</sup> Young's Annals 1. 128. 2. 347. 360. 3. p. 5. 6.  
<sup>o</sup> Transf. arts. 8. 59. <sup>p</sup> Survey, p. 78. <sup>q</sup> Survey, p. 94.

Winter tares begin to flower in may, and from that time stock may be advantageously supported on them, till the flowers fall off, and pods begin to form: then all that are left may be made into hay, or left for seed. If the land was dunged and the seed good, there will probably be twelve tons of green food on an acre; which will make three tons of excellent hay, provided the season will admit it to be well cured. But in a wet or uncertain season it is far better to use the whole crop green; and by so doing, the stock will be taken off the grass land long enough to allow of its being mown for hay; and by the time the cattle have consumed the green tares, the after-grass will be ready to receive them.

Spring tares produce a lighter crop, and are subject to some risk from a dry summer, but coming a fortnight later, they will make a succession of green food all the summer.

The most adviseable method of giving them to cattle, is to mow the Tares off the first half acre, and to carry the produce into the stables, cow-houses and fold-yards, or on to poor land to be there consumed by the stock. Then to hurdle off the growing Tares from such cleared ground, into which put the stock, feeding them in racks, and removing the hurdles with the racks daily to the edge of the growing Tares; by which means the land will be manured uniformly and all the urine deposited in the soil. Or they may be fed through rack-hurdles, made the same with the common ones, only leaving the middle rail out, and nailing upright pieces across, at proper distances, to admit the sheep to put their heads through. A swath being mown in the direction you wish to plough the land, a sufficient number of these hurdles, allowing one to five sheep, are set close to it: at noon the shepherd mows another swath, throwing it to the hurdles, and the same at night: next morning, a swath being first mown, the hurdles are again set; thus mowing them once in the twenty-four hours, the Tares are eaten clean off, and the land is equally benefited.

Mr. Davis of Beddingham in Suffex says, that not one tenth of his stock could be maintained without Tares; that they keep more stock than any other plant whatsoever; that hogs may be soiled upon them, as well as horses, cows and sheep, without any other food; that one acre of Tares will maintain four horses in much better condition than five acres of grass; and that upon eight acres he has kept twelve horses and five cows for three months, and no other food given them<sup>r</sup>.

Tare or Vetches vary in some degree in cultivation, and hence have different names among agriculturists—as Gore-vetch, Pebble-vetch, Winter-vetch, Rath-ripe vetch, Gout-vetch, &c. The two last are the same with the Spring-vetch, between which and the Winter-vetch, it is not agreed whether there be any real difference, grounded on the nature of the plants themselves, or whether the difference may not be owing merely to the time of sowing.

With a view to decide this question, two experiments were made by the late Rev. Mr. Laurens of Bury.

September 30, 1783, he sowed seeds both of the winter and spring Tare near one another in the same soil and exposure, and covered both an inch deep with crumbled mould. The weather proving mild, the Spring Tare soon made its appearance, and two days after the winter Tare came up. They were both in a vigorous and thriving condition, when a frost came on about the middle of december, and continued for some weeks. When a thaw took place, the spring tare was lying on the ground, slimy and putrified to the very root. The winter tare had received no damage, grew up afterwards, and was ripe before the middle of august.

March 6, 1784, both sorts were again sown. Near a week later than the winter tare of the autumnal sowing, the spring tare of the vernal sowing arrived at perfect maturity. But the winter tare of the vernal sowing was mildewed, nor did a single pod of it ripen.

<sup>r</sup> Middlesex Report, 199, 201—203.



From these two circumstances there appears a material difference in the constitution, if we may so call it, of the two tares in question. Not to say any thing of a trifling difference in the colour and size of their seeds, the only visible mark of distinction seems to be a disparity in the first leaves of the upright stalks, which in the spring tare are elliptic and rounded or notched at the end, but in the winter tare linear and drawn to a point. The leaves on the branches, which afterwards issue below, and in time form the bulk of the plants, are the same in both vetches.

But whatever the difference may be, it is evident that the seeds of the two sorts ought to be kept separate, since each sown out of its proper season is found not to prosper. Mr. Laurents, wishing to compare with our winter tare, that which is cultivated in the Pays de Caux, under the name of hyvernache, searched almost every shop in Rouen, where it was likely to be found, in vain. The reason assigned was, that the time of sowing it was over. So exact a proportion between the wants of the farmer, and the stock at market, struck him as a case somewhat remarkable, the solution of which he conjectured to be, that after the autumnal sowing, the remains of the hyvernache were thrown in among the other tares. This, it is to be feared, is not an uncommon practice among our seedsmen, not only with tares, but with other seeds: and may account for what Mr. Laurents observed in some fields after the frost, that there were patches of something in a state of putrefaction, resembling the dead tares in his garden.

Mr. Laurents also remarked, that some winter tares, self-sown in august, were so forward as to suffer from the severity of the winter, more than what he had sown in his first experiment. Hence it appeared to him, that if the lower shoots are coming out before the winter sets in, they are sufficiently forward, and will stand ready to start at the genial summons of returning spring<sup>1</sup>.

A crop of winter tares, which I sowed last month, now, (november 15th, 1804) correspond exactly with Mr. Laurents's figure of the spring Tare.

We cannot ascertain when Tares were first introduced, because they seem to have been cultivated, before we have any printed or written registers on the subject of agriculture. Perhaps from the time of the Romans, who cultivated them much. They are mentioned by Fitzherberd, under the name of fitches or fytches, as being sown with beans and peas in one crop<sup>2</sup>: and seem anciently to have been cultivated only for the seed, probably to feed pigeons. Little is said about them by the improvers under the Commonwealth. Hartlib says, that in Kent sometimes Tares were sown in his time, which, when the cattle had eaten a little of the tops, they turned in with very good improvement for their ground<sup>3</sup>.

Worlidge, in 1681, says that the Winter and Summer Fetch or Citch are much sown in some places, and to a very considerable advantage; and that they are a good, strong and nourishing food to cattle, either given in the straw or without<sup>4</sup>.

Ray, in 1686, informs us, that the Common Tare or Vetch, was then sown almost all over Europe; that it was chiefly used in England, mixed with peas and oats, to feed horses; but that it was sometimes sown separately for foiling cattle, and was reputed to cause milch cows to yield much milk<sup>5</sup>.

Mr. Lisle, at the beginning of the eighteenth century, has much upon the subject of Vetches<sup>6</sup>.

14. Root annual. Sometimes it has no tendrils<sup>7</sup>.

Native of Denmark and Norway, France and Britain. What Hudson, &c. have taken for this plant, is a variety of *V. sativa*.

Stems procumbent, divaricating, numerous. These, with the leaves and stipules slightly hairy. Leaflets two or three pairs, opposite, obcordate, but towards the top of the plant sometimes lanceolate and narrowed. Stipules semisagittate, mostly quite entire, rarely if ever spotted. Flowers subsessile, solitary,

small, blueish purple. Legumes erect, very smooth, containing several cubic seeds, rugged with minute tubercles.—It is very distinct from the varieties of the preceding, by its smooth even pods, tubercled seeds, simple tendrils commonly very short and in a manner abortive, and not more leaflets than six<sup>8</sup>.

The true leading characters of this species, says Mr. Woodward, are, the corolla being scarcely longer than the calyx, the seeds cubic, and the tendril never branched.

Root small, fibrous, annual. Whole plant hairy except the pods. Stems several, a foot high or less, weak, trailing. Leaflets four to six, never more, opposite, the upper ones mostly lanceolate. Tendrils never branched. Stipules half-arrow shaped; the upper lanceolate, narrow, pointed. Flowers small, blueish purple. Legumes upright, smooth, dotted. Seeds cubic<sup>9</sup>.

Dr. Stokes remarks, that the stipules are not spotted.

Dr. Abbot observes, that the root is ornamented with garnet-coloured tubercles; that the stipules have not the burnt spot; and that there are two or three pairs of leaflets, without an odd one or tendrils, ending in a point.

The figures in English Botany, Flora Danica, and Kniphoffius, have no tendrils; in those of Rivinus and Jacquin, the tendrils are represented as unbranched<sup>10</sup>. Morison's figure is a very bad one.

No British plant has been less understood than this *Vicia*. That it is Tournefort's plant, and consequently *Ervum soloniense* of Linneus, which he took up from that author without having it in his own collection, appears from Tournefort's herbarium at Paris. That it is the true *V. lathyroides*, is certain from the Linnean herbarium.

Our plant is found on dry grassy banks, and in fallow fields on a gravelly soil, flowering early in may, and scarcely to be met with after the month of june. It was found by Mr. James Sherard and Mr. Rand on chalky banks near Greenhithe in Kent. Mr. Pitchford found it about Norwich; Mr. Dickson in the dry parts of Hyde Park; and Mr. Lightfoot in King's Park, Edinburgh.—There is a variety with white flowers<sup>11</sup>.

15. Root perennial, long, divided at the top, among the loose pebbles where it grows, into several diffuse, angular, smooth, striated, subflexuose, leafy stems, often two or three feet long, but little branched. Some of the branches are always subterraneous, producing colourless condensed *gemmæ* rather than flowers, which however form seeds as in *Lathyrus amphicarpos*, and some other vetches. Leaves composed of numerous, (three to five pairs,) opposite or alternate, (mostly alternate, Woodward.) elliptic-lanceolate, (or oblong,) pointed or bluntish, sometimes retuse leaflets, which are hairy beneath, with a branched (bifid or trifid) tendril at the end of their common footstalk. Stipules small, deltoid, subagittate, generally stained externally, more or less deeply, with a blackish-red hue; some of them however are green. Flowers solitary, almost sessile. Calyx tubular. Corolla pale yellow, but generally more or less streaked and stained with a blueish gray or purple; very rarely all over gray: standard quite smooth. Legumes reflexed, broad, compressed, clothed with short hairs arising from small tubercles. Seeds five or six, roundish, smooth, in a young state bitter and astringent.

The late Mr. Humphrey of Norwich found this plant many years ago on the beach at Orford in Suffolk, on the side next the river, about a mile from the haven's mouth. It has since been met with at Aldborough, by the Rev. Mr. Burroughes. At Weymouth by the Rev. Mr. Baker and A. B. Lambert, Esq. in August 1795. Certainly found in a chalk-pit on the side of Glastenbury Tor-hill, by Mr. D. Turner, in 1799. In Mearnsire, North Britain, by Professor Beattie<sup>12</sup>.

Native of several other parts of Europe, the Levant and about Algiers.

16. Root perennial. Plant generally taller and

<sup>1</sup> Young's Annals, 2. 384. <sup>2</sup> Booke of Husbandry, ed. 1562. fol. 21.

<sup>3</sup> Complete Husbandman, 1659, p. 37.

<sup>4</sup> Syst. agr. p. 42.

<sup>5</sup> Hist. p. 900.

<sup>6</sup> Husbandry, p. 172.

<sup>7</sup> Retzius.

<sup>8</sup> Smith brit.

<sup>9</sup> Woodward Mss.

<sup>10</sup> Idem.

<sup>11</sup> Engl. bot.

<sup>12</sup> Smith brit. and engl. bot.



more upright than the preceding, which it otherwise very nearly resembles in habit and leading characters. The flowers are generally yellow (lemon-coloured) streaked a little with pale purplish red, not varying to gray or purple: they are essentially characterized by the back of their standard being hairy; it is also red at the base. Another mark of this species is the stipules being entirely green. The leaflets vary greatly in shape, as in most of this genus, but are always more obtuse and emarginate than those of *V. lutea*: they are hairy, as in that species, as well as the pods; which contain five seeds<sup>b</sup>.

Calyx short, unequal; teeth awl-shaped: the whole slightly villose. Corolla pale yellow; standard heart-shaped, entirely covered with short hairs on the back, but most conspicuous at the base; within smooth and veined: wings oval, entire, hooked, and terminating in a narrow claw adhering to the keel, and shorter than the keel, which is greenish.

Gathered by Mr. Sole and A. B. Lambert, Esq. in June 1797, on Glastenbury Tor-hill, Somersetshire, as mentioned by Ray. But it could not be found there in 1799, by Mr. D. Turner. What Hudson took for it at Weymouth, is the *lævigata*<sup>h</sup>.

Native of France, Piedmont and Barbary.

17. Root perennial. It has the habit of *V. lutea* but the stems are only from six to twelve inches long, upright, and always much less diffuse. Leaves and whole plant entirely smooth. Leaflets elliptic-lanceolate, terminated by a little point, scarcely ever retuse. Stipules green or pale brown. Flowers like those of the *lutea*, but their calyx-teeth are generally more equal in length. The corolla is for the most part less yellow, and sometimes quite blue, but both are extremely variable in that respect. The pods are even and quite smooth in every stage of their growth, of a brown colour, and contain rarely more than five seeds.

Gathered on the beach at Weymouth, by the Rev. Mr. Baker, in August 1792. Frequently taken for the hybrid, and sometimes for the *bithynica*<sup>i</sup>.

18. Root annual. Stems slender and weak. Leaflets linear, truncate, four or five pairs. Stipule two-toothed, with a violet stain below the upper segment. Flowers solitary, large, of a dusky violet colour, with the standard deeply notched. Pods pendulous, wide, flattened, marked transversely on the outside with purplish stripes, and containing four or five (sometimes six or seven) seeds<sup>k</sup>.

Native of France and Piedmont. Introduced in 1779, by Monf. Thouin. It flowers in July<sup>l</sup>.

19. Root perennial. Stems climbing by tendrils, two feet high, grooved, little branched. Leaves many-paired, terminated by a branching tendril. Leaflets ovate, obtuse, sometimes emarginate, somewhat hairy, the outer ones gradually smaller. Stipules crescent-shaped, sharply toothed. Flowers commonly in fours, on very short pedicels, all directed one way, dark blue purple. Calyx hairy. Legume nearly erect, brown, dotted, smooth. Seeds globular, even<sup>m</sup>.

Leaflets ovate with a projecting point, or ovate-lanceolate, opposite. Stipules semisagittate, small, acute. Flowers three or four in the axils of the upper leaves, on very short pedicels. Calyx very hairy, with nearly equal segments. Flowers dirty purple; sometime white<sup>n</sup>.

According to Linneus, the leaves are doubled together, and the flowers are in racemes (three or four) shorter than the leaves.

Villars says, the stems are a foot and half high, and support themselves though weak. Leaflets oval, twelve or fourteen, diminished in size. Flowers pale dusky red, inclining to carnation. Pods straight, linear, oblong and rounded, a little villose.

Native of Europe, in woods, hedges and bushy pastures; flowering in May and June.

It shoots earlier in the spring than any plant eaten by

cattle, vegetates late in the autumn, and continues green all winter. But it is difficult to collect the seeds, as the pods burst and scatter them about, and moreover hardly a third part of them will vegetate, being made the nidus of an insect. A patch sown in drills in a garden was cut five times in the course of the second year, and produced at the rate of twenty-four tons on an acre of green food; which when dry would weigh near four tons and a half. Though palatable to all kinds of cattle, it may be difficult to cultivate it on a large scale; the seeds being generally devoured by the larvæ of a species of *Attelabus*, which larvæ are the prey of a species of *Ichneumon*<sup>o</sup>.

20. Root perennial, branched. Stems several, climbing by tendrils, branched; angular, grooved, smooth. Leaves two-paired, terminated by elongated branched tendrils: leaflets large, elliptic-lanceolate, acute, somewhat hairy beneath. Stipules large, semisagittate, unequally toothed; teeth divaricating; acute. Flowers solitary, peduncled; the peduncles various in length, very seldom two-flowered. Teeth of the calyx ciliate. Standard of the corolla large, of a leaden purple colour: wings and keel whitish. Legume erect, bay-coloured, hairy and rugged. Seeds five or six, globular, smooth; black, and ash-colour variegated<sup>p</sup>.

Dr. Withering remarks, that the seeds are protuberant; the standard and keel of the corolla red purple, and the wings yellowish.

Stems angular. Leaflets in two pairs, broad-lanceolate. Stipules much toothed. Flowers solitary; with a calyx the length of the peduncle. Standard of the corolla violet: wings whitish. Legume compressed, ovate-oblong, villose. Seeds about six. The bearded stigma, and stipules with a glandular pore beneath, evince this to be a *Vicia*<sup>q</sup>.

Native of the county of Nice, Italy, Bavaria, and England.—Found near Doncaster by Mr. Toffield, upon the authority of his herbarium, now in the hands of Dr. Younge of Sheffield:—in woods near Clifton upon Teme, Worcestershire, by Dr. Stokes:—in the Isle of Purbeck, by Mr. Hudson:—in Portland Island, half a mile to the left of the ferry, on loose sand-banks, by Mr. Stackhouse:—and in a field half way between Weymouth and Portland ferry, near the sea, by A. B. Lambert, Esq. It flowers in July and August<sup>r</sup>.

21. Root annual. Stem erect, angular, striated. Leaves pubescent: leaflets ovate, blunt with a very short point; two on the lower leaves, four or six on the upper ones. Stipules large, roundish, toothed, mucronate. Flowers solitary, sessile or on short pedicels. Calyx half-five-cleft, with lanceolate, acute segments. Legumes compressed, villose, acute, containing many seeds<sup>s</sup>.

Linneus remarks, that the leaves are doubled together, as in *V. sepium*, not rolled in, as in most of the species; that the peduncles are one-flowered in barren, three-flowered in fertile soils; and that the corolla is very dark purple<sup>t</sup>.

Native of France and Barbary near Algiers among corn.—Cultivated in 1597, by Gerarde. It flowers in June<sup>u</sup>.

22. Root annual. Stem upright, about two feet high, to three or four in the larger garden varieties, thick, angular. Leaves without tendrils. Leaflets about three pairs, ovate-oblong, tomentose, convoluted. Flowers several together in the axils, white with a black filken spot in the middle of the wings. Legumes thick, roundish, straight, pointed, very woolly within, containing several large ovate, flattened seeds. In the Kew catalogue, it is said to be a native of Egypt. Linneus, from Lerche, affirms that it is found wild not far from the Caspian sea, on the confines of Persia. It has been cultivated time out of mind both in fields and gardens, not only over great part of Europe, but in China, Japan, &c.

#### Varieties of the Garden Bean.]

1. The Mazagan Bean is the first and best sort of

<sup>b</sup> Smith brit. and engl. bot.

<sup>h</sup> Woodw. Mff.

<sup>i</sup> Smith. brit.

and engl. bot.

<sup>k</sup> Villars.

<sup>l</sup> Hort. kew.

<sup>m</sup> Smith brit.

<sup>n</sup> Woodw. Mff.

<sup>o</sup> Swayne in Bath mem. 3. and Wither. arr.

<sup>p</sup> Smith brit.

<sup>q</sup> Linn. spec.

<sup>r</sup> Smith, Withering.

<sup>s</sup> Desfontaines.

<sup>t</sup> Linn. spec.

<sup>u</sup> Hort. kew.



early Beans at present known; they are brought from a settlement of the Portuguese on the coast of Africa, just without the Straits of Gibraltar; the seeds of this sort are smaller than those of the Horse Bean; and as the Portuguese are but slovenly gardeners, there is commonly a great number of bad seeds among them. If this sort is sown in October, under a warm hedge, pale, or wall, and carefully earthed up when the plants are advanced, they will be fit for the table by the middle of May. The stems of this sort are very slender, therefore if they are supported by strings close to the hedge, or pale, it will preserve them from the morning frosts, which are sometimes severe in the spring, and retard their growth; and by keeping them close to the fence it will cause them to come forwarder than if this is neglected; these Beans bear plentifully, but they ripen nearly together, so that there are never more than two gatherings from the same plants; if the seeds of this sort are saved two years in England, the Beans will become much larger, and not ripen so soon, which is called a degeneracy.

2. The next sort is the early Portugal or Lisbon Bean, which appears to be the Mazagan sort saved in Portugal, for it is very like those which are the first year saved in England; this is the most common sort used by the gardeners for their first crop, but they are not near so well tasted as the Mazagan; therefore when the Mazagan Bean can be procured, no person would plant the other.

3. The next is the small Spanish Bean; this will come in soon after the Portugal sort, and is rather a sweeter Bean, therefore should be preferred to it.

4. Then comes the broad Spanish, which is a little later than the other, but comes in before the common sorts, and is a good bearer and therefore is frequently planted.

5. The Sandwich Bean comes soon after the Spanish, and is almost as large as the Windsor Bean; but, being hardier, is commonly sown a month sooner; this is a plentiful bearer, but not very delicate for the table.

6. The Toker Bean, as it is generally called, comes about the same time with the Sandwich, and is a great bearer; therefore is now much planted, though it is a coarse Bean.

7, 8. The white and black Blossom Beans are also by some persons much esteemed; the Beans of the former are, when boiled, almost as green as Peas; and being a tolerable sweet Bean, renders it more valuable; these sorts are very apt to degenerate, if their seeds are not saved with great care.

9. The Windsor Bean is allowed to be the best of all the sorts for the table; when these are planted on a good soil, and are allowed sufficient room, their seeds will be very large, and in great plenty; and when they are gathered young, are the sweetest and best tasted of all the sorts; but these should be carefully saved, by pulling out such of the plants as are not perfectly right, and afterward by sorting out all the good from the bad Beans.

This sort of Bean is seldom planted before Christmas, because it will not bear the frost so well as many of the other sorts; so it is generally planted for the great crop, to come in June and July.

[Of the small early varieties, there is one which is chiefly planted for curiosity: it is a dwarf, six or ten inches in height, with branches spreading like a fan, and flowers succeeded by small pods, both in clusters; whence it is called dwarf Fan or Cluster Bean.

Of the middle-sized later Beans, one now very commonly cultivated is the Long-podded Bean, a yard or more in height, a great bearer, the pods long and narrow, closely filled with oblong middle-sized seeds. Of this there are several subordinate varieties, as the early, tall, Turkey, &c.

The white-blossomed Bean (n. 7.) is an anomaly, as to the flowers, having none of the black mark on the wings. The seed is semitransparent, and having less of the peculiar bean flavour, when young, than any of the others, is by many persons much esteemed. It

bears abundance of smallish, long, narrow pods, and the seeds are almost black when ripe.

Besides this and the black (n. 8.) there is a red-blossomed Bean, with smallish pods and seeds, not near so palatable as that with white blossoms.

There are other varieties, but they are scarcely worth notice.]

#### *Varieties of the Field Bean.*

1. The common Horse Bean. [Probably the original of all the varieties.]

2. The Tick Bean, lower in stature, a more plentiful bearer, and succeeds better on light land. [Of this there are several subordinate varieties; as flat Ticks or May Beans, small or Essex Ticks, and French Ticks. Some of the garden beans are taken into field culture in Kent; as the Toker, Windsor, Long pod, Spanish or Lisbon, and Mazagan; besides others cultivated only in small quantities for supplying the London seedsmen.

Mr. Miller insists that the Field Bean is a different species from the Garden Bean; but that is an idea destitute of all probability.

23. Root annual, whitish, branched, and, like those of its congeners, furnished with tubercles: stem single or double, acutely quadrangular; ascendent at the base, and then upright; rising to the height of about two feet: Stipules roundish unequally and very sharply toothed: lowest leaves binate, the remaining ones bijugate; the upper tri or quadrijugate, and generally terminated by a tripartite tendril: rib angular-striate; leaflets subovate, obtuse, sharply tooth-ferrate, pale-green, and very shortly foot-stalked: one of the last leaflets is often wanting, in which case the leaf has the appearance of a pinnated leaf terminated by an odd leaflet: the stem, edges, and ribs of the leaflets are furnished with fine hairs, scarcely visible without a glass. The foot-stalks are few-flowered, and spring from the bosoms of the leaves. The flowers are of a moderate size and violet-purple. The legume is flat-compressed, and furnished on each side with white hairs. Native of the Euganean mountains, flowering in June\*.

24. Stem angular, slender, procumbent. Leaflets eight to twelve, very narrow, remote, alternate. Stipules very small, semihastate, acute, simple or toothed. Peduncles axillary, filiform, one or two-flowered, awned. Calyx five-toothed. Corolla blue. Native of Algiers.

25. Allied to *V. sativa*. Stem four-cornered, decumbent. Leaflets ten to fourteen, alternate, somewhat villose, mucronate. Stipules small, acute, unspotted. Peduncles solitary, twice or three times shorter than the leaf, one-flowered seldom two-flowered, having a short spur below the flower. Calyx five-toothed smooth; teeth small, acute. Corolla less almost by half than that of *V. sativa*, more slender, lengthened out, pale blue. Legume compressed, smooth, containing from four to six seeds. Native of Algiers<sup>v</sup>.]

#### PROPAGATION AND CULTURE.

2, 3, 4, 5. These sorts are propagated by seeds, which should be sown in autumn soon after they are ripe, for if they are kept out of the ground till spring, the seeds often fail, or at least remain in the ground a year before they vegetate; they should be sown in the places where the plants are designed to remain, for they do not bear transplanting well. These plants grow naturally in woods and thickets of bushes, where their roots are screened from the sun, and their stalks furnished with supports by the bushes, point out the places where the seeds should be sown, which should be where they are sheltered by shrubs. If three or four seeds are sown on each patch, it will be sufficient, for if one or two plants come up in each place it will be enough. When the plants come up, they will require no other culture but to keep them clean from weeds, and their stalks must be permitted to climb upon the neighbouring shrubs; for if they trail upon the ground, they will produce few flowers, and in wet seasons the stalks will rot, so the plants will be rather unsightly.

\* Jacquin.

<sup>v</sup> Desfontaines.



A few of these plants may be allowed a place in large gardens, particularly on the borders of wood-walks, or in thickets of shrubs; where if they are allowed to climb up the branches, they will have a good effect during their continuance in flower.

8. This sort is propagated by seeds, which may be sown in the spring or autumn; and when the plants come up, they will require no other culture but to keep them clean from weeds; and if they are supported from trailing upon the ground, they will continue in verdure all the winter, and the following summer they will flower and produce ripe seeds.

If this plant is designed for feed, the seed should be sown in rows at four feet distance, and should be dropped thin in the rows; for as the stalks send out many branches, and extend to a great length, so when the plants are too close, the branches will intermix, and mat so closely together, as to rot each other by excluding the air. When the plants come up, they must be kept clean from weeds, which, while they are young, should be performed with Dutch hoes, but afterward it may be done by the hoeing plough, which will save expence, and with this instrument the plants may be earthed up in the same manner as Peas and Beans, which will greatly strengthen their stalks, and make them and the leaves larger and more succulent, so increase the quantity of feed. If this is practised as often as may be found necessary to destroy the weeds in summer, it will prepare the ground for any crop which may afterward be put upon the land; and as this will be in no danger of suffering from frost, so it should be preserved till the spring, when there is a want of green feed for ewes, at which time it may be cut a, it is wanted; but a part of the plants should be permitted to stand for seeds, for those which are cut, if they do shoot again, will flower so late in summer, that unless the autumn proves very warm, the seeds will not ripen; therefore it will be a better way to sow a sufficient quantity of seeds for this purpose in a separate spot of ground, because, when the other is cut, the ground may be ploughed for other crops; and if in mild seasons there may be so great plenty of other green feed as not to want this, if the plants are ploughed into the ground, it will be a good dressing for other crops.

Vetches are generally sown at two seasons, one is in autumn, and the other early in the spring; but the best time is in august, for the seeds which are sown then will come up soon, and the plants will have time to get strength before winter, so will be in less danger of suffering by frost than those which are sown later, and will be fit to cut for feed much earlier in the spring, for it is then green feed is most wanted; and if they are designed for seed and not to be cut for fodder, those early-sown Vetches will come early into flower, and the seeds will be ripe early, so they may be cut and stacked in good weather; which is a great advantage, for those which ripen late are often stacked or housed wet; and then the seeds frequently sprout in the mow, and are spoiled.

The usual method of sowing Vetches is in broad-cast, ploughing them lightly in; in this way the common allowance of seeds for one acre of land is two bushels, but there are some who sow two bushels and a half; this practice may do well enough for those Vetches which are designed to be cut for fodder in the spring, but those which are sown with an intent to stand for seeds, will do much better if they are sown in drills in the same way as is practised for Peas, and then less than half the quantity of seeds will be sufficient; for the drills should not be nearer to each other than three feet, that the hoe plough may have room to go between them, to destroy the weeds, and earth up the plants; for by this management they will produce a much greater crop, and ripen earlier in the season.

These drills should be about the same depth as those usually made for Peas, and the seeds should be scattered about the same distance in the drills. These seeds should be carefully covered as soon as they are sown, for if they are left open the rooks will discover them; and when they once find the rows, if they are not carefully watched, they will entirely devour them. Indeed, these being sown early in autumn, will

be in less danger than those which are sown late, or in the spring, because there is more food for rooks and pigeons in the open fields at this season, and the plants will appear much sooner above ground. The best time to sow them is about the beginning of august, for the rains which usually fall about that season, will bring them up in a short time. Toward the latter end of october the plants will have obtained considerable strength, therefore they should be earthed up with the hoeing plough. This work should be performed in dry weather, and in doing it care must be had to lay the earth up as high to the stems of the plants as possible, so as not to cover their tops, because this will secure them against frost. The whole space of ground between the rows should also be stirred, in order to destroy the weeds, which, if carefully performed in dry weather, will lay the land clean till march; at which time the crop should be earthed a second time, and the ground cleaned again between the rows, which will cause the plants to grow vigorous, and in a little time they will spread so as to meet, and cover the spaces; whereas those sown in the spring will not grow to half this size, and will be very late in flowering.

Some people sow these Vetches, and when they are fully grown, plough them into the ground to manure it. Where this is designed, there will be no occasion to sow them in drills at this distance, nor to husband them in the manner before directed; but in this case it will be the best method to sow them in autumn, because they will be fit to plough in much sooner the following year, so that the land may be better prepared to receive the crops for which it is intended. In some parts of France, and in Italy, these Vetches are sown for feeding of cattle while green, and are accounted very profitable; and in many parts of England they are cultivated to feed cart-horses, &c. though upon such land where Lucern will thrive, it will be much better husbandry to cultivate that for this purpose.

Where these plants are cultivated for their seeds, they should be cut soon after the pods change brown; and when they are dry, they must be immediately stacked, for if they are suffered to lie out in the field to receive wet, and there comes one hot day after it, the pods will most of them burst, and cast out the seeds. When the seeds are threshed out, the haulm is esteemed very good food for cattle, and some have recommended the seeds for horses, and affirm they are as proper for those animals as Beans; which, if true, will render them more valuable, because these will grow on the lightest sandy land where Beans will not thrive, so may be a good improvement to some counties in England, where they do not attempt to cultivate Beans.

[To insure a succession of Tares during the spring and summer, sow upon the wheat stubble as soon as the wheat is off, or on land well manured, in august; as soon as these are up, throw in another crop, and in like manner a third. As there will be about a month between the first and third sowing, a regular succession will be insured for the following season; especially if another crop be sown in the spring. Some mix a bushel of black oats with every two bushel and half of tares: others put in some rie with the autumnal sowings<sup>2</sup>.

The quantity sown an acre, is from two bushels, or two bushels and a peck, or two bushels and a half, to three, or even four bushels.

On the South downs in Suffex, they substitute a double crop of Tares, instead of a fallow for wheat. They sow forward winter Tares, which are fed off late in the spring with ewes and lambs: they then plough, and sow summer Tares and Rape, two bushels and a half of the first, and half a gallon of the second; this they feed off with their lambs, in time to plough once for wheat. Thus the land in the fallow year is made to support the utmost possible quantity of sheep which its destination admits; the two ploughings are given at the best seasons, in autumn for the frost to mellow the lands, and prepare it for a successive growth of weeds; and late in spring to turn them down: between the

<sup>2</sup> Reports of Suffex and Kent. Young's Annals, 2. 347.



times of giving these stirrings, the land is covered with crops: the quantity of live stock supported yields amply in manure: and the treading which the soil receives, previous to the sowing of wheat, gives an adhesion grateful to that plant.<sup>2</sup>]

*Culture of Garden Beans.*

22. All the early Beans are generally planted on warm borders under walls, pales, and hedges; and those which are designed to come first, are usually planted in a single row pretty close to the fence: and here I cannot help taking notice of a very bad custom, which too generally prevails in gentlemen's kitchen-gardens, which is that of planting Beans close to the garden-walls, on the best aspects, immediately before the fruit-trees, which is certainly a greater prejudice to the trees, than the value of the Beans, or any other early crop; therefore this practice should be everywhere discouraged; for it is much better to run some low Reed hedges across the quarters of the kitchen-garden, where early Beans and Peas may be planted, in which places they may with more conveniency be covered in severe frost; and to these hedges they may both be closely fastened, as they advance in their growth; which, if practised against the walls where good fruit-trees are planted, will greatly prejudice the trees, by overshadowing them, and the growth of these legumes will draw off the nourishment from the roots of the trees, whereby they will be greatly weakened.

But to return to the culture of the Beans. Those which are planted early in october, will come up by the beginning of november; and as soon as they are an inch above ground, the earth should be carefully drawn up with a hoe to their stems; and this must be two or three times repeated, as the Beans advance in height; which will protect their stems from the frost, and encourage their strength. If the winter should prove severe, it will be very proper to cover the Beans with Peas-haulm, Fern, or some other light covering, which will secure them from the injury of frost; but this covering must be constantly taken off in mild weather, otherwise they will draw up tall and weak, and come to little; and if the surface of the border is covered with tanner's bark, it will prevent the frost penetrating the ground to the roots of both, and be of great service to protect them from the injury which they might otherwise receive.

In the spring, when the Beans are advanced to be a foot high, they should be fastened up to the hedge with packthread or a small line, so as to draw them as close as possible; which will secure them from being injured by the morning frosts, which are often so severe in march and april, as to lay those Beans flat on the ground, which are not thus guarded; at this time all suckers which come out from the roots should be very carefully taken off; for these will retard the growth of the Beans, and prevent their coming early; and when the blossoms begin to open toward the bottom of the stalks, the top of the stems should be pinched off, which will cause those first pods to stand, and thereby bring them forward. If these rules are observed, and the ground kept clean from weeds or other plants, there will be little danger of their failing.

But lest this first crop should be destroyed by frost, it will be absolutely necessary to plant more about three weeks after the first, and so to repeat planting more every three weeks, or a month, till february; but those which are planted toward the end of november, or the beginning of december, may be planted on sloping banks, at a small distance from the hedges; for if the weather is mild, these will not appear above ground before Christmas; therefore will not be in so much danger as the first and second planting, especially if the surface of the ground is covered with tan to keep the frost out of the ground as is before directed; for the first planting will, by that time, be a considerable height: the same directions which are before given will be sufficient for the management of these; but

only it must be observed, that the larger Beans should be planted at a greater distance than the small ones; as also, that those which are first planted must be put closer together, to allow for some miscarrying; therefore, when a single row is planted, the Beans may be put two inches asunder, and those of the third and fourth planting may be allowed three inches, and when they are planted in rows across a bank, the rows should be two feet and a half asunder; but the Windsor Beans should have a foot more space between the rows, and the Beans in the rows should be planted five or six inches asunder. This distance may, by some persons, be thought too great; but from many years experience, I can affirm, that the same space of ground will produce a greater quantity of Beans when planted at this distance, than if double the quantity of seeds are put on it. In the management of these later crops of Beans, the principal care should be to keep them clear from weeds, and any other plants which would draw away their nourishment; to keep earthing them up, and, when they are in blossom, to pinch off their tops; which, if suffered to grow, will draw the nourishment from the lower blossoms, which will prevent the pods from setting, and so only the upper parts of the stems will be fruitful; and another thing should be observed in planting of the succeeding crops, which is, to make choice of moist strong land for the later crops; for if they are planted on dry ground, they rarely produce a crop.

These after-crops should be planted at about a fortnight distance from each other, from the middle of february to the middle of may; after which time it is generally too late to plant, unless the land is very strong and moist; for in warm dry light land all the late crops of Beans are generally attacked by the black insects, which cover all the upper part of their stems, and soon cause them to decay.

Where the seeds of these Beans are designed to be saved, a sufficient number of rows should be set apart for that purpose, according to the quantity desired; these should be managed in the same way as those which are designed for the table; but none of the Beans should be gathered, though there are some covetous persons, who will gather all the first ripe for the table, and are contented to save the after-crop for seed, but these are never so large and fair as the first; so that if these are for sale, they will not bring near the price as the other; therefore, what is gained to the table is lost in the value of the seed; but those who are desirous to preserve the several varieties as pure as possible, should never suffer two of the varieties to grow for seeds in the same place; for by their farina mixing with each other they will not continue so pure, but be apt to vary; and in order to keep the early kinds perfect, those which come the earliest should be saved for seeds; but this is what few people chuse to do, because they are then the most valuable.

When the seed is ripe, the stalks should be pulled up, and set upright against a hedge to dry, observing to turn them every third day, that they may dry equally; then they may be threshed out, and cleaned for use, or otherwise stacked up in a barn, till there is more leisure for threshing them out; and afterward the seed should be drawn over to take out all those that are not fair, preserving the best for use or sale.

It is a very good method to change the seeds of all sorts of Beans, and not to sow and save the seeds long in the same ground, for they do not succeed so well; therefore, if the land is strong where they are to be planted, it will be the best way to procure the seed, from a lighter ground, and so vice versa; and by this method the crops will be larger, and the Beans fairer, and not so liable to degenerate.

*Culture of Field Beans.*

Having given directions for the culture of the Garden Beans, I shall next proceed to that of the Horse Bean, which is cultivated in the fields: there are two or three varieties of these, which differ in their size and colour; but that which is now in the greatest esteem, called the Tick Bean, this does not grow so high as



the other, is a more plentiful bearer, and succeeds better on light land than the common Horse Bean.

The Horse Bean delights in a strong moist soil, and an open exposure, for they never thrive well on dry warm land, or in small inclosures, where they are very subject to blight, and are frequently attacked by a black insect, which the farmers call the black dolphin; these insects are often in such quantities as to cover the stems of the Beans entirely, especially all the upper part of them; and whenever this happens, the Beans seldom come to good: but in the open fields, where the soil is strong, this rarely happens.

These Beans are usually sown on land which is fresh broken up, because they are of use to break and pulverize the ground, as also to destroy weeds; so that the land is rendered much better for corn, after a crop of Beans, than it would have been before, especially if they are sown and managed according to the new husbandry, with a drill plough, and the horse hoe, used to stir the ground between the rows of Beans which will prevent the growth of weeds, and pulverize the ground, whereby a much greater crop may, with more certainty, be expected, and the land will be better prepared for whatever crop it is designed for after.

The season for sowing these Beans is from the middle of february to the end of march, according to the nature of the soil; the strongest and wet land should always be last sown; the usual quantity of Beans sown on an acre of land is about three bushels; but this is double the quantity which need be sown, especially according to the new husbandry; but I shall first set down the practice according to the old husbandry, and then give directions for their management according to the new. The method of sowing is after the plough, in the bottom of the furrows; but then the furrows should not be more than five, or at most six inches deep. If the land is new broken up, it is usual to plough it early in autumn, and let it lie in ridges till after Christmas; then plough it in small furrows, and lay the ground smooth; these two ploughings will break the ground fine enough for Beans, and the third ploughing is to sow the Beans, when the furrows should be made shallow, as was before mentioned.

Most people set their Beans two close; for, as some lay the Beans in the furrows after the plough, and others lay them before the plough, and plough them in; so, by both methods, the Beans are set as close as the furrows are made, which is much too near; for when they are on strong good land, they generally are drawn up to a very great height, and are not so apt to pod as when they have more room, and are of lower growth; therefore I am convinced by many late trials, that the better way is to make the furrows two feet and a half asunder, or more; which will cause them to branch out into many stalks, and bear in greater plenty than when they are closer; by this method, half the quantity of Beans will be sufficient for an acre of land; and by the sun and air being admitted between the rows, the Beans will ripen much earlier and more equally than in the common way.

What has been mentioned must be understood as relating to the old husbandry; but where Beans are planted according to the new, the ground should be four times ploughed before the Beans are set, which will break the clods, and render it much better for planting; then with a drill plough, to which a hopper is fixed for setting the Beans, the drills should be made at three feet asunder, and the spring of the hopper set so as to scatter the Beans at three inches distance in the drills. By this method less than one bushel of seed will plant an acre of land. When the Beans are up, if the ground is stirred between the rows with a horse plough, it will destroy all the young weeds; and when the Beans are advanced about three or four inches high, the ground should be again ploughed between the rows, and the earth laid up to the Beans; and if a third ploughing, at about five or six weeks after, is given, the ground will be kept clean from weeds, and the Beans will stalk out, and produce a much greater crop than in the common way.

When the Beans are ripe, they are reaped with a hook, as is usually practised for Peas; and after having lain a few days on the ground they are turned; and this must be repeated several times, until they are dry enough to stack, but the best method is to tie them in small bundles, and set them upright; for then they will not be in so much danger to suffer by wet, as when they lie on the ground; and they will be more handy to carry and stack, than if they are loose. The common produce is from twenty to twenty-five bushels on an acre of land; but I have known thirty-six on an acre.

The Beans should lie in the mow to sweat, before they are threshed out; for as the haulm is very large and succulent, so it is very apt to give and grow moist; but there is no danger of the Beans receiving damage, if they are stacked tolerably dry, because the pods will preserve the Beans from injury; and they will be much easier to thresh after they have sweated in the mow than before; and after they have once sweated and are dry again, they never after give.

By the new husbandry, the produce has exceeded the old by more than ten bushels on an acre; and if the Beans which are cultivated in the common method are observed, it will be found that more than half their stems have no Beans on them; for by standing close, they are drawn up very tall; so the tops of the stalks only produce, and all the lower part is naked; whereas in the new method, they bear almost to the ground; and as the joints of the stems are shorter, so the Beans grow closer together on the stalks.

In the year 1745 I made the following experiment, in planting a piece of eleven acres of Beans in Berkshire; the gentleman's bailiff, who was wedded to the old practice of husbandry, was very unwilling to depart from it; and having been an old servant in the family, his master was inclinable to hear all he could say in favour of his opinion: however, at last I prevailed on the gentleman to let his bailiff plant one half of the land in his way, giving him the choice which half he would have: accordingly the land was divided and planted; but the summer proving wet, the Beans on that part of the field he had chosen grew so tall and rank, that they produced no pods but on the upper part of the stalks; and when they were threshed out, there was no more than twenty-two bushels on an acre, whereas the other half produced near forty.

[Whatever the preceding crop, whether corn, or old grass, plough but once for planting Beans, which should be performed as soon as the Christmas frosts break up. Provide poles of slit deal planed ten feet long, an inch thick, and two inches broad, bore holes through them at sixteen inches asunder, pass pack-threads through these holes to the length of the lands you are about to plant, and there should be a pole at every fifty yards; four stakes at the corner of the extreme poles, fasten them to the ground, the intention is to keep the lines every where at equal distances and straight, to facilitate horse-hoeing. Then women take beans in their aprons, and with a dibber pointed with iron, make holes along the strings with their right hand, and put the bean in with their left; while they are doing one set of lines, another should be prepared for them. Near London they are paid three shillings and three shillings and six-pence a bushel for planting; but where they are not accustomed to it, they do it by the day.

By the time the cold easterly winds come in the spring, they will be high enough to hand hoe, if they were early planted, and it is of consequence on strong soils to catch every dry season for such operations. The hoes should be eight inches wide, the whole surface between the rows carefully cut, and every weed eradicated. This hoeing costs near London, from five shillings to seven shillings and sixpence an acre. When the beans are about six inches high, they should be horse-hoed with a shim, the cutting part ten or eleven inches wide. This tool is cheap, simple, and not apt to be out of order; one horse draws it, which should be led by a careful person, another holding the shim, and guiding it carefully in the centre between the rows. It cuts up all weeds effectually,



fectually, and loosens the earth two or three inches deep; in a little time after this operation the hand hoe should be sent in again to cut up what the shim may have passed, and to extract the weeds that grow too near the Beans, for that tool to take them. If the weather is dry enough, a second horse-hoeing with the shim should follow when the Beans are nine or ten inches high, but if the weather is wet, it must be omitted, the hand-hoe however must be kept at work enough to keep the Beans perfectly free from weeds<sup>b</sup>.

Common Ticks is the Bean generally cultivated in Kent, in which county the culture of this pulse is supposed to be best understood. It is used there for fattening hogs, and as food for horses. The Beans are usually drilled, dropped by hand, or boxed, in furrows eighteen inches apart, from three and a half to four bushels to the acre, in february and march. They are generally hand and horse-hoed twice, and sometimes three times, and lastly hand-weeded. The crop is reaped at the end of august or beginning of september. The produce is from two to six quarters on an acre, according to the strength of the land and the management.

May Beans are a larger sort of Ticks, and somewhat earlier ripe. They are sometimes very productive, but being larger are not so heavy, and therefore of rather less value per quarter. Four bushels, and sometimes four and a half of this kind are dropped in by hand on an acre.

The Essex Ticks are much smaller than the Common Tick, and of a rounder shape. They ripen six or eight days later than that, and are not so productive, but more valuable, being heavier.

The French Ticks are still smaller, being only as big as a moderate-sized Pea, and nearly circular: this ripens the latest of any sort, but is most valuable when dry, on account of its great weight. They will grow on some sorts of poor land, but they are not very productive. Three bushels of these small sorts are sufficient to seed an acre when drilled; which is the best method by far of putting them in.

The Toker is the largest Garden Bean, and somewhat of an oval shape. Many are found an inch and half in length. The Beans are dropped by hand in rows about twenty inches apart, as soon as the land is sufficiently dry in the spring. The quantity of seed about five and a half or six bushels to the acre. This crop is kept perfectly free from weeds during the summer, and is pulled up by hand in harvest: it is set up in lumps of a sheaf at a place to dry, in a conical form, the butt-end being spread out as wide as possible, to prevent their being blown down. They are threshed by the flail, and cleaned with the casting-shovel and spry, like the other sorts; and then culled by women, to take out every rotten and stained Bean, before they are sent to market. The produce is from three to ten quarters on an acre.

The Windsor Bean is somewhat less, not so long, and more approaching to a square form. It is managed in every respect as the Toker, only requiring a little less seed. Its produce is generally somewhat less, and its value a little more.

The Long-pod is about half the size of the Toker: it is an earlier sort, and much used by the London gardeners. Four bushels and a half to the acre is dropped by hand in rows eighteen inches apart. It is managed as the other garden Beans, and the produce is from three to six quarters.

The Spanish or Lisbon is a still smaller kind, and ripens about the same time. The Mazagan is the smallest and earliest ripe.

The Spanish is dropped in by hand, about four bushels and a half to the acre, in rows eighteen inches apart. The Mazagan is frequently drilled four bushels to the acre. These two sorts are reaped as common Beans: the produce of the first is from three to five quarters, and sometimes much more:—of the second, from two quarters and a half to four and a half<sup>c</sup>.

Mr. Marshall, in his Rural Economy of Gloucestershire, has detailed the cultivation of pulse in the vale of Gloucester.

<sup>b</sup> Young's Irish tour, vol. 2.

<sup>c</sup> Boys, survey of Kent, p.

It invariably succeeds a corn crop: namely, wheat in the old fallow field course; barley in the new; and either wheat or barley on the every year's lands.

They begin ploughing as soon after Christmas as the season will permit, fetching up the soil as deep as the plough will turn it; nine, ten or more inches deep; and let it lie in whole furrow to take the frost.

They begin about Candlemas, or as soon after as the land can be got upon with the harrows, to break the plits and level the surface for the setters. The soils of this vale mostly fall like lime after being frozen; so that once going over with the harrows is sufficient to reduce the surface to powder as fine as ashes, leaving not the trace of a whole furrow.

Setting is done by women. The method varies in different parts of the district. In the central and southern quarters, they set across the ridges by the eye, without a line. About Cheltenham and along the northern border, they set along the ridges by a line. About Tewksbury, and towards Deerhurst, it is common to set by a line, across the ridges.

In theory, a line appears to be necessary. Women however, who have been long in the habit of setting without one, set pretty regularly by the eye; and the young ones are trained up, by putting one of them between two who are experienced.

Each setter has a setting pin, and a fatchel, (provincially tuckin.) The setting-pin resembles the gardener's dibble: but it has a cross-pin or half crutch near the top, to rest the palm upon; and a groove on each side of the main pin to receive the forefinger and thumb: the length of the dibble is about eight inches; of the handle about four.

In setting the women walk sideway, to the right, with their faces toward the ground which is set: the last row therefore is immediately under the eye, and the difficulty of setting another row, nearly parallel with it, is readily overcome by practice.

The distance between the rows varies from ten to fourteen inches: twelve may be considered as the prevailing width. The distance in the rows about two inches. The holes about two inches deep: and one Bean dropped in each hole.

The quantity of seed from two bushels and a half to three bushels on an acre.

The price of setting, sixteen to eighteen pence a bushel: costing from three shillings and sixpence to four shillings and sixpence an acre.

Covering generally done with tined harrows, drawn once in a place: but if the soil be so light that the tines pull up the Beans, a thorn-harrow is made use of.

Presently after the Beans are above ground, the surface is sometimes loosened with the harrow, previous to the hoeing. The method of doing which is the common one practised by gardeners in drilled crops. The width of the hoe is five inches.

The second hoeing should be deferred as long as it can be with safety; but it ought always to be finished before the Beans begin to blossom. In this hoeing, the rows must be carefully hand-weeded. Both of them are flat, without earthing up the Beans. The price of both, including hand-pulling, is six shillings an acre: more or less, according to the crop, and its degree of foulness.

A short, low-podded crop is mown, usually with a naked scythe: but tall Beans are usually cut with a reaping-hook, and a hooked stick. In the former case they are gathered into rows with forks, and then into wads or bundles:—in the latter, they are either bound in sheaves, and set up in shocks; or more usually in hackles, or one enormous conical sheaf.

They are used for feeding horses and fattening hogs; and are bought up in great quantities at Bristol for the inns, and for Guinea ships, as food for the negroes, in their passage from Africa to the West Indies.

The produce is about three quarters an acre: four quarters, (or thirty-eight Winchester bushels,) are not a very extraordinary crop; though much of the land has borne Beans every third year, and some of it perhaps every second year, during a succession of ages<sup>d</sup>.



Beans are excellent on strong clays, and wet loams as a preparation for wheat, instead of a fallow. The thick shade from this crop causes a putrid fermentation in the height of summer, opens the land, and loosens the soil. On this theory, Mr. Fiske, in march 1767, mucked six acres of barley stubble, and set it with Windsor Beans. The produce was twenty-four quarters, twenty-three of which were sold to a gardener at Bury for thirty-six shillings the quarter.

October following, the same field was sown with wheat: the produce upwards of three quarters on the acre; which was more by half a quarter than any that year from a clean fallow.

March 1768, sixteen acres were set with the common Horse Bean, upon an oat-stubble, ploughed at michaelmas, and mucked before the setting: the produce four quarters and a half to the acre. Wheat succeeded, which was the best in the parish.

In 1782, to prove the use of the bean culture as a preparation for barley, four acres in an eight acre field were sown with turneps; two were set with Tick Beans; and two acres were a clean fallow. The Beans were kept clean: the turneps were hoed, and fed off with sheep. The spring following, the whole field was sown with barley: that after Beans was the best; after the fallow next; after turneps by much the worst.

In the culture of Beans, they must be kept clean, which cannot be done but by hoeing early; and they must be manured for plentifully, twenty-five-three-horse loads of compost earth and dung to the acre; in order that a large crop may be obtained, which is not only of great importance in itself, but also to that which is to succeed; for every bushel gained in the crop of Beans, is a certain gain in the wheat or barley which follows.

VICIA. See *Astragalus*, *Ervum*, *Galega*, *Lathyrus*.

Viciæ similis. See *Lathyrus amphicarpos*.

VICTORIALIS. See *Allium* & *Gladiolus*.

VIDARA. See *Rhamnus*.

VIDI-MARUM. See *Cordia Myxa*.

VILLARIA. (So named by Schreber, in honour of Mons. Villars, physician to the military hospital at Grenoble, &c. Author of *Histoire des plantes de Dauphiné*, 1786. 8°)

Lin. gen. Schreb. n. 1514.

Class. 22. 5. Dioecia Pentandria.

#### GENERIC CHARACTER.

##### \* Male.

CAL. Perianth one-leafed, five-parted, spreading, permanent: segments roundish, obtuse, concave, coriaceous, thinner at the edge, almost equal: two more interior.

COR. Petals five, oblong, obtuse, flat, spreading, coriaceous, thinner at the edge, twice as long as the calyx, permanent.

STAM. Filaments five, awl-shaped, erect, smaller by half than the calyx. Anthers roundish, twin.

PIST. Germ orbicular, depressed. Style very short. Stigma capitate.

##### \* Female.

CAL. as in the Male.

COR. as in the Male.

Nectary leaflets five, ovate, obtuse, erect, alternate with the petals and shorter than them, permanent.

PIST. Germ ovate-turbinate. Style very short, scarcely any. Stigma capitate, subtrifid.

PER. Berry subglobular, pointed with the permanent style, three-celled.

SEEDS solitary.]

VINCA. (From vinco or vincio; because it subdues other plants by its creeping, or binds them by its runners.)

Lin. gen. n. 295. Reich. n. 322. Schreb. n. 419.

Gertn. t. 117. Juss. 144. Pervinca Tournef. t. 45.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of Contortæ. Apocineæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, erect, acute, permanent.

COR. one-petalled, salver-shaped: tube longer than the calyx, cylindric below, wider above, marked with five lines, the mouth a pentagon: border horizontal, five-

parted; segments fastened to the apex of the tube, wider outwards and obliquely truncate.

STAM. Filaments five, very short, inflexed and retroflexed. Anthers membranaceous, obtuse, erect, curved in, fariniferous on both sides at the edge.

PIST. Germs two, roundish, with two roundish little bodies lying by their sides. Style one common to both, cylindric, length of the stamens. Stigma capitate, concave, placed on a flat ring.

PER. Follicles two, round, long, acuminate, erect, one-valved, opening longitudinally.

SEEDS numerous, oblong, cylindric, grooved, naked.

#### ESSENTIAL CHARACTER.

Contorted. Follicles two, erect. Seeds naked.

#### SPECIES.

##### 1. Vinca minor. Small Periwinkle.

Lin. spec. 304. Reich. 1. 593. Willd. 1. 1232.

hort. cliff. 77. upf. 63. mat. med. 71. Hudf. angl.

91. Wither. arr. ed. 3. 268. Smith brit. 270.

engl. bot. t. 917. Curt. lond. 3. t. 6. 172. Lightf.

scot. 147. Relb. cant. ed. 2. n. 218. Sibth. oxon.

n. 245. Abbot. bedf. n. 182. Hoffm. germ. 83.

Roth. germ. 1. 95. 2. 243. Pollich pal. n. 241.

Leers herb. n. 152. Krock. files. n. 365. Neck.

gallob. 126. Villars dauph. 2. 486. Ludw. eet.

t. 75. Kniph. cent. 1. n. 97, 98, 99. Berg. phyt.

2. 177. Plenck. ic. t. 113. Blackw. t. 59.

Pervinca minor. Scop. carn. n. 273. Allion. pedem. n.

369. Hall. belv. n. 572. Ger. prov. 326. 1.

P. vulgaris angustifolia, flore cæruleo. Tournef. inst.

120.

Vinca pervinca minor. Ger. 747. emac. 894. 1. Raii

syn. 268.

V. pervinca vulgaris. Park. theat. 381. f. 1.

Clematis. Matth. 956.

C. daphnoides. Dod. pempt. 405.—minor. Bauh.

pin. 301. Bauh. hist. 3. 130. Raii hist. 1091.

Stems procumbent, leaves elliptic-lanceolate smooth at the

edge, flowers peduncled, calyx-teeth lanceolate.

##### 2. Vinca major. Great Periwinkle.

Lin. spec. 304. syst. 252. Reich. 1. 593. Willd. 1.

1233. Hudf. angl. 91. Wither. arr. ed. 3. 269.

Smith brit. 270. engl. bot. t. 514. Curt. lond. 4. t.

19. 222. Relb. cant. ed. 2. n. 219. Sibth. oxon.

n. 246. Abbot. bedf. n. 183. Villars dauph. 2.

486. Fabric. helmst. ed. 2. 252. Pallas it. 3.

585. Desfont. atlant. 1. 206. Berg. phyt. 2. 59.

Plenck. ic. t. 114. Regnault. ic.

Pervinca major. Scop. carn. n. 274. Allion. pedem. n.

370. Hall. belv. n. 573. Ger. prov. 326. 1. var.

P. vulgaris latifolia, flore cæruleo. Tournef. inst. 119.

Garid. aix. t. 81.

Clematis daphnoides major. Bauh. pin. 302. Bauh.

hist. 2. 132. Dod. pempt. 406. 1. Ger. emac. 894.

2. Raii hist. 1091. syn. 268. Mor. hist. f. 15. t.

2. f. 1.

C. daphn. latifolia. Clus. hist. 1. 121. 2. Park. theat.

381. 2.

C. f. Pervinca major. Lob. obs. 360. 2. ic. 636.

Stems nearly erect, leaves ovate ciliate, flowers peduncled,

calyx-teeth bristle-shaped elongated.

##### [3. Vinca lutea. Yellow Periwinkle.

Lin. spec. 304. Reich. 1. 594. Willd. 1. 1233.

amoen. 4. 307.

Apocynum scandens, foliis folio, flore amplo plano,

Cateb. car. 2. t. 53.

Stem twining, leaves oblong.]

##### 4. Vinca rosea. Madagascar Periwinkle.

Lin. spec. 305. Reich. 1. 594. Willd. 1. 1233.

Gertn. fruct. 2. 172. Mill. fig. 124. t. 186.

Kniph. cent. 8. n. 99. Thunb. jap. 110. Lour.

cochin. 118. ed. Willd. 146. Curt. magaz. t.

243.

Stem suffrutescent erect, flowers in pairs sessile, leaves

ovate-oblong, petioles two-toothed at the base.

##### [5. Vinca parviflora. Small-flowered Periwinkle.

Alt. kew. 1. 296. Retz. obs. 2. 14. n. 33. & 5. 3.

n. 38. Willd. spec. 1234.

V. pusilla. Lin. syst. 252. suppl. 166. Murr. in comm.

gott. 1772. p. 66. t. 4. f. 1.



Cupa-Veela. *Rheed. mal.* 9. 61. t. 33.  
*Stem herbaceous erect, leaves lanceolate acute.*

## DESCRIPTIONS, &amp;c.

1. Root perennial, creeping with branched fibres. The whole plant smooth and shining. Stems round, slender, leafy, erect when in flower, from nine inches to a foot in height, and much higher when supported by bushes, marked on each side with a groove faintly impressed; after flowering, prostrate, elongated, taking root at their joints. Mr. Woodward remarks, that the flowering-stem is upright in the spring, but that in autumn the flowers are borne on the shoots of the year, which are trailing. Leaves opposite, on footstalks about one fourth the length of the leaves, which are quite entire, evergreen, shining, somewhat like those of Privet, not having the fringed edge observable in *V. major*. Flowers axillary, alternate, solitary, void of scent, on nearly upright peduncles, almost twice the length of the leaves, round, smooth and shining. Calyx bell-shaped, five-cleft, smooth, with short lanceolate segments; much shorter and less tapering than in *V. major*. Corolla blue with a white eye, varying to purple and white; of a darker colour and smaller size than in *V. major*<sup>f</sup>.

This plant, like many others which run much at the root, seldom produces its follicles. Mr. Curtis and Dr. Smith inform us, that they have never seen them. Tournefort says that he never saw any fruit in Provence or Languedoc, where this plant is very common, nor about Lisbon; that Cæsalpinus is the only author who has described it, and that he obtained that which is engraved in his Elements by setting the plant in a pot with little earth. Miller did not succeed that way, but by cutting off all the lateral shoots. Leers affirms that the follicles are always two-seeded.

Whoever, says Mr. Curtis, looks into the tube of this flower with any degree of attention, must be struck with the wisdom shewn in the formation of the parts contained within it. Each anther is terminated by a membrane which bends over at top, and the membranes of all the anthers closing together, effectually seclude every thing that might injure the parts of the fructification below them. The filaments somewhat resemble in shape a note of interrogation; the anthers in structure are very similar to those of the violet, and open inwardly in the same manner; the style, which in most flowers is broadest at top, is here the slenderest; they are two in number, but so closely united, that without a magnifier, the division is scarcely to be perceived; the stigmas, according to Linneus, are two, it is most probable however, that the lowest, which is flat with a glutinous edge, and forms a kind of ring round the style, is the true stigma; the top is a little elevated above this, and appears like a round white ball, which when magnified, is found to consist of a number of hairs diverging from one centre, and is a very pleasing sight in the microscope.

The small Periwinkle varies much in the colour of the flowers, pale blue, purple, and white; they are also double; and the foliage is sometimes variegated, either with white or yellow stripes.

At the foot of a sheltered hedge exposed to the morning sun, it flourishes very much, especially if the soil be moist; the flowers are there very ornamental in spring, and continue a month or six weeks<sup>h</sup>. They appear earlier than those of *V. major*.

Native of Germany, Switzerland, France, Italy, Britain, &c.

Mr. Curtis says he has noticed it only in one spot near London; in the hedge of a field on the left hand side of Lordship lane near Dulwich, where it had every appearance of being wild. Merret however found it on the west of Hampstead heath, and Dr. Milne in many other places, as in Bellsize lane, on the left hand in going from Primrose hill to Hampstead, in great abundance; under the paling of Clendon Place park; in a lane betwixt Hayes church in Kent and the common; at Addington; below Singlewell church near

Gravesend, plentifully; a mile beyond Bexley on the Dartford Road; by the side of the paling of Miffley park; between Milton near Swanscomb and Knock-hall; at the bottom of a lane leading from Eltham to Southend, in the Foot's Cray road; about a mile from Sydenham; about two miles and a half from Croydon, in the way to Coombe; at Cobham in Surry; between Walthamstow and Low Layton; and on a cliff near Stone church, among the bushes. Blackstone perceived it in a lane leading from Uxbridge moor to Iver heath, and in a little grove near Breakspears, Middlesex. Mr. Warner found it on the left hand of the footway from Woodford to the church, and on the islands in his own gravel-pit pond. In the Feversham catalogue it is mentioned as growing in Hay's wood, near Southstreet, Boston. Near Lewes in Suffex. By Honingham church, Norfolk, plentifully, and in several lanes in that parish, undoubtedly wild, according to Dr. Smith. In Earsham wood, by Mr. Woodward. In Cambridgeshire, under a hedge by Maid's Causeway, near the town at Cherry Hinton, near the church, and at Triplow-Potton and Aspley in Bedfordshire, by Dr. Abbot. In Magdalen College walks, between Wolvercot and Yarnton, and Cornbury, Oxfordshire, by Dr. Sibthorp. Rainfal brow near Manchester, by Mr. Caley. Near Rippon in Yorkshire, by the Rev. Mr. Dalton and Mr. W. Brunton, perfectly wild. In Coryton woods, Scotland, by Dr. Parsons.

It was found with a white flower, at Chiltonington, four miles from Lewes, by Mr. Woolgar, of the latter place: and with a striped leaf, in the field-way from Hampstead to Willidon; at West Wickham in Kent; in a wood near Erith; about half a mile from Tottenham; at Clendon place; and at Cobham, by Dr. Milne and Mr. Alex. Gordon<sup>i</sup>.

2. This is larger in all its parts than the preceding. Stems erect, finally rooting at the end. Leaves broad-ovate three inches long and two broad, of a thick consistence, finely fringed with short rigid hairs at the edge, on thick footstalks. Flowers solitary, alternate, on peduncles half the length of the leaves. Calyx-teeth elongated, bristle-shaped, often ciliate, spreading at the tip. Corolla fine purplish blue, twisted. Follicles very smooth and shining, awl-shaped at the top, divaricating. Seeds mostly two, one above the other, oblong, with a longitudinal groove at top, roughish, but naked<sup>k</sup>. Calyx as long as the tube of the corolla; which is woolly within just above the anthers. Corolla blue with a blush of purple. Petioles long<sup>l</sup>.

Flowering-stems two feet high and upwards, round but the sides alternately somewhat flattened, smooth, dotted with red; other stems, producing no flowers, creep on the ground or climb up neighbouring plants. Peduncles longer than the leaves. Flowers large, pale blue with a whitish mouth<sup>m</sup>; varying to white. The foliage also is sometimes striped.

Linneus, (in syst. veg.) asserts this to be a variety of the minor. And Mons. Gerard (in Flora Gallo-Provinc.) says, that nature has not put any limits between them. They seem however to be as distinct as many other species of natural genera. Haller's remark of the fringe at the edge of the leaves in this, would be sufficient to distinguish them, if there were nothing else; but several other marks are specified above.

Native of France, Spain, Italy, Switzerland, England, and Algiers. With us it is more common in a wild state than the preceding, in moist woods, and hedges. Mr. Curtis noticed it near London, under Lord Stormont's park pales, between Wandsworth and Putney common, and in a field near Beckenham in Kent, where it was certainly wild. Dr. Milne found it most abundantly between that village and Croydon, and near Beckenham church, and in innumerable other places in Kent, Surry, Essex, and Middlesex. It was observed by How, who published his Phytologia in 1650, near Kingsland, whence it is now doubtless ex-

<sup>f</sup> Smith brit. and engl. bot. Curt. lond.

<sup>h</sup> Curt. lond.

<sup>g</sup> Tourn. par.

<sup>i</sup> Indigenous Botany, p. 308.

<sup>l</sup> Withering.

<sup>k</sup> Smith brit. and engl. bot.

<sup>m</sup> Curtis.



tirpated. This was probably the first notice of its being found wild in England; since Gerard and Parkinson give no hint of its being so. Even Ray, in his history (1688) does not mark it as an English plant. Plot (1677) found it between Wolvercot and Yarnton, in Oxfordshire, where Sibthorp marks the minor. Near Colchester, by Dr. Richardson. In the way from Knowlton to Deal, and in a lane before you come to Foot's Cray from Roehill, by Mr. James Sherard<sup>n</sup>. In a meadow near Harefield church, by Blackstone. Near Walthamstow, by Warner. Southorp in Northamptonshire, by Morton. Observed by Professor John Martyn, before 1732, at Madingley in the way to Drayton, on the outside of St. John's College, and in many other places in Cambridgeshire. At Coton in the same county, near the church in 1759, at Girton, Whittlesford, Rampton, and Bottisham, by Mr. Relhan. At Ravensden and Clapham in Bedfordshire, by Dr. Abbot. In a grove at Thorpe, near Norwich, by Mr. Woodward. In Magdalen College walks, Oxford, by Dr. John Sibthorp. In the Isle of Wight, to the south of Yarmouth, plentifully, by Dr. Withering.

It having been doubted whether these plants are really wild in England, I have given the above numerous places of growth. They probably escaped originally out of gardens, and increasing so readily have gradually diffused themselves. However that may be, having been noticed in a wild state, during a century and half, they may now fairly be reputed indigenous. It flowers in may.]

As these plants delight to grow under the cover of trees and bushes, they may be made ornamental in large gardens, if they are planted on the verges of wildernesses, where they will spread and cover the ground: and as their leaves continue green all the year, they will have a good effect in winter, and their flowers appearing great part of summer, will add to the variety.

[3. This has the appearance of an Echites. Native of Carolina.]

4. Stem upright, branching, three or four feet high, when young, succulent, jointed, purple; but as the plant advances the lower parts become woody. The branches have the joints very close, are covered with a smooth purple bark, and have oblong, ovate, entire leaves, two inches and a half long, and an inch and half broad, smooth and succulent, setting pretty close to the branches. Flowers axillary, solitary, on very short peduncles: tube long and slender; brim spreading open flat, divided into five broad obtuse segments, which are reflexed at their points. The upper surface of the petal is of a bright crimson or peach colour, and their under side pale flesh-colour. There is a succession of flowers, from february to the end of october. Those which appear early in the summer are succeeded by taper seed-vessels, filled with roundish black seeds, which ripen in autumn.

[Stem somewhat rigid, round, smooth and even. Leaves opposite, lanceolate-oval, coriaceous with a white midrib: the petioles have a toothlet on each side at the base. Flowers axillary, sessile in pairs. The calyx ends in five awl-shaped bristles. Corolla salver-shaped; segments half-sickle-shaped, obtuse, mucronate, rose-coloured with a dark-purple eye<sup>o</sup> and a white circle within it.

Mr. Curtis remarks, that the flowers do not always grow in pairs. It varies with a white flower, having the eye only purple.

Follicles two, small, round, subclavate, striated, pubescent, half-two-celled, opening by the inner side: partition narrow, doubled, taking its rise from the future plaited inwards. Seeds from sixteen to twenty in each follicle, small, ovate, acuminate above, on one side grooved and rugged with sharp tubercles, on the other side smooth in the middle and having a small umbilical teat, of a chestnut-brown or blackish colour, and bald: they are fastened longitudinally on each side of the partition<sup>p</sup>.]

The seeds of this beautiful plant came originally from the island of Madagascar to the royal garden at

Paris, and were communicated by Monf. Richard to Mr. Miller, who cultivated them in 1757. [It has since been found in Java, China, Cochinchina and Japan.

5. The other species are perennial, this is annual. Stem a span high, quadrangular. Flowers at the sides, and often at the top, in pairs, peduncled. Corolla of the same size and colour with that of *Lithospermum officinale*<sup>1</sup>.

Stem branched, even. Leaves sinuate-toothed, somewhat rugged. Flowers usually in pairs, on short pedicels, axillary, in a bristly involucre, small with a long tube. Follicles linear, striated, as it were jointed<sup>1</sup>.

Native of the East Indies. Sent from Tranquebar by the indefatigable Konig. It is there a troublesome weed in the gardens.—Introduced in 1778 by Sir Joseph Banks. It flowers here in august<sup>1</sup>.]

#### PROPAGATION AND CULTURE.

1. 2. These are easily propagated by their trailing stalks, which put out roots very freely: and if the stalks of the large sort are laid in the ground, they will root very soon, and may be cut off and transplanted where they are to remain, and when they are once rooted, they will spread and multiply very fast without farther care.

4. Sow the seeds upon a moderate hot-bed in the spring, and when the plants are fit to remove, transplant them on to a fresh hot-bed, at about four inches distance, shading them till they have taken new root: then treat them in the same way as other natives of warm countries; taking great care to prevent their drawing up weak, and not giving them too much water. When the plants have obtained strength, take them up carefully with balls of earth to their roots, plant them in pots filled with good earth, and plunge them into a moderate hot-bed to facilitate their taking new root, observing to screen them from the sun, and when they are well rooted to enure them gradually to bear the open air: but unless the summer prove warm, these plants should not be placed in the open air, for they will not thrive if they are exposed to cold or wet; therefore during the summer they should be placed in an airy glass-case, and in winter they must be removed into the stove, where the air is kept to a temperate heat.

It may also be increased by cuttings planted in pots during any of the summer months. Plunge the pots into a moderate hot bed, and if they are closely covered with bell or hand-glasses, they will put out roots the more readily: when they have so done, they must be gradually hardened, and afterwards planted in pots and treated in the same way as the seedling plants.

[VI. CETOXICUM. See *Asclepias*.

VINE. See *Vitis*.

VIOLA. (Said to be from the Greek *Ion*.)

Lin. gen. n. 1007. Reich. n. 1092. Schreb. n. 1364.

Tournef. t. 236. Juss. 294. Gertn. t. 112. Calceolaria Loeff.

Class. 19. 6. Syngenesia Monogamia—*potius* Pentandria Monogynia.

Nat. Order of *Campanaceæ*. *Cisti* Juss.

#### GENERIC CHARACTER.

CA<sup>1</sup>. Perianth five-leaved, short, permanent: leaflets ovate-oblong, erect, more acute at the tip, obtuse at the base, fastened above the base, equal, but variously disposed: of which two support the uppermost petal, two others each a second and third lateral petals, and the remaining one, the two lowest petals together.

COR. five-petalled, irregular. Petals unequal. The uppermost petal straight, turned downwards, wider, blunter, emarginate, finishing at the base in a blunt horned Nectary, prominent between the leaflets of the calyx: the two lateral ones paired, opposite, obtuse, straight: the two lowest paired, bigger, reflexed upwards.

STAM. Filaments five, very small; two of them, which are nearest to the uppermost petal, enter the nectary by annexed appendages. Anthers commonly connected, obtuse, increased by membranes at the tip.

PIST. Germ superior, roundish. Style filiform, prominent beyond the anthers. Stigma oblique.

<sup>n</sup> Rati syn.

<sup>•</sup> Linn. spec.

<sup>p</sup> Gartner.

<sup>1</sup> Linn. suppl.

<sup>1</sup> Retz. obs. 2.

<sup>1</sup> Hort. kew.



PER. Capsule ovate, three-cornered, obtuse, one-celled, three-valved.

SEEDS many, ovate, appendicled, fastened to the valves.

Receptacle linear, running like a line along each valve.

Obs. The Stigma is either reflected into a single hook, (as in the species called *Martia*,) or is a concave head perforated at the top, (as in the *Tricolors*.)

The flower in the European species is always inverted; in the Indians it is commonly straight: whence they have a different appearance.

One species (*V. diandra*) is anomalous, having only two stamens.

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled, irregular, horned at the back. Anthers cohering. Caps. superior, one-celled, three-valved.

#### SPECIES.

##### \* Stemless.

- [1. *Viola palmata*. *Palmated Violet*.  
Lin. spec. 1323. Reich. 3. 962. Willd. 1. 1159.  
Gron. virg. 1. 182. 2. 135. Pluk. mant. 187.  
amalth. 129. t. 447. f. 1. Curt. magaz. t. 535.  
Stemless, leaves palmate five-lobed toothed and undivided.]

2. *Viola pedata*. *Multifid-leaved Violet*.  
Lin. spec. 1323. Reich. 3. 962. Willd. 1. 1160.  
Gron. virg. 1. 107. 2. 135. Curt. magaz. 89.  
Pluk. phyt. t. 114. f. 7.

*V. mariana* folio digitato. Petiv. sicc. 20.

*V. multifida*. Mill. dict. n. 5.

Stemless, leaves pedate seven-parted.

3. *Viola pinnata*. *Pinnate-leaved Violet*.  
Lin. spec. 1323. syst. 802. Reich. 3. 962. Willd.  
1. 1160. Hall. helv. n. 561. Gmel. fib. 4. 101.  
t. 49. f. 4. Aët. nat. cur. 3. n. 3. Villars dauph.  
2. 663. Allion. pedem. n. 1636. misc. taur. 3. 181.  
t. 5. f. 2.

*V. montana* laciniato folio. Chuf. hisp. 309.

*V. alpina*, folio in plures partes dissecto. Baub. pin. 199. Raii hist. 1051. 9.

*V. montana*, folio multifido. Baub. hist. 3. 544.

*V. 7*. Ger. emac. 851.

*V. montana* laciniato folio. Park. theat. 755. 3.

Stemless, leaves pinnatifid.

- [4. *Viola sagittata*. *Arrow-leaved Violet*.  
Ait. kew. 3. 287. Willd. spec. 1. 1160.  
Stemless, leaves oblong acute cordate-sagittate serrate cut at the base, flowers inverted.

5. *Viola lanceolata*. *Spear-leaved Violet*.  
Lin. spec. 1323. syst. 802. Reich. 3. 963. Willd.  
1. 1161. Gmel. fib. 4. 99. t. 49. f. 2. Forst. in  
Linn. transf. 6. 310.

*V. acadiensis*, folio longo sinuato. Dierv.

Stemless, leaves lanceolate crenate.

6. *Viola obliqua*. *Oblique-flowered Violet*.  
Ait. kew. 3. 288. Willd. spec. 1. 1161.  
Stemless, leaves cordate acute flattish smooth, flowers erect, petals bent obliquely.

7. *Viola cucullata*. *Hollow-leaved Violet*.  
Ait. kew. 3. 288. Willd. spec. 1. 1162.  
Stemless, leaves cordate sharpish cowled at the base, flowers inverted, petals bent obliquely.

8. *Viola primulifolia*. *Primrose-leaved Violet*.  
Lin. spec. 1324. Reich. 3. 963. Willd. 1. 1162.  
Gron. virg. 135. Lepech. it. 1. 188. Lour.  
cochin. 513. ed. Willd. 628.

Stemless, leaves oblong subcordate, petioles membranaceous.]

9. *Viola hirta*. *Hairy Violet*.  
Lin. spec. 1324. syst. 802. Reich. 3. 963. Willd.  
1. 1162. mant. 483. fl. suec. n. 788. Hudf. angl.  
379. Wither. arr. ed. 3. 260. Smith brit. 244.  
engl. bot. t. 894. Curt. lond. 1. t. 64. Relb. cant.  
ed. 2. n. 192. Sibth. oxon. n. 256. Abbot bedf. n.  
622. Sym. syn. 60. Fl. dan. t. 618. Hall. helv.  
n. 559. Hoffm. germ. 310. Roth. germ. 1. 104.  
2. 267. Pollich pal. n. 835. Krock. files. n.  
1480. Villars dauph. 2. 662. Allion. pedem. n.  
1637. Thunb. jap. 326.

*V. martia* major hirsuta inodora. Plot oxon. 144. t. 9.

f. 1. Mer. hist. f. 5. t. 35. f. 4. Raii hist. 1051. syn. 365.

*V. foliis Trachelii serotina hirsuta radice lignosa*. Merr. pin.

Stemless, leaves cordate, they and the petioles hairy-hispid, calyxes obtuse:—bractes below the middle of the peduncles.

- [10. *Viola magellanica*. *Magellanic Violet*.  
Lin. spec. ed. Willd. 1. 1162. Forst. in comm. gott.  
6. 41. t. 8.

Stemless, leaves kidney-form repand villose.]

11. *Viola odorata*. *Sweet Violet*.  
Lin. spec. 1324. syst. 803. Reich. 3. 964. Willd.  
1. 1163. mant. 483. fl. suec. n. 784. hort. cliff.  
427. mat. med. 194. Woodv. med. bot. 225. t. 81.  
Gartn. fruct. 2. 140. Hudf. angl. 378. Wither.  
arr. ed. 3. 260. Smith brit. 245. engl. bot. t. 619.  
Curt. lond. 1. t. 63. Lightf. scot. 507. Relb.  
cant. n. 193. Sibth. oxon. n. 257. Abbot bedf.  
n. 623. Sym. syn. 60. Fl. dan. t. 309. Hall.  
helv. n. 558. Hoffm. germ. 311. Roth. germ. 1.  
105. 2. 268. Pollich pal. n. 837. Leers Herborn. n.  
683. Krock. files. n. 1482. Neck. gallob. 367. Scop.  
carn. n. 1097. Villars dauph. 2. 662. Allion. pedem.  
n. 1639. Hasselq. it. 483. Desfont. atlant. 1. 313.  
Thunb. jap. 326. Lour. cochinch. 513. ed. Willd.  
627. Ludw. est. t. 175. Knorr del. 1. t. V. Kniph.  
cent. 3. n. 97. Blackw. t. 55. Regnault bot.  
Renealm. spec. 141. t. 140.

*V. martia* purpurea. Baub. hist. 3. 542. Raii hist. 1049. syn. 364. Petiv. brit. t. 37. f. 3. Tabern. ic. 301. Mer. hist. f. 5. t. 7. f. 1.

*V. nigra* f. purpurea. Dod. pempt. 156. 1. Ger. 699. 1. emac. 850. 2.

*V. purpurea*. Fusch. hist. 311.

*V. martia* præcox purpurea. Lob. ic. 1. 608. 2.

*V. martia* purpurea, flore simplici odoro. Baub. pin. 199.

*V. simplex* martia. Park. parad. 282.

- β *V. martia* alba. Baub. pin. 199. Raii hist. 1050. syn. 364.

*V. flore* albo. Ger. 699. 2. emac. 850.

*V. simpl.* martia flore albo. Park. parad.

- γ *V. martia* multiplici flore. Baub. pin. 199.

Stemless, runners creeping, leaves cordate, they and the petioles smoothish, calyxes obtuse:—bractes above the middle of the peduncle.

12. *Viola palustris*. *Marsh Violet*.  
Lin. spec. 1324. syst. 802. Reich. 3. 963. Willd.  
1. 1163. fl. lapp. n. 278. suec. n. 786. Hudf.  
angl. 379. Wither. arr. ed. 3. 261. Smith brit.  
246. engl. bot. t. 444. Curt. lond. 3. t. 58. Lightf.  
scot. 506. Abbot bedf. n. 624. t. 3. Hall. helv.  
n. 560. Hoffm. germ. 310. Roth. germ. 1. 105.  
2. 267. Pollich pal. n. 836. Krock. files. n.  
1481. Villars dauph. 2. 662. Allion. pedem. n.  
1638. Pallas it. 3. 34. Thunb. jap. 226.

*V. palustris* rotundifolia glabra. Plot. oxon. 144. t. 9. f. 2. Mor. hist. 2. 475. f. 5. t. 35. f. 5. Raii hist. 1050. syn. 364. Petiv. brit. t. 37. f. 5.

- β *V. rubra* striata Eboracensis. Park. theat. 755. Raii syn. 365. Fl. dan. t. 83.

Stemless, leaves kidney-form smooth, root creeping.

##### \*\* Caulescent.

- [13. *Viola canina*. *Dog's Violet*.  
Lin. spec. 1324. syst. 803. Reich. 3. 964. Willd.  
1. 1164. mant. 484. fl. lapp. n. 277. suec. n. 785.  
hort. cliff. 427. Hudf. angl. 379. Wither. arr.  
ed. 3. 261. Smith brit. 246. engl. bot. t. 620.  
Curt. lond. 2. t. 61. Lightf. scot. 508. Relb.  
cant. ed. 2. n. 194. Sibth. oxon. n. 258. Abbot  
bedf. n. 625. Hall. helv. n. 563. Hoffm. germ.  
311. Roth. germ. 1. 105. 2. 269. Pollich pal.  
n. 838. Leers herborn. n. 684. Krock. files. n. 1483.  
Neck. gallob. 366. Scop. carn. n. 1098. Villars  
dauph. 2. 665. Allion. pedem. n. 1645. Gron.  
virg. 182.

*V. canina* sylvestris. Ger. emac. 851. 6.

*V. sylvestris*. Park. parad. 285. 1. —inodora. Dod. pempt. 156. 3.

*V. martia* inodora sylvestris. Baub. pin. 199. Raii hist.



- hist.* 1050. *syn.* 364. *Petiv. brit. t.* 37. *f.* 4. 6. *Tournef. inst.* 419. *Mor. hist. f.* 5. *t.* 7. *f.* 2.
- V. *cærulea martia inodora sylvatica.* *Baub. hist.* 3. 544. 1.
- β. V. *canina flore albo.* *Merr. pin.* 125. *Dill. in Raii syn.* 364.
- γ. V. *caninæ varietas minor.* *Dill. in Raii syn.* 364. *t.* 24. *f.* 1.
- δ. V. *alpina.* *Huds. angl. ed.* 1. 379.
- V. *martia alpina, folio tenello circinato.* *Raii syn.* 366.
- Stem when advanced ascending channelled, leaves oblong-cordate, calyxes acute.*
14. Viola *lactea.* *Cream-coloured Violet.*  
*Smith brit.* 247. *engl. bot. t.* 445. *Sym. syn.* 61.  
V. *caninæ var.* 3. *Wither. arr.* 262.  
*Stem ascending round, leaves ovate-lanceolate, stipules gasb-ferrate.]*
15. Viola *montana.* *Mountain Violet.*  
*Lin. spec.* 1325. *Reich.* 3. 965. *Willd.* 1. 1164. *f. succ. n.* 787. *Willich obs. n.* 94. *Hoffm. germ.* 311. *Roth. germ.* 1. 105. 2. 270. *Hall. belv. n.* 567. *Krock. files. n.* 1485. *Villars dauph.* 2. 669. *Allion. pedem. n.* 1647. *Gmel. fib.* 4. 47. *Kniph. cent.* 4. *n.* 99.
- V. *sylvestris longifolia.* *Tabern.* 305.
- V. *flore cæruleo, longifolia.* *Riv. t.* 119.
- V. *martia arborescens purpurea.* *Baub. pin.* 199. *Garid. aix. t.* 97.
- V. *erecta, flore cæruleo & albo.* *Mor. hist.* 2. 475. *f.* 5. *t.* 7. *f.* 7.
- V. *arborescens.* *Camer. epit.* 911.
- V. *furrecta purpurea.* *Park. theat.* 755. *f.* 1. *Raii hist.* 1052.
- V. *assurgens tricolor.* *Ger.* 703. *f.* 2. *emac.* 854. *f.* 2.
- Jacea *tricolor furrectis cauliculis, quibusdam arborea.* *Baub. hist.* 3. 547.
- β. V. *perficifolia.* *Hoffm. germ.* 311. *Roth. germ.* 2. 271.
- Stems erect, leaves cordate oblong—in β. ovate-lanceolate.*
- [16. Viola *concolor.*  
*Forst. in Linn. transf.* 6. 309. *t.* 28.  
*Stems erect, leaves broad-lanceolate and stipules lanceolate-linear quite entire.*
17. Viola *nummularifolia.*  
*Lin. spec. ed. Willd.* 1. 1165. *Allion. pedem. n.* 1640. *t.* 9. *f.* 4. *Villars dauph.* 2. 663. *Schmidt bohém. n.* 246.
- V. *rupestris.* *Schmidt bohém. n.* 249.
- V. *alpina minima nummulariæ folio.* *Bocc. mus.* 2. 163. *t.* 127.
- Stems undivided very short, leaves roundish-cordate subcrenate, stipules toothed.]*
18. Viola *cenisia.*  
*Lin. spec.* 1325. *Reich.* 3. 965. *Willd.* 1. 1165. *Allion. pedem. n.* 1641. *t.* 22. *f.* 6. *Hall. belv. n.* 565. *Villars dauph.* 2. 665.
- Stems filiform undivided procumbent, leaves ovate petioled, the edge at the base ciliate, stipules undivided.*
- [19. Viola *canadensis.* *Canadian Violet.*  
*Lin. spec.* 1326. *Reich.* 3. 966. *Willd.* 1. 1166. *amoen.* 1. 157. *Ait. kew.* 3. 290.
- Stem erect roundish, leaves cordate acuminate smooth, stipules entire.*
20. Viola *striata.* *Striated Violet.*  
*Ait. kew.* 3. 290. *Lin. spec. ed. Willd.* 1166.
- Stem erect semicylindric, leaves ovate cordate acute serrate, stipules lanceolate, serrate-ciliate.*
21. Viola *pubescens.* *Downy Violet.*  
*Ait. kew.* 3. 290. *Lin. spec. ed. Willd.* 1. 1166.
- Stem erect villose round flattish on one side, leaves cordate pubescent, stipules oblong serrulate at the tip.]*
22. Viola *mirabilis.* *Broad-leaved Violet.*  
*Lin. spec.* 1326. *syft.* 803. *Reich.* 3. 966. *Willd.* 1. 1167. *f. succ. n.* 789. *hort. cliff.* 407. *Hoffm. germ.* 311. *Roth. germ.* 1. 106. 2. 271. *Jacqu. austr.* 1. 14. *t.* 19. *Krock. files. n.* 1486. *Villars dauph.* 2. 664. *Allion. pedem. n.* 1648. *Dill. elth.* 408. *t.* 303. *f.* 390.
- Stem three-sided, leaves kidney-form-cordate, stipules lanceolate quite entire, flowers on the stem commonly apetalous.*
- VOL. II.
- [23. Viola *biflora.* *Two-flowered Violet.*  
*Lin. spec.* 1326. *syft.* 803. *Reich.* 3. 966. *Willd.* 1. 1167. *f. lapp. n.* 276. *succ. n.* 790. *hort. cliff.* 427. *f. dan. t.* 46. *Hall. belv. n.* 564. *Scop. carn. n.* 1099. *Villars dauph.* 2. 664. *Krock. files. n.* 1487. *Allion. pedem. n.* 1643. *Gmel. fib.* 4. 98. *n.* 61. *Pluk. phyt. t.* 233. *f.* 7. & *t.* 234. *f.* 1.
- V. *alpina rotundifolia lutea.* *Baub. pin.* 199.  
*Stem two-flowered, leaves kidney-form serrate.*
24. Viola *uniflora.* *Siberian Violet.*  
*Lin. spec.* 1327. *syft.* 803. *Reich.* 3. 967. *Willd.* 1. 1167. *Gmel. fib.* 4. 101. *t.* 48. *f.* 5.
- Stem one-flowered, leaves cordate toothed.*
25. Viola *decumbens.* *Trailing Violet.*  
*Lin. syft.* 803. *Willd.* 1. 1168. *suppl.* 397. *Thunb. prodr.* 41.
- Caulescent, procumbent, leaves linear clustered.]*  
\*\*\* *Stipules pinnatifid; Stigma urceolate.*
26. Viola *tricolor.* *Pansy-Violet or Heart's-ease.*  
*Lin. spec.* 1326. *syft.* 803. *Reich.* 3. 967. *Willd.* 1. 1168. *f. succ. n.* 791. *hort. cliff.* 527. *Gartn. fruct.* 2. 139. *Huds. angl.* 380. *Wither. arr. ed.* 3. 262. *Smith brit.* 248. *Curt. lond.* 1. *t.* 65. *Lightf. scot.* 509. *Relb. cant. ed.* 2. *n.* 195. *Abbot bedf. n.* 626. *Woodv. med. bot. suppl. t.* 252. *Hall. belv. n.* 569. *Hoffm. germ.* 311. *Roth. germ.* 1. 106. 2. 272. *Pollich pal. n.* 839. *Leers herborn. n.* 685. *Krock. files. n.* 1490. *Neck. gallob.* 366. *Scop. carn. n.* 1100. *Villars dauph.* 2. 668. *Allion. pedem. n.* 1649. *Gmel. fib.* 4. 97. *Thunb. jap.* 326.
- V. *arvensis.* *Murr. prodr.* 73. *Sibth. oxon. n.* 259. *Sym. syn.* 61.
- V. *bicolor arvensis.* *Baub. pin.* 200. *Raii hist.* 1053. *syn.* 366. *Petiv. brit. t.* 37. *f.* 9. *Mor. hist. f.* 5. *t.* 7. *f.* 10.
- V. *tricolor arvensis.* *Park. theat.* 755.
- V. *tric. petræa.* *Ger. emac.* 854. 4.
- Jacea *bicolor frugum & hortorum vitium.* *Baub. hist.* 3. 546. 2.
- J. *altera.* *Camer. epit.* 913.
- Trinitatis *herba.* *Fuchs. hist.* 803.
- β. V. *tricolor.* *Murr. prodr.* 73. *Fl. dan. t.* 623. *Hall. belv. n.* 568. *Sym. syn.* 61. *Renealm. spec.* 144. *t.* 140. *Riv. t.* 120. *Ger.* 703. 1. *emac.* 854. *Raii hist.* 1052. *syn.* 365. *Petiv. brit. t.* 37. *f.* 8.
- V. *tric. hortensis repens.* *Baub. pin.* 199.
- V. *tric. major & vulgaris.* *Park. theat.* 756.
- Jacea *f. flos trinitatis.* *Camer. epit.* 912.
- J. *tric. f. Trinitatis flos.* *Baub. hist.* 3. 546.
- Stem angular diffused, leaves oblong tooth-crenate, stipules lyrate-pinnatifid.]*
- [27. Viola *grandiflora.* *Great-flowered Pansy-Violet.*  
*Lin. syft.* 803. *Reich.* 3. 968. *Willd.* 1. 1169. *mant.* 120. *Hall. belv. n.* 566. β. *Villars dauph.* 2. 667. *Krock. files. n.* 1491. *t.* 44.
- V. *calcarata.* β. *Lin. spec.* 1326.
- V. *montana tricolor odoratissima.* *Baub. pin.* 109.
- V. *mont. lutea grandiflora.* *Baub. pin.* 200. *Barr. ic.* 692. *Raii hist.* 1052. 4.
- Stem three-sided simple, leaves somewhat oblong, stipules pinnatifid.]*
28. Viola *lutea.* *Yellow Mountain Pansy-Violet.*  
*Wither. arr. ed.* 3. 263. *Smith brit.* 249. *Sym. syn.* 61. *Huds. angl. ed.* 1. 331.
- V. *grandiflora.* *Huds. ed.* 2. 380. *Lightf. scot.* 508. *Mill. dict. n.* 10.
- V. *montana lutea grandiflora nostras.* *Raii hist.* 1052. 5. *syn.* 365. *Petiv. brit. t.* 37. *f.* 10.
- V. *martia lutea.* *Ger.* 701. 5. *emac.* 850. 5. *descr. non. ic.*
- Stem three-sided simple, leaves ovate-oblong crenate ciliate, stipules palmate-gashed.]*
- [29. Viola *Zoyfii.*  
*Lin. spec. ed. Willd.* 1. 1169. *Jacqu. collect.* 4. 297. *t.* 11. *f.* 1.
- V. *montana lutea subrotundo crenato folio.* *Barr. ic.* 691.
- Stem very short, erect, leaves roundish crenate, stipules quite entire, peduncles three-sided.*
- 19 G 30. Viola



30. *Viola calcarata*. *Alpine or long-spurred Violet*.  
*Lin. spec.* 1325. *syft.* 803. *Reich.* 3. 968. *Willd.*  
 1. 1169. *Krock. filef. n.* 1492. *Villars dauph.*  
 2. 666. *Allion. pedem. n.* 1650.  
*V. alpina purpurea*, *exiguus foliis*. *Bauh. pin.* 199.  
*V. montana caerulea grandiflora*. *Tournef. inst.* 420.  
*Melanium montanum*. *Dalech. hist.* 1204.  
*Stem abbreviated, leaves roundish-cordate crenate, stipules*  
*roundish toothed, nectaries longer than the calyx.*
31. *Viola cornuta*. *Pyrenean Violet*.  
*Lin. spec.* 1325. *syft.* 803. *Reich.* 3. 968. *Willd.*  
 1. 1170. *Hall. belv. n.* 570. *Desfont. atlant.*  
 313.  
*V. pyrenaica longius caudata, teucris folio*. *Tournef.*  
*inst.* 481. *Dodart. ic.*  
*V. pyren. folio teucris ferotina*. *Raii suppl.* 510.  
*Stem elongated, leaves ovate subcordate ciliate at the edge,*  
*stipules oblong pinnatifid, nectaries awl-shaped longer*  
*than the corolla.*
32. *Viola capensis*. *Cape Violet*.  
*Lin. spec. ed. Willd.* 1. 1170. *Thunb. prodr.* 40.  
*Suffruticose, stem erect, leaves obovate serrate.*
33. *Viola arborescens*. *Shrubby Violet*.  
*Lin. spec.* 1325. *Reich.* 3. 969. *Willd.* 1. 1170.  
*V. hispanica fruticosa longifolia*. *Tournef. inst.* 421.  
*V. hisp. fruticans*. *Barr. ic.* 568.  
*V. montana pumila angustifolia, flore inodoro*. *Bauh.*  
*pin.* 199.  
*Stem shrubby, leaves lanceolate quite entire.*  
 \*\*\*\*\* *Flowers erect, not inverted.*
34. *Viola stipularis*. *West Indian Violet*.  
*Lin. spec. ed. Willd.* 1. 1171. *Swartz prodr.* 117.  
*Stem simple creeping, leaves ovate lanceolate crenate*  
*smooth, stipules ciliate, peduncles solitary terminating.*
35. *Viola parviflora*. *Small-flowered Violet*.  
*Lin. spec. ed. Willd.* 1. 1171. *suppl.* 396.  
*Stems diffused weak many-leaved, leaves ovate petioled*  
*serrate, flowers axillary solitary.*
36. *Viola enneasperma*. *Nine-seeded Violet*.  
*Lin. spec.* 1327. *syft.* 803. *Reich.* 3. 969. *Willd.*  
 1. 1171. *fl. zeyl. n.* 317. *Burm. zeyl.* 195. *t.* 85.  
 (Polygala.)  
*Velam-parenda*. *Rheed. mal.* 9. 117. *t.* 60. *Raii*  
*suppl.* 402. 2.  
*Stem very much branched at the base, leaves lanceolate-*  
*linear quite entire distant, calyxes equal behind.*
37. *Viola linariifolia*. *Toadflax-leaved Violet*.  
*Vahl. ecl.* 2. 18.  
*Suffruticose, branched, leaves linear-lanceolate opposite and*  
*alternate almost quite entire smooth; peduncles axillary*  
*solitary.*
38. *Viola suffruticosa*.  
*Lin. spec.* 1327. *syft.* 803. *Reich.* 3. 969. *Willd.*  
 1. 1171. *fl. zeyl. n.* 318.  
*Stem procumbent, leaves lanceolate subserrate clustered,*  
*calyxes equal behind.*
39. *Viola Calceolaria*.  
*Lin. spec.* 1327. *syft.* 803. *Reich.* 3. 969. *Willd.*  
 1. 1172. *Swartz obs.* 318.  
*V. Itoubou*. *Aubl. guian.* 2. 808. *t.* 318.  
*Calceolaria caule simplici hirsuto, floribus axillaribus*  
*solitariis*. *Loefl. it.* 183.  
*Stem simple hirsute herbaceous, leaves lanceolate hairy,*  
*flowers solitary.*
40. *Viola oppositifolia*.  
*Lin. spec.* 1327. *syft.* 803. *Reich.* 3. 970. *Willd.*  
 1. 1172.  
*Calceolaria caule brachiato glabro, floribus racemosis*.  
*Loefl. it.* 183.  
*Stem suffruticose brachiate, leaves opposite, flowers ra-*  
*cemed.*
41. *Viola Hybanthus*.  
*Lin. spec.* 1328. *syft.* 803. *Reich.* 3. 970. *Willd.*  
 1. 1172. *Loefl. it.* 282. 185. *n.* 3. *Aubl.*  
*guian.* 2. 811. *t.* 319.  
*Hybanthus*. *Jacqu. amer.* 77. *t.* 175. *f.* 24, 25. *piet.*  
 107. *t.* 260. *f.* 21.  
*Arborecent, scandent, prickly, leaves oblong obtuse smooth.*
42. *Viola Ipecacuanha*.  
*Lin. syft.* 804. *Reich.* 3. 970. *Willd.* 1. 1172.  
*mant.* 484. *suppl.* 397. *mat. med.* 194.

- V. grandiflora, Veronica folio villoso*. *Barr. æquin.*  
 113.  
*Pombalia Ipecacuanha*. *Vandelli fasc.* 7. *t.* 1.  
*Leaves oval hairy on the edge and beneath.*
43. *Viola diandra*.  
*Lin. syft.* 804. *Reich.* 3. 970. *Willd.* 1. 1173.  
*Stem creeping herbaceous, leaves oblong, peduncles one-*  
*flowered.*

## DESCRIPTIONS, &amp;c.

1. Root perennial. Leaves five-parted, the segments ovate, the middle segment wider, the outer one toothed only at the base<sup>1</sup>.

Native of Virginia. It flowers here in may and june; and was cultivated by Mr. Miller in 1739<sup>2</sup>, as appears from his supplementary volume, published that year, and in which he has given thirty violets, many of which he omitted in the later editions of his Dictionary.

It is a singular species, and rare in this country, having no sweet scent to recommend it<sup>3</sup>.]

2. The leaves are divided into seven parts or lobes, [which are sometimes toothed: they are of the sort called pedate by Linneus.] The flowers stand upon naked foot-stalks: they are blue and have no scent either in this or the preceding species.

They appear in june, but are not succeeded by seeds here. Native of North America. [Cultivated in 1759, by Mr. Miller.]

3. This is a very low plant, seldom rising two inches high. The leaves are small and pinnatifid. The flowers are pale blue, and appear in june.

[It is like the preceding, but differs in having the segments more numerous, not produced at the base, lobed, and the outer ones only somewhat toothed<sup>4</sup>.

This singular species, says Monsr. Villars, has the leaves rather digitate than pinnate; the segments, four or five in number, are obtuse. The flower is small, and on a scape three or four inches in length.

Root slender, branched. Root-leaves numerous, smooth, thickish, composed of three pairs of lobes, and an end one: the first four or five-cleft, with unequal blunt segments, the middle one obtusely and shortly bifid and trifid. Flowering scape from the root, with two capillary bristles, ciliate at the base. Flower nodding: segments of the calyx ovate, large, white, the uppermost very small: the two uppermost petals smooth; the two middle very large, bearded, marked with lines, pale; the lowest smooth, more slender, with blue lines. Allione remarks, that he has often seen two or three petals only. Fruit large, ovate, with spherical orange-coloured seeds<sup>5</sup>.

Native of the mountains of southern Europe and Siberia. Sent to Mr. Miller by Allione, and cultivated by him in 1759.

4. Leaves unequally and remotely serrate, below the middle gash-serrate, veined, subpubescent, a finger's length: petioles longer than the leaves, semicylindric, somewhat hairy. Scares filiform, long, one-flowered; four-cornered, having a few hairs scattered over them, and a small lanceolate leaf or two, reflexed at the top. Calyx-leaves lanceolate, acute, smooth. Petals oblong-ovate, blue: the uppermost white below the middle with blue veins, hairy within at the base, little more than an inch and half in length; the lateral ones a little longer than the uppermost, hairy and whitish at the base; the lowest of the same length with these, whitish at the base, and beardless.

Native of Pennsylvania. Introduced in 1775, by John Fothergill, M.D. It flowers in july, and is perennial<sup>6</sup>.

5. The Canadian plant introduced by Kalm, has narrow leaves, on long petioles, with alternate parallel nerves, indistinctly serrate. Gmelin's Siberian plant has ovate-lanceolate leaves, on petioles shorter by half than the leaf, less striated, and the flowers larger<sup>7</sup>.

Mr. Forster informs us that they are different species: Kalm's plant from Canada having very narrow lanceolate shining leaves, and a fibrous root throwing

<sup>1</sup> Willdenow, <sup>2</sup> Hort. kew. <sup>3</sup> Curtis, <sup>4</sup> Willdenow.  
<sup>5</sup> Haller, <sup>6</sup> Hort. kew. <sup>7</sup> Linn. trans.



out runners. Gmelin's from Siberia having ovate-lanceolate pubescent leaves, with a fusiform root, and stemless.

The former was introduced here in 1785, by Mr. Archibald Menzies<sup>c</sup>.

6. Leaves crenate-ferrate, an inch and half long. Petioles twice or thrice as long as the leaves, semicylindric, channelled, smooth. Scapes filiform, semicylindric, smooth, erect, for the most part of the same length with the petioles. Calyx-leaves smooth. Petals oblong-ovate, straw-coloured, blue at the base: the uppermost half an inch long, streaked with blue, beardless; the lateral ones a little narrower and longer, bearded below the middle; the lowest of the same length with the lateral ones, but a little wider, beardless. Native of Pennsylvania and Virginia. Cultivated in 1762, by Mr. James Gordon. It flowers in may and june.

7. Leaves ferrate, attenuated at the end, two inches and more in length. Petioles twice as long as the leaves, flat above, smooth. Scapes filiform, subcylindric, having a very small leaf or two in the middle, for the most part the length of the petioles, reflexed at the end. Calyx-leaves smooth. Petals ovate-oblong, blue: the uppermost half an inch long, whitish below the middle, with violet-coloured veins, beardless; the lateral ones longer, whitish below the middle, bearded; the lowest whitish at the base, beardless. Native of North America. Introduced in 1772, by Samuel Martin, M.D. It flowers in july<sup>d</sup>.

8. Leaves very blunt, crenate, decurrent along the petiole, exactly as in *Primula officinalis*<sup>e</sup>. Native of North America. Said also to be found in Siberia, and in China near Canton.—Introduced in 1783, by Mr. William Young. It flowers in june<sup>f</sup>.

9. Root somewhat woody, fibrous. Stem none. Runners or scions short, simple, prostrate but not taking root. Leaves nearly upright, heart-shaped, ferrate, veiny, clothed on both sides with short dense hoary hairs, on long hairy footstalks, the hairs short spreading and bent down. Stipules in pairs, radical, lanceolate, toothed. Scapes taller than the leaves, smooth, erect, one-flowered, bearing below their middle a pair of lanceolate smooth bractes. Flower nodding, blue, scentless. Calyx smooth. Lateral petals marked with a hairy line, as in *V. odorata*. Filaments flat. Anthers terminating in an orange-coloured membrane, close but not united. Capsule roundish, hairy, containing several round seeds<sup>g</sup>.

Mr. Curtis distinguishes this species from the odorata. It throws out young stalks, but then they are not procumbent, nor do they ever strike root as those of the odorata do; hence the hirta does not increase so fast, nor spread so wide. Linneus makes a considerable difference in the form of the roots, but this proceeds chiefly from their age; for in both species, the older they are, the more tubercles or cicatrices are formed by the annual shedding of the leaves. The petioles form the most obvious difference: in the odorata they are nearly smooth, in this they are very hirsute, and this hairiness puts on a silvery appearance in the young plants. The leaves in both are somewhat hirsute underneath; but those of the hirta, in particular soils or situations, are sometimes remarkably so; and those of the odorata have a more glossy appearance on their upper surface: in the hirta they are somewhat longer, and not so perfectly heart shaped. In the odorata the bractes are placed above the middle of the scape or peduncle; in the hirta they are situate below it! But this character must be observed when the flowers of each are fully expanded, for the scape of the odorata above the bractes is considerably elongated, as the flowers fade. These appear about a week later than those of the odorata, are of a paler blue, and have none of that fragrance which renders the odorata so grateful a harbinger of spring. Besides the perfect flowers which first spring up, the hirta continues for a month or more to throw out others, which have no petals or only rudiments of them, which never appear beyond the calyx; but these produce seed as well as the others.

It is the same in the odorata, but in a less degree; and the capsules in both, when they become nearly ripe, lie close to the ground: so that when they burst, the seeds have an easy access to the earth. Lastly, there is some difference respecting the soil and situation; the odorata grows generally under warm hedges, among bushes, or in woods; the hirta is pretty much confined to a calcareous soil, and often occurs in more exposed situations. It is by far less frequent than the sweet Violet. Long since observed about Charlton, in the way to Lewisham, and near Sittingbourn in Kent. By North Cray Church, in many places about Foot's Cray, near Northfleet, and in the wood near Purfleet, by Mr. J. Sherard. In several places of Essex, and on the road from Ashley to Silverton Steeple, on the confines of Cambridgeshire towards Suffolk, by Mr. Dale. In coppices of Oxfordshire, Shotover-hill, Stow-wood, Magdalen College woods<sup>h</sup>. Dr. Sibthorp marks it in the coppice under Shotover hills, and in Cheyney lane. Moor Barns, Cherry Hinton, &c. in Cambridgeshire. At Marham in Norfolk, by Mr. Crowe. Near Bury in Suffolk, by Mr. Woodward. On Barton hill, Bedfordshire, by Dr. Abbot. On St. Vincent's rocks near Bristol, by Mr. Dyer. It flowers in april or may.

10. This has a large yellow flower, with bay-coloured veins. Native of Terra del Fuego, in boggy places<sup>i</sup>.

11. Root fibrous, whitish: in old plants the upper part becomes knobby, and appears above ground, the knobs being formed from the base of the petioles which are left yearly; from the bosom of these knobs spring the scions or runners which creep on the ground, and are furnished with leaves and the same kind of stipules which are observable at the bottom of the plant: these runners are very long, and in general do not produce flowers till the second year. Leaves somewhat rounded at the tip, notched at the edge, on the upper side smooth and shining, underneath slightly hairy, when young rolled in at the edges on longish upright nearly smooth footstalks, which sometimes however have a few scattered hairs. Stipules from the stump of the root in pairs, lanceolate, toothed, pale; each tooth terminates in a minute gland. Flower-stalks springing from the root, taller than the leaves, smooth, bearing a pair of narrow bractes, pressed to the stalk, and placed above the middle of it. Linneus remarks, that below the bractes they are quadrangular, and above them grooved on the upper side. They are incurvated at top, and support one nodding flower. Calyx smooth, greenish purple. Corolla dark purple, varying to red purple, pale flesh colour and white, possessing a fragrance generally most grateful. Spur short and blunt: the two side petals marked with a hairy line on the inside. Filaments very short, flat. Anthers orange-coloured, dilated, close but scarcely connected: from the back of two of them springs a slender flat greenish appendage, which enters the nectary. Style slenderest at bottom and a little twisted. Stigma hooked, and a little longer than the anthers. Seed-vessel purplish, villose: containing several roundish, straw-coloured seeds<sup>k</sup>.

The accurate Gærtner, describes the capsule as subglobular, rounded-three-cornered, one coloured. Seeds to each valve about five, ovate-globular, of a dirty whitish colour, twice as big as in the tricolor. Navel large, glandular, elongated into a thick peduncle downwards, and produced upwards into an awl-shaped apophysis lying on the seed. Coat crusty, brittle. Embryo nearly the length of the albumen, grass-green, or the radicle only green and the cotyledons yellow.

This favourite flower, so highly esteemed for its fragrance, is a native of every part of Europe, in woods, among bushes, in hedges and on warm banks; flowering in march and april; and ripening its seeds towards the end of summer. I gathered a handful of the flowers from a single plant this year (1804) at the end of november. Desfontaines says it is frequent about Cassa and Tozzer in Barbary, in the Palm groves; the

<sup>c</sup> Hort. kew.

<sup>d</sup> Idem.

<sup>e</sup> Linn. spec.

<sup>f</sup> Hort. kew.

<sup>g</sup> Smith brit. and engl. bot.

<sup>h</sup> Plot, Raii hist. and syn. Merr. pin.

<sup>i</sup> Forster.

<sup>k</sup> Smith brit. and engl. bot. Curtis.



blue and white growing promiscuously, and flowering in winter. Hasselquist found it in Palestine. Thunberg in Japan, plentifully by way sides, flowering from January to April. Loureiro, in China near Canton.

The flowers of Violets, taken in the quantity of a dram or two, act as a mild laxative, and are given to young children in the officinal preparation of a syrup. This syrup is very useful in chemistry, to detect an acid or an alkali; the former changing the blue colour to a red, and the latter to a green: for this purpose Violets are cultivated in large quantity at Stratford upon Avon. Slips of white paper stained with the juice of the petals, and kept from the air and light, answer the same purpose. The seeds are reported to be strongly diuretic, and useful in gravelly complaints. The powdered root in doses from forty to eighty grains, vomits and purges<sup>1</sup>.

β, γ. Of the Common Violet there are the following varieties: the single blue, and white, the double blue and white, and the pale purple. These are all commonly preserved in gardens, for the odour of their flowers. [It is very common with white flowers in the chalky ground near Cambridge. And Dr. Withering says, all that he has seen wild about Birmingham are white, with the same fragrance as the blue, but without the hairs on the inside of the claws which that has.—It has been found wild with double flowers. This variety is in much esteem, both for the superior size of the flowers, and their extreme fragrantcy: they also appear later and thereby keep up the succession.

12. Root creeping, whitish, toothed, somewhat fleshy, with many fibres. Leaves cordate-reniform, tender, shining, spreading, crenate, veiny, often purple beneath, on smooth semicylindric foot-stalks. Stipules radical, numerous, ovate, acute, smooth, scarcely perceptibly ferrate. Flower-stalks longer than the leaves, erect, square, smooth; having a pair of lanceolate erect bractes about the middle, not always below the middle, as Mr. Curtis asserts they are. Flowers solitary, drooping, inodorous, paler and smaller than in the more common species; sometimes flesh-coloured with darker red veins. Calyx-leaves rather elliptical, slightly membranous at the edge. The two upper petals are scarcely streaked at all, the two lateral ones have one dark longitudinal line, and are bearded with white near the base; the lowermost is beautifully marked with numerous branched streaks, and terminates behind in a short blunt spur. Anthers bordered with an orange-coloured membrane, though collected together yet scarcely united. Stigma acute, with a singular protuberance above it<sup>m</sup>. It is distinguished by this circumstance from the other species, also by the greater roundness of its leaves, the paleness of its flowers, and its place of growth in bogs, or the moist parts of sandy or turfy heaths. Like the odorata, hirta, &c. it produces ripe seeds without perfect flowers, and that in a greater quantity and for a longer continuance<sup>n</sup>.

Native of Europe and Japan. With us more frequent in Scotland and the North of England than in the South: yet it is found plentifully on the boggy part of Shirley common near Croydon: it was gathered in Norfolk by Mr. Dawson Turner; near Ampthill by Dr. Abbot; and long since by Dr. Plot on the banks of the Cherwell between Oxford and Water Eyton, by Dr. Richardson on Oakenshaw-moor and Roadeshall woods, and by Mr. J. Sherard in the bogs about a mile from Joan Coles. On the borders of the lake west of Ballynahinch, in Ireland, by Mr. Templeton.

β. The variety with red striped flowers mentioned by Parkinson, was found in Yorkshire by Mr. Stonehouse, a reverend Minister of Darfield in Yorkshire. The leaves were rounder and thinner, and the flowers reddish with sadder veins therein<sup>o</sup>.

It should seem by the coloured copies of the Flora Danica to be intended by t. 83 of that work, though the leaves are there represented less pointed or more truly kidney-shaped than ours<sup>p</sup>.

13. Root somewhat woody. The first flowers radical, but several branched angular leafy stems soon spring

forth, which continue growing and bearing numerous flowers for several weeks. Leaves heart-shaped or oblong, crenate, smooth; their footstalks smooth, somewhat dilated at the top. Stipules fringed. Flower-stalks axillary, solitary, erect, square, bearing two awl-shaped bractes in the upper part, and one nodding blue flower. Anthers scarcely cohering. Calyx-leaves acute. Stigma gibbous. Capsule rather more oblong than in the Sweet Violet. Seeds roundish<sup>q</sup>, of a pale yellowish colour, in each valve seven or nine.

Dog's Violet differs from the Sweet one in the flowers having no smell, being generally larger, and growing from the stem; the stipules very strongly edged with stiff hairs; the calyx-leaves pointed; the seed-vessel more oblong. It differs from *V. hirta* in all these respects except the first. It produces seed like them during the summer months, without any expanded corolla<sup>r</sup>.

Native of Europe and North America.—After the flowers of the Sweet Violet are gone, every coppice, heath, hedge bank and shady dell is decorated for two or three months, with the paler and less welcome blossoms of the *V. canina*. This epithet seems to have been given it, as to the hedge rose, to express a degree of inferiority.

This species varies in the colour of its flowers, in the size of the whole herb, and in the form of the leaves<sup>s</sup>. Hence the varieties β, γ, δ.

β. Dog's Violet is not unfrequent with a white flower, and sometimes the spur only is white<sup>t</sup>.

γ. Mr. Du-Bois observed about Mitcham in Surry a variety smaller in all respects, with the spur of the flower yellowish<sup>u</sup>.

The leaves are very small, the largest not exceeding half an inch in length, and one third of an inch in breadth; others on the plant are even much smaller; they are more rough than in the common sort. Stipules not so much fringed. Not entirely without stem, but it is very short, and there is seldom more than one flower. It is common on heaths, and may be traced up through all its stages to the largest plant of *V. canina*<sup>x</sup>.

δ. The Alpine variety was observed in Wales by Mr. Lhwyd. Dr. Richardson, to whom he showed it, did not think it different from the common Dog's Violet<sup>y</sup>. Yet Hudson, in the first edition of his Flora, made it a distinct species, under the name of *V. alpina* or Welch Violet, with the character of a subtriflorous stem, and cordate leaves deeply ferrate. But he does not assign any place of growth of his own knowledge. Dr. Smith only adopts it from Hudson, not as a species, but a variety.

14. The herb in all its parts much smaller than the canina, and quite smooth. Stems procumbent at the base, and throwing out radicles from the joints, then erect, round, branched, leafy. Leaves alternate, on footstalks about their own length, generally erect, lanceolate or inclining to ovate, decurrent, not cordate at their base, veiny, crenate, rather obtuse. Stipules deeply ferrate, and often pinnatifid; the ferratures glandular not bristly at the tip. Peduncles axillary, solitary, erect, rising as high as the branches, each bearing above its middle a pair of purplish lanceolate bractes, mostly toothed near their base, and at the top one nodding flower. Calyx-leaves linear-lanceolate, acute. Petals cream-coloured, obtuse, much narrower than in *V. canina*, streaked, especially the lower one with purple lines, disposed as those in *V. canina*, and the two side petals, as in that, hairy above the base; spur short and blunt. Anthers terminating in a broad dilated membrane, and not cohering. What distinguishes this from canina is principally the narrow and lanceolate form of the leaves, which if permanent would be sufficient, but in cultivation the leaves become cordate; the flowers also turn blue. The stipules appear to be more deeply cut; and the bractes, which are entire and almost setaceous in canina, are in this lanceolate and mostly toothed.—After all it is very doubtful whether it be any thing more than another variety of canina. It seems to be different from *V. pumila* of Villars. 2. 666.

<sup>1</sup> Woodville and Withering. <sup>m</sup> Smith brit. and engl. bot.

<sup>n</sup> Curtis.

<sup>o</sup> Park. theat.

<sup>p</sup> Engl. bot.

<sup>q</sup> Smith brit. and engl. bot.

<sup>r</sup> Curtis.

<sup>s</sup> Engl. bot.

<sup>t</sup> Withering. <sup>u</sup> Dill. in Ray syn.

<sup>x</sup> Woodward MS.

<sup>y</sup> Ray syn.



Mr. T. F. Forster, jun. found it on the wolds near Tunbridge wells; and Mr. Stackhouse at Pendarvis in Cornwall. It flowers in may <sup>z</sup>.

15. Height about half a foot. Leaves large, oval-lanceolate, a little cordiform at the base. Flowers on axillary peduncles, bright blue, moderately large <sup>a</sup>.

Stem tender, erect, a foot or even eighteen inches high, leafy and branched. Leaves petioled, the lower roundish or ovate, crenate, the upper elliptic. Stipules very large, bipinnate; the extreme pinna largest, oblong. Petioles long, erect, with very large lanceolate bristles. Upper petals blue, middle ones pale, bearded, lowest with a broad yellow claw with deep blue lines; sometimes the flower is wholly blue, and sometimes most of it is yellow: spur short. Inodorous <sup>b</sup>.]

Miller says it rises with erect stalks more than a foot high; that the flowers are produced upon long axillary peduncles, are shaped like those of the Dog Violet, of a pale blue colour, appear at the end of may, and are succeeded by roundish capsules filled with small seeds which ripen in august.

[It is improperly named arboreſcent by Camerarius, having nothing woody about it.

Cultivated in 1714, <sup>c</sup> in Chelsea garden.

16. Stem herbaceous, flexuose, grooved and angular, simple, hispid, a foot high and more. Leaves alternate, acuminate, wrinkled, ciliate, pale green; not unfrequently sharply toothed and lacerated. Petiole very short, semicylindric. Stipules four, two larger and two smaller, bowed, entire, ciliate. Peduncles two, very small, from the axils of the leaves; one bearing an abortive flower. Bractes two, very small, linear, obtuse. Flowers small, pale green of the same colour with the plant, whence its trivial name. Calyx five-leaved, concave, hooked. The two upper petals very small, linear, recurved, entire; the two lateral linear, toothed, recurved; the lowest two-parted; spur very short, blunt. Stamens awl-shaped, very short. Anthers green-purple, bifid at the base. Pistil short: stigma not urceolate but hooked, perforated, twice as long as the anther.

Native of North America, in bogs <sup>d</sup>.

Mr. Forster, who has cultivated this above fourteen years in his garden, informs us that it flowered only twice in that time. This gentleman having studied the genus with great assiduity, and remarked not fewer than sixty species, it is much to be wished that he would give the result of his labours to the world.

17. This is a very small plant, three or four inches high, with the peduncles two thirds of its length. Root black and knobbed. Leaves almost round, with a scarcely visible point, and a still smaller notch at the base, petioled, and only three or four lines in diameter: at their base are two lanceolate stipules, sharply toothed. Flower small, nodding, pale blue or whitish; with a blunt spur, half the length of the calyx <sup>e</sup>.

Willdenow says it differs from the *cenisia* in having cordate leaves smooth at the edge, and toothed stipules.

Native of the alps of Dauphiné and Piedmont.]

18. This is an humble plant, with entire leaves, not more than half an inch long, and a quarter of an inch broad, on short footstalks. Flowers large, of a light blue colour, appearing in june, and having no scent.

[Stems filiform, perennial, undivided, creeping on under ground, ascending at the top, quite simple. Leaves very small, smooth, crowded at the top of the stem. Peduncle solitary, long. Flower large, blue, with a spur shorter than the petals <sup>f</sup>.

Native of Mount Cenis and other places in the Alps. Mr. Miller received it from Dr. Allione, and cultivated it in 1759.

19. Stem a span high. Leaves alternate, reniform-cordate, ferrate, even, pale beneath, on petioles shorter by half than the leaf, in the uppermost yet shorter. Stipules in pairs, erect, lanceolate, shrivelling. Peduncles from each axil, solitary, naked, the length of the leaves. Flowers corolled. It differs from *mirabilis* in having the leaves more mucronate, the flowers on the stem corolled, the stems firmer and bigger <sup>g</sup>.

Native of North America. Introduced in 1783, by Mr. William Young.

20, 21. These also are natives of North America; and were introduced in 1772, by Mr. William Young. They all flower in june <sup>h</sup>.

22. Leaves large, somewhat rigid, roundish, especially the lower ones, produced at the end into a bluntish point, crenate with blunt broadish notches, on the upper surface a few slender hairs, paler beneath and smooth, on long thick petioles. The flowers come out early in spring among the young leaves, they smell sweet, and are somewhat larger and paler than those of *V. odorata*; though they have all the parts of fructification, yet they very seldom produce capsules: these are produced at the top of the stem after the flowers are past, among the leaves, on short peduncles; they are large, oblong, smooth, pale green, bluntly three-sided, filled with round pale seeds. This stem rises to a long span in height, is three-sided, smooth, and has a few leaves on it, especially at the top. Calyxes in both sorts of flowers composed of five leaves, three larger, and two smaller or narrower. Petals commonly wanting in the upper fertile calyxes, but they have the pistil and five stamens with their anthers.

It differs much from *V. odorata*, in having a stem, larger and longer capsules, wider leaves, more produced, and with broader notches; it does not creep by runners, and the capsules, when they are produced next the root, do not lie on the ground, but stand up. It is not unlike *V. hirta*, especially in the leaves; but in that the leaves and petioles are very hairy, the former are paler with smaller notches, the flowers also are paler and smaller than in this, the capsules are round and hairy, and it has no stem.

This species was first observed by Maurice Hoffman, who (in Fl. Alt. 63.) calls it *Viola ananthos*, *stamine perpusillo luteo, cui capsula oblonga triangula succedit*. It is noticed in Ruppius's *Flora Jenensis*; and was communicated to him by Dillenius, who found it in Hangeſtein wood, about a mile from Gießen his native place, and introduced it into the Eltham garden <sup>i</sup>. It was afterwards found by Linneus about Upsal, in Oeland and Dalecarlia, and by others in Germany, Austria, &c.

A singular œconomy having been first remarked in this species, gave occasion to its being named *mirabilis*; but it has since been found to take place in several other species, as *hirta*, *odorata*, and *montana*. Jacquin says that the barrenness of the corollate flowers in the *mirabilis* appears to arise from a defect in the style.

23. This is a very tender plant. Stem a hand high, from decumbent erect, smooth, round below but flattened above. Leaves petioled, smooth and even. Stipules oblong, acute. Peduncles two, filiform, compressed a little, one terminating, the other axillary. Bractes two, alternate, small, pressed close. Corollas yellow, the claws of the petals with dark veins <sup>k</sup>.

Leaves, according to Haller, reniform without a point, roundly and minutely ferrate, subhirsute, on long petioles. Upper calyx-leaf very small, the middle ones very large. Flowers small, the four upper petals yellow with rufous lines, the lowest deep orange with black lines.

Native of the Alps of Europe. Cultivated by Mr. Miller in 1739. (vol. 2, n. 12.) It flowers in april and may <sup>l</sup>.

24. Stem scarcely a span high, naked, firm, bearing at the top three subalternate cordate toothed subvillose leaves, on very short petioles. Flower one, yellow, bigger than the leaves, on a very short peduncle. Native of Siberia <sup>m</sup>. Cultivated in 1774, by Mr. James Gordon. It flowers in june and july <sup>n</sup>.

25. Stems decumbent, filiform, somewhat branched, scarcely frutescent. Leaves linear, somewhat clustered, an inch long, quite entire, acute, sessile. Stipules minute, awl-shaped, acute. Peduncles solitary, longer than the leaves, axillary. Bractes in pairs, minute, on the middle of the peduncle. Corolla blue, spurred, very nearly allied to *V. tricolor*. Native of the Cape of Good Hope <sup>o</sup>.

This and all the preceding species are perennial.

<sup>z</sup> Hort. kew. <sup>a</sup> Dillenius. <sup>b</sup> Krock. <sup>c</sup> Hort. kew. <sup>d</sup> Linn. spec. <sup>e</sup> Linn. suppl. <sup>f</sup> Hort. kew. <sup>g</sup> Linn. spec. <sup>h</sup> Hort. kew. <sup>i</sup> Linn. suppl. <sup>j</sup> Hort. kew. <sup>k</sup> Linn. spec. <sup>l</sup> Hort. kew. <sup>m</sup> Linn. spec. <sup>n</sup> Hort. kew. <sup>o</sup> Linn. suppl.

<sup>z</sup> Smith brit. and engl. bot. <sup>a</sup> Villars. <sup>b</sup> Haller. <sup>c</sup> Hort. kew. <sup>d</sup> Forster. <sup>e</sup> Villars. <sup>f</sup> Linn. spec. <sup>g</sup> Idem.



26. Root annual, simple, fibrous. Stems ascending, much branched. Stipules pinnatifid, with two or three pairs of short linear pinnæ at the base, and a large elliptical one slightly toothed terminating. Leaves elliptical or lanceolate, ferrate, or toothed. Peduncles axillary, solitary; longer than the leaves; lower ones spreading, sometimes declining; with a pair of small bractes a short distance below the flower. Calyx-leaves acutely lanceolate, unequal, the three upper shortest, but longer than the upper petals; the two lower as long as the lower petal: all remaining and surrounding the capsule<sup>p</sup>. This is of an oblong spheroidal form, with six longitudinal bands, of different colours, namely whitish, rufescent, or green, one-celled, three-valved; the valves at first concave, afterwards boat-shaped, converging, and throwing out the seeds. These are numerous, (more than 30,) ovate-acuminate, smooth and shining, pale straw-coloured or whitish; they are fastened in longitudinal rows by means of short pedicels to the middle of the back of the inner surface of the valves. They are covered with a single thin papery coat. Albumen fleshy, thick, white. Embryo almost the length of the albumen, of a grass-green. Cotyledons orbicular, flattish. Radicle a little longer than the cotyledons, straight, roundish, centrifugal<sup>q</sup>.

The stem is about four or six inches high, angular, pubescent, at bottom of a dull purple colour: branches alternate, erect. Leaves alternate, petioled, hairy especially about the edge, but sometimes smooth; the lowermost often smaller and roundish, the uppermost narrow and slightly indented. Peduncles alternate, nearly quadrangular, channelled on the back, bent in at top. Petals obcordate, shorter than the calyx and whitish or yellow white, in its truly savage state, when it appears as a weed among corn: but longer than the calyx, and variegated with yellow and purple in gardens<sup>r</sup>. The truly wild plant has sometimes a few purple streaks: and in a somewhat improved state is blue or purplish, with or without yellow or white<sup>s</sup>. These go under the name of *V. bicolor*.

β. With more than two colours, purple, blue, yellow, white, improved and enlarged by garden culture. Linneus remarks the black lines which sometimes appear on the petals; and gave occasion to Milton's expression of "Pansies freakt with jet."<sup>t</sup>

Some of these varieties, says Mr. Miller, have very large beautiful flowers, with an agreeable odour; others have smaller flowers without scent. Some have the two upper petals of a deep yellow colour with a purple spot in each, the two middle of a paler yellow with a deep yellow spot, and the lower petal like velvet; in others the petals are white with yellow and purple spots; in some the yellow is the most prevailing colour, in others the purple.

[The variation from white to purple in this flower, gave occasion to Shakspeare, in his *Midsummer Night's Dream*, to feign a metamorphosis of it, and at the same time to pay an elegant compliment to Queen Elizabeth.

"Yet mark'd I where the bolt of Cupid fell;

"It fell upon a little western flower,

"Before milk-white; now purple with Love's wound,

"And Maidens call it Love in idleness."

It has ever been a favourite flower with the people, and has many provincial names bearing some allusion to love: as that just mentioned; Kifs me behind the garden gate; Call me to you; Three faces under a hood; in days of superstition it was called Herb Trinity, for an obvious reason such as it was. Heart's-ease is the general name by which it is now known, and that shows the esteem in which it is held. Its more elegant name Pansies is from the French *Pensees*. The meaning is alluded to by Shakspeare in *Hamlet*. "There's Pansies, that for thoughts."—Gerarde's names are Hart's ease, Pansies, Live in idleness, Cull me to you, and Three faces in a hood.

Native of Europe, Siberia and Japan: in corn fields, gardens, &c. flowering from may to september; frequently earlier and in mild seasons much later.

<sup>p</sup> Woodw. Mff.

<sup>q</sup> Gärtner.

<sup>r</sup> Smith and Curtis.

<sup>s</sup> Withering.

Heart's ease was represented by old writers on the materia medica as a powerful medicine in epilepsy, asthma, ulcers, scabies and cutaneous complaints. Stark, Metzger, Haase and other moderns recommend it especially as a remedy for the crusta lactea. For this purpose, a handful of the fresh herb, or half a dram of it dried, and boiled two hours in milk, is to be strained and taken night and morning. Bread with this decoction is also to be formed into a poultice, and applied to the part. By this treatment it has been observed, that the eruption during the first eight days increases, and that the urine, when the medicine succeeds, has an odour similar to that of cats; but on continuing the use of the plant a sufficient time, this smell goes off, the scabs disappear, and the skin recovers its natural purity.

Instances of the successful exhibition of this medicine, as cited by these authors, are very numerous. It appears, however, that Murfinna, Ackermann, and Henning were less fortunate; and the last of them declares, that in the different cutaneous disorders in which he used it, no benefit was derived.

Haase, who administered it in various forms and large doses, extended its use to many chronic disorders; and from the great number of cases in which it proved successful, it seems to deserve a farther trial in this country<sup>t</sup>.

27. Stem high, branched, leafy, stipuled, altogether that of *V. tricolor*, but the flower is very large and yellow, with ovate petals, the length of the leaves, and a spur twice as long as the calyx, but shorter than the petals<sup>u</sup>.

Linneus at first considered it as a variety of the *calcarata*, but afterwards separated it, though he still considered them as too nearly allied, and both as the progeny of *V. tricolor*: which is annual, whereas these are perennial.

Villars describes the root as creeping; the stems from five or six inches to ten in height; the leaves as oblong, obtuse, and entire from the bottom up to the middle, whence issue two or three naked peduncles, each bearing one flower. The stipules are intermixed with the leaves, as in the *calcarata*, but they are larger and more cut. The flower is of three colours, but the yellow predominates. The spur is as long again as the calyx: in the *calcarata* it is twice as long.

Native of Switzerland, Silesia, Dauphiné, and the Pyrenees.

28. Root perennial, small, slender. Stem unbranched, weak and prostrate at the base, then erect or ascending, leafy, triangular, very slightly downy, bearing one or two flowers on very long stalks from the bosoms of the upper leaves. Leaves alternate, petioled, more or less ovate, crenate, very like those of the *tricolor*, but finely fringed; accompanied by a pair of large, deeply five-cleft, fringed stipules, the outer lobes of which are deepest and narrowest. Calyx toothed at the base. Petals either all yellow with dark purple radiating veins, or the two uppermost blue purple and the rest yellow with a blue tinge, or sometimes wholly purple. Anthers slightly attached to each other. The style and stigma are of a singular form, and the purple line under the stigma is remarkable<sup>v</sup>.

This species, which has been confounded with *V. tricolor*, differs widely from it in its place of growth, in being perennial, in having a simple stem, and the stipules deeply five-cleft and palmate, neither pinnatifid nor lyrate, though the middle lobe is larger than the rest<sup>w</sup>.

It has been confounded also with the preceding, but that has a much larger flower, and differs both in the spur and stipules. Our plant was entirely unknown to Linneus<sup>x</sup>.

Our *lutea* is thus accurately described by Mr. Woodward under the name of *grandiflora*, from plants growing in great abundance on the hills above Dove-dale in Derbyshire. Stem erect, or ascending, three-angled, simple. Stipules in pairs with winged clefts, linear or linear-lanceolate, the terminating one not much longer than the others, all absolutely entire, slightly

<sup>t</sup> Woodville.

<sup>u</sup> Linn. mant.

<sup>x</sup> Smith brit. and engl. bot.

<sup>v</sup> Engl. bot.

<sup>w</sup> Withering.

hairy.



hairy. Lower leaves obtusely ovate-lanceolate, upper elliptical or lanceolate, distantly ferrate or toothed, slightly hairy. Fruit-stalk one terminating; and sometimes one or two more arise from the axils of the upper leaves, pointing upwards, and nearly parallel to the upper one. Bractes small, in pairs, at a little distance beneath the flower. Calyx-leaves lanceolate, unequal, all much shorter than the petals. Corolla yellow, two upper petals oval, tapering to a narrow claw, unveined; side ones oval, as broad but shorter than the upper ones, with three purple veins near the base, and fringed, terminated in a bent claw; lower one very broad, slightly emarginate, tapering to the base, and ending in a blunt horn longer than the calyx but shorter than the petals; this petal is marked with branched purple veins towards the base. Mr. Woodward suspects this not to be distinct from *V. tricolor*, though it differs in three, and those not trifling particulars: the simple stem, the shape of the stipules, and the comparative length of the calyx and petals. The few fruit-stalks and their manner of growth also distinguish it.

The stem of the tricolor, says Dr. Withering, is almost always branched, but this is never so, even in the strongest and most luxuriant specimens.

This species is found only in mountainous pastures. It is plentiful in the north of England, Scotland, and the wildest parts of South Wales, often in a rotten peaty soil. Near Latham in Lancashire, found by Mr. Hesketh, according to Gerard. Between Malham and Settle, and about Hallifax, Yorkshire, found by Dr. Richardson. About Attamine cliffs near Settle in the same county, by Mr. Curtis. Dovedale; by Mr. Woodward. Chatsworth park, by Mr. Whately. Moorlands of Staffordshire, between Leck and Buxton, by Dr. Stokes. In Scotland, on Broughton-heights in Tweddale, and on Pentland hills, two miles south of Fast-castle, at Crawford-John, near the Lead-hills in Lanerkshire, and with a purple flower on Mall-gyrdy, in Breadalbane, &c. by Lightfoot. It flowers from may to september.—Ray, in his history, has distinguished this species very well from the grandiflora.

29. This resembles the grandiflora, but it has a shorter stem, shorter leaves, and quite entire very short stipules. The flowers are yellow with a blue spur. Host has united it with the grandiflora, but it differs from that in habit as well as the marks specified above. Native of the mountains of Carinthia<sup>a</sup>.

30. Leaves near the root very small and crowded, oval, obtuse, toothed and petioled. The stipules mixed with the leaves are wide, of the same colour, but pinnatifid, sessile and opposite; whereas the leaves are petioled and alternate. The two lower calyx-leaves are slightly cloven into two lobes at their hinder part and turned back. The flower is large, with a slender spur from three to six lines in length. It is sometimes white, and sometimes it is found with flowers smaller by half than common, but having the same smell and colour, the stem and leaves only a little increased in size<sup>b</sup>.

According to others, and the synonyms, the flowers are blue, not yellow, but the colour is very uncertain in this section of the violet, and the species are so nearly allied as not easily to be distinguished.

Linneus remarks, that what nature has taken from the herb of *V. tricolor* in this plant, it has added to the flowers.

Native of the Alps of Europe. Cultivated by Mr. Miller in 1739: (vol. 2. n. 11.) It flowers in march<sup>c</sup>.

31. This differs from the preceding, in having a long erect stem, whereas that is in a manner stemless; this has oblong petals less than the leaves, in that they are round and bigger than the leaves; in this the leaves are oblong-ovate, in that rounded-ovate; yet after all they are very nearly allied<sup>d</sup>.

According to Desfontaines, the stems are decumbent at the base, striated, smooth; the leaves obtuse, crenate, smooth, on petioles longer than the leaves; the stipules pinnatifid at the base; the peduncles long, one-flowered; the flower of the same size with that of the garden *V. tricolor*, violet or white; the spur awl-shaped, the length of the flower.

Native of the Pyrenees. Ray found it on mount Jura, but Haller says it has not been found by any other person in Switzerland. Desfontaines observed it in mount Atlas near Belide, belonging to the Algerines.

Introduced in 1776, by Casimer Gomez Ortega, M.D. It flowers in may<sup>e</sup>.

All these are perennial, and differ in that respect from *V. tricolor*.

Desfontaines has a species, which he entitles *Viola puberula*, and characterizes as suffruticose, with narrow-lanceolate, ferrate, smooth leaves, awl-shaped stipules, axillary peduncles, and a very short spur. The bark in very old trunks is cloven and fungous. Branches round, slender, unequal, leaflets at bottom decumbent, tubercled. Leaves at the end of the branches clustered, running down into a slender petiole. Stipules entire. Peduncles solitary, filiform, one-flowered, for the most part longer than the leaf. Calyx-leaves linear, acute. Corolla the size of *V. biflora*, pale blue or white, with a blunt spur. Style longer than the stamens. Stigma hooked. Native of mount Atlas, in the clefts of rocks.

32. Native of the Cape of Good Hope.

33. Native of Spain. These are both shrubby. This was introduced in 1784, by Mr. John Fairbairn<sup>f</sup>, gardener of the botanic garden at Chelsea.

34. Native of the West Indies, in the island of St. Christopher<sup>g</sup>. Perennial.

35. Root perennial, cylindric, thickness of a pigeon's quill, flexuose, torulose, ash-coloured. Appearance that of *Veronica serpyllifolia*. Stems scarce a foot high, diffused, somewhat twining, filiform, branched at the base, afterwards simple, subpubescent. Leaves on the stem and branches numerous, approximating, having five serratures on each side, blunt, flat, smooth, veined, the same size as those of *Vaccinium Vitis idæa*. Peduncles axillary over the whole stem, shorter by half than the leaf, solitary, erect, naked, one-flowered. Flower the smallest of all the Violets. Capsule small. This species has roots in habit and property very like those of *Ipecacuanha*. Native of the hotter regions of South America, where it was found by Mutis<sup>h</sup>.

36. Root perennial. Stem scarcely branched except at the base, where it is very much so, half a foot high, with rudiments of branches in the axils. Leaves scarcely petioled, alternate; without any stipules. Peduncles axillary, capillary, solitary, one-flowered. Calyx-leaves not at all appendiced at the back. Lower lip of the corolla wide, it is the upper and not as in the rest resupine downwards<sup>i</sup>. According to the Hortus Malabaricus there are eight shining seeds in the capsule.

Burmah says the flowers are blue and soon fall off.

Native of the East Indies.

37. Stem a span high or little more, not much branched, smooth. Leaves sessile, remote, the lower opposite, the upper alternate, scarcely an inch long, very smooth, paler underneath, bluntnish, for the most part quite entire, but sometimes having one or two remote serratures. Stipules two on each side, bristle-shaped, spreading. Peduncles one-flowered, the lower opposite, the upper alternate, twice or thrice as short as the leaf, filiform, jointed above the middle, below the joint permanent like a thorn after the flower is fallen. Bractes minute, towards the base of the peduncle. Calyx equal behind: calyx-leaves lanceolate, attenuated, whitish at the edge. Lower petal linear. It differs from *V. enneasperma* in having a suffruticose stem, and quite entire leaves:—from *V. suffruticosa* in having remote opposite leaves. Found by West in the island of Santa Cruz<sup>k</sup>.

38. Herb procumbent, very much branched, hard as in *Helianthemum*. Leaves alternate, acute, ending in the petioles, scarcely manifestly ferrate. Stipules awl-shaped, hardish, permanent; whence the plant is rugged and in a manner prickly. Peduncles capillary. Flower as in n. 36<sup>l</sup>. Native of the East Indies.

39. This rises with several upright, branchy, villose stems, with alternate, downy, grayish leaves: the

<sup>a</sup> Willdenow. <sup>b</sup> Villars. <sup>c</sup> Hort. kew. <sup>d</sup> Linn. spec.

<sup>e</sup> Hort. kew. <sup>f</sup> Hort. kew. <sup>g</sup> Swartz. <sup>h</sup> Linn. suppl.

<sup>i</sup> Linn. zeyl. <sup>k</sup> Vahl. <sup>l</sup> Linn. zeyl.



flowers are axillary and solitary, and either of a white or blue colour: the fifth petal is very large and rhomboid. It is a native of the Caribbee islands, flowering at various times of the year<sup>m</sup>.

Native of Cumana, Cayenne and Martinico.

40. Shrubby, with a smooth stem. Native of Cumana. This and the preceding were found by Loeßling, and supposed by him to belong to the genus *Calceolaria*.

41. This is an inelegant little tree, upright, branched, about seven feet high. Prickles awl-shaped, scattered, few. Leaves attenuated to both ends, emarginate, slightly ferrate, petioled, coming out several together from the same tubercle. Common peduncles short, bifid at top, few-flowered, one or two from the same tubercle with the leaves. Flowers small, inodorous, with whitish corollas, scarcely to be examined with the naked eye. Fruit the size of a large pea<sup>n</sup>.

This differs from the Violets in having many-flowered peduncles. Jacquin at first made it a distinct genus. Native of South America.

42. Root fibrous, white, branched. Stems two feet high, erect, round, even, branched. Leaves alternate, petioled, elliptic, sharply ferrate, smooth. Petioles very short. Stipules in pairs, scarious, lanceolate, keeled, awned, hairy. Flowers lateral, solitary, peduncled, drooping, on a peduncle shorter than the leaves. Bractes two, on the middle of the peduncle, very short, lanceolate, hairy at the tip. Calyx five-leaved, muricate at the edge. Petals five, white; two shorter than the calyx, linear; two a little longer, reflexed, emarginate; one very large, retuse, wide, gibbous at the base without a spur, pubescent beneath. Many contend that the root of this is the White *Ipecacuanha*. It certainly is not the brown\*. See *Psychotria emetica*. Native of Brasil.

43. Stem filiform, climbing along hedges by creeping. Leaves alternate, remote. Peduncles solitary, jointed, thickened; with two minute bractes on them. Calyx by no means protruded behind. Corolla white: upper petal incumbent, very large, as it were ringent with a trifid helmet; lateral petals ascending; lower petals smaller, bent downwards; the uppermost of these ends behind in a very long twisted nectary or spur. Stamens five, three of which are anterior and sterile; the other two posterior and fertile. Allamand<sup>p</sup>.

#### PROPAGATION AND CULTURE.

1, 2. These North American Violets will succeed best by putting them in pots filled with loam and bog earth mixed, and plunged in a north border, where they may be sheltered in winter, or taken up, and kept in a common hot-bed frame.]

The common Violets are easily propagated by parting their roots; this may be done at two seasons: the first or most common season for removing and parting these roots is at michaelmas, that the young plants may be well rooted before winter; this is generally practised where the plants are put on the borders of wood-walks in large plantations, but in the gardens where they are cultivated for their flowers, the gardeners transplant and part their plants soon after their flowering season is over; they gather all the flowers first, and the plants, which are then removed, having all the remaining summer to grow and get strength, will produce a greater quantity of flowers the following spring, than those which are removed in autumn; but this is not to be practised, where they cannot be supplied with water till they have taken new root, unless in moist seasons.

When these are planted, they should be placed at a good distance from each other to allow them room to spread, for if they are expected to produce many flowers, they should not be transplanted oftener than once in three or four years, and in that time the offsets will spread over the ground, if the roots are three feet asunder.

Violets may also be propagated by seeds, which should be sown soon after they are ripe, which is about the end of august. The plants will come up the following spring, and when they are fit to remove, they should be transplanted in shady borders to grow till

<sup>m</sup> Aublet.

<sup>n</sup> Jacquin.

<sup>p</sup> Linn. suppl.

<sup>p</sup> Linn. syst.

autumn, and then they may be planted where they are to remain, but the double-flowering Violets do not produce seeds.

The other sorts of Spring Violets are sometimes preserved in botanic gardens for the sake of variety; these may be propagated in the same way as the common sort, but require a moist soil and a shady situation.

The upright sort not sending out shoots like the common Violet, increases but slowly by offsets; this may be propagated by seeds in plenty, and is as hardy as the common sort.

The several varieties of Pansies (n. 26.) will scatter their seeds in a short time after the flowers are past, and from these self-sown seeds the plants which come up in autumn, will flower very early in the spring, and these will be succeeded by the spring plants; so that where they are indulged in a garden, and their seeds are permitted to scatter, there will be a constant succession of their flowers the greatest part of the year; for they will flower all the winter in mild seasons, and most part of the summer in shady situations, which renders them worthy of a place in every good garden; but then they must not be allowed to spread too far, lest they become troublesome weeds, for their seeds, when ripe, are cast out of their covers with great elasticity to a considerable distance, and the plants will soon spread over a large space of ground, if they are permitted to stand.

The great yellow Violet propagates by offsets in pretty great plenty, if it has a moist soil and a shady situation; this may be transplanted in autumn, and the offsets may then be taken off, but the roots should not be divided into small heads; nor should they be too often transplanted, because they will not produce many flowers unless the plants are strong, and have good root in the ground. This sort will not live in a dry soil, nor in a situation much exposed to the sun.

[*VIOLA*. See *Cheiranthus*, *Lunaria*, *Tropaeolum*.

—— aquatilis. See *Hottonia*.

—— mariana. See *Campanula*.

—— matronalis. See *Hesperis*.

—— palustris. See *Hottonia* and *Pinguicula*.

*Viola folio*. See *Psychotria*.

*VIOLET*, Calathian. See *Gentiana Pneumonanthe*.

—— Corn. See *Campanula hybrida*.

—— Damask and Dame's. See *Hesperis*.

—— Dog-tooth. See *Erythronium*.

—— Water. See *Hottonia*.]

*VIORNA*. See *Clematis*.

[*VIPER'S BUGLOSS*. See *Echium*.

*VIPER'S GRASS*. See *Scorzonera*.

*VIREA*. See *Apargia* and *Picris*.

*VIRECTA*.

*Lin. gen. Schreb. n. 312. suppl. 17. Juss. 200.*

*Sipanea. Aubl. t. 56.*

*Class. 5. 1. Pentandria Monogynia.*

*Nat. Order of Rubiaceae Juss.*

#### GENERIC CHARACTER.

*CAL.* Perianth five-leaved, permanent, superior: leaflets subulate-fetaceous, equal, erect: teeth between the calyx-leaves very small, glandular, solitary between each pair.

*COR.* one-petalled, funnel-form: tube three times as long as the calyx, slender, equal, erect: border five-parted equal, flat; segments ovate, entire.

*STAM.* Filaments five, inserted in the middle of the tube, very short. Anthers linear, subulate, converging.

*PIST.* Germ inferior, globular, within the calyx terminated by a raised permanent circle. Style filiform, smooth. Stigma two-parted: segments fetaceous.

*PER.* Capsule globular, angular, hispid, crowned with the calyx, one-celled. Receptacle fleshy, filling the capsule, covered with one row of seeds.

*SEEDS* numerous, small, angular, hollow-dotted.

#### ESSENTIAL CHARACTER.

*Cal.* five-toothed, with teeth interposed. *Cor.* funnel-form. *Stigma* two-parted. *Caps.* one-celled, many-seeded, inferior.



## SPECIES.

1. *Virecta biflora*. *Two-flowered Virecta*.  
*Lin. syst.* 197. *Willd.* 1. 972. *suppl.* 134. *Vahl.*  
*symb.* 2. 38.  
*Rondeletia biflora*. *Rottb. surin.* 7. t. 2. f. 2.  
*Leaves ovate, peduncles two-flowered.*
2. *Virecta pratenfis*. *Many-flowered Virecta*.  
*Vahl. ecl.* 2. 11.  
*Sipanea pratenfis*. *Aubl. guian.* 148. t. 56.  
*Leaves lanceolate, peduncles many-flowered.*

## DESCRIPTIONS, &amp;c.

1. Root annual. Herb tender, like that of *Mercurialis annua*. Stem round, a span high or more; simple, sometimes rooting, pubescent. Leaves opposite, petioled, ovate, obtuse, quite entire, decurrent along the petiole, veined, small. Stipules interfoliaceous, small, erect, awl-shaped. Peduncle terminating between two tender branches, for the most part shorter than the leaves, two-flowered: the lower flower sessile. Corollas becoming red, with a white mouth. Native of Surinam, in moist places; found by Dalberg<sup>1</sup>.

2. Branches roundish, opposite, with close-pressed hairs, scattered over them. Leaves opposite, an inch long, acute at each end, quite entire, having close-pressed hairs scattered over them on both sides, veinless, nerved, paler underneath; on very short petioles, on each side of which is a short lanceolate stipule. Peduncles from the uppermost axils and from the top, opposite. Flowers four to six, at the top of the peduncle, scarcely pedicelled. Calyx rough-haired, superior: segments linear, sharp. Tube of the corolla twice as long as the calyx, thinly hairy on the outside, and the opening hirsute: segments of the border oblong. Germ crowned at the edge. Style thicker above, almost the length of the border. Stigma club-shaped. Native of Guiana<sup>1</sup>.]

*VIRGA AUREA*. See [*Cacalia*, *Conyza*, *Erigeron*, *Senecio*,]  
*Solidago*.

——— *pastoris*. See *Dipsacus*.

——— *sanguinea*. See *Cornus*.

*VIRGINIAN ACACIA*. See *Robinia*.

——— *Cowslip*. See *Dodecatheon Meadia*.

——— *Creeper*. See *Clematis*.

——— *Guelder Rose*. See *Spiræa opulifolia*.

——— *Poke*. See *Phytolacca decandra*.

——— *Silk*. See *Periploca*.

*VIRGIN'S BOWER*. See *Clematis*.

*VIOLA*. See *Myristica*.

*VISCAGO*. See *Cucubalus*, *Lychnis*, *Silene*.

*VISCARIA*. See *Lychnis*.

*Visci modo*. See *Tillandsia*.

*VISCOIDES*. See *Psychotria*.]

*VISCUM*. (or *Viscus* of the Latin writers; from the  
*Æolic* βίσκος for βίος. *Vossius*.)

*Lin. gen.* n. 1105. *Reich.* n. 1209. *Schreb.* n. 1504.

*Tournef.* t. 380. *Juss.* 212. *Gartn.* t. 27.

*Class.* 22. 4. *Dioecia* Tetrandria.

*Nat. Order* of *Aggregatæ* & *Linn.* *Caprifolia* *Juss.*

## GENERIC CHARACTER.

\* *Male*.

*CAL.* *Perianth* four-parted: leaflets ovate, equal.

*COR.* none.

*STAM.* four. *Filaments* none. *Anthers* oblong, acuminate, one growing to each calyx-leaf.

\* *Female* commonly opposite to the male.

*CAL.* *Perianth* four-leaved: leaflets ovate, small, sessile, deciduous, placed on the germ.

*COR.* none.

*PIST.* *Germ.* oblong, three-cornered, indistinctly crowned with a four-cleft margin, inferior. *Style* none. *Stigma* obtuse, scarcely emarginate.

*PER.* *Berry* globular, one-celled, even.

*SEED* one, cordate, compressed, obtuse, fleshy.

## ESSENTIAL CHARACTER.

*MALE.* *Cal.* four-parted. *Cor.* none. *Filam.* none. *Anthers* fastened to the calyx.

*FEM.* *Cal.* four-leaved, superior. *Cor.* none. *Style* none. *Berry* one-seeded. *Seed* cordate.

<sup>1</sup> *Linn. suppl.*

<sup>2</sup> *Vahl. ecl.*

## SPECIES.

1. *Viscum album*. *Common or White Mistletoe*.  
*Lin. spec.* 1451. *syst.* 883. *Reich.* 4. 240. *hort. cliff.*  
441. *fl. suec.* n. 905. *mat. med.* 211. *Woodv.*  
*suppl.* 150. t. 270. *Gartn. fruct.* 1. 131. *Huds.*  
*angl.* 431. *Wither. arr. ed.* 3. 203. *Smith brit.*  
1074. *Hull* 220. *Relb. cant.* n. 806. *Sibth.*  
*oxon.* n. 197. *Abbot bedf.* n. 702. *Hall. belv.* n.  
1609. *Scop. carn.* n. 1217. *Pollich pal.* n. 926.  
*Villars dauph.* 2. 337. *Allion. pedem.* n. 2123.  
*Thunb. jap.* 63. *Mill. illustr.* 87.  
*Viscum.* *Matth. ed. valgr.* 1. 806. 2. 161. *Dod.*  
*pempt.* 826. *Camer. epit.* 555. *Ger.* 1168. 1.  
*emac.* 1350. 1. *Raii hist.* 1583. *syn.* 464. *Blackw.*  
t. 184. *Dubam. arb.* 356.  
*V. baccis albis.* *Baub. pin.* 423.  
*V. vulgare.* *Park. theat.* 1393. 1.  
*Viscus quercus & aliarum arborum.* *Baub. hist.* 1. 2.  
89.

*Leaves lanceolate obtuse, stem dichotomous, spikes axillary.*

- [2. *Viscum rubrum*. *Red-berried Mistletoe*.  
*Lin. spec.* 1451. *Reich.* 4. 241. *Catesb. car.* 2. t.  
81.

*Leaves lanceolate obtuse, spikes lateral.*

3. *Viscum purpureum*. *Purple-berried Mistletoe*.  
*Lin. spec.* 1451. *Reich.* 4. 241. *Catesb. car.* 2. t. 95.  
β. *V. baccis niveis racemosis, foliis buxi luteis.*  
*Plum. spec.* 17. ic. 258. f. 3.

*Leaves obovate, racemes lateral.*

4. *Viscum opuntiodes*. *Indian-fig-like Mistletoe*.  
*Lin. spec.* 1452. *Reich.* 4. 241. *Brown. jam.*  
357. 2. *Plum. spec.* 17. ic. 258. f. 1. *Sloan. jam.*  
2. 93. n. 6. t. 201. f. 1. *Raii dendr.* 52.

*Stem proliferous very much branched leafless compressed.*

5. *Viscum japonicum*. *Japanese Mistletoe*.

*Thunb. in Linn. transf.* 2. 329.

*V. opuntia.* *Thunb. jap.* 64.

*Stem proliferous branched leafless, joints three-cornered.*

6. *Viscum capense*. *Cape Mistletoe*.

*Lin. syst.* 883 *suppl.* 426.

*Leafless, with brachiate branches.*

7. *Viscum verticillatum*. *Whorled Mistletoe*.

*Lin. spec.* 1452. *Reich.* 4. 241. *Brown. jam.* 356.

n. 1. *Plum. spec.* 17. ic. 258. f. 2. *Sloan. jam.*

2. 93. n. 7. t. 201. f. 2. *Raii dendr.* 52.

*Stem whorled, leaves ovate three-nerved blunt.*

8. *Viscum flavens*. *Yellow Mistletoe*.

*Swariz prodr.* 32. *Plum. ic.* 256. t. 258. f. 4.

*V. racemosum.* *Aubl. guian.* 895. 4.

*Leaves ovate veined, racemes axillary in threes or fours on each side.*

9. *Viscum pauciflorum*. *Few-flowered Mistletoe*.

*Lin. syst.* 883. *suppl.* 426.

*Leaves ovate obtuse nerveless, flowers scattered solitary; stem shrubby, branches alternate.*

10. *Viscum terrestre*. *Earth Mistletoe*.

*Lin. spec.* 1452. *Reich.* 4. 242.

*Stem herbaceous four-cornered brachiate, leaves lanceolate.*

11. *Viscum rotundifolium*. *Round-leaved Mistletoe*.

*Lin. syst.* 883 *suppl.* 426.

*Leaves orbicular, flowers in whorls.*

12. *Viscum antarcticum*. *New-Zealand Mistletoe*.

*Forst. prodr.* n. 370.

*Leaves ovate quite entire, racemes on the branches and terminating jointed.]*

## DESCRIPTIONS, &amp;c.

1. This plant instead of rooting and growing in the earth, fixes itself into the branches of trees, where it spreads and forms a large bush. The branches are woody, and are covered with a pale or yellowish green bark; the largest is about the thickness of a man's finger, and the rest gradually smaller; they have many joints which easily part asunder; and at each of these are two thick fleshy leaves, which are broad and rounded at their points, and narrow at their base. The flowers come out from the axils in short spikes, and are composed of four greenish-yellow calyx-leaves. The female flowers are succeeded by round white berries, which are almost pellucid; about the size of currants,



rants, full of a tough viscid juice, in the middle of which lies one heart-shaped flat seed.

[The root insinuates its fibres into the woody substance of the tree on which it grows. The stem is one of the best instances we have of what Linneus calls dichotomous, in its mode of branching. The branches are round, smooth and even: the leaves pale green, opposite, tongue-shaped, quite entire, smooth and even: the flowers in axillary sessile heads, few together, inserted into a fleshy common receptacle<sup>a</sup>. Berry inferior, marked with four brown warts at the top from the falling of the capsule, spherical, white, diaphanous, one-celled: pulp viscid, pellucid, surrounding the seed. Seed elliptic, as it were emarginate, and thence heart-shaped, or a spherical triangle, compressed like a lens, fleshy, when fresh, painted with white dendritic vessels on a grass-green base: navel in the base of the seed, slightly emarginate<sup>t</sup>.

Native of Europe and Japan, on various trees: flowering in May. It is very rare with us in the northern counties, and in Scotland not remarked at all. In the fruit counties, as Worcestershire and Herefordshire, very common in orchards and hedge-rows.

Mistletoe, says Gerarde, groweth upon Okes, and divers other trees almost every where. Parkinson reports that it groweth very rarely on Okes with us, but upon sundry other as well timber as fruit trees, plentifully in woods, groves, and the like, in all the land. Both these authors hold the exploded notion of this parasite growing from its own superfluous moisture, and not from seed.

Mr. Ray, in his Cambridge catalogue (1660) says it grows upon Apple trees chiefly, but that he has sometimes found it upon the White-thorn. In his History he relates that he has seen it upon the Maple and Ash in Mr. Willughby's park at Middleton in Warwickshire, on the Hazel near Braintree in Essex, on the Lime, Elm, Willow, Mountain Ash and Buckthorn; on Apples, Pears, and White-thorn frequently, on other trees more rarely. John Bauhin enumerates many other trees on which he and others have observed the Mistletoe to grow as *Cratægus Aria*, Hornbeam, Birch, &c. Bartholinus says that he never observed it on the Almond, but it is commonly found in Provence, both on that tree and the Box; and John Bauhin says that he once observed it on the Almond. Brassavola saw it on the Vine.

The Mistletoe of the Oak has been celebrated from the time of the Druids both as a sacred plant, and as a medicine.

“Ad viscum Druidæ, Druidæ cantare solebant.”

And the Oak itself on which it grew was also held sacred. The Druids sent round their attendant youths with branches of the Mistletoe to announce the entrance of the new year; and this custom has continued down to modern times, for in some parts of France the children run about from house to house asking for Mistletoe in rude rhymes, and calling out *Aguilaneuf*, that is *Agui l'an neuf*, or *to the Mistletoe, 'tis the new year*<sup>a</sup>. And in England, branches of this plant are hung up in most houses at Christmas, among other evergreens.

As a medicine, the Mistletoe of the Oak obtained great reputation for the cure of the Epilepsy; and a case of this disease in which it proved remarkably successful, is mentioned by Mr. Boyle<sup>x</sup>. Monf. Villars administered the dry leaves in powder to two children between eight and ten years of age, who were epileptic, and were cured by it; but he has cured others by emetics and Cinchona; whilst others again have resisted all these remedies, together with cauteries, setons, extracts of henbane and valerian, electricity, &c.

The wood rasped or powdered, from a dram to a dram and half in a dose, or a decoction of it, from two drams to an ounce and half, is a very old remedy in the epilepsy; but it is now disregarded, and its sensible qualities promise little<sup>y</sup>.

The use of it however has been strongly recommended in various convulsive disorders by Colbach. He administered it in substance, in doses of half a dram or a

dram of the wood or leaves, or an infusion of an ounce. This author was followed by others, who have not only borne testimony to the efficacy of the Mistletoe in convulsions, but also in complaints denominated nervous, in which it was supposed to act in the character of a tonic. But all that has been written in favour of this remedy, has not prevented it from falling into general neglect, and the Colleges of London and Edinburgh have expunged it from their catalogues of the *Materia Medica*<sup>z</sup>.

There seems to be a disposition to doubt, whether the Mistletoe ever grows upon the Oak. It is certainly not common now in England upon that tree, and I do not recollect having seen it more than once, which was many years since, in the Duke of Manchester's park at Kimbolton. The English Oak is of so hard a texture, that it is no wonder if the Mistletoe should find a difficulty in establishing itself upon it; especially as few Oaks are now left to be in a state of decay, when it principally attacks trees, and contributes to hasten their dissolution. The scarcity of this parasitical plant on the Oak at present, is no proof that it might not have been plentiful when great part of the island was a forest, and there were trees in all states of age and decay adapted to receive and nourish it.

Ray says that the Mistletoe is very rarely found on the Oak in England; but according to Clusius, it is very abundant on that tree in many woods of Hungary; and Bellonius writes, that between mount Athos and Ceres and Tricala there is not an Oak to be seen without Mistletoe on it; he affirms indeed that it is different from that which grows on Apple and Pear trees, but he does not inform us in what the difference consists. Scopoli observed it on the Pine and the Oak in Carniolia. Pollich says, “circa Lauteren in sylvis passim ad quercus præprimis reperitur.” Allione relates, that it occurs on the Oak, as well as other trees, on the hills about Turin.

The berries of Mistletoe are devoured by several birds, as the Blackbird, Fieldfare, Thrush, and large Thrush thence named Mistle Thrush or Mistletoe Bird. Birdlime is made from these berries and also from the bark<sup>a</sup>.] The berries are boiled in water till they burst, when they are well beaten in a mortar, and afterwards washed, till all the branny husks are cleared away.

The Italians make their birdlime of the berries heated and mixed with oil, as is also that which they make of Holly bark; and to make it bear the water, they add turpentine.

The birdlime now commonly used with us, is made of the bark of Holly, which is stripped off about midsummer: this is boiled for ten or twelve hours, and when the green coat is separated from the other, it is covered up with fern for a fortnight, and put in a moist place; by that time the bark will be turned to a jelly, and no fibres left: then it is beaten in a stone mortar till it becomes a tough paste: this is washed in a running stream till no motes appear; is then put up to ferment for four or five days, is scummed as often as any thing arises, and then laid up for use. When used, a third part of oil is incorporated with it over the fire. The bark of our Wayfaring Shrub, as it is said, will make birdlime as good as that of the Holly.

That which is brought from Spain has an ill smell. Damascus birdlime is supposed to be made of Sebestens, their kernels being frequently found in it; but this will not endure either frost or wet.

[Our English name is from the German *Mistel*; it is the same in Swedish: in Dutch, *Marentacken*: in French, *Gui*. The Italians have kept the Latin name, *Vischio* or *Visco*; the Portuguese, *Visgo*. The Spaniards, *Liga*. The Japanese, *Ksei* or *Jadoriki*.

2. This Mistletoe, says Catesby, has long smooth shining green leaves, growing by pairs: the berries are round, red, and somewhat smaller than those of the Common Mistletoe: they grow in clusters to stalks of above an inch long, which shoot forth by pairs from between the joinings of the leaves to the stalk. They grow to Mahogany and other trees of the Bahama islands.

<sup>a</sup> Smith brit. and Withering.

<sup>t</sup> Gærtner.

<sup>x</sup> Plin. 16. 44. Vossii etym.

<sup>z</sup> Woodville.

<sup>y</sup> Allione.

<sup>z</sup> Woodville.

<sup>a</sup> Withering.



3. The leaves of this species, according to Catesby, grow by pairs, and are narrow at their beginning, and broad at their ends, set on slender pliant stalks, growing confusedly, after the manner of the common Mistletoe: between every pair of leaves shoot forth two slender stalks of about three inches in length, with pairs of oblong purple berries set opposite to each other. It is a native of America and the West Indian islands, and is said to grow principally on the Mancineel tree <sup>b</sup>.

4. This seems by its way of growth to be near of kin to the Opuntia, having no leaves or rather stems; but what we may call the stem or first leaf at the coming out of the trunk of the tree is flat, somewhat roundish, of a very dark-green colour, having at every inch and half's distance, out of their sides only, opposite branches, growing out of one another, after the manner of the Indian Fig, being an inch and half long, and an eighth of an inch broad, the whole growing to a foot in length: at the ends of the branches are small yellowish flowers, two together: berries whitish, like those of the ordinary Mistletoe. Native of Jamaica, on trees <sup>c</sup>. Also of the Society Isles.

5. Branches dichotomous: joints three-cornered, oblong, compressed, very short, gradually smaller, wrinkled <sup>d</sup>. Native of Japan. Taken at first by Thunberg for the preceding species <sup>e</sup>.

6. This is a very branching, brachiate, jointed shrub, with the bark somewhat wrinkled longitudinally; each joint being round, and ending at top in a bluntish scale, exactly as in Salicornia herbacea, to which it approaches very much in stature. It has no leaves like the two preceding. Anthers sessile two or four. Berries lateral, opposite, often three together, sessile, the size of a currant, with a very short cylindrical style, and an obtuse stigma, about which is a little area girt with a four-cornered, short, scarcely four-cleft margin. Native of the Cape of Good Hope, on trees; found by Sparrmann <sup>f</sup>.

7. This hangs down from trees after the manner of Mistletoe, having a roundish, green, woody, striated stalk, as big as a goose quill, two or three feet long, sometimes flatter and sometimes rounder, having a large pith. It divides into several branches, and these into twigs, at the distance of one, two or three inches; at which divisions the stalk is always set round, almost after the manner of stellated plants, with roundish green leaves, an inch and half long, just like stalks, only smaller and very numerous, so that it appears very bushy. Native of Jamaica, in the North parts <sup>g</sup>.

Browne says it is pretty frequent in that island; growing on all the larger trees in every savannah. It is used there for the same purposes, as the Mistletoe of the Oak in England, but Dr. Browne never knew it to have any remarkable effect.

8. A shrubby species, according to Plumier's figure, with simple branches, ovate, sinuous, very broad leaves, which are opposite and footstalked: racemes several, upright, simple, axillary, upright and subumbellate: berries verticillate, placed at intervals, roundish and umbilicate: their colour is said to be purple. Native of the West Indies and Guiana <sup>h</sup>.

9. Parasitical, hoary but not tomentose. Found at the Cape of Good Hope by Thunberg <sup>i</sup>.

10. Stem herbaceous, a foot high, even, brachiate, four-cornered. Leaves petioled, even, quite entire, veinless: the lower one smaller. Spikes axillary, sessile, fleshy, oblong. Linneus saw only female flowers, and no fruit: the genus therefore is uncertain; and it may be a species of Loranthus. Native of Philadelphia, in moist meadows. Found by Kalm <sup>k</sup>.

11. Parasitical. Native of the Cape of Good Hope, where it was found by Thunberg <sup>l</sup>.

12. Native of New Zealand <sup>m</sup>.]

#### PROPAGATION AND CULTURE.

1. Mistletoe is always produced from seed, and cannot be cultivated in the earth like most other plants, but will always grow upon trees: hence the ancients

thought it was an excrescence of the tree, without any seed being previously lodged there; which opinion has been confuted from repeated experiments.

The manner of its propagation is this. The Mistletoe Thrush, which feeds upon the berries of this plant in winter, when they are ripe, often carries them from tree to tree; for the viscous part of the berry, which immediately surrounds the seed, sometimes fastens it to the outer part of the bird's beak, and to disengage it, he strikes his beak against the branch of the tree on which he alights, and leaves the seed sticking to the bark; if this should chance to be a smooth part, the seed will adhere to it, and the following year will put out and grow. In the same manner it may be propagated by art. The trees on which it most readily takes are the Apple, Ash, White-thorn, and others which have a smooth rind. I have several times tried it upon the Oak without success, for the bark of that tree is of too close a texture to admit the sticking of the seeds thereto, which is also the reason why it is so rarely found upon the Oak. Notwithstanding the great encomiums which have been given to the Mistletoe of the Oak for its medicinal virtues, I cannot help thinking that it is equally good from whatever tree it be taken: nor is it possible to find this plant growing in any quantity upon the Oak; so that they who pretend to furnish it for medicinal use, do but impose upon their customers; for it is so rarely met with, that whenever a branch of an Oak-tree has Mistletoe growing upon it, it is cut off and preserved by the curious in their collections of natural curiosities, and of these there are few to be seen in England.

As to what some persons have asserted, of its being propagated by Mistletoe Thrushes, who having eat the berries, void the seed in their dung upon the branches of trees, I can by no means agree to it; for in this case the plant would always be found on the upper part or the sides of such branches, upon which only the dung can be supposed to lodge; whereas it is generally found at the under side of the branches: besides I believe that the stomachs of these birds are too powerful digesters, to suffer any seeds to pass so entire as to grow.

[The first of these objections would apply to the other mode of propagation by nature and art. The second is generally right, but yet it is certain that seeds now and then escape the powers of digestion, probably by a passage more accelerated than common, and vegetate when they happen to fall on their proper nidus. And though the seeds are first deposited upon the upper part of the branch, the rains may soon wash them to the sides or even the lower part.

The ancients, as Aristotle, Pliny, &c. insisted that the only mode of propagation of the Mistletoe is by the excrement of birds, supposing that the heat of the body is necessary to mature the seed for vegetation. Julius Scaliger, John Bauhin, and other moderns of the old school, adopted the idea of equivocal generation. Ray was too good a philosopher to admit this doctrine, and asks very reasonably, to what end so great a quantity of seed seemingly perfect was created, if it were all barren and unfruitful? But Ray lived to see his theory and that of Aristotle confirmed by experiment; for Mr. Doody, an Apothecary of London, inserted a seed of the Mistletoe into the bark of a White Poplar tree, which grew in his garden, with complete success; this has been done since by many persons, both by rubbing the berries on the smooth bark of various trees, and by inserting them in a cleft. Doody seems to have bored a hole for the reception of the seed.

It is wonderful, as Ray justly observes, that Botanists and Philosophers should choose to argue pro and con so many years, not to say centuries, rather than take the pains to consult nature, and determine the matter by an easy experiment <sup>n</sup>.

The celebrated Tournefort, in his travels in the Levant saw numbers of wild Pear trees covered with Mistletoe, and observed upon their trunks, how hard soever the bark was, the germination of the seeds. These seeds, says he, which are in the shape of a heart, were

<sup>b</sup> Catesby. <sup>c</sup> Sloane. <sup>d</sup> Thunb. in Linn. trans. <sup>e</sup> Thunb. jap. <sup>f</sup> Linn. suppl. <sup>g</sup> Sloane. <sup>h</sup> Aublet. <sup>i</sup> Linn. suppl. <sup>k</sup> Linn. spec. <sup>l</sup> Linn. suppl. <sup>m</sup> Forster.

<sup>n</sup> Cat. cant. and hist. p. 1918.



out of their cases, and had fastened themselves by their glue to the trunks and branches of these trees, at the time that winds or some other cause made them fall off. Each seed lay upon its side, in such a manner that the radicle began to pierce the bark, whilst the eye (or plume) shot out and unfolded itself.

VISCUM. See *Epidendrum*, *Loranthus*, *Tillandsia*.

Vifenia umbellata. See *Melochia odorata*.

VISMEA. (So named by the younger Linneus, in memory of Mr. De Visme a Portuguese merchant, well known for his love and knowledge of plants. Suppl. 37.)

Lin. gen. Schreb. n. 833. suppl. 36.

Mocanera. Juss. 318.

Class. 11. 3. Dodecandria Trigynia.

Nat. Order of *Onagrace* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-leaved, permanent: leaflets lanceolate, recurved: three outer hairy.

COR. Petals five, elliptic, spreading, scarcely longer than the calyx.

STAM. Filaments twelve, filiform, erect, shorter than the petals, inserted into the receptacle. Anthers quadrangular, erect, terminated by an awn.

PIST. Germ rough-haired, superior, attenuated as it were into a very short rough-haired style. Styles three, filiform, smooth. Stigmas simple.

PER. Nut ovate, smooth, acuminate, two or three-celled, half-inferior, enclosed within the converging calyx-leaves, and for the most part covered by the one-leaved part of the calyx, which is connate with the nut, but a third of the upper part of the nut within the calyx is naked.

SEEDS in each cell one.

#### ESSENTIAL CHARACTER.

CAL. five-leaved, inferior. COR. five-petalled. Stigmas five. Nut two or three-celled, half-inferior.

#### SPECIES.

1. *Vifmea Mocanera*.

Lin. syst. 454. Willd. 2. 926. suppl. 251.

Mocanera Canar.

#### DESCRIPTION, &c.

This is a small shrub, with a round, somewhat warted stem. Leaves alternate, erect, on short petioles, elliptic, very smooth, veined, ferrate, the consistence of the Bay. Peduncles axillary, solitary, nodding, scarcely longer than the petiole, naked, one-flowered. Flowers small. Corolla yellow. When the flower is impregnated, the peduncle is erected, the calyx closed and thickened, and its three outer leaflets become brown and hairy. Native of the Canary islands, in mountain woods. Found by Francis Masson<sup>p</sup>.

VISNAGA. See *Daucus*.

[VISTNU-CLANDI. See *Evolvulus*.

VITALBA. See *Clematis*.

Vitaliana. See *Aretia*.]

VITEX. (A vinciendo f. viendo; from the great flexibility of the twigs, which makes them fit to bind or tie any thing.)

Lin. gen. n. 790. Reich. n. 853. Schreb. n. 1060. Tournef. t. 373. Juss. 107. Gært. t. 56. Mill. fig. t. 275.

Class. 14. 2. Didynamia Angiospermia.

Nat. Order of *Personata*. Vitices Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, cylindric, very short, five-toothed

COR. one-petalled, ringent: tube cylindric, slender; border flat, two-lipped; upper lip trifid, with the middle segment wider: lower lip trifid, with the middle segment bigger.

STAM. Filaments four, capillary, a little longer than the tube, two of which are shorter than the others. Anthers versatile.

PIST. Germ roundish. Style filiform, length of the tube. Stigmas two, awl-shaped, spreading.

PER. Berry or Drupe globular, four-celled.

SEEDS solitary, ovate.

#### ESSENTIAL CHARACTER.

CAL. five-toothed. COR. border six-cleft. Drupe one-seeded: a four-celled nut.

\* Voyage 3. lett. 21. p. 309. ed. Lyon and Hist. par. ed. Mart. art. Viscum. <sup>p</sup> Linn. suppl.

#### SPECIES.

[1. *Vitex ovata*. Ovate-leaved Chaste-tree.

Lin. syst. 578. Willd. 3. 390. Thunb. jap. 257.

V. rotundifolia. Lin. suppl. 294.

Leaves simple ovate.

2. *Vitex triflora*. Three-flowered Chaste-tree.

Lin. spec. ed. Willd. 3. 390. Vahl. ecl. 2. 49.

Leaves ternate smooth, peduncles axillary and terminating three-flowered.

3. *Vitex divaricata*.

Lin. spec. ed. Willd. 3. 390. Swartz prodr. 93.

descr. 2. 1078. Vahl. symb. 2. 76.

Leaves ternate quite entire smooth on both sides, the end one very large; with a dichotomous divaricating panicle.

4. *Vitex pubescens*. Downy Chaste-tree.

Lin. spec. ed. Willd. 3. 391. Vahl. symb. 3. 85.

Pistacio-Vitex. Lin. zeyl. n. 415.

Leaves ternate pubescent, panicles trichotomous, bractes length of the calyx.

5. *Vitex altissima*. Tall Chaste-tree.

Lin. syst. 578. Willd. 3. 391. suppl. 294.

Leaves ternate, quite entire, panicle whorled, spikes whorled, berry three-seeded.]

6. *Vitex Agnus castus*. Official Chaste-tree.

Lin. spec. 890. Reich. 3. 198. Willd. 3. 391. hort.

cliff. 327. mat. med. 157. Woodv. med. bot. suppl.

26. t. 222. Jacqu. collect. 3. 64. Gært. fruct.

1. 269. Medic. in obs. soc. econ. Lutr. 1774.

p. 283. Scop. carn. n. 783. Allion. pedem. n.

458. Desfont. atlant. 2. 61. Forsk. aegypt. cent.

8. 213. Gron. orient. 77. Gron. virg. 169.

Ludw. eet. t. 28. Regnault bot. Berg. phyt.

45.

Vitex. Camer. epit. 105. Dod. pempt. 774. Matth.

196. Dalech. hist. 281. Blackw. t. 139.

V. foliis angustioribus cannabis modo dispositis. Baub.

pin. 475. Tournef. inst. 503.

V. f. Agnus castus. Ger. 1201. emac. 1387.—folio angust.

Park. theat. 1437.

Agnus folio non ferrato. Baub. hist. 1. 205. Raii

hist. 1696.

Elæagnum Theophrasti. Lob. ic. 2. 138.

3. *Vitex latifolia*. Mill. dict. n. 2.

V. latiore folio. Baub. pin. 475. Park. theat. 1437.

n. 2. Raii hist. 1696. Kniph. cent. 2. n. 99.

V. folio ferrato. Baub. hist. 1. 205.

Leaves digitate seven or five-leaved lanceolate mostly quite entire, spikes whorled panicled.

7. *Vitex incisa*. Cut-leaved Chaste-tree.

Willd. spec. 3. 392. Lamarck encycl. 2. 605.

V. chinensis. Mill. dict. n. 5. fig. t. 275. f. 1. 2.

Lagoondæ. Marsd. Sumatra. 90.

Leaves digitate quinate, leaflets gash-pinnatifid, spikes subverticillate.

[8. *Vitex Leucoxydon*. White-wooded Chaste-tree.

Lin. syst. 578. Willd. 3. 392. suppl. 293.

Leaves digitate quinate, leaflets petioled oblong quite entire, panicles dichotomous, berry one-seeded.]

9. *Vitex trifolia*. Three-leaved Chaste-tree.

Lin. spec. 890. syst. ed. 13. 483. ed. 14. 579. Reich.

3. 199. Willd. 3. 392. suppl. 293. fl. zeyl. n.

413. Forst. prodr. n. 245. Lour. cochinch. 390.

ed. Willd. 474.

V. integerrima. Mill. dict. n. 3.

V. trifolia minor indica. Pluk. phyt. t. 206. f. 5.

Burm. zeyl. 229. t. 109. ind. 137.

Piperi similis, fructus striatus, femina. Baub. pin. 412.

Lagondium vulgare. Rumph. amb. 4. 48. t. 18.

Caranofi. Rheed. mal. 2. 13. t. 11. Raii hist. 1575.

Leaves ternate and quinate, leaflets ovate acute quite entire hoary beneath, panicle with a straight rachis, pedicels dichotomous.

[10. *Vitex umbrosa*.

Lin. spec. ed. Willd. 3. 392. Swartz prodr. 93.

descr. 2. 1076.

Nephandra. Coth. disposit. 8.

Leaves quinate quite entire smooth on both sides, racemes compound axillary.

11. *Vitex capitata*.

Lin. spec. ed. Willd. 3. 393. Vahl ecl. 2. 50. t.

18.

Leaves



*Leaves quinate-digitate, leaflets lanceolate smooth quite entire, flowers capitate-subumbelled.*]

12. *Vitex Negundo*. *Five-leaved Chaste-tree*.  
*Lin. spec.* 890. *fst.* 579. *Reich.* 3. 199. *Willd.*  
 3. 393. *fl. zeyl.* n. 414. *Osbeck.* it. 92. *Burm. ind.*  
 138. *Lour. cochinch.* 390. *ed. Willd.* 474.

*V. pahiculata*. *Lamarck encycl.* 2. 606.

*V. trifolia minor indica ferrata*. *Pluk. alm.* 390.  
*Burm. zeyl.* 229.

*Negundo arbor mas*. *Bauh. hist.* 1. 189.

*Lagondium litoreum*. *Rumph. amb.* 4. 50. t. 19.

*Bemnos*. *Rheed. mal.* 2. 15. t. 11. *Raii hist.* 1575.

*Leaves quinate and ternate ferrate, flowers raceme-panicled.*

- [13. *Vitex spicata*.

*Lour. cochinch.* 390. *ed. Willd.* 475.

*Leaves quinate crenate, spikes linear terminating.*

14. *Vitex pinnata*.

*Lin. spec.* 890. *fst.* 579. *Reich.* 3. 200. *Willd.*

3. 393. *Burm. ind.* 138. t. 43. f. 2.

*Camunium finense*. *Rumph. amb.* l. 7. c. 15. p. 28. t. 18. f. 1.

*Aglaia odorata*. *Lour. cochinch.* 173. *ed. Willd.* 216.

*Leaves pinnate quite entire, panicles trichotomous.*

#### DESCRIPTIONS, &c.

1. This is a tree, in appearance and colour like *V. Agnus castus*, except in the leaves, which are nearly roundish, and two inches long. Peduncles axillary, short, one-flowered<sup>a</sup>.

Stem creeping. Leaves decussated, petioled, ovate, obtuse, quite entire, green above but underneath soft and white-tomentose. Flowers at the top of the branchlets, at first axillary, but finally terminating and panicled. Panicle subtrichotomous, very shortly peduncled. Berry globular, twin, four-valved, four-celled. Seeds minute. Native of China and Japan<sup>b</sup>.

2. Branches below roundish, smooth, purplish, above four-cornered with a rust-coloured down, jointed: joints two inches long. Genis golden-rust-colour. Leaflets on very short petioles from two to five inches in length, the lateral ones a little smaller, elliptic-lanceolate, wider outwards, towards the base gradually narrowed a little, bluntly acuminate, veined, smooth on both sides, quite entire. Petioles purplish, above channelled, an inch and half long, golden tomentose at the top. Axillary peduncles, opposite, solitary; the terminating ones in pairs, length of the petioles, compressed. Pedicels in threes, one-flowered, half an inch long, the middle one shorter. Bractes two, bristle-shaped, towards the top and at the base of the lateral pedicels. Calyx almost an inch long; corolla twice the length, golden-tomentose on the outside. Calyx a little different from its congeners; but the corolla the same. Native of Cayenne<sup>c</sup>.

3. Branches obscurely four-cornered, smooth, with an ash-coloured bark. Leaves at the tops of the branches, opposite, petioled: leaflets petioled, membranaceous; the lateral ones oblong, scarcely an inch long, acute, sometimes acuminate; the end one four or five inches long, ovate, acuminate. Peduncles axillary, solitary, three or four times dichotomized: pedicel at the divisions one-flowered, filiform, like the rest. Frequent in the islands of Martinico, St. Lucia, and Santa Cruz. Called by the French there, bois de Lezard.

4. Branches four-cornered, pubescent. Leaves opposite, petioled: leaflets sessile, two inches long, or a little less, ovate attenuated, quite entire, above marked with very fine lines along the nerves, and smoothish; beneath ribbed, veined, pubescent. Panicle terminating, large, trichotomous, finally dichotomous. Under the first divisions on each side is a ternate leaf. Bractes spreading, opposite, sessile, oblong, obtuse, length of the calyx, hoary. Flowers six or seven on the outmost branches of the panicle, sessile, alternate. Calyx bell-shaped, five-toothed, hoary. Corolla twice as long as the calyx, tomentose on the outside. Berry the size of black Pepper, four-seeded. Native of the East Indies.

It differs from *V. trifolia*, in having the leaves not hoary beneath, the pedicels not dichotomous, but with

the flowers longitudinally, sessile and alternate, and by the squarrose habit of the panicle, from the spreading and reflex bractes, which are bigger than in the other species<sup>d</sup>.

5. Leaflets ovate, acuminate at both ends; smooth above, pubescent underneath. Found in the vast woods of Ceylon by Koenig<sup>e</sup>.]

6. This has a shrubby stalk eight or ten feet high, sending out their whole length opposite branches, which are angular, pliable, and have a grayish bark. Leaves for the most part opposite upon pretty long footstalks; they are composed of five, six or seven leaflets spreading out like the fingers of a hand; the lower ones small; and the middle largest; they are smooth and entire; the largest are about three inches long, and half an inch broad in the middle, ending in blunt points, of a dark green on their upper side, but hoary on their under. The flowers are produced in spikes at the extremity of the branches, from seven to fifteen inches in length, composed of distant whorls; in some plants they are white, in others blue. They are generally late before they appear, so that in bad seasons they do not open fair in England, and even in warm years the plants produce no seeds here. They have an agreeable odour when they open fair, and make a good appearance in autumn, when the flowers of most other shrubs are gone; for in warm mild seasons I have seen these shrubs in full flower the middle of october.

[The fruit, according to Gærtner, is a berried drupe, received into the calyx, globular, with a little point upon the top, rufescent, the size of a large pepper corn: pulp thin, somewhat aromatic: shell bony, ovate-globular, acuminate downwards, four-celled. One seed in each cell, fastened to the base of it, oblong, acuminate at bottom, angular rufescent. We shall seek in vain for a four-seeded berry in the *Vitex*. Gærtner remarks that he never could see a six-cleft corolla, except in Tournefort's figure, whence Linneus took his generic character. Native of Sicily and the kingdom of Naples, where Ray observed it to be plentiful, flowering in august. Scopoli found it about Tergeste and in Istria—Allione on the maritime hills near Albenga—Bellardi between Menton and Monaco—Dr. Smith near Lodano, on Dec. 26, in seed. He remarks that it is a small shrub there, and that the seeds have an unpleasant aromatic smell<sup>f</sup>. Forskahl found it in Egypt—Desfontaines, in the kingdom of Tunis—Rauwolf, about Aleppo and Racka—Gronovius in Virginia. It was cultivated here in 1570, according to Lobel<sup>g</sup>.

The seeds, from the time of Dioscorides and Pliny, have been highly celebrated for securing chastity, hence the absurd officinal name of the shrub, *Agnus castus*; *αγνος* in greek being the same with *castus* in Latin: and hence the Athenian matrons, in the sacred rites of Ceres, used to strew their couches with the leaves. Hence also it has had the affected name of *Piper eunuchorum* and *monachorum*.

The seeds of the Chaste-tree are, however, so far from being thought antiaphrodisiac, that writers of later times have ascribed to them an opposite quality; their aromatic pungency seems to favour this opinion, and Bergius states them to be carminative and emmenagogue<sup>h</sup>. See n. 9. and 13.

β. Mr. Miller considers the Broad-leaved Chaste-tree as a distinct species. He says] it is a lower shrub, seldom rising more than four or five feet high, with several stalks which do not branch so much as the other; their bark is also whiter. The leaflets are not so disproportionate in their length, the longest being seldom more than three inches, and the shortest an inch and half: they are near an inch broad, ferrate, and not so stiff as those of the former. The spikes are shorter; the flowers smaller, always blue, and appear sooner. Native of the South of France and Italy.

7. [Stature of the preceding, but smaller in all its parts, with quinate acuminate pinnatifid leaves pubescent underneath. *Vitex Negundo*, under which name this species occurs in the gardens, is quite another

<sup>a</sup> Linn. suppl.

<sup>b</sup> Thunberg.

<sup>c</sup> Vahl.

<sup>d</sup> Vahl. symb.

<sup>e</sup> Linn. suppl.

<sup>f</sup> Tour, 1. 223.

<sup>g</sup> Adv. 423. Hort. kew.

<sup>h</sup> Woodville.



plant, differing in the size of all the parts, and the raceme-panicled, not whorled inflorescence<sup>1</sup>.]

Mr. Miller describes it as a lower shrub, seldom rising more than three feet high, sending out on every side spreading branches, which are slender and angular. Leaves opposite upon pretty long footstalks; some composed of three, others of five leaflets, which are deeply and regularly cut on their sides like pinnatifid leaves, and end in acute points: the largest of these leaflets is about an inch and half long, and three quarters of an inch broad in the middle; they are of a dull green colour on their upper side and gray on their under. The branches are terminated by spikes of flowers three or four inches long, disposed in whorls; in some plants they are white, in others blue, and some have bright red flowers: they are in beauty from the middle of July to the beginning of September; but no seeds are produced in Europe. Native of China: whence seeds were sent to Paris by the Missionaries. Mr. Miller had young plants from France: [but the species seems to have been since lost in England, as it does not appear in the Kew catalogue.

8. This very much resembles *Vitex trifolia*, but differs in having the leaves very smooth on both sides, and a dichotomous panicle from the first division. Found by Koenig in the vast woods of Ceylon<sup>2</sup>.

9. Leaflets ovate, acute, quite entire, tomentose underneath<sup>1</sup>: the two nearest to the petiole smaller<sup>2</sup>.

Stem shrubby, branched, round, eight feet high, the thickness of a finger, procumbent, sometimes creeping. Leaves ternate, seldom quinate; leaflets waved, dusky green above, cinereous-hoary beneath, soft: common petioles long, opposite. Flowers violet in dichotomous terminating racemes. Upper lip of the corolla trifid, lower bifid. Fruit small, globular, hard, smooth, black, like Pepper, four-seeded<sup>3</sup>.]

Mr. Miller says, that it rises nine or ten feet high, with many side branches, which have a brown bark; and that the flowers are small and white, not followed by seeds in England. [Native of the East Indies; very common on the coast both of China and Cochinchina, creeping in the sand; also in the Friendly islands.

The fruit is reputed in the eastern countries to be warm, discutient, nervine, cephalic, and emmenagogue; and to be of service in paralysis, weakness and pains of the limbs. It is in great use among Indian practitioners both internally and externally. The plant has a bitter taste, and a strong somewhat aromatic smell<sup>4</sup>.

10. Native of Jamaica, in shady places.

11. This is a middle-sized tree. Branches roundish, warted, at the warts a little dilated and four-cornered, smooth with an ash-coloured bark, even: branchlets leafing and flowering, the lower alternate, the end ones often in threes, alternately compressed. Leaves at the ends of the branchlets, opposite, approximating, spreading: leaflets tender, the middle ones petioled, the outermost sessile, four inches long, the outer ones gradually less, all lanceolate, attenuated, sharp at each end, veined, very smooth, on petioles two or three inches in length. Peduncles axillary, solitary, length of the petiole, smooth, slender. Flowers six to twelve at the top of the peduncles at first sessile, but afterwards very shortly pedicelled. At the base of the calyx are a few minute bractes. Calyx silky-villose, five-toothed; when fruiting enlarged to five times its former dimensions, hemispherical, smooth, netted-veined. Corolla also silky-villose; upper lip bifid, lower trifid: throat villose. Drupe ovate-oblong, submucronate, double the size of a pea; with a four-celled shell in it, having one seed in each shell. Native of the island of Trinidad, where it was found by Ryan<sup>5</sup>.

12. Leaflets three or five, ovate-lanceolate, sinuate-ferrate, underneath naked and veined<sup>6</sup>.

Stem arboreous, twisted, the thickness of the human arm, with spreading branches. Leaflets lanceolate, for the most part quite entire, but sometimes ferrate, flat, veined, of a dusky ash colour, on opposite petioles. Flowers purplish, in loose, terminating, erect racemes. Calyx, corolla and fruit as in *V. trifolia*. The taste

and smell as in that. The qualities also the same, only weaker<sup>7</sup>.]

Stalks eight or ten feet high, with a gray bark. Branches opposite. Leaves opposite, upon long footstalks: leaflets deeply ferrate, ending in very acute points; the largest three inches and a half long, and an inch and quarter broad, dark green above, but gray beneath. Flowers in opposite axillary whorled spikes: and the branches are terminated by branching spikes of flowers, which are blue. They appear in July and August, but do not produce seeds in England.

[Native of the East Indies, China, and Cochinchina. —Cultivated in 1697, by the Dutchess of Beaufort<sup>8</sup>.

13. Stem shrubby, erect, eight feet high, thick. Leaves quinate, rarely ternate, lanceolate, crenate, some quite entire, bright green, tomentose, wrinkled, strong-smelling, opposite, on long petioles. Flowers pale violet, on long linear spikes, often heaped, terminating: involucrets awl-shaped, many-flowered. Calyx very small, five-cleft, acute, permanent. Corolla tube short, globular: border spreading, five-cleft; segments obtuse, the four upper nearly equal, the lowest bigger. Filaments shorter than this segment, but longer than the others. Fruit roundish, brown, smaller than Pepper, containing four seeds. Native of China and Cochinchina. Qualities the same as the trifolia: the leaves are most frequently used externally, in paralysis, contraction and weakness of the limbs, and wandering pains<sup>9</sup>.

14. Native of Ceylon and other islands of the East Indies. Doubtful whether it appertains to this genus. Loureiro determines that it not only is not of this genus, but that it belongs to another class and order, pentandria digynia. He thus describes it under the name of *Aglaia odorata*. It is a tree eight feet in height; the wood hard and yellowish; the bark thin and brown; the branches spreading; the head very close and thick. Leaves ternate or quinate; leaflets oval, attenuated at the base, quite entire, smooth, shining; on short petioles: Flowers yellow, very small, globular, sweet-smelling, on oblong, axillary racemes. Fruit small, red. Native of China and Cochinchina, where it is also cultivated in the gardens of the great, for its beauty and sweetness. In Malay it is called *Tsjulang*. Loureiro has named it from the splendour and beauty of the plant, and from the sweetness of the flowers. He suspects the *Bumalda trifolia* of Thunberg to be of this genus; but Willdenow remarks, that *Bumalda* differs in many points from Loureiro's generic description of *Aglaia*.]

#### PROPAGATION AND CULTURE.

6. This plant is very hardy, and may be propagated by planting the cuttings early in the spring, before they shoot; it requires a fresh light soil, and must be frequently refreshed with water until it has taken root; after which the plants must be carefully cleared from weeds during the summer season, and if the following winter prove severe, lay a little mulch upon the surface of the ground between the plants, to prevent the frost from penetrating to their roots, which would injure them while they are young; and as these cuttings are apt to shoot late in the year, their tops will be very tender, and the early frosts in autumn often cut them down a considerable length, if they are not protected, therefore they should then be covered with mats, which will be of great service to them. Toward the middle of March, if the season is favourable, you should transplant them either into the places where they are designed to remain, or into a nursery to grow two or three years to get strength, where they must be pruned up, in order to form them into regular stalks, otherwise they are very subject to shoot out their branches in a straggling manner.

They may also be propagated by laying down their branches in the spring of the year, in doing which be very careful not to break them, for their shoots are apt to split if they are violently forced; these will take root in one year, provided they are watered in very dry weather, and may then be transplanted out, and managed as was directed for those plants raised from cuttings.

<sup>1</sup> Willdenow. <sup>2</sup> Linn. suppl. <sup>3</sup> Linn. spec. <sup>4</sup> Linn. suppl.  
<sup>5</sup> Loureiro. <sup>6</sup> Idem. <sup>7</sup> Vahl. <sup>8</sup> Linn. spec.

<sup>9</sup> Loureiro.

<sup>10</sup> Hort. kew.

<sup>11</sup> Loureiro.



The 9th sort being too tender to live in the open air in England, must be planted in pots, and constantly kept in the stove; it is propagated both by cuttings and layers, but the cuttings of this must be planted in pots, and plunged into a moderate hot-bed, covering them close with a bell or hand-glass to exclude the air; they should be refreshed with water now and then, but it must not be given them too freely. The best time to plant the cuttings is about the middle or latter end of april, for if they succeed, they will put out roots in six or seven weeks, and will then begin to shoot, they should therefore have the free air gradually admitted to them to prevent their shooting weak; then they may be carefully taken up, and each planted into a separate small pot filled with light earth, and plunged into the hot-bed again, shading them from the sun till they have taken new root; after which they should have plenty of free air at all times when the weather is good, treating them in the same manner as other tender plants. In winter they must be kept in a moderate temperature of heat, but in the summer they should have the free air in mild weather, but must not be removed into the open air.

As this plant retains its leaves all the year, it makes a variety in the stove, but the flowers have no great beauty.

7. Plant cuttings in the spring in pots, plunging them into a moderate hot-bed and covering them with glasses. When these are well rooted, take them carefully up, and plant each in a separate small pot filled with light earth, placing them in the shade until they have taken new root: then remove them to a sheltered situation with other greenhouse plants, where they may remain all the summer. In autumn they must be put under shelter; but as they cast their leaves early in autumn, they must not be much watered in winter. They are late in putting out new leaves in the spring, and have much the appearance of dead plants before these appear.

12. This also is increased by cuttings in the spring, a little before the buds open, and must be managed as directed for the seventh species. Having lived some years in the open air, the severe frost of 1740 destroyed all the plants. [But it has been since recovered to our gardens.

The directions given for the seventh and ninth species will suffice for all the rest, which are natives of the East or West Indies, China or Japan.

VITEX. See *Rhus*.

VITICELLA. See *Clematis* and *Galax*.]

VITIS. (From *viere*, to tie, or *vincire*, to bind.)

*Lin. gen. n.* 284. *Reich. n.* 305. *Schreb. n.* 396. and *p.* 284. *Tournef. t.* 384. *Juss.* 267. *Gärtn. t.* 106.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Hederaceæ*. *Vites* Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-toothed, very small.

COR. Petals five, rude, small, caducous.

STAM. Filaments five, awl-shaped, from erect spreading, caducous. Anthers simple.

PIST. Germ ovate. Style none. Stigma obtuse-headed.

PER. Berry globular or ovate, two-celled.

SEEDS two, bony, turbinate-cordate, contracted at the base, semibilocular.

Obs. *Gärtner* describes the unripe berry as five-celled; the ripe one as one-celled and five-seeded. But *Schmidel*, *Haller*, *Ehrhart*, &c. never could see five seeds. One or two seeds are often abortive.

#### ESSENTIAL CHARACTER.

Petals cohering at the top, shrivelling. Berry five-seeded (two-seeded) superior.

#### SPECIES.

1. *Vitis vinifera*. Common Vine.

*Lin. spec.* 293. *Reich.* 1. 569. *Willd.* 1. 1180. *hort. cliff.* 74. *ups.* 50. *mat. med.* 70. *Woodv. med. bot.* 531. *t.* 195. *Gärtn. fruct.* 2. 108. *Hall. belv. n.* 825. *Allion. pedem. n.* 1759. *Desfont. atlant.* 1. 202. *Thunb. jap.* 103. *Lour. cochinch.* 155. *ed. Willd.* 192. *Gron. virg.* 144. *Jacqu. collect.* 1. 169. *Duham. arb. fruit.* 2. *t.* 1.—6.

*Blackw. t.* 154. *Du Roi barbecc.* 2. 488. *Ludw. est. t.* 125. *Kniph. cent.* 6. *n.* 100. *Schmid. anal. t.* 7. *Plenck. ic. t.* 144. *Bauh. pin.* 299. *Fuchf. hist.* 84. *Matth.* 1320. *Dod. pempt.* 415. *Bauh. hist.* 3. 67. *Ger.* 725. *emac.* 875. *Park. parad.* 563. *theat.* 1556. *Raii hist.* 1613.

3. *Vitis apyrena*. The Currant Vine.

*V. corinthiaca* f. *apyrena*. *Bauh. hist.* 2. 72. *Raii hist.* 1614. *Plenck. ic. t.* 145.

*Uvæ passæ minores*, vel *Passulæ Corinthiæ*. *Bauh. pin.* 299. 4.

*Uvæ Corinthiæ*. *Park. theat.* 1556.

Leaves lobed sinuate naked.

[2. *Vitis palmata*. Palmate-leaved Vine.

*Lin. spec. ed. Willd.* 1. 1180. *Vahl. symb.* 3. 42.

Leaves palmate smooth, segments gasbed, umbels racemed.]

3. *Vitis indica*. Indian Vine.

*Lin. spec.* 293. *syst.* 244. *Reich.* 1. 569. *Willd.* 1. 1180. *fl. zeyl. n.* 99. *Swartz obs.* 95. *Lour. cochinch.* 155. *ed. Willd.* 192. *Brown. jam.* 178. *Sloan. jam.* 2. 104. *t.* 110. *f.* 4. *Pluk. phyt. t.* 249. *f.* 1.

*V. sylvestris indica*, acinis rotundis. *Raii dendr.* 67.

*Scembra Valli*. *Rheed. mal.* 7. *t.* 6.

Leaves cordate toothed villose beneath, tendrils racemiferous.

[4. *Vitis flexuosa*. Japanese Vine.

*Thunb. in Linn. trans.* 2. 332. *Lin. spec. ed. Willd.* 1. 1181.

*Vitis indica*. *Thunb. jap.* 103.

Leaves cordate toothed villose beneath, stem flexuose, panicles elongated.]

5. *Vitis Labrusca*. Downy-leaved Vine.

*Lin. spec.* 293. *Reich.* 1. 570. *Willd.* 1. 1181. *arb.* 409. *Wangenh. amer.* 124. *Du Roi barbecc.* 2. 493. *Thunb. jap.* 103. *Lour. cochinch.* 155. *ed. Willd.* 193.

*V. hederæ folio ferrato*. *Plum. spec.* 18. *ic.* 259. *f.* 1.

*V. sylvestris virginiana*. *Bauh. pin.* 299.

Leaves cordate subtrilobate toothed tomentose underneath.

6. *Vitis vulpina*. Fox-grape or Vine.

*Lin. spec.* 293. *Reich.* 1. 570. *Willd.* 1. 1181. *Wangenh. amer.* 123.

*V. vulpina dicta virginiana nigra*. *Pluk. alm.* 392.

*V. aceris folio*. *Raii dendr.* 68. *n.* 5.

Leaves cordate tooth-ferrate naked on both sides.

[7. *Vitis heterophylla*. Various leaved Vine.

*Lin. syst.* 244. *Willd.* 1. 1181. *Thunb. jap.* 103. *Leaves simple gasb-three-lobed and five-lobed serrate naked.]*

8. *Vitis laciniosa*. Parsley-leaved Vine.

*Lin. spec.* 293. *Reich.* 1. 570. *Willd.* 1. 1181. *arb.* 410. *Lin. hort. cliff.* 74.

*V. laciniatis foliis*. *Corn. canad.* 182. *t.* 183. *Park.*

*theat.* 1555. 2. *ic.* 1556. 2.

*V. apii folio*. *Bauh. hist.* 2. 73. *Raii hist.* 1614.

Leaves quinate, leaflets multifid.

9. *Vitis hederacea*. Ivy-leaved Vine.

*Lin. spec. ed. Willd.* 1. 1182. *Ehrh. Beitr.* 6. 85.

*V. hederacea indica*. *Stapel. theatr.* 364.

*Hedera quinquefolia*. *Lin. spec.* 292. *Du Roi barbecc.* 1. 302. *Mill. dict. n.* 2. and *dict. nostr. n.* 3.

Leaves quinate ovate acuminate toothed.

[10. *Vitis heptaphylla*. Finger-leaved Vine.

*Lin. syst.* 244. *Reich.* 1. 570. *Willd.* 1. 1182. *mant.* 212.

Leaves digitate septenate ovate quite entire.

11. *Vitis pinnata*. Pinnate-leaved Vine.

*Lin. spec. ed. Willd.* 1. 1182. *Vahl. symb.* 3. 43. *Leaves pinnate tooth-ferrate smooth.]*

12. *Vitis arborea*. Pepper Vine.

*Lin. spec.* 294. *Reich.* 1. 571. *Willd.* 1. 1183. *arb.* 411.

*V. caroliniana*, foliis apii, uva corymbosa purpurascens.

*Aët. bonon.* 3. *par.* 2. *p.* 365. *t.* 24.

*Frutex scandens*, petroselinii foliis, virginianus, clavicularis donatus. *Pluk. mant.* 85. *t.* 412. *f.* 2.

Leaves superdecompound, lateral leaflets pinnate.

#### DESCRIPTIONS, &c.

The common Vine is universally known to have a thick twisted irregular weak stem, covered with a brown



brown cloven bark, and having very long tough flexible branches, trailing along the ground, or climbing trees by means of tendrils. The leaves are lobed and sinuated, serrate, smooth and alternate, on long footstalks. The tendrils are opposite to a leaf and are attended by the flowers in a raceme. The flowers are whitish or herbaceous, very small and insignificant in appearance but having a very agreeable smell; the petals cohering at the tip and concealing the genitals in manner of a veil, but soon fall off. Berry globular, in some varieties ovate, before it is ripe regularly divided into five cells; but afterwards one-celled, almost pellucid, coloured in some, colourless in others. In the middle is a short column, springing from the woody fibres of the pedicel of the berry; to the top of this the seeds are fastened by its peculiar umbilical chord: this chord is filiform, running along the inner side of the seed to its very top, then reflected to the back, and finally entering the navel. Seeds naturally five, but for the most part fewer: others have not discovered more than two. In some berries they are all abortive.

Native of most of the temperate parts of the world. In very cold regions it refuses to grow; and within 25° or even 30° of the equinoctial line, it seldom flourishes so as to produce good fruit. In the Northern Hemisphere, the proper wine country is from 25° to 51° of latitude. Thunberg informs us, that grapes do not ripen very well in Japan, and are not high flavoured in that country. Browne however says that the Muscadine Grape ripens well in Jamaica, and would produce a mellow and rich wine, if care were taken to cultivate it. The Vine is spontaneous in Carolina and all North America, from 25° to 45° of latitude, but they do not succeed in making wines there in the same latitude with Spain and Italy. The American woods are in many parts so entangled with vines for many miles together, that their trailing branches are a great impediment in travelling, and lofty trees are overtopped and wholly covered with them\*.

The Vine was gradually introduced into the different countries of southern Europe, from the East, where we know it was cultivated from the time of Noah. In the age of Homer it grew wild in the island of Sicily, and probably in the adjacent continent, but it was not improved by skill, nor did the rude inhabitants extract a liquor from it. A thousand years afterwards, Italy could boast, that of the fourscore most generous and celebrated wines, more than two thirds were produced from her own soil. The blessing was soon communicated to the Narbonnese province of Gaul; but so intense was the cold to the north of the Cevennes, that in the time of Strabo, it was thought impossible to ripen Grapes in those parts of Gaul. This difficulty, however, was gradually vanquished; and there is some reason to believe, that the vineyards of Burgundy are as old as the age of the Antonines. In the beginning of the fourth century, the orator Eumenius speaks of the vines in the territory of Autun, which were decayed through age, and the first plantation of which was totally unknown. The Pagus Arebrignus is supposed, by M. D'Anville, to be the district of Beaune, celebrated even at present for one of the first growths of Burgundy†.

Mr. Miller tells us, that the vineyards in some parts of Italy will hold good above three hundred years, and that vines of one hundred years old are accounted young ones.

It would seem probable that the luxurious Romans should introduce the Vine into Britain, during their establishment in the island; and that it should have maintained its ground ever since, with various fortune. But there is little doubt that Vineyards were common appendages to Abbies and Monasteries, which were frequently filled with Monks who were foreigners, or had lived much in Italy, and had there contracted such a habit of drinking wine with their meals, that it appeared to be in a manner a necessary.

Mr. Pegge, from Pliny's silence on that head, in the large account which he gives of the Vine in his four-

teenth book, concludes that Britain had it not when Pliny wrote. But Tacitus, writing of the times when Julius Agricola commanded here, expressly denies us the Vine. If so, it is not probable that we had it for many years after, since Domitian ordered vineyards in the Provinces to be destroyed, both because they occasioned a scarcity of corn, and were an incitement to sedition by the encouragement which they gave to drunkenness: and from this time none could plant vineyards without the permission of the Emperors; till Probus, who acceded in A.D. 276, rescinded the edict, towards the end of his reign. Mr. Pegge conceives that licence was granted the Provincials to plant vineyards about the year 280, and the Britanni are expressly mentioned by Vopiscus among the nations who partook of it.

Bede, who finished his history A.D. 731, writes expressly, "Vineas etiam quibusdam in locis germinant."

It is natural to suppose, that the propagation of the Vine would be first attempted in the southern parts of our island, both because they are the warmest, and the nearest to Gaul. Accordingly the neighbourhood of Winchester was formerly famous for Vines, as appears from the old verses cited by Mr. Somner; and Twyne supposes this city to have taken its name from hence.

Of Canterbury and that neighbourhood the same author makes the abbat of St. Augustine's say, that their house was formerly not destitute of vines: and Somner informs us, that in the year 1285, both that abbey and the priory of Canterbury were plentifully furnished with vineyards.

At Rochester, a large piece of ground adjoining to the city is now called the Vine: another is so called at Sevenoke in Kent: this also was the name of the seat of the barons Sandes in Hampshire. At Halling, near Rochester, the bishop of that see had formerly a vineyard; for when Edward II. in the nineteenth year of his reign, was at Bockinfeld, bishop Hamson sent him thither, as Lambarde tells us, "a present of his drinkes, and withal both wine and grapes of his own growth in his vineyarde at Halling." Captain Nicholas Toke, of Godington, in Great Chart, in Kent, "hath so industriously and elegantly, says Philipot, cultivated and improved our English Vines, that the wine, pressed and extracted out of their grapes, seems not only to parallel, but almost to out-rival that of France."

Of Suffex, Lambarde writes, "History doth mention, that there was about that time, (the Norman invasion) great store of Vines at Santlac (near to Battel.)" He adds, as to Berkshire, "the like whereof I have redd to have been at Wyndsofe, in so moche as tythe of theim hathe beene theare yielded in great plenty, which gyveth me to think, that wyne hath been made longe sence within the realme; although in our memorie it be accompted a great deintye to heare of." He farther observes, that some part of the wine was spent in the king's household, and some sold for the king's profit.

John Twyne has remarked, that William of Malmesbury has extolled the Vines and wine of Gloucestershire; and the passage is extant in William's book de Gestis Pont. IV. p. 283. See also Camden‡.

Domesday book mentions at Rageneia in Essex one park, and six arpennies of vineyard, which, if it takes well, yields twenty modii of wine.—And at Ware, a park and six arpennies of vineyard very lately planted.

We hear of vineyards also in Middlesex, Cambridge-shire at Denny abbey, the Isle of Ely, at Dunstable, and at St. Edmundsbury; in the engraved plan of which town the vineyard of the abbey is particularly noted. Within the walls of the city of London there is a street called the vineyard; and in the liberties and suburbs, and in Westminster, there is Vine-street in Hatton garden, and St. Giles's and Piccadilly; and the vineyards by Houndsditch and Coldbath fields<sup>b</sup>.

In the archives of the church of Ely is the following register:

|               |   |   |   |   |   |    |    |                 |
|---------------|---|---|---|---|---|----|----|-----------------|
| Exitus Vineti | - | - | - | - | - | 2  | 15 | 3 $\frac{1}{4}$ |
| Ditto Vineæ   | - | - | - | - | - | 10 | 12 | 2 $\frac{1}{2}$ |

\* Archæologia. 1. 321—329.

† Pegge in Archæol. 3. 56.

10 bushels

‡ Gærtner.

\* Catesby.

† Gibbon, 1. c. 2. p. 64.



|   |    |   |        |
|---|----|---|--------|
| 10 bushels of Grapes from the Vineyard                            | o  | 7 | 6      |
| 7 Dolia Musti from the Vineyard                                   | 12 |   |        |
| Edw. II.  | -  | - | 15 1 o |
| Wine sold for   | -  | - | 1 12 o |
| Verjuice  | -  | - | 1 7 o  |
| One Dolium, and one pipe filled with new wine, and supped at Ely. |    |   |        |
| For wine out of this Vineyard                                     | -  | - | 1 2 2  |
| For verjuice from thence  | -  | - | o 16 o |
| No wine, but verjuice made 9 Edw. IV.                             |    |   |        |

Hence it appears plainly that at Ely Grapes would sometimes ripen, and the convent made wine of them; and when they did not, they converted them into verjuice<sup>c</sup>.

In Northamptonshire, Martin, Abbot of Peterborough, in the time of King Stephen, is said expressly, in the Saxon Chronicle, to have planted a vineyard, and it was a large one<sup>d</sup>. Madox, in his History of the Exchequer writes, that the Sheriffs of Northamptonshire and Leicestershire were allowed in their account, for the livery of the King's vine-dresser at Rockingham, and for necessaries for the vineyard<sup>e</sup>.

There are evidences of Vineyards still farther north, as at Darley abbey in the county of Derby. And perhaps the several villages there of South Winfield, North Winfield, and Wingerworth, take their names from vineyards formerly flourishing at those places<sup>f</sup>.

Petrarch therefore must surely have been ill informed, when he says that "the English drink nothing but beer and cyder, and the Flemish hydromel; each of these countries being so far distant from those in which Vines grow, that the people cannot afford to purchase wine<sup>g</sup>." This famous poet lived in the reigns of our three first Edwards, being born in 1304 and dying in 1374. Now long before this, in different years of Henry the second's reign, allowances were made to the officer who farmed Windsor of that prince for wine, perry and cyder. In the reign of Henry III. the neglect of vineyards in England, is attributed by Twyne in part to that fondness for French wine which then came upon us. In this king's time, about the year 1260, a Dolium (thirty-six gallons) of the best wine could be bought for forty shillings, sometimes for two marks, and sometimes for twenty shillings. In 1285 (temp. Edw. I.) we have seen, that the churches at Canterbury were plentifully furnished with vineyards. In 1325, the 19th of Edw. II. we have also seen that the bishop of Rochester sent the King wine and grapes of his own growth from his vineyard at Halling in Kent<sup>h</sup>. As to the splendid reign of Edward III. when our commerce so much increased, and we had the command of so great part of France, it cannot be supposed that there was any want of French wines in England, allowing that our own vineyards were much neglected. If Petrarch meant only that wine was not the general drink of the commonalty in England, it never has been so at any period, nor is it so even in this luxurious and expensive age.

Several causes may be assigned why vineyards were neglected, and at length in a manner disused in this country. The principal cause probably was that our wine was of an inferior quality, and that better wine could be had cheap from our French provinces. The advancement of agriculture also contributed to their being relinquished. We may however fairly conclude with Mr. Pegge, that there were many vineyards in England, for several centuries since the conquest; few of our greater religious foundations, in the south at least, having been without them.

In more modern times, the Vine, says Dr Plot, has been improved by Sir Henry Lyttleton to that advantage at Over-Arley, that he has made wine so good there, as not to be distinguished from the best French wines. And Dr. Ralph Bathurst, president of Trinity college and dean of Wells, made as good claret at Oxford in 1685, as one could wish to drink<sup>i</sup>.

Barnabe Googe, in his Epistle to the Reader, prefixed to his translation of Herefbachius's Husbandry,

<sup>c</sup> Speechly, 187. <sup>d</sup> Archæol. 1. 329. <sup>e</sup> Speechly, 187. <sup>f</sup> Archæol. 1. 330. <sup>g</sup> Seward's Biogr. 23. <sup>h</sup> Archæol. 1. 327, 328, 332. and 3. 59, 61, 66. <sup>i</sup> Archæol. 1. 330, 331. and 3. 61.

1586, says, "he is fully persuaded we might have a reasonable good wine growing in many places of this realme: as undoubtedly we had immediately after the Conquest, till partly by slothfulness, not liking any thing long that is painful, partly by civil discord long continuing, it was left, and so with time lost, as appeareth by a number of places in this realme, that keep still the name of Vineyards; and upon many cliffs and hills are yet to be seen the roots and old remains of Vines. There is besides Nottingham an ancient house called Chilwell, in which remaineth yet as an ancient monument in a great window of glass, the whole order of planting, proyning, stamping and pressing of Vines. Beside; there is yet also growing an old Vine that yields a Grape sufficient to make a right good wine, as was lately proved by a gentlewoman in the said house. There hath moreover good experience of late years been made by two noble and honourable Barons of this realme, the Lord Cobham, and the Lord Williams of Tame, who both had growing about their houses as good Vines as are in many places of France."

Samuel Hartlib, in 1659, says, that here in England some ingenious gentlemen usually make wine, very good and long lasting. He instances Sir Peter Ricard, at Great Chart, in the Wilde of Kent, a place very moist and cold, who yearly made six or eight hogshheads, which was very much commended by divers who had tasted it.

We are informed in Rea's Flora (1702) that Sir Thomas Hanmer asserted, he had drunk in several places good wine of English growth.

At Arundel castle in Suffex, a seat of the Duke of Norfolk's, a noble Vineyard was some years ago planted: it has succeeded, and annually yields considerable quantities of wine: there are at this time (1763) in his grace's cellar at Arundel, above sixty pipes of excellent Burgundy. This wine is not, it is true, of quite so fine a flavour as the wines of Beaune; yet does it much exceed quantities of Burgundy wine annually imported into England, and most of what is consumed commonly in France<sup>k</sup>.

Mr. Bradley says, he cannot help mentioning how our poor soils might be improved by making of vineyards; a good instance of which is at Mr. John Warner's, a gentleman of Rotherhithe, who makes good wine from his own vineyards.

Stephen Switzer, in his Ichnographia Rustica, published in 1742, affirms that Vineyards may be so cultivated in England, as to produce large quantities of Grapes, and those so well ripened, as to afford a good and substantial vinous juice: that there were then in several parts of Somersetshire flourishing Vineyards, and that the Vineyard of the late Sir William Basset annually produced some hogshheads of good-bodied and palatable wine.

Bartholomew Rocque, of Walham Green, made wine for thirty years from a Vineyard he had planted in a common field garden; and although the ground was flat, the wine was as good as that of Orleans or Auxerre.

I have known, says Mr. Hanbury, good wine made of Grapes growing in England, and have drank our Burgundy no way inferior, as my taste could find out, to that noted wine which we have constantly imported from that country.

Mr. Vispre, in a dissertation on the growth of wine in England, printed at Bath in 1786, informs us, that he planted a piece of ground with Vines at Wimbledon in march 1783; that his intention was to train the shoots, as he did afterwards at Chelsea, upon the ground in their natural positions, like the vines of melons and cucumbers; and that he hoped thus to make good wine with well-ripened Grapes, almost every year. In 1784, he presented his plan to the Society for the Encouragement of Arts, &c.<sup>l</sup> The second season proving more favourable than the first, the Grapes on the Vines trained near the ground were considerably larger than those of the same kind growing on a south wall.

Hales, in his Practical Husbandry, says that he drank

<sup>k</sup> Museum Rusticum, 1. 85.

<sup>l</sup> Transf. vol. 3. for 1785.



with Dr. Shaw, wines made under his own care, from a little vineyard behind his garden at Kensington, which equalled many of the lighter wines of France; and while due care was taken of the Vineyard at Hammer-smith, much very good wine was obtained there for sale: yet neither of these were favourable spots. Mr. King's Vineyard at Brompton was well known to the curious. As was also that of the Hon. Charles Hamilton at Pain's-Hill, near Cobham in Surry. This last was situated on the south side of a gentle hill, the soil a gravelly sand; it was planted entirely with two sorts of Burgundy Grapes, the Auvernat, which is the most delicate, but the tenderest, and the Miller grape, commonly called the black Cluster, which is more hardy. The wine which he made resembled Champagne<sup>m</sup>.

From the evidences thus collected I think we may fairly conclude, notwithstanding the difficulties which the Hon. Daines Barrington and others have thrown in the way; first that we had in former times many Vineyards in England, properly so called, that were not Orchards of apples and pears, much less plantations of currants: and secondly, that Vineyards might now be cultivated in the southern and western parts of England, in proper soils and situations, by persons skilled in their management, provided they adopted the sorts of Grapes best suited to the climate, and kept the wines low, as they do in the northern parts of France.]

Mr. Miller, in allusion probably to some of the trials above recited, says that if we were to judge only by the success of some modern essays made near London, where small Vineyards have been planted a few years past, there would be no great encouragement to begin a work of this kind, because the produce of very few of these Vineyards has been so kindly as were to be wished: but this should not deter others from making farther trials, for scarcely one of them was placed in a proper soil and situation, and not one was rightly planted and managed: and how can success be expected from Vineyards under these disadvantages, when even in France and Italy they would succeed little better, if their management were not directed with more judgment. Mr. Miller therefore humbly offers his own opinion, founded on some trials he had seen made, and on instructions that he had received from several curious persons abroad who cultivated Vineyards for their own use, and from their friends who were very exact in observing the several methods of practice among the vigneron; whence he hopes that the prejudice which most people have against a project of this kind, will either be removed, or suspended until trials have been judiciously made.

[The Vine is not generally reputed to be a tree, but rather a trailing shrub; yet in its wild state it arrives sometimes at a considerable size. Pliny mentions one which attained a bulk sufficient to make a statue of Jupiter, and columns for Juno's temple. The great doors of the cathedral of Ravenna were made of Vine-tree planks; some of which are twelve feet long, fourteen and fifteen inches broad; the whole soil of that country producing vines of prodigious growth. Such another in Margiana is spoken of by Strabo, that was twelve feet in circumference. Pliny mentions one of six hundred years old in his time. At Ecoan, the late Duke of Montmorency's house, is a table of very large dimension, made of the like plant. That which renders this the more strange is, that a tree growing in such a wreathed and twisted manner, rather like a rope than timber, and needing the support of others, should arrive to such a bulk and firm consistence. But so it is, and Olearius affirms, that he found many Vines near the Caspian Sea, whose trunks were as big about as a man<sup>n</sup>. No wood, Pliny says, is of a more lasting nature. On the Barbary coast, Vines are now growing of surprising dimensions, some of them having trunks eight or nine feet in circumference.

In general we are not to expect Vines that are pruned and dressed to attain this enormous size; the vigour of the stock being transfused into the branches, and

consumed in bearing fruit. In our climate in particular we are not to look for instances of longevity and magnitude in the Vine. When however it is planted in a genial soil and situation, it will attain an amazing size and expansion even in this country.

One instance we have at Northallerton in Yorkshire, where a Vine is now (1789) growing, that once covered a space of one hundred and thirty-seven square yards; and might probably have covered three or four times that area. The circumference of the trunk, a little above the ground, was three feet eleven inches. It is supposed to have been planted an hundred and fifty years; but from injudicious management it was then in a very declining state. The soil is light and rich, of a dark colour, and inclining to sand<sup>o</sup>.

At Valentines, the seat of Donald Cameron, Esq. to the north of Ilford in Essex, is a Vine of the black Hamburgh sort, which was planted in april 1758. The branches extend two hundred feet, and the stem is about nineteen inches in girth. It never produces less than three hundred weight of fruit annually, and has been known to bear four hundred weight and a quarter. The average profit, when it was in the hands of a gardener, was eighty pounds per annum; but the Grapes did not then ripen till june: when the hot-house was kept warmer they ripened in march; when it is supposed they would have been worth, in some years, three hundred pounds<sup>p</sup>.

When Mr. Speechly saw it, which was about eight years prior to Mr. Lysons's account, it was in the hands of the gardener. It then furnished the entire roof of a pine-stove seventy feet long and eighteen feet broad; some of the branches also were trained downwards, and covered great part of the back wall. It was exceedingly robust, and under a very judicious management, by the gardener who planted it. The bunches in general were singularly fine, and composed of large well-swelled berries, but the crop was not large in the year 1788, when Mr. Speechly saw it.

Mr. Laurens, head master of the grammar school at Bury in Suffolk, gives a detailed account of a Vine there which covers forty-four yards of a wall ten feet high; and some of the branches run over the wall and cover about twelve yards more. It is thirty-five or thirty-six years old. The clusters hang very thick, and each weighs from half a pound to a pound. Upon some vigorous shoots there were about forty clusters. If it had been always pruned in the manner it has been for three or four years past, it would probably have covered three or four times the area of wall that it does at present. The soil is a light loose brownish mould, about two feet thick on a loose sand, with coarse gravel, and at the depth of twenty feet is water<sup>q</sup>.

But the most famous Vine for the quantity of its produce, is in a grape-house on the south side of Hampton Court Palace. It is of the black Hamburgh kind, and occupies the whole house, which is seventy feet by fourteen. It was planted in the year 1769; the stem is about thirteen inches in girth; and the principal branch, having been trained back at the extremity of the house, is one hundred and fourteen feet in length. This Vine has been known to produce, in one year, two thousand two hundred bunches of grapes, weighing on an average one pound each<sup>r</sup>.

Of Grapes, or the fruit of the Vine, most of the uses are so generally known, that it is not necessary to enlarge upon them. A few words may suffice upon their medical qualities. Of the juice of the unripe fruit is made Verjuice, now much superseded by juice of lemons; but still employed externally in bruises and sprains. The dried fruit, *Uvæ passæ majores et minores*, Raisins and Currants, are used as agreeable lubricating acescent sweets, in pectoral decoctions, and for obtunding the acrimony of other medicines, and rendering them grateful to the palate and stomach. The general effects of wine are, to stimulate the stomach, exhilarate the spirits, warm the habit, quicken the circulation, and promote perspiration: taken in too large quanti-

<sup>m</sup> Sir Edw. Barry on Wines, 468. Speechly, p. 197—209.

<sup>n</sup> Evelyn's Silva, b. 3. ch. 3.

<sup>o</sup> Speechly, 177.

<sup>p</sup> Lysons env. 4. 87. Gilp. for. scen. 1. 149.

<sup>q</sup> Speechly, 179.

<sup>r</sup> Lysons, 5. 72.



ties it is but too well known to prove intoxicating and powerfully sedative. In many disorders wine is admitted to be of important service, especially in fevers of the typhous kind, or of a putrid tendency: in many cases it proves of more immediate advantage than the Peruvian bark. Delirium, the consequence of excessive irritability, and a defective state of nervous energy, is often removed by the free use of wine. In the putrid sore throat, in the small-pox when attended with great debility and symptoms of putrescency, in gangrenes, and even in the plague, wine is considered a principal remedy. In almost all cases of languor and great prostration of strength, wine is a more grateful and efficacious cordial than can be furnished from the whole class of aromatics.

The Tartar, which is thrown off from wines, and consists of the vegetable alkali supersaturated with acid, is also an officinal article. Crystals of Tartar are in common use as a laxative and mild cathartic; are serviceable in the dropsy; and enter several officinal compositions.

Vinegar is esteemed of great use in almost all inflammatory and putrid disorders: and is very efficacious in counteracting the effects of vegetable poisons. Inhaled in form of a vapour, it is useful in the putrid sore throat. It is also much employed as a menstruum, or for extracting the virtues of other medicines.

The leaves (pampini) and the tendrils (capreoli,) having an astringent acid taste, were formerly used in diarrhoeas, hemorrhages, and other disorders, requiring refrigerant and styptic medicines. The juice or sap of the Vine (lacryma,) has been recommended in calculous disorders, and is said to be an excellent application to weak eyes, and specks of the cornea.

#### VARIETIES.

The Vine having been assiduously cultivated from the time of Noah, in a variety of soils and climates, the varieties are very numerous, and might be increased indefinitely, if more attention were given to raising it from seed, which is seldom done on account of the facility with which it may be propagated by other methods.

Virgil has given some of the varieties most esteemed in his time:

- “ Non eadem arboribus pendet vindemia nostris,  
 “ Quam Methymnæo carpit de palmite Lesbos.  
 “ Sunt Thasiæ vites, sunt et Mareotides albæ:  
 “ Pinguibus hæc terris habiles, levioribus illæ.  
 “ Et passio ptychia utilior, tenuisque lageos,  
 “ Tentatura pedes olim, vincturaque linguam,  
 “ Purpureæ, præciæque, et quo te carmine dicam  
 “ Rhætica? nec cellis ideo contende Falernis.  
 “ Sunt etiam Ammineæ vites, firmissima vina,  
 “ Tmolius adsurgit quibus, et rex ipse Phanæus,  
 “ Argitisque minor: cui non certaverit ulla,  
 “ Aut tantum fluere, aut totidem durare per annos.  
 “ Non ego te, Dîs, et mensis accepta secundis,  
 “ Transferim, Rhodia, et tumidis, bumaste racemis.  
 “ Sed neque quam multæ species, nec nomina quæ  
 sint,  
 “ Est numerus; neque enim numero comprehendere  
 refert:  
 “ Quem qui scire velit, Lybici velit æquoris idem  
 “ Discere quam multæ Zephyro turbentur arenæ:  
 “ Aut ubi navigiis violentior incidit eurus,  
 “ Nossæ, quot Ionii veniant ad litora fluctus.”

Pliny has been very copious upon this subject, but it would serve no purpose to give a long catalogue of names, which we could not reduce to the sorts with which we are now acquainted.

The oldest list of Grapes which we have in English is that of Parkinson in 1629.

1, 2. Our ordinarie Grape both white and red, which excelleth Crabs for Verjuice, and is not fit for wine with us.

3. The white Muscadine; very great, sweet, and firm, some of the bunches have weighed six pounds, and some of the Grapes half an ounce.

4. The red Muscadine as great, chiefly differing in colour.

5. The Burlet, very great and white, fitter for verjuice than wine, except in a hot year, when it is pleasant.

6. The little black Grape that is ripe very early.

7. Raisin of the Sunne Grape, very great and in very great clusters, reddish when ripe, yet in an extraordinary hot year, it hath got a little blewness cast over it: but naturally verie blew.

8. The Curran Grape, or the Grape of Corinth, the least of all; beareth both few and verie seldome with us. There is another sort that are red or browne, and of a four taste.

9. The Greeke wine Grape, blackish and very sweete.

10. The Frontignack: white, verie sweete and delicate, as the wine declareth, that smelleth as it were of Muske.

11. The square Grape; not fully round but sided.

12. The Damasco; great, white and very sweete.

13. The Ruffet; reasonable faire; exceeding sweet and whitish, with a thick skin, cruisted over with a shew of ash colour.

14. The long white Grape, like unto a Pigeon's egge, or as it were pointed pendent like a Pearle.

15. The partie-coloured Grape; reasonable great, discoloured when ripe, sometimes the whole bunches, and sometimes but some of the Grapes being parted whitish, and blacke halfe through, verie variably.

16. The Rhenish wine Grape; white, and endureth the cold of winter when it commeth early, more then the Muscadine, and is nothing so sweete.

17. The White wine Grape, is very like unto the preceding, the foile only and climate adding more sweetnesse.

18. The Claret wine Grape is altogether like the white, but reddish, which lying bruised upon the skins before they are pressed, give that Claret tincture to the wine.

19. The Teint; deeper and darker, whose juice is of so deepe a colour, that it serveth to colour other wine.

20. The Bursarobe; faire, sweete and white: of much esteeme about Paris.

21. The Alligant; verie sweete, giving so deep and lively a coloured red wine, that no other is comparable to it, and therefore usually called Spaniard's blood.

22. Blew or blacke Grape of Orleans; giving a darke coloured sweete wine much commended in those parts.

23. The Grape without stones, growing near Ascalon, the wine whereof is redde, and of a good taste.

Mr. Ray, in 1688, gives a few of the Grapes, which were then most in request in England.

1. The white and red Muscadine.
2. The small black, or cluster or Currant-grape.
3. The Canada or Parsly-grape.
4. The Frontignac, white and red.
5. The red and black Orleans.
6. The Raisin of the Sun Grape.
7. The Burlet.

8. The Grape de Arbois, in Burgundy: large, longish, oval, firm but sweet. This sort does not ripen early, and is therefore unfit for cold situations.

9. The Bursarobe.

10. The Muscate. Uvæ moschatæ, Apianæ Plinio, C. Bauh.

11. The Canary Grape: translated hither from the Rhine.

Mr. Ray adds a list of the principal wines then in use.

- French wines: 1. Vin de Paris. 2. Champagne.  
 3. Common Claret or Graves wine. 4. Burgundy.  
 5. Common white wine. 6. Frontignac. 7. Orleans.  
 8. Hermitage.

Spanish wines: 1. Canary Sack. 2. Malaga Sack.  
 3. Sherry Sack. 4. Alicant wine. Not unlike which is Tent wine.

Portugal: Porto-port wine is imported, but rarely. —Madeira wine is chiefly carried to America.

Italian wines: few are imported. 1. Red Florence wine. 2. Verdea, also from Tuscany, white and sweet. —Wines esteemed in Italy are, Malvasia from Crete; Vicentine;



Vicentine ; Montefiascone ; Montepulciano ; Syracule ; and Lacryma Christi. Red Muscadine is also imported from Crete.

German wines : are Neccar, Rhenish, Hock, Moselle and Baccherac.

For farther information Ray refers to a work of Andrea Baccio, printed at Rome in 1596.

John Rea, in 1702, gives most of those in Mr. Ray's list, and adds,

1. Blood-red.
2. The red round Lombardy.
3. White Rhenish.
4. Small white Muscat.
5. Muscat of Frontignan.

The Grapes most esteemed in Italy are la Lugliatica and Tremorina.

The fittest for England are, white and red Muscadine, the two sorts of Frontiniack, Blood-red, and D'Arbois.

The best Vines, he says, were then on the walls of the Physick Garden at Oxford.

This author gives directions for making a Vineyard in England, from Sir Thomas Hanmer. The sorts he recommends for this purpose are the white and red Muscadine and the Frontiniack. He does not however encourage the planting of Vineyards in England.

John Rose, who was gardener to king William at St. James's, in the English Vineyard, printed at the end of Evelyn's French Gardener, 12mo. 1691, mentions a new white Grape, which he says he found in his Majesty's garden at St. James's, with a red wood, and a dark leaf, the fruit of which ripens as soon in standard as against some walls.

Hitherto no heat but that of the sun had been applied to the ripening of Grapes. Stoves for preserving curious exotics from hot climates had been introduced soon after the middle of the seventeenth century ; and towards the end of the same century artificial fire was applied to raising Ananas or Pine-apples. The first mention I find made of its application to Vines is by Mr. Laurence in his Fruit-garden Kalendar, 1718 : where he says he has been informed that the Duke of Rutland, at Belvoir castle, has done so much justice to the Vine, as to have these artificial fires constantly burning behind his slope walls from Lady-day to Michaelmas ; whereby he is rewarded with the largest Grapes, and even the best Frontignacs in July.

I have not seen them, says Mr. Laurence ; but it is easy to conceive, that by the help of Stoves at convenient distances, and cavities in the structure of the wall to convey the heat to all parts, the desirable purpose of early, large, and good Grapes must be attained ; especially if the constant care of matting them at night be not neglected ; without which all would quickly be spoiled by the cold and perpendicular dews or frosts, that fall so frequently in April and May.

Our modern forcers of Grapes, will laugh at such improvement. It is however a considerable step from Master Parkinson's blanket.

But to return to our varieties : Bradley, in 1724, gives a list of forty-nine Grapes, which are most esteemed in France ; but as he does not pretend to reconcile these with our English catalogues, I will not set them down here, but proceed to Mr. Miller's, and subjoin some from the latest and most approved writers on the subject.]

N. B. The letter (h) distinguishes the Grapes proper for a Hothouse ; the letter (v) for a Vinery ; and the letter (w) for a common Wall.

1. July Grape, or Morillon noir hatif. *Dubam. 2. 264. n. 1. Speechly n. 37. Forsyth n. 1. Bradley n. 1.* Berry small, round, black, growing loose on the bunches, which are small, but many. Juice sugary, with little flavour. Principally esteemed for ripening early without fire heat. Mr. Miller says, the beginning of August ; Mr. Forsyth, September.

2. The black Sweet-water. *Speechly n. 17. Forsyth n. 20.* Berry small, roundish, growing close in the bunches, which are short. Skin thin, juice very sweet. Birds and flies are very apt to devour them if

they are not guarded : they are also subject to crack. This ripens soon after the preceding. *v. w.*

3. The white Sweet-water. *Speechly n. 16. Forsyth n. 19.* Berry large and round when in perfection. Juice sugary, but not vinous. It is apt to have very small berries among the large ones.—It is esteemed an excellent Grape, the juice being very agreeable ; the skin and flesh very delicate. In some situations, on the side next the sun, the berries are clouded with a russet colour, and are then generally most admirable. This Grape is forced in Holland preferably to any other. It is by the Dutch called Parel druif. *Speechly b. v. w.*

4. Chasselas Blanc, or Royal Muscadine. *Dubam. n. 2. t. 1. ? or D'Arbois, Speechly n. 29. Forsyth n. 2.* An excellent Grape ; the bunches generally large, and at the upper part having two smaller side bunches or shoulders. Berries round, white, when perfectly ripe turning to an amber colour. Juice rich and vinous. It ripens in September ; but if carefully preserved, will hang very late, and become excellent.—The berry is of a moderate size, with a thin skin, and a juicy soft flesh. The bunches sometimes weigh six or seven pounds. The Vine is very distinguishable by the wood and foliage, generally growing remarkably gross and strong. *Speechly. b. v.*

5. The Chasselas Musqué, or le Cour Grape, by some Frankindal. *Dubam. n. 4.* Excellent, and generally ripens well in England on a good-aspected wall. Berries like those of the preceding in shape, size and colour ; but fleshy with a little musky flavour. It ripens in September.—Mr. Speechly says, that he had his Black Muscadine, *n. 28.* from Holland, by the name of Frankendale. See *n. 19.*

6. The Black Cluster, or Meunier Grape, so called from the hoary down of the leaves in summer. For the same reason Speechly calls it Miller's Burgundy, *n. 33.* And Forsyth, the Miller Grape. Morillon faconné, *Bradley n. 2.* It is a good fruit, and ripens well here. The bunches are short ; the berries oval, and very close, so that many of the inner ones continue green, when those on the outside are perfectly ripe. It is by some called the Burgundy Grape, and ripens in September.—Speechly adds, that the skin and flesh are delicate, the juice sweet and pleasant. *v. w.*

This author has another that he calls Small Black Cluster, *n. 34.* the berries and bunches of which are little different from Miller's Burgundy, but the leaves have less down, and are somewhat smaller. The fruit is sweet and delicate, and is sometimes called the Burgundy Grape. See Forsyth *n. 24.*

7. The Auvergne, or true Burgundy Grape, sometimes called Black Morillon. *Forsyth n. 44. Le Bourguignon, Bradl. n. 24. ?*—An indifferent fruit for the table, but one of the best for making wine. Berries oval, and hanging looser on the bunches than in the Cluster Grape, ripen more equally.

8. The Corinth or Currant Grape. *Dubam. n. 14. t. 7. Forsyth n. 49.* Raisin de Corinthe *Bradl. n. 18.* Berry small, roundish, generally without stone, of a deep black colour, and much clustered on the bunches, which are short. It has a sugary juice, and ripens in September, but will not last long. *b. v.*

[Richard Hakluyt, in his Remembrances, 1582, informs us that it is said, since we traded to Zante, that the plant which beareth the Coren is brought into this realm from thence.

I have heard those who have eaten the fruit ripe in that Island, speak of it with exquisite delight.

Mr. Speechly has a White Corinth Grape, with a small round berry, thin skinned, having a very delicate juicy flesh, of an agreeable flavour. The berries when perfectly ripe, are transparent, so that the seeds appear very distinctly. *N. 48. Fors. n. 30.* This therefore differs from the black Zante Grape, which seldom has any seeds.

Bradley has both a red and a blue Curran Grape, besides the common sort.]

9. The Red Chasselas. *Forsyth n. 51.* Very like the White (*n. 4.*) in size and shape, but of a dark red colour. It is a very good Grape, but ripens later than the White. See *Bradl. n. 8.*

10. The



10. The White Muscadine. *Speechly n. 27.* White or Common Muscadine, by some called the Chasselas. *Forfyth n. 5.* Somewhat like the Chasselas, (n. 4.) but the berries are smaller and hang looser on the bunches, which are longer but not so thick. The juice is sweet, but not so rich.—It is however the best Grape that we have for a common wall, and is a great bearer. *Forfyth.* It is often eaten before it is well matured, but when well perfected is an exceeding fine Grape. *Speechl.*

11. Black Frontinac, or Muscat noir. *Dubam. n. 9. Forfyth n. 15. Bradl. n. 13. 14.* Blue or Violet Frontinac. *Speechly n. 14.* Berries round of a good size, loose on the bunches, yet do not ripen equally; when fully ripe they are very black, and are covered with a meal or flue like the Plum: the juice is very rich and vinous. Bunches short. It ripens at the end of september or beginning of october.

12. The Red Frontinac, or Muscat rouge. *Dubam. n. 7. t. 4. Forfyth n. 16. Bradl. n. 12.* An excellent Grape when fully ripe, but unless the season proves very warm, they rarely ripen without artificial heat in England. Bunches longer than those of the former, the berries large and round, when fully ripe of a brick colour, but when unripe gray with a few dark stripes. This is then taken to be a different kind commonly called Grisley Frontinac: but it is the same Grape. The juice of this has the most vinous flavour of all the sorts, and is greatly esteemed in France. *v.*

Both *Speechly* (n. 12.) and *Forfyth* (n. 18.) have a Grizzly Frontinac, which they distinguish from this. The Red Frontinac of the former (n. 15.) is different from Miller's, and he says is undoubtedly the true one. Berries of a moderate size, round, of a fine red colour, and high flavour. They grow close upon the bunches, which are of a moderate size. He had seen only two or three bunches, produced here last summer from a plant which came from France the preceding year, growing in a pot.

13. White Frontinac. Muscat Blanc. *Dubam. n. 6. t. 3. Speechly n. 11. Forfyth n. 17.* Bunches larger than either of the former, berries round, so closely clustered that unless they are carefully thinned early in the season they will not ripen; and the moisture will be detained in the autumn, which will cause them to rot. Juice excellent; and when the fruit is perfectly ripe, it is inferior to none. *b. v. w.*

14. Alexandrian Frontinac, or Muscat d'Alexandrie, by some called Muscat of Jerusalem. *Dubam. n. 10. t. 5.* White Muscat of Alexandria. *Speechly n. 1. Forfyth n. 6.* Berries oval, hanging loose on the bunches, which are long and not shouldered. There are two sorts, one with white, the other with red berries; their juice is very rich and vinous, but they seldom ripen in England without artificial heat.—This Grape is in great estimation, and is more generally planted in hot-houses than any other sort. When perfectly ripe, the berries are of a fine amber colour: the skins are thick; the pulp hard, and not very juicy, but of a high musky flavour. *Speechly.*

15. Red Hamburgh. Berries inclined to oval, thin-skinned, dark red, with a juicy delicate flesh, that has a rich vinous flavour. Size middling. Bunches large. End of october or in november. *b. v. Speechly n. 19. Forfyth n. 22.* It is sometimes called the Gibraltar Grape.

16. Black Hamburgh. Like the preceding, but black. Mr. *Speechly* remarks, that the skin is thick, and the pulp hard; but that it is a valuable Grape, being a good-flavoured fruit, and a plentiful bearer.—Mr. Miller says it is by some called the Warner Grape.

It ripens with the former. *b. v. Speechly n. 18. Forfyth n. 21.*

17. St. Peter's Grape. *Speechly n. 43. Forfyth n. 47.* Berry large, oval, deep black. Bunches very large, and make a fine appearance at the table, but the juice is not rich, and it ripens late in the year.—Mr. *Speechly* says, the berry is nearly globular, the skin thin, and the pulp very delicate and juicy; as it is very apt to crack, it is not generally planted in forcing-houses, *v.* He has another (n. 44.) which he calls Black Grape from Palestine. It is like the St. Peter, but does not crack in the hot-house.

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The leaves are much more divided than those of the other sorts, approaching to the Parsley-leaved Grape.

The Claret Grape, Bourdelais or Verjuice Grape; the Raisin Grape, the striped Grape, and many others which never come to perfection here, are not worthy of any place in gardens, unless for the sake of variety; for even when they have the assistance of heat to bring them to maturity, their juice is harsh, and without flavour.

[Since Mr. Miller's time many new Grapes have been introduced; and the luxury of forcing has been carried to such an extent, that several sorts are now cultivated which were then neglected, as they would not ripen kindly on walls, or by the common mode of treatment then used.

The choicest of these, from the catalogues of Mr. *Speechly* and Mr. *Forfyth* are here added:

18. The Malmsey Muscadine. *Sp. n. 30. Forf. n. 3.* Malvoisee Musquée. *Bradl. n. 15.* It somewhat resembles the Royal Muscadine. (n. 4.) The juice is very sweet, and of a high flavour. It is a good bearer and a very fine Grape. *w. v.*—Bradley says it is one of the richest musked Grapes; comes from Montferat, and grows plentifully about Turin.

19. The Black Muscadine. *Sp. n. 28. Forf. n. 4.* Muscat noir. *Bradl. n. 13.* Berries and bunches somewhat smaller than in the White Muscadine. (n. 10.) Very prolific, and makes a fine appearance, on account of the black berries being powdered with a blueish bloom; but the pulp is not so delicate and juicy as the white. *b. v.*

Mr. *Speechly* says he procured a plant of this Grape from Holland by the name of Frankendale.

20. The Red Muscat of Alexandria. *Forf. n. 7.* Muscat rouge. *Bradl. n. 12.* Resembles the White; (n. 14.) only the berries are red. *b.*

Bradley says, it requires a good deal of sun to bring it to perfection, but is then one of the best Grapes.

21. The White Muscat from Lunel. *Sp. n. 49. Forf. n. 8.* Berries large and oval, when perfectly ripe of a fine amber colour, sometimes clouded with brown or russet, especially on the side next the sun. Skin thin, and pulp delicate, full of a vinous juice. This Vine is a plentiful bearer and highly esteemed. *b. v.*

22. The Black Muscadel. *Sp. n. 8. Forf. n. 9.* Berries large, oval, black; with a thin skin, and a delicate juicy flesh. *b.*

The same bunch contains berries of different sizes, some of them very large and long, but somewhat compressed and flat at the ends. The leaves change in autumn to a beautiful scarlet.

23. The Red Muscadel. *Sp. n. 9. Forf. n. 10.* Berries large, oval, of a beautiful red colour, with a thick skin and hard flesh, something like the Raisin Grape. The bunches frequently weigh six or seven pounds, and are most elegantly formed of equal berries. It is one of the latest ripe. *b.*

The leaves change in autumn to a beautiful red and green.

24. The Black Damascus. *Sp. n. 2. Forf. n. 11.* Berries large, round, black, with a thin skin, and a delicate, rich, juicy pulp, of an exquisite flavour. *b.*

The same bunch commonly has berries of different sizes; the small ones, without stones, and the large ones with only one. It is a late Grape, but a most excellent and very valuable sort.

25. The Black Tripoli. *Sp. n. 3. Forf. n. 12.* Nearly allied to the preceding, but the berries are all large and equal, with one stone in each. It is a truly valuable late Grape. *b.*

The foliage in both these is similar, and in autumn beautiful.

26. The black Spanish or Alicante Grape. *Sp. n. 26. Forf. n. 13.* Grosnoir d'Espagne, *Bradl. n. 37.* Berries inclining to an oval shape, moderately large and black, on exceedingly long unshouldered bunches. Skin thick, and the seeds uncommonly large. Pulp soft, juicy, and of an agreeable flavour. It is a pretty good fruit, and is sometimes called the Lombardy Grape. *b. v.* See n. 42.

The leaves in autumn are beautifully variegated with red, green and yellow.



The most excellent Spanish Wine is made from this Grape.

27. The Black Lisbon. *Sp. n. 46. Forf. n. 14.* Berries large, globular, black, thin-skinned, and juicy. Bunches large-shouldered, resembling the Black Hamburgh. It is a good Grape. *b. v.*

28. Grizzly Frontinac. *Sp. n. 12. Forf. n. 18.* Berries round, somewhat larger than the White, (n. 13.) brown, red and yellow. It has a high, musky, perfumed flavour. *b. v.*

29. The White Hamburgh. *Sp. n. 20. Forf. n. 23.* Berries large, oval, with a thick skin and hard flesh. It is a plentiful bearer, and forms large bunches; but is not so valuable as the Black or Red Hamburgh, (n. 15. 16.) It is sometimes called the Portugal Grape. *b.*

30. The large Black Cluster. *Sp. n. 35. Forf. n. 25.* Berries larger and more oval than the small; (see n. 6.) with a juice of a harsh rough taste. *v.*

Mr. Speechly says it was sent him from Lisbon, and that he was assured it is the Grape of which Port wine is made.

31. The White Grape from Alcobaca. *Sp. n. 10. Forf. n. 26.* Berry large, oval, white, with a thin skin and juicy pulp; on large and long bunches, without shoulders. *v.*

It was sent to Mr. Speechly, with many others, from Portugal, by Gerrard De Visme, Esq.

32. The White Morillon. *Sp. n. 36. Forf. n. 27.* Berry oval, white, of a moderate size, and delicate juicy pulp, growing close on the bunches, which are small. Leaves soft, covered with down on the under side, somewhat similar to the genuine Tokay Grape, to which it appears to be nearly allied.

33. Early White Grape from Teneriffe. *Sp. n. 42. Forf. n. 28.* Berries round, middle-sized, with a thin skin, and delicate juicy pulp, of an extraordinary sweetness. The berries and bunches much resemble the common Muscadine, to which it appears to have a near affinity. *v. w.*

34. The Aleppo Grape. *Sp. n. 4. Forf. n. 31.* Berries middle-sized, roundish, with a thin skin, and delicate juicy flesh of an exquisite vinous flavour. Colour various, white, black, but the major part striped in the same bunch, sometimes one half is white and the other half black, and the colours never intermix, but are divided by straight lines. The leaves in autumn are very curiously striped with green and yellow, somewhat similar to the Aleppo Lettuce. *b. v.*

35. The Red Grape from Syracuse. *Sp. n. 5. Forf. n. 32.* Berries very large, oval, somewhat irregularly formed; hanging loosely on the bunches, which are pretty large. This is a noble Grape, but little known in this country. *b.*

36. Le Coeoeur or Morocco Grape. *Sp. n. 6. Forf. n. 33.* Berries large, somewhat heart-shaped, of a tawny grizzly colour; often unequally sized: they never contain more than one stone, and the small ones have none. The pedicels are short, and singularly large. It is a much-esteemed Grape, and very scarce. *b.*

37. The Golden Galician. *Sp. n. 7. Forf. n. 34.* Berries large, oval, with a hard flesh but of a tolerable flavour. They and their footstalks are of a light yellow colour. *b.*

38. The Black Raisin Grape. *Sp. n. 39. Forf. n. 35.* Berries large, oval, with a thick skin and a firm flesh. It forms long handsome bunches. *b.*

39. The White Raisin Grape resembles the preceding, except that the berries are white.

Mr. Twiss in his travels through Spain and Portugal, informs us, that Raisins are cured these two ways: first, by cutting the stalk of the bunches half through, when the Grapes are almost ripe, and leaving them suspended on the Vine by their stalks. The sun, in this state, candies them, and when they are dry they are packed up in boxes.—Secondly: when the Vines are pruned, the tendrils are preserved till the time of vintage: a great fire is then made, wherein the tendrils are burnt, and in the lye, made of their ashes, the newly-gathered Grapes are dipt, after which they are exposed to the sun to dry.

Mr Swinburne, in his travels through Spain, says

that the Raisins dried upon the coast of Valencia are dipped in a lye of wine and ashes. *Speechly p 14. note.*

40. The Malvoise, sometimes called the Blue Tokay. *Sp. n. 21. Forf. n. 37.* La Malvoisie or Malmsey Grape. *Bradl. n. 41.* Berries small, inclining to oval, brown powdered with a blue bloom; skin thin, and flesh delicate, full of a vinous juice. *b. v.*

Bradley says it bears well, and though the berry is small, it is extremely rich and high flavoured; that it ripens early, and is so full of juice that he esteems it the most melting of all Grapes.

He has two other Malvoisies, red and white, but he esteems the first the best.

41. The genuine Tokay. *Sp. n. 22. Forf. n. 38.* White, inclining to oval, rather close on the bunch, which is of a moderate size: skin thin, and pulp delicate, abounding with a very agreeable juice. The leaves on the under side are covered with a fine soft down, like fatten. The Duke of Portland received it from Hungary. *b. v.*

42. The Lombardy. *Sp. n. 23. Forf. n. 39.* Berry large, inclining to oval, of a beautiful flame-colour. The bunches are regularly formed with shoulders, and frequently weigh six or seven pounds. *b. v.*

The leaves are much divided, and their upper surface is of a deep green colour. This is by some called the Rhenish Grape, and by others the Flame-coloured Tokay.

43. The Smyrna. *Sp. n. 24. Forf. n. 40.* Berry large, red, oval, with thin skin and delicate juicy flesh; on long bunches with shoulders loosely connected. The leaves in autumn have purple edges. It is a good Grape, but little known in this country. *b. v.*

44. The Brick Grape. *Sp. n. 25. Forf. n. 41.* Berries small, inclining to oval, of a pale red or brick colour; growing close on the bunch, which is very small. It is a very sweet Grape, but not much esteemed. *v. w.*

45. The Claret Grape. *Sp. n. 31. Forf. n. 42.* Berries small, black, inclining to oval, growing close, in small bunches: the juice is blood-red, of a harsh taste, excepting the Grapes are perfectly matured, and then it may be considered rather as an agreeable delicate fruit. The leaves change to a russet-red early in summer, and to a deep red in autumn. *b. v.*

46. The Syrian Grape. *Sp. n. 32. Forf. n. 43.* Berries white, large, oval, with a thick skin, and a firm hard flesh; on well-formed bunches enormously large. It is very prolific, and when well perfected, may be called a very eatable fruit; it may also be kept without difficulty many weeks longer than any other sort. They may thus be had in perfection in January and sometimes even in February. *b.*

This is supposed to be the sort of Grape which the twelve spies, who were sent by Moses to view the land of Canaan, cut down by the brook of Eshcol, and bare it between two upon a staff. (Numb. 13. 23.) How large the bunch might be we are not told; but Strabo testifies that the Vines in Margiana and other places were so big, that two men could scarcely compass them with their arms, and that they produced bunches of Grapes two cubits or a yard long. And Huetius informs us, that Crete, Chios and other islands of the Archipelago afford bunches of ten, and sometimes of thirty-six or forty pounds weight. Nay even in this country, a bunch of the Syrian Grape was produced at Wellbeck under the care of Mr. Speechly, that weighed nineteen pounds and an half. Ignorant persons, judging from the ordinary size of a bunch of grapes, have attempted to throw a ridicule upon the circumstance of conveying a single bunch between two men. Supposing the branch with its cluster to have weighed forty or fifty pounds, it might certainly have been carried by one man: but as it was to be exhibited to the people, it was proper that the fruit should be preserved fair, whole and unbruised, which it could not have been without carrying it in the manner they are related to have done. Accordingly when the Duke of Portland sent his large cluster to the Marquis of Rockingham as a present, it was conveyed to Wentworth house, a distance of more than twenty miles, by four labourers, who carried it, suspended on a staff in pairs, by turns. Its greatest diameter was nineteen inches and an half,

its



its circumference four feet and an half, and its length twenty-one inches three quarters<sup>u</sup>.

47. Cat's Grape. *Sp. n. 38. Forf. n. 45.* Berries small, oval, greenish white, with a thin skin, and soft juicy pulp, growing close on small bunches. Taste very disagreeable unless perfectly ripe, and then it is very sweet. *b. v.*

48. The Damson Grape. *Sp. n. 41. Forf. n. 46.* Berries very large, oval, of a beautiful purple colour, growing loosely on large bunches. Leaves large, thick, and succulent, having something of the appearance of green leather. *b.*

49. The Greek Grape. *Sp. n. 47. Forf. n. 48.* Berries of a moderate size inclining to oval, bluish white, growing close in moderately-sized handsome bunches. It is a delicate fruit justly esteemed. The leaves grow on very short footstalks, and bear a resemblance to those of the Sweetwater. *b. v.*

50. The Cornichon. *Sp. n. 50. Forf. n. 50.* Berries white, with a thick skin, and a firm sweet flesh. Their shape is remarkable, tapering from the stalk, but not in a regular manner, and ending in a blunt point, according to the French name, something like a horn; but its figure is more like the long end of a small fish's bladder. *b.*

51. The new Muscat of Jerusalem. Introduced by Mr. Phillip Miller about thirty-six years ago, (1766) and now in the Botanic Garden at Chelsea. Berries large, round, red, in fine seasons the size of a gooseberry: but as it does not ripen well on a wall in this country, it might be worth while to try it in a hot-house or vinery. *Forf. n. 52.*

52. The Black Prince. Berries large; bunches also large, in a favourable season weighing a pound and half on walls. It very well deserves a place in the hot-house and vinery. Ripe in october, and will hang till the middle of november. *Forf. n. 53.*

Mr. Speechly says he might add two or three seedling Grapes that have borne fruit: one the produce of the Black Frontinac, impregnated by the White Sweetwater, which may be considered as a valuable sort. The berries are black, but of unequal sizes. It ripens early.

Mr. Forsyth also adds several names to his list, without any description or observation. Some of them are mere varieties of varieties; and of such there is no end. They are however the following:

Black Frankindale. See *n. 5.* and *19.*

Black Gibraltar. See *n. 15.* for the Red.

Black Muscat of Alexandria. See *n. 14.*

The Miller Grape. See *n. 6.*

New White Sweetwater. See *n. 3.*

Passé Musk.

Pearl Muscadine.

Red Constantia.

Red Raisin. See the Black and White, *n. 38* and *39.*

Sir Abraham Pitches's Fine Black.

West's St. Peter. See *n. 15.* It is common for persons who raise new varieties, to add their own names to an old one.

White Constantia.

From this and the Red is made the famous Constantia wine, so called from a place near the Cape of Good Hope. But Colonel Paterson informs us that this Vine, when transplanted to but a small distance from that spot, produces a very inferior wine. The situation of the place is rather low, but rather more elevated than other parts of the district; and the soil is a light sandy loam.

Mr. Speechly says, that he had his Black or Purple Frontinac, *n. 13.* from the Cape by the name of Black Constantia. The berries, he says, are black, but when produced under glass are generally dark purple: they are moderately large, round, and of a most excellent flavour. The bunches are very long. It has been generally called the Red Frontinac (See *n. 12.*) and is one of our very best Grapes.

*Select Vines for a small Garden.*

The White Muscadine. White Sweetwater. Black

<sup>u</sup> Speechly, p. 41. and Pegge's note.

Sweetwater. Large and Small Black Cluster. The Miller Grape.

St. Peter's and the Black Hamburg, will do very well in favourable seasons<sup>x</sup>.

Mr. Speechly remarks, that the leaves of white Grapes change to a yellow colour. Those of the Claret grape change to a dark purple and russet green early in the season. Those of the Blue Frontinac and Black Muscadine change late to a beautiful scarlet and yellow intermixed. The leaves of the Aleppo Grape are curiously striped with red, green and yellow: the Muscadine, Smyrna, Morocco, Black Damascus, Grizzly Frontinac, and Black Spanish or Alicant, are also exceedingly beautiful.

The leaves of the pale-red and grizzly Grapes are not always tinged with red; but whenever the least tinge of red, purple or scarlet appears on the leaves of the Vine at the time of their maturation, it is a certain sign that the Grape will be grizzly, red, or black. By attending to this, we may ascertain at the end of the first year, the colour which the Grapes of seedling Vines will have.

β. The Currant Vine has been noticed among the varieties: it is not unusual to have some berries without stones in other varieties: and we have dried Grapes frequently imported under the name of Sultana Raisins, that are esteemed on that account.

2. Branches purplish, smooth. Leaves equal in length and breadth, cordate at the base; segments lanceolate, attenuated, the lateral ones with lanceolate teeth on the outside, the middle one deeply serrate on each side above. Stipules lanceolate. Racemes an inch long: with approximating umbellets. Native of Virginia<sup>y</sup>. Vahl says he had it from the Paris Garden.]

3. Trunk woody, sending out many slender branches, furnished with branching tendrils, by which they fasten themselves to trees. Flowers in bunches like those of the other sorts; succeeded by berries or Grapes of an austere taste.

[Size of the common Vine but with gray hairs scattered over the whole. Leaves undivided, almost smooth above, but villose and veined beneath with thick vessels. It has a simple tendril from the axils, and simple raceme from the middle of the tendril<sup>z</sup>.

Leaves ovate, acute, alternate, on reddish petioles. Flowers white, like those of the common Vine and equal; on small lateral racemes. Berries round, brownish-green, small, watery, acid, eatable<sup>a</sup>.

It produces a great quantity of small black Grapes in the lower hills of Jamaica; but they are of a rough taste, and would doubtless make an excellent red wine, if properly managed. It seems to thrive best in the Red hills. In Jamaica it is known by the name of Water-withe. When it grows luxuriant, as it generally does in the higher woody lands, it is so full of juice, that a piece of about three feet will yield near a pint of clear tasteless water; which has saved the lives of many who have wandered long in the woods, without any other refreshment of a liquid sort<sup>b</sup>.

Native both of the East and West Indies, and Cochin-China.

4. Stem round, ash-coloured, smooth. Leaves acute, villose beneath, especially along the nerves. Petioles filiform, half an inch long. Panicles without tendrils, with glomerate floscules. Native of Japan<sup>c</sup>. At first not distinguished by Thunberg from the preceding.]

5. Leaves large, covered with a white down on the under side. Berries round and black, with a rough-flavoured juice.

[Stem very long and slender, branched, and climbing by tendrils. Leaves subtrilobate and entire, serrate-toothed, with a rust-coloured down beneath, rough, alternate, on long petioles. Flowers very small, pale, on short lateral racemes. Berries round, black, acid but eatable.

From the fermented Grapes of this and the Indian Vine a tolerably good spirit is distilled in Cochin-China<sup>d</sup>.

<sup>x</sup> Forsyth, p. 113.

<sup>y</sup> Vahl.

<sup>z</sup> Linn. zeyl.

<sup>a</sup> Loureiro.

<sup>b</sup> Browne and Sloane

<sup>c</sup> Thunberg.

<sup>d</sup> Loureiro.

Native



Native of North America, Amboyna, Cochinchina and Japan.—Introduced in 1656, by Mr. John Tradescant, jun.<sup>e</sup>.]

6. Stem shrubby climbing by tendrils. Berries black, with a flavour resembling the scent of a fox, whence the name. [Native of Virginia. Cultivated 1656, by Mr. John Tradescant, jun.<sup>e</sup>.]

7. Stem climbing; somewhat angular, smooth and even, jointed, knobbed: branches alternate, spreading, resembling the stem. Leaves alternate; the lower ones larger, five-lobed; upper gradually less, three-lobed with the lobes gashed and toothed; uppermost undivided, ferrate, deep green above and even, beneath paler with the veins standing out and rugged. Petioles round, have a brown downy groove above, spreading, as long as the leaf from an inch to a finger's length. Tendrils opposite to the peduncles, bifid, smooth. Flowers axillary, in subdichotomous smooth panicles. Corolla white. Berries globular, green, smooth, the size of a pea, containing two or sometimes three or four seeds, surrounded by a hardish white rind, subcordate, attenuated below, subbilocular. Native of Japan, flowering there in july and august.<sup>e</sup>.]

8. The stalks and branches of this are like those of the common Grape, but the leaves are cut into many slender segments. The Grapes are round, white, and disposed in loose bunches. Mr. Miller says, it is supposed to grow naturally in Canada, [but that is probably a mistake, which took its rise from Cornutus having inserted it in his work. It was cultivated by Mr. John Tradescant, jun. in 1656.] But as the fruit has little flavour, and ripens late in autumn, it has been almost banished the English gardens, where at present there are only a few plants preserved for the sake of variety.

[Speechly and Forsyth have a white Parsly-leaved Grape, called also Ciotat, or Ciouta, as Bradley writes it. In his catalogue from France it is named Raisin d'Autriche à feuille de Persil. Berries round, white, of a moderate size, with a thin skin, and delicate juicy pulp, but not of a vinous flavour. The bunches are of a pretty good size, almost similar to the White Muscadine. Bradley adds that it bears pretty well. *Sp. n.* 45. *Forf. n.* 29. *Bradl. n.* 6.]

There is a variety of this with red berries.

9. See *Hedera quinquefolia*, n. 3.

10. This resembles the preceding species. Stem scandent. Leaves alternate, digitate, on long petioles: leaflets seven, or from five to eight, on petiolets, elliptic, smooth, substantial, mucronate, twice as long as the petiolets. Raceme terminating, very large, formed of alternate spikes, which are simple and subtomentose. Flowers sessile, small, in remote whorls. Calyx five-toothed. Petals cohering at the top, deciduous at the base. Stamens five. Pistil blunt. Therefore it is not either a *Hedera* or a *Cissus*. Native of the East Indies.<sup>b</sup>

11. Branches purplish, smooth, round. Leaflets in fives, the middle ones subsessile, the rest petioled, the lowest frequently augmented on the outside with a lobe, ovate, acuminate, having four or five large serratures on each side, pale green beneath, two inches long. Peduncles opposite to a leaf, twice bifid. Pedicels umbelled. Flowers small. Native place unknown. Vahl had it from Schumacher.<sup>c</sup>]

12. Stem woody, sending out many slender branches, which climb by tendrils. Leaves composed of many smaller winged leaves, divided somewhat like those of common Parsley, of a lucid green on their upper side, but much paler on their under. Flowers axillary in loose bunches, very small, white, composed of five small petals, which expand and soon fall off. They are not succeeded by any fruit in England, but the berries which come from North America, their native place of growth, have generally three seeds in each.

Mr. Rand gave it the name of Reynardsonia, from Samuel Reynardson, Esq. of Hillendon near Uxbridge, who was a great collector of foreign plants, [and cultivated the Pepper Vine there before the year 1700, as

we learn from Plukenet.<sup>k</sup>] Mr. Miller says, that the characters are not sufficiently known in Europe, to determine its proper genus; for it seldom flowers here, and has never produced any fruit in England. He therefore leaves it in this genus on the authority of Linneus.

#### PROPAGATION AND CULTURE.

All the sorts of Grapes are propagated either from layers or cuttings, the former of which is greatly practised in England, but the latter is what I would recommend, as being much preferable to the other; for the roots of Vines do not grow strong and woody, as in most sorts of trees, but are long, slender, and pliable; therefore when they are taken out of the ground, they seldom strike out any fibres from their weak roots, which generally shrivel and dry; so that they rather retard than help the plants in their growth, by preventing the new fibres from pushing out; for which reason I had rather plant a good cutting than a rooted plant, provided it be well chosen, and there is little danger of its not growing.

But as there are few persons who make choice of proper cuttings, or at least that form their cuttings rightly in England, so it will be proper to give directions for this in the first place, before I proceed. You should always make choice of such shoots as are strong, and well ripened of the last year's growth: these should be cut from the old Vine, just below the place where they were produced, taking a knot, or piece of the two years wood to each, which should be pruned smooth; then you should cut off the upper part of the shoots, so as to leave the cutting about sixteen inches long. When the piece or knot of old wood is cut at both ends near the young shoot, the cutting will resemble a little mallet, from whence Columella gives the title of Malleolus to the Vine cuttings. In making the cuttings after this manner, there can be but one taken from each shoot; whereas most persons cut them into lengths of about a foot, and plant them all; which is very wrong; for the upper part of the shoots is never so well ripened as the lower, which was produced early in the spring, and has had the whole summer to harden, so that if they take root, they never make so good plants; for the wood of those cuttings being spongy and soft, admits the moisture too freely, whereby the plants will be luxuriant in growth, but never so fruitful as such whose wood is closer and more compact.

When the cuttings are thus prepared, if they are not then planted they should be placed with their lower part in the ground in a dry soil, laying some litter upon their upper parts to prevent them from drying: in this situation they may remain till the beginning of april (which is the best time for planting them) when you should take them out, and wash them from the filth they have contracted; and if you find them very dry, you should let them stand with their lower parts in water six or eight hours, which will distend their vessels, and dispose them for taking root. Then the ground being before prepared where the plants are designed to remain (whether against walls, or for standards, for they should not be removed again,) the cuttings should be planted; but in preparing the ground, you should consider the nature of the soil, which, if strong, and inclinable to wet, is by no means proper for Grapes; therefore where it so happens, you should open a trench where the cuttings are to be planted, which should be filled with lime rubbish, the better to drain off the moisture; then raise the border with fresh light earth about two feet thick, so that it may be at least a foot above the level of the ground, then you should open the holes at about six feet distance from each other, putting one good strong cutting into each hole, which should be laid a little sloping, that their tops may incline to the wall, but it must be put in so deep, as that the uppermost eye may be level with the surface of the ground; for when any part of the cutting is left above ground, as is the common method used by the English gardeners, most of the buds attempt to shoot;

<sup>a</sup> Hort. kew. <sup>b</sup> Idem. <sup>c</sup> Thunberg. <sup>d</sup> Linn. mant.

<sup>e</sup> Vahl.

<sup>k</sup> Hort. kew.



so that the strength of the cuttings are divided to nourish so many shoots, which must consequently be weaker than if only one of them grew; whereas on the contrary, by burying the whole cutting in the ground, the sap is all employed on one single shoot, which consequently will be much stronger; besides, the sun and air are apt to dry that part of the cutting which remains above ground, and so often prevents their buds from shooting.

Then having placed the cutting into the ground, you should fill up the hole gently, pressing down the earth with your foot close about it, and raise a little hill just upon the top of the cutting, to cover the upper eye quite over, which will prevent it from drying; this being done, there is nothing more necessary, but to keep the ground clear from weeds until the cuttings begin to shoot; at which time you should look over them carefully to rub off any small shoots, if such are produced, fastening only the first main shoot to the wall, which should be constantly trained up, as it is extended in length, to prevent its breaking or hanging down; you must continue to look over these once in about three weeks during the summer season, constantly rubbing off all lateral shoots which are produced, leaving only the first main shoot; and be sure to keep the ground constantly clear from weeds, which, if suffered to grow, will exhaust the goodness of the soil, and starve the cuttings.

The Michaelmas following, if your cuttings have produced strong shoots, you should prune them down to two eyes, which, though by some people may be thought too short, yet I am satisfied, from several experiments, to be the best method. The reason for advising the pruning Vines at this season, rather than deferring it till spring is, because the tender parts of those young shoots, if left on, are subject to decay in winter, for they are apt to grow late in the year, so the tops of their shoots are tender, and the early frosts will pinch them, and then they frequently are killed down a considerable length, which weakens their roots; but if they are cut off early in autumn, the wounds will heal over before the bad weather, and thereby the roots will be greatly strengthened.

In the spring, after the cold weather is past, you must gently dig up the borders to loosen the earth; but you must be very careful in doing this, not to injure the roots of your Vines; you should also raise the earth up to the stems of the plants, so as to cover the old wood, but not so deep as to cover either of the eyes of the last year's wood. After this they will require no farther care until they begin to shoot, when you should look over them carefully, to rub off all weak dangling shoots, leaving no more than one or two shoots, which are produced from the eyes of the last year's wood, which should be fastened to the wall; and from this time, until the Vines have done shooting, you should look them over once in three weeks or a month, to rub off all lateral shoots as they are produced, and to fasten the main shoots to the wall as they are extended in length, which must not be shortened before the middle or latter end of July, when it will be proper to nip off their tops, which will strengthen the lower eyes; and during the summer season, you must constantly keep the ground clear from weeds; nor should you permit any sort of plants to grow near the Vines, which would not only rob them of nourishment, but shade the lower part of the shoots, and thereby prevent their ripening, which will not only cause their wood to be spongy and luxuriant, but render it less fruitful.

As soon as the leaves begin to drop in autumn, you should prune these young Vines again, leaving three buds to each of the shoots, provided they are strong, otherwise it is better to shorten them down to two eyes if they are good; for it is a very wrong practice to leave much wood upon young Vines, or to leave their shoots too long, which greatly weakens the roots; then you should fasten them to the wall, spreading them out horizontally each way, that there may be room to train the new shoots the following summer, and in the spring dig the borders as before.

The third season you must go over the Vines again

as soon as they begin to shoot, to rub off all danglers as before, and train the strong shoots in their proper places, which this year may be supposed to be two from each shoot of the last year's wood; but if they attempt to produce two shoots from one eye, the weakest of them must be rubbed off, for there should never be more than one allowed to come out of each eye. If any of them produce fruit, as many times they will the third year, you should not stop them so soon as is generally practised upon the bearing shoots of old Vines, but permit them to shoot forward till a month after Midsummer, at which time you may pinch off the tops of the shoots; for if this were done too soon, it would spoil the buds for the next year's wood, which in young Vines must be more carefully preserved than on older plants, because there are no other shoots to be laid in for a supply of wood, as is commonly practised on old Vines.

During the summer you must constantly go over your Vines, and displace all weak lateral shoots as they are produced, and carefully keep the ground clear from weeds, as was before directed, that the shoots may ripen well; which is a material thing to be observed in most sorts of fruit-trees, but especially in Vines, which seldom produce any fruit from immature branches. These things being duly observed, are all that is necessary in the management of young Vines; I shall therefore proceed to lay down rules for the government of grown Vines, which I shall do as briefly as possible. And,

First, Vines rarely produce any bearing shoots from wood that is more than one year old, therefore great care should be taken to have such wood in every part of the trees; for the fruit are always produced upon the shoots of the same year, which come out from buds of the last year's wood. The method commonly practised by the gardeners in England is, to shorten the branches of the former year's growth, down to three or four eyes, at the time of pruning; though there are some persons who leave these shoots much longer, and affirm that by this practice they obtain a greater quantity of fruit; but however this may be, it is a very wrong practice, since it is impossible that one shoot can nourish forty or fifty bunches of Grapes, so well as it can ten or twelve; so that what is gotten in number, is lost in their magnitude; besides, the greater quantity of fruit there is left on Vines, the later they are ripened, and their juice is not so rich; and this is well known in the wine countries, where there are laws enacted to direct the number and length of shoots that are to be left upon each Vine, lest by overbearing them, they not only exhaust and weaken the roots, but thereby render the juice weak, and so destroy the reputation of their wine.

Wherefore the best method is, to shorten the bearing shoots to about four eyes in length, because the lowermost seldom is good, and three buds are sufficient, for each of these will produce a shoot, which generally has two or three bunches of Grapes; so that from each of those shoots there may be expected six or eight bunches, which is a sufficient quantity. These shoots must be laid about eighteen inches asunder, for if they are closer, when the side shoots are produced, there will not be room enough to train them against the wall, which should always be provided for; and as their leaves are very large, the branches should be left at a proportionable distance from each other, that they may not crowd or shade the fruit.

At the winter pruning of your Vines you should always observe to make the cut just above the eye, sloping it backward from it, that if it should bleed, the sap might not flow upon the bud; and where there is an opportunity of cutting down some young shoots to two eyes, in order to produce vigorous shoots for the next year's bearing, it should always be done, because in stopping of those shoots which have fruit upon them as soon as the Grapes are formed, which is frequently practised, it often spoils the eyes for producing bearing branches the following year, and this reserving of new wood is what the vignerons abroad always practise in their vineyards. The best season



for pruning of Vines is the end of october, for the reasons before laid down.

The latter end of april, or the beginning of may, when the Vines begin to shoot, you must carefully look them over, rubbing off all small buds which may come from the old wood, which only produce weak dangling branches; as also when two shoots are produced from the same bud, the weakest of them should be displaced, which will cause the others to be stronger: and the sooner this is done, the better it is for the Vines.

In the middle of may you must go over them again, rubbing off all the dangling shoots as before, and at the same time you must fasten up all the strong branches; so that they may not hang from the wall; for if their shoots hang down, their leaves will be turned with their upper surfaces the wrong way, and when the shoots are afterwards trained upright, they will have their under surface upward; and until the leaves are turned again, and have taken their right position, the fruit will not thrive; so that the not observing this management, will cause the Grapes to be a fortnight or three weeks later before they ripen; besides, by suffering the fruit to hang from the wall, and be shaded with the closeness of the branches, it is greatly retarded in its growth; therefore during the growing season, you should constantly look over the Vines, displacing all dangling branches and wild wood, and fasten up the other shoots regularly to the wall, as they are extended in length; and towards the middle of june you should stop the bearing branches, which will strengthen the fruit, provided you always leave three eyes above the bunches; for if you stop them too soon, it will injure the fruit, by taking away that part of the branch which is necessary to attract the nourishment to the fruit, as also to perspire off the crudities of the sap, which is not proper for the fruit to receive.

But although I recommend the stopping those shoots which have fruit at this season, yet this is not to be practised upon those which are intended for bearing the next year, for these must not be stopped before the middle of july, lest, by stopping them too soon, you cause the eyes to shoot out strong lateral branches, whereby they will be greatly injured.

During the summer season you should be very careful to rub off all dangling branches, and train up the shoots regularly to the wall as before, which will greatly accelerate the growth of the fruit, and also admit the sun and air to them, which is absolutely necessary to ripen and give the fruit a rich flavour; but you must never divert the branches of their leaves, as is the practice of some persons; for although the admitting of the sun must be necessary to ripen them, yet if they are too much exposed thereto, their skins will be tough, and it will retard their ripening; besides, the leaves being absolutely necessary to nourish the fruit, by taking them off, the fruit is starved, and seldom comes to any size, as I have several times observed; therefore a great regard should be had to the summer management of the Vines, where persons are desirous to have their fruit excellent, and duly ripened.

When the fruit is all gathered, you should prune the Vines, whereby the litter of their leaves will be entirely removed at once, and their fruit will be the forwarder the succeeding year.

*[Method of managing Vines against flued or hot-walls, commonly called Vineries or Grape Houses.]*

A Vinery or Grape House consists of walls twelve or fourteen feet high, running from east to west, furnished with stoves and proper flues, with a roof and lights of glass covering a border of about ten feet in width. See the engraved Elevation, Section and Ground Plan.

Where Vines are intended to be forced at an early season, it is usual to have upright glasses, two and an half or three feet high in front, to support the roof, to admit sun and light to the border, which is generally occupied by low-growing vegetables; but where Grapes are not wanted early, a low wall in front will answer as well.

Supposing the wall to be twelve feet high, the breadth of the border ten feet, and the height of the

upright wall in front three feet, the roof will then form an angle of about  $43^{\circ}$ ; which experience shows to be a proper pitch for forcing Vines after the vernal equinox.

A Grape House may also be constructed on a plan similar to that of a single-pitted Pine-stove. The back wall fourteen feet high; the roof slanting, and covering an extent of about sixteen feet; and a flue running from east to west near the front wall. Such a building is well calculated not only for Grapes, but for early crops of melons, strawberries, &c.

Glass being the principal article of expense in forcing fruit; where there is a Peach-house, the glass-frames may serve both for that and the Vinery, provided the buildings are constructed of the same dimensions; for as Peaches do not require to be covered with glass later than the middle of summer, a crop of Grapes may be got by means of the same glasses after that season.

Good crops of Grapes may also be obtained from Vines trained against walls about six feet high, by means of melon-frame glasses, if a small slanting roof is made of proper dimensions to receive the glasses. A small degree of fire-heat would be of great advantage, and might be applied either by a flued wall, the flue running through the house, or by cast-iron pipes<sup>1</sup>.]

The borders against these hot walls should have the earth taken out two feet deep (provided the ground is dry,) otherwise one foot will be sufficient, because in wet land the borders should be raised at least two feet above the level of the ground, that the roots of the Vines may not be injured by the wet. When the earth is taken out, the bottom of the trench should be filled with stones, lime rubbish, &c. a foot and a half, or two feet thick, which should be levelled and beaten down pretty hard to prevent the roots of the Vines from running downward. The trenches should be made five feet wide at least, otherwise the roots of the Vines will in a few years extend themselves beyond the rubbish, and finding an easy passage downwards, will run into the moist ground, and thereby imbibe so much wet, as to lessen the vinous flavour of the Grapes; but before the rubbish is filled into the trench, it is a better method to raise a nine inch wall, at five feet distance from the hot wall, which will keep the rubbish from intermixing with the neighbouring earth, and also confine the roots of the Vines to the border in which they are planted, so that they cannot reach to the moisture of the ground about them. This nine inch wall should be raised to the height of the intended border, so will be of great use to lay the plate of timber of the frames upon, which will be necessary to cover the Vines when they are forced, whereby the timbers will be better preserved from rotting; and where the borders are raised to any considerable height above the level of the ground, these walls will preserve the earth of the borders from falling down into the walks; but in carrying up these walls, it will be proper to leave little openings about eight or ten feet distance, to let the water pass off, because when the rubbish at the bottom of the trench unites and binds very hard, the water cannot easily find a passage through it; therefore it will be the better method to leave these small passages in the front wall, lest the moisture being confined at bottom, should be pent up as in a ditch, which will be of ill consequence to the Vines, but these openings should be two feet below the surface.

When the walls are finished and thoroughly dry, the rubbish should be filled in, as before directed; then there should be fresh light earth laid upon it two feet thick, which will be a sufficient depth of soil for the Vines to root in. These borders should be thus prepared at least a month or six weeks before the Vines are planted, that they may have time to settle. The best time to plant them is about the end of march, or the beginning of april, according as the season proves early or late. These I would also advise to be planted with cuttings, rather than rooted plants, for the reasons before assigned, but there should be two cuttings put into each hole, or placed at a nearer distance, lest any of them should fail; for if all should

<sup>1</sup> Speechly, p. 97. and 124.



succeed, the weakest of them may be easily drawn out the following spring. These cuttings should be well chosen from good bearing Vines, and the shoots should be well ripened, otherwise they will never make good plants. The distance these Vines should be allowed to remain is the same as for common walls, i. e. about six feet. In planting them there should be holes opened with a spade, about fourteen or fifteen inches deep, for if there be but three or four inches of good earth under the foot of the cuttings it will be sufficient; then the cuttings should be laid in the holes a little sloping, afterward the earth should be filled into the holes, and gently pressed with the foot to the cuttings, and raised in a heap over them, so as just to cover the uppermost eyes of the cuttings; afterward lay a little mulch on the surface of the ground about the cuttings, to prevent the sun and air from drying the earth, and if the spring should prove very dry, they should have some water once a week, which will be as often as the cuttings require it, for nothing will destroy them sooner than too much water, which rots their bark, and destroys them. If these cuttings are well chosen, and the instructions here laid down duly observed, they will make strong shoots the first summer, for I have frequently planted cuttings which have shot five feet in one year, but then I carefully rubbed off all the side dangling shoots as they were produced, and never permitted more than one shoot to remain on each cutting, which is what should always be observed by those who have the care of Vines. With this management there will be little hazard of the cuttings taking root, for in upwards of five hundred cuttings which I received from Italy, and which had been cut off from the Vines in the beginning of november, wrapped up in moss, and put on board the ship, (which did not arrive at the port of London until march, so that they were full four months cut off before they were planted,) there were not twenty of the number which failed, and many of them shot about six feet the first season.

As I have directed the pruning of Vines to be performed in autumn (which is without dispute the best season for this work,) so in preserving of the cuttings till the planting season, I have advised them to be cut to their lengths, and their ends laid into the ground, and then covered with litter or moss to keep the air from them; but since I have found it a much better method not to shorten the shoots, from which the cuttings are to be made, but to lay their ends just into the ground, about two inches deep, and so leave them at full length, only observing to cover them with dry litter or Peas haulm in frosty dry weather, tho' in moist weather the covering should not remain on, because it would make the cuttings grow mouldy, which would greatly injure them. Then in the spring, when they are to be planted, they should be taken out of the ground, and their upper part cut off, so as to reduce them to about fourteen inches in length, according to the distance of the buds or eyes; for those cuttings whose buds grow pretty close together, need not be left more than one foot long, but in others fourteen or sixteen inches will be full short. The leaving the upper part of the shoots on all the winter is of great service to the cuttings, because when they are cut off in autumn, the air penetrates the wounded part, and greatly injures the other eyes.

The management of these Vines, for the three first years after planting, being the same as is practised for those against common walls, I shall not repeat it in this place, having fully treated of that already; only will observe, that during these three years, the Vines should be encouraged as much as possible, and the shoots not left too long; nor too many in number on each root, that they may be duly ripened and prepared for bearing the fourth year, which is the soonest they should be forced; for when any sorts of fruit-trees are forced by fire too young, they seldom continue long in health, so that what fruit they produce is small, and not well-flavoured; therefore, in being over hasty to save a year or two, very often the whole design miscarries; for unless the trees are in a proper

condition to bear much fruit, it is not worth while to make fires for a small quantity of starved ill-tasted fruit, the expense and trouble being the same for ten or twelve bunches of Grapes, as it will be for a hundred or more.

These Vines should not be forced every year, but with good management they may be forced every other year, though it would be better if it were done only every third year; therefore, in order to have a supply of fruit annually, there should be a sufficient quantity of walling built to contain as many Vines as will be necessary for two or three years, and by making the frames in front moveable, they may be shifted from one part of the wall to another, as the Vines are alternately forced; therefore I would advise about forty feet length of walling to be each year forced, which is as much as one fire will heat; and when the Vines are in full bearing, will supply a reasonable quantity of Grapes for a middling family; but for great families, twice this length will not be too much.

In most places where these hot walls have been built, they are commonly planted with early kinds of Grapes, in order to have them early in the season; but this I think is hardly worth the trouble, for it is but of little consequence to have a few Grapes earlier by a month or six weeks, than those against common walls, therefore I should advise, whenever a person is willing to be at the expense of these walls, that they may be planted with some of the best kinds of Grapes, which rarely come to any perfection in this country without the assistance of some artificial heat, of which the following sorts are the most valuable.

The Red Muscat of Alexandria.

The White Muscat of Alexandria.

The Red Frontinac.

The White Frontinac.

The Black Frontinac.

When the Vines which are planted against the hot walls are grown to full bearing, they must be pruned and managed after the same manner as hath been directed for those against common walls, with this difference only, viz. that those seasons when they are not forced, the Vines should be carefully managed in the summer for a supply of good wood, against the time of their being forced, so that it will be the better method to divest the Vines of their fruit, in order to encourage the wood; for as few of the sorts will ripen without heat, it is not worth while to leave them on the Vines during the season of resting, except it be the common Frontinacs, which in a good season will ripen without artificial heat, but even on these, I would not advise many Grapes to be left during the years of their resting; because as the design of this is to encourage and strengthen them, therefore all possible care should be had that the young wood is not robbed by overbearing; for those years when the Vines are forced, the joints of the young wood are generally drawn farther asunder, than they ordinarily grow in the open air; so that when they are forced two or three years successively, the Vines are so much exhausted, as not to be recovered into a good bearing state for some years, especially if they are forced early in the season; or where great care is not taken in the summer to let them have a proper share of free air, to prevent their being drawn too much, and also to ripen their shoots. Those years when the Vines are forced, the only care should be to encourage the fruit, without having much regard to the wood, so that every shoot should be pruned for fruit, and none of them shortened for a supply of young wood, because they may be so managed by pruning in the years of their resting, as to replenish the Vines with new wood. Those Vines which are designed for forcing in the spring, should be pruned early the autumn before, that the buds which are left on the shoots, may receive all possible nourishment from the root, and at the same time the shoots should be fastened to the trellis in the order they are to lie; but the glasses should not be placed before the Vines till about the middle or end of january, at which time also the fires must be lighted, for if they are forced too early



in the year they will begin to shoot before the weather will be warm enough to admit air to the Vines, which will cause the young shoots to draw out weak, and thereby their joints will be too far asunder, consequently there will be fewer Grapes on them, and those bunches which are produced will be smaller than when they have a sufficient quantity of air admitted to them every day.

If the fires are made at the time before directed, the Vines will begin to shoot the middle or latter end of february, which will be six weeks earlier than they usually come out against the common walls, so that by the time that other Vines are shooting, these will be in flower, which will be early enough to ripen any of these sorts of Grapes perfectly well. The fires should not be made very strong in these walls, for if the air is heated to about ten degrees above the temperate point on the botanical thermometers, it will be sufficiently warm to force out the shoots leisurely, which is much better than to force them violently. These fires should not be continued all the day time, unless the weather should prove very cold, and the sun does not shine to warm the air, at which times it will be proper to have small fires continued all the day; for where the walls are rightly contrived, a moderate fire made every evening, and continued till ten or eleven of the clock at night, will heat the wall, and warm the inclosed air to a proper temperature; and as these fires need not be continued longer than about the end of april (unless the spring should prove very cold,) the expense of fuel will not be very great, because they may be contrived to burn coal, wood, turf, or almost any other sort of fuel; though where coal is to be had reasonable, it makes the evenest and best fires, and will not require so much attendance. When the Vines begin to shoot, they must be frequently looked over to fasten the new shoots to the trellis, and rub off all dangling shoots; in doing of which great care must be taken, for the shoots of these forced Vines are very tender, and very subject to break when any violence is offered. The shoots should also be trained very regular, so as to lie as near as possible to the espalier, and at equal distances, that they may equally enjoy the benefit of the air and sun, which is absolutely necessary for the improvement of the fruit. When the Grapes are formed, the shoots should be stopped at the second joint beyond the fruit, that the nourishment may not be drawn away from the fruit in useless shoots, which must be avoided as much as possible in these forced Vines; upon which no useless wood should be left, which will shade the fruit, and exclude the air from it by their leaves.

As the season advances and the weather becomes warm, there should be a proportionable share of free air admitted to the Vines every day, which is absolutely necessary to promote the growth of the fruit; but the glasses should be shut close every night, unless in very hot weather, otherwise the cold dews in the night will retard it. The bunches of the White Frontinac should also be carefully looked over, and the small Grapes cut out with very narrow-pointed scissars, in order to thin them, for these berries grow so close together on the bunches, that the moisture is detained between them, which often occasions their rotting; and the air being excluded from the middle of the bunches, the Grapes never ripen equally, which by this method may be remedied, if done in time; and as these Grapes are protected by the glasses from the blights which frequently take those which are exposed, there will be no hazard in thinning these Grapes soon after they are set, at which time it will be much easier to perform this operation, than when the Grapes are grown larger, and consequently will be closer together; but in doing this the bunches must not be roughly handled, for if the Grapes are the least bruised, or the bloom which there naturally is upon them, be rubbed off, their skins will harden, and turn of a brown colour, so that the fruit will never thrive after; therefore the scissars which are used for this purpose, should have very narrow points, that they may be more easily put between the Grapes without injuring the remaining ones. The other sorts of Grapes which I have re-

commended for these hot walls, not producing their fruit so close together on the bunches they will not require this operation, unless by any accident they should receive a blight, which often occasions a great inequality in the size of the Grapes; which, whenever it thus happens, will require to be remedied by cutting off the small Grapes, that the bunches may ripen equally, and appear more sightly.

By the middle of june these Grapes will be almost full grown, therefore the glasses may be kept off continually in the day time, unless the season should prove very cold and wet, in which case they must be kept on, and only opened when the weather is favourable; for as the racy vinous flavour of these fruits is increased by a free air, so during the time of their ripening, they should have as large a share as the season will admit to be given them.

Before the Grapes begin to ripen, they must be carefully guarded against birds, wasps, and other insects, otherwise they will be destroyed in a short time: to prevent which, the Vines should be carefully covered with nets so as to exclude the birds, who make great havock with the Grapes, by breaking their skins; and if there are a few twigs covered with birdlime placed here and there on the outside of the nets, it will be of service, because the birds are often so bold as to attempt to break the nets to get to the Grapes; which, if they attempt, they may be so entangled on these twigs, as not to get loose; and whenever that happens, they should not be disengaged, but suffered to remain to keep off their companions; and if they get off themselves, it will have the desired effect, for there will few other birds come to the same place that season, as I have more than once experienced.

As to the wasps, the best method is to hang up some phials about half filled with sugared water, and rub the necks of the phials with a little honey, which will draw all the wasps and flies to them, which, by attempting to get at the liquor, will fall into the phials and be drowned; these phials should be carefully looked over once in three or four days to take out the wasps and destroy them, and to replenish the phials with liquor. If this be duly observed, and the phials placed in time, before the Grapes are attacked, it will effectually prevent their being injured; but where these precautions are not taken, the Grapes will be in danger of being absolutely destroyed; for as these early Grapes will ripen long before any others against common walls, they will be in much more danger, there being no other fruit for them at that season in the neighbourhood; whereas when Grapes in general begin to ripen, there is a quantity in almost every garden; so that if they destroy a part in each garden, yet there will be a greater chance to have some escape, than where there is only one wall for them to attack.

These sorts of Grapes being forced in the manner before directed, will begin to ripen early in august, especially the Black and Red Frontinacs, which will be fit for the table a fortnight earlier than the other sorts; but as the design of forcing them is to have them in as great perfection as possible in this climate, they should not be gathered until they are thorough ripe, for which reason some of the later sorts should be left on the Vines till september; but then the glasses should be kept over them in wet and cold weather to protect the fruit from it, but whenever the weather is fair, the glasses must be opened to let in the free air, otherwise the damps, arising from the earth at that season, will cause a mouldiness upon the Grapes, which will rot them; so that if the season should prove very cold and wet while the fruit is upon the Vines, it will be proper to make a small fire every night to dry off the damps, and prevent this injury. Most people in England gather their Grapes too soon, never suffering them to remain on the Vines to ripen perfectly, even in the warmest seasons, when, if they are left on till after Michaelmas, they will be good.

[*Directions for the management of Vines in the Hot-house or Pine Stove.*]

Having a Hot-house built according to the instructions



tions given under the article STOVES: and having taken the proper precautions to lay it dry by drains; and by a floor of chippings of stone, coarse gravel, broken bricks or lime rubbish, eight or ten inches thick, over which a thin layer of fine loam may be well puddled to fill up the chinks, if necessary, on account of having a retentive clay soil or a barren sand; and having given the whole a fall of six or eight inches; unless the soil should happen to be a rich sandy loam, fill up the area with a compost-mould composed of one fourth strong loam; one fourth turf from a pasture where the soil is a sandy loam, one fourth sweepings or scrapings of pavements or hard roads, one eighth rotten cow and stable-yard dung mixed, and one eighth of vegetable mould from decayed oak leaves: the grass must be well rotted, and the whole worked together till it is uniformly mixed. Where sandy loam cannot be had, common sand may be used; and the mould of rotten sticks, or old woods, or from hollow trees, may be substituted for decayed leaves.

This border being prepared, if the weather will permit, the Vines may be planted at the end of february or the beginning of march, in front of the Hot-house; having first taken the precaution to put a little moss round the upper part of each stem, with two or three folds of paper over it, tied with bass matting; to prevent the eyes from being injured in putting the plants through the holes in the wall.

Opposite to each rafter, and close to the front wall, make a hole two feet over, and one foot deep; make the mould taken out of the holes fine, and add a little of the compost. Turn the plant carefully out of its pot, and put the upper part through the hole. If the shoot will just reach the bottom of the rafter, when planted, it will be sufficient, but as the earth may settle a little, it is better to allow two or three inches for this circumstance. In closing the mould to the plant care should be taken to preserve the roots, their fibres being exceedingly brittle. Lay a thin coat of rotten dung over the mould, and give the plant a gentle watering: then take off the bandage, and fasten the top of the shoot to the rafter.

Only one shoot should remain on each plant. Two may be left for a time, but when one is secure, the other must be taken off, but not close to the old wood, as that would occasion it to bleed.

From the time the Vines begin to grow, they will require constant watering, especially in dry weather, and before the roots have penetrated deep into the border.

Train a shoot up to each rafter, and if the rafters be not a sufficient depth to keep the leaves of the Vines from touching the glass, fix iron pins of about nine inches in length, at proper distances under each rafter; these should have a small hole or eye at the bottom, through which a small iron rod or strong wire should be thrust, for the support of the branch. The pins and wires must be painted.

The Vine-plants will frequently show fruit at one year old, but this should not be suffered to stand, except a single bunch, if wanted to ascertain the sort.

During the summer, water the roots constantly; keep them regularly fastened to the rafters; divest them of their wires and lateral shoots; and above all, guard them against the depredations of the red spider and other insects.

The Vines may be permitted to run two-thirds of the length of the rafters, twenty or twenty-five feet, before they are stopped: and those which grow remarkably strong, may be suffered to run the whole length of the rafters, or about thirty feet.

After these shoots are stopped, which is done by pinching off their tops, they will, in general, push out laterals, at three or four eyes on the upper part of the shoot; it will be prudent to permit these to grow twelve or fourteen inches before their tops are pinched off. These in their turn, will push out secondary laterals, which should be pinched off at the second or third joint; and thus the sap may be diverted till the end of the season.

November and the beginning of december, when the leaves begin to fall, is the best season for pruning. The first season, supposing the Vines to have grown with

equal vigour, the shoots may be pruned alternately to three, four or five eyes, and to about twenty-one or twenty-two feet. But if they have grown moderately strong, the shoots should be pruned down to about eleven feet.

By this alternate pruning, the former shoots will make fine wood for the succeeding season, and the latter will produce a crop of fruit; after which, these fruit-bearing shoots must all be cut down nearly to the bottom of the rafters. But when any of the plants appear weak, and have not made shoots more than eight, ten, or twelve feet long, it will be proper to prune every shoot down to two, three or four eyes.

In pruning, take off the shoots, with a clean sloping stroke, about half an inch above the eye. Make choice of a bold eye to terminate the shoot, and fasten it completely to the rafter.

Vines in pine-stoves begin to make weak shoots early in january; the house being then kept warm on account of early crops raised in most hot-houses. But when it is kept to a proper degree of heat for pines during the winter months, the Vines will seldom begin to push till about the middle of february. It is usual to see them push only towards the ends of the shoots, the other eyes remaining in a dormant state, and causing a long space of naked wood. To make the eyes push more generally, as soon as the sap is in motion, keep the house, for a short-time, a few degrees warmer than usual. In the morning the thermometer should be 5° or 6° above temperate, and in the day-time the house should be kept as warm as the weather will permit. It will also be necessary to guard the stem of the Vine on the outside against frost; for one severe night would greatly injure, if not totally destroy, the hopes of a crop. This may be done, by wrapping the part exposed round with moss, fastened thick with bass matting. Leave this covering on till spring frosts are over, and then wash the stem well to clean it.

When Vines break out freely, they push at almost every eye, nearly at the same time. It is easy to distinguish which will make the most promising shoots even as soon as the eyes begin to break; and by the time they are three or four inches long, the bunches are very distinguishable. The Vines should be divested of the least promising and supernumerary shoots as soon as possible, as it will greatly contribute to invigorate the remainder.

Caution should be observed not to leave too abundant a crop; for few bunches in a high state of perfection, are preferable to many in a less. Therefore in case the shoots which are pruned to about twenty-two feet, should show two or three bunches at almost every eye, as they will frequently do, no more should be permitted to stand than the leading shoot, and four or five on each side; and the remaining shoots should have only one bunch left on each, which should be the best proportioned and most regularly formed. The shoots should be left four or five feet apart on each side, and one shoot as near the bottom as it can be got. Train them regularly on each side of the rafter, and pinch off the top of each as soon as it begins to interfere with the adjoining shoot above; or in general, let the shoots be stopped at the second or third joint above the bunch.

During the time of flowering, should the weather prove hot and dry, with brisk winds, the berries of many kinds of Grapes, particularly the blue Frontenac, white Sweetwater, and black Damascus, are liable to fall off at the time of their setting, and the remainder are in general small and without stones. This proceeds from the calyx adhering to and drying upon the germ, and thereby preventing its impregnation. It is proper therefore at this period to water the roots of the Vines plentifully, to keep the house as close as the weather will permit, and to water the walks and flues in the hot-house constantly, especially late in the evening, when the glasses should be immediately closed. The heat of the house will exhale the moisture, and raise a kind of artificial dew, which, by falling upon the calyx, will cause it to expand and fall off. But although Grapes set best in a close moist air, yet the house should not be violently hot during the time of their setting.



When the weather is serene, transparent drops of dew will be observable in a morning on the points of the leaves. This is the most favourable indication that can happen at the season of the Vine's flowering: for the Grapes set well, and the growth of the berries is extremely rapid, when the Vines are in this state.

Pull off all superfluous shoots, and divest the young shoots of all their laterals, during the summer. Do this without reserve, because every shoot left more than twenty feet long at the last year's pruning, with intent to produce a crop of fruit, must be cut down nearly to the bottom at the next winter's pruning.

But all the rest of the Vines that were cut down at the last year's pruning, suppose one at every alternate rafter, must be trained with one shoot each, exactly the same in every respect as in the preceding season.

When Grapes are at their last swelling, are becoming transparent, and change from green to red or black, and till they are nearly on the point of being ripe, the Vines will require a plentiful supply of water, especially if the season prove hot and dry. The situation of Vines in a pine-stove may be considered as similar to that of very hot climates, where they cannot have Vineyards without a command of water.

After the fruit is cut, the Vines will not require any other management till the pruning season, but taking off their lateral shoots in the same manner as in the preceding year.

At the next winter's pruning all the Vines that produced a full crop of fruit, should be cut down nearly to the bottom, that is to the lowermost summer shoot, which should also be cut down to the first or second eye.

But all those Vines that were cut down nearly to the bottom the preceding season, and which will, in general, have made very strong wood, must be left to the length of twenty-one or twenty-two feet each, with intent to produce a full crop of fruit the following season.

The management of the Vines during the next summer, will be nearly the same as in the preceding one: only as they have increased in strength and size, they will be enabled to produce and support a larger burden of fruit.

The crop should, at all times, be proportioned to the size and vigour of the Vine: but especially whilst Vines are young, great moderation should be used as to the number of bunches that are allowed to ripen.

The shoots may now be laid rather closer than in the preceding season, and two bunches may remain on strong and vigorous shoots, especially of those kinds which do not produce large bunches. The bunches should be well thinned when the berries are about the size of a small shot. The main shoulders, as also the less projecting parts of the bunch, should be suspended by small strings to the rafters, and every part raised to an horizontal position. In thinning the berries, great care should be taken to leave all the most projecting ones on every side of the bunch. In very close-growing bunches, it will be necessary to clip out more than two-thirds of the berries; in some, one half; but in the loose-growing kinds, one third is generally sufficient. Thus the remaining berries will swell well, grow to a great size, and not be subject to rot; as they are apt to do in a hot-house, when they are wedged together.

Not only the rafters or roof of the hot-house, but the back wall also above the flue, may be furnished with fruit.

For this purpose, let every fourth or fifth Vine-plant be trained in one shoot quite to the top of the rafter, and then directed sideways ten or twelve feet along the top of the back wall. At the winter's pruning, bring down that part of the shoot perpendicularly, and cut it off at one foot above the top of the flue. The next spring, encourage only two shoots from the two extreme or lowermost eyes of each shoot so brought down, and train them in an horizontal direction one foot above the top of the flue. These shoots however will grow with greater readiness, if they are trained upwards during the summer; and they may easily be brought to the desired position at the next winter's pruning. They will then form against the back wall the figure of the letter T inverted.

In the next season the horizontal shoots will produce new wood from almost every eye, provided all the shoots be pinched off from every other part as soon as they appear. Lay in the shoots from one to two feet apart, according to the kind of Vine.

Train all the shoots in a perpendicular direction, and provided they are strong, and vigorous, suffer them to grow to the length of five or six feet before they are stopped; but all these shoots must be cut down to two or three eyes at the next winter's pruning.

Only one shoot should be permitted to rise from each spur the following season; and although they will in general be sufficiently strong, and produce two or three bunches a piece, yet only one bunch should remain on each shoot: these will then be large and fine, and the wood will be greatly benefited by such practice.

These shoots must be pruned next winter very differently. One shoot must be left four feet; that next it only a few inches long, and so alternately.

The Vines on the rafters will require a management in future seasons nearly similar to that already described for them; and although it will not be advisable to prune them alternately so near to the bottom of the rafters as was directed for the two preceding seasons, yet it will be frequently found necessary to cut an old shoot down to the lowermost summer shoot, as near to the bottom of the rafter as can be. The side shoot, on the other rafters, should not be permitted to ramble over the adjoining lights; but at the end of every season it will be proper to cut such shoots down to the second or third eye next the old wood, provided the bottom eyes are bold and strong; this must be done not only to strengthen the Vines, but also to prevent the roof of the house from being too much crowded with old wood.

Whilst the Vines are young, one rafter will suffice for a Vine-plant; but when they become older, they will require a larger space; especially the strong-growing kinds, which produce large leaves and bunches. It will be proper therefore to train shoots sideways on the wall-plate, from the stem of the plant, immediately at its entrance into the house. These shoots should be carried up the adjoining rafters, and the plants growing against such rafters must be taken entirely away; except it should happen that the plant growing against such rafter is trained forward to furnish the back wall.

When a Vine-plant occupies two or more rafters, it will be right to prune occasionally, particularly whilst the Vine is young, one or more of such shoots down nearly to the bottom of the rafter. This will not only contribute to strengthen the plant, but will afford means to furnish the rafters with a succession of young wood.

When Vine-shoots are thus conducted to different rafters, every shoot may be considered as a separate plant, and must be trained up in one shoot: from that time it will require a management similar to that already laid down.

#### *On the Propagation of Vines.*

Besides the two common modes of propagating the Vine, which are treated of by Mr. Miller, by layers and cuttings; they may also be increased by seeds, by grafting, and by inoculation.

In raising Vines from seed, it should be sown at the end of february or beginning of march, in pots filled with light fresh mould, and plunged in a moderate hot-bed, gently sprinkling the mould from a watering-pot having a fine rose. Six or eight seeds, if gathered from ripe Grapes and carefully preserved through the winter, will be sufficient for a small pot, for if sown too thick, the plants are apt to be drawn and weak. In dry weather water the pots gently every day; but in wet or moist weather give them so much water only as will keep the mould moist till the plants begin to vegetate. Let this be done in the afternoon, when the sun is going off the frame; which should be shut down immediately, and if the heat be not too great, it may remain shut during the night. As the heat of the bed decays, add a lining of horse-dung, to be shaken up and repaired,



as occasion requires, till the plants have got sufficient strength to do without any bottom heat.

About the end of august take the lights off, that the plants may be hardened before winter, taking care to shelter them in frames covered with mats, which will prevent the autumnal frosts from injuring the tender shoots.

When the plants are about six inches high, transplant them singly into other pots (deep forty-eights), filled with light fresh mould, taking great care not to hurt the roots, or to break the leaders; then plunge them again into the hot-bed; or if the heat of the old bed be too much decayed, have a new one prepared to receive them. If they grow vigorously, they must be shifted into larger pots (thirty-twos.)

If the plants are above six inches high, tie them to small rods, as high as the frames will permit, leaving only one stem for the first year.

When the leaves begin to drop, pick them carefully off the pots, to prevent the plants from becoming mouldy.

Keep the plants under frames, or in the greenhouse, in hard winters, to shelter them from severe frost. In march or the beginning of april, if from seed ripened in this country, plant them out where they are to remain; but if from foreign seed, plant only one or two, till it has been ascertained that they are worth cultivating.

After they are planted, cut them at the third eye, if strong; but at the second, if weakly: at the same time rubbing off the lower bud with the finger and thumb<sup>a</sup>.

Mr. Speechly recommends the Grapes designed for seed to remain on the Vine till they are perfectly ripe, when the stones are generally of a very dark-brown colour; to take them from the pulp, and to lay them on a sheet of paper, in some airy, but shady place to dry, till spring.

The intention of raising Vines from seed being to procure new varieties of Grapes, superior to the old ones; Mr. Speechly recommends, that in the hot-house, where a variety of the best Grapes is trained, the young branches of two different kinds should be so brought together, as soon as they show their fruit, that their bunches, in the same state of maturity, may admit of being entwined. Attention should be paid to the size, the flavour, and the delicacy of the skin and flesh; also to the form of the bunch, and the length of the foot-stalk.

He remarks that all the Frontinac Grapes are proper to add flavour to other kinds; that the White Muscat of Alexandria is a good one to be joined with many other sorts, on account of its large loose-growing bunches, and large well-flavoured berries; that the White Sweetwater may be coupled with various sorts that are small and less delicate; particularly with the Red Frontinac; the Syrian with the White Muscat of Alexandria; the Black Hamburgh with the White Frontinac or Sweetwater; the Black Damascus with the Grizzly Frontinac; Flame-coloured Tokay with Red Frontinac; White Muscat of Alexandria with White Sweetwater; Black Frontinac with White Muscadine; St. Peter's Grape with White Muscat of Alexandria. Hence he augurs, that the best sorts of Grapes hitherto known, will at some future day, be esteemed only as secondary or inferior<sup>o</sup>.

This theory may be fanciful, and we cannot say any thing decisive upon it till it has been tried; Mr. Speechly having merely thrown it out to stimulate persons of taste and curiosity.

It is probable however that many of the present varieties of Grapes have been obtained from seed, either sown by hand, or accidentally let fall by birds, &c. And it is undoubtedly the chief, if not the only way to obtain new kinds with us. If therefore it be little practised, it is partly on account of the distant prospect of fruit, partly from the hazard of obtaining better kinds than we have already. To this it may be answered, that a seedling Vine, judiciously managed, will produce fruit the third or fourth year; and if proper care and attention be bestowed on the seed sown, the best sorts may very reasonably be expected<sup>p</sup>.

#### *On Grafting of Vines.*

At the pruning season, make choice of cuttings for grafts, or scions, from the best bearing branches of the sorts intended to be propagated. In general the bottom part of the last year's shoot is to be preferred; but in well-ripened vigorous wood, any part of the shoot will answer, provided it be not too long-jointed. These cuttings should be preserved in pots filled with light sandy earth till the grafting season.

Vines in a pine-stove should be grafted in the beginning of january; but the middle of march is a proper season to graft Vines growing in the open air. In general they should be grafted about three weeks before they begin to break into bud.

Upon small stocks, not more than an inch in diameter, cleft-grafting is most proper; but upon larger stocks, whip-grafting is to be preferred. In both methods care should be taken in fitting the stock and scion together, and the operation should be performed with great exactness. Fasten them together with bass matting, and cover them with clay in the usual way.

Though the scion will sometimes begin to push in a few weeks, yet it will frequently remain dormant two or three months: during this period the stock must be stripped of all its shoots, as soon as they appear; and to preserve the scion in a vegetative state, the clay must be kept moderately moist, by wrapping wet moss round it, and by keeping the moss constantly sprinkled with water.

When the scion has made shoots five or six inches long, the clay and bandage should be carefully taken off.

But the most eligible method with Vines is grafting by approach. In which case it is necessary, to have the plant intended to be propagated, in a pot. Strong plants, that have been two or three years in pots, are to be preferred; but plants from the nursery may be potted, and grafted in the same season, if brought into a hot-house or vinery.

Fine Grapes and good wood may be obtained even the first season, by any of these methods, but particularly by the last; in which it is obvious that the graft has a double support; namely, from the stock, and from the plant in the pot.

In grafting by approach the clay and bandage should remain two or three months after the graft has formed an union; for if it be taken off sooner, the graft will be very liable to spring from the stock. The pot should be plentifully supplied with water till the month of august, when the graft should be separated from the plant in the pot. Two or three inches of wood below the bottom of the graft may be left, but should be taken clean off at the next winter's pruning.

The Syrian Vine is the most proper for stocks, and plants raised from seeds of this sort, are greatly preferable to plants raised either from layers or cuttings for this purpose. If the produce of these seeds should even degenerate to a kind of wildness, they will still be the better for stocks; because they will on that account, rise with greater vigour.

The most important advantages of grafting are; first, that if a wall should have been planted with bad kinds of Vines; instead of stubbing them up, and making a new border, by which several years must elapse before the wall can again be completely filled: by grafting, the nature of the Vines may be changed immediately; for good Grapes may be obtained from the same year's graft: and in a hot-house the grafts, if permitted, will frequently shoot thirty or forty feet the first summer. Secondly, in small Vineries, or Vine-frames, where any great variety could not be had in the common way; it may be procured by grafting different kinds upon the same plant. Thus a Syrian Vine, in the hot-house at Welbeck, produces sixteen different sorts of Grapes,

But the principal advantage of grafting, is the improvement of the various kinds, and particularly the small ones, which generally make weak wood. This may be done by grafting the weak and delicate-growing Vines upon the stocks of those which are more robust and vigorous. Thus the small blue Frontinac engrafted on the Syrian Vine, produces well-sized handsome bunches, with berries almost as large as those of the Black Hamburgh<sup>q</sup>.

<sup>a</sup> Forsyth, p. 112.

<sup>o</sup> Page 39 to 44.

<sup>p</sup> Idem, p. 38 and 44.

<sup>q</sup> Speechly, p. 153 to 159.



*On propagating Vines by Layers.*

Mr. Miller has not given any directions upon this subject.

Vines may be increased by stools in open quarters, in the same manner as nursery-men propagate forest trees and shrubs; but the best way is to train shoots that will easily bend, on walls, at full length during the summer, and in february to lay the finest and strongest across the foot-path into pots (twenty-fours or sixteens) filled with fresh mould, and plunged in the ground about two inches below the surface; at the same time making an incision or two in the old wood, or giving it a twist just below a joint: they will generally take without notching or twisting, but it is the surer way to do it. Introducing the shoots through the bottom of the pots is now laid aside, because when this method is followed, the layers generally have larger roots below the pots than in them. The layers must be cut, leaving two or three strong eyes upon each.

When the shoots begin to run, tie them to long stakes, to prevent their being broken by the wind. Pick off all the runners and side shoots, leaving only two or three fine strong shoots on each plant, which should be trained at full length during the summer.

Cover the shoots with good dung or rotten leaves, to keep the mould moist; and in very dry summers give them a good watering once or twice a week.

By this method, there may be two or three rows of layers from one wall; taking care to lay the branches alternately, and to keep the pots plunged about two inches below the level of the ground. The plants will be well rooted in the pots before autumn, and fit for planting in vineries, hot-houses, &c.

When they are to be planted out, cut them carefully from the mother Vine, and carry them in the pots to the place where they are to be planted; taking care to preserve the ball of earth about their roots, as much as possible, when they are turned out of the pots.

If the season be warm and fine, Grapes of early kinds ripen very well on these layers before they are taken up; and, if properly managed, they will bear some fruit the first year after planting. One of the strongest shoots must be left nearly at full length, cutting it as high as the uppermost full bud, leaving nothing but round well-ripened wood. If there are three shoots, the remaining two should be cut so as to leave only two full eyes upon each, which should be trained at full length, to produce fine wood for next year. The shoot which was trained the preceding year should then be cut down, leaving only two strong eyes to produce wood for the following year; and so on every year, cutting the branches alternately. By so doing, the walls will be kept always covered with fine healthy bearing wood; and much time will be saved in furnishing hot-houses and vineries.

*On propagating Vines by Cuttings.*

Mr. Miller has treated largely upon this mode of propagation, and this only: some improvements however may be suggested even here from late experience.

The cuttings should be chosen from those shoots which have the shortest joints, always having one or two joints of the last year's wood, cutting it perfectly smooth and a little rounding at the lower end, and as near to a joint of the old wood as possible. Cut the upper end smooth and sloping towards the wall; or if in beds or borders, let the cut always face the north. Against piers or walls, set them at about a foot distance, and so deep as to have the second eye level with the ground; remembering always to rub off the lower eye. Pick off all runners and side shoots, leaving only two shoots, which should be trained at their full length. In january or february they may be pruned, leaving one or two eyes on each, according to the strength of the shoot.

In the first year, especially if the summer be dry, and they have not been duly watered, they will make little progress: but in the second year it will be plainly discerned which is the strongest plant, and that only should be left to fill up the vacant space on the wall.

\* Forsyth, p. 118 to 120.

The rest should be taken up and planted in other situations where they are wanted.

Mr. Speechly\* offers what he thinks a more advantageous method, from only a single eye and about three inches and an half of the last year's wood: plants thus raised being, as he has experienced, greatly preferable to cuttings raised in the common way, as having more abundant roots, growing shorter, being more prolific, and coming into bearing the second year. This method first occurred to the Rev. Mr. Michell, a profound philosopher, who has explained the subject at length, in a letter to Mr. Speechly, which he has printed as a note.

Make choice of the cuttings after a warm dry season. Each should have two inches of the old wood, with one eye of the new. When the Vines are pruned there will be great choice: select such as are of a middling size, and have the wood round and perfectly ripened. Cut the bottom part perfectly smooth; and if any of the old dead snags remain, cut them off close to the quick wood, and cut the top sloping towards the back of the hot-house or frame. Put only one cutting in each pot, which should be a deep forty-eight, filled with rich light mould well prepared. The plants will thus grow much stronger and quicker than when many are crowded together, and the sun and air will have a freer admission to ripen the wood. When the plants begin to get strong, and the pots full of roots; shift them into larger pots (thirty-twos.)

This mode is best adapted to private gardens. They who raise plants for sale in larger quantities, and cannot conveniently spare so much room, may plant three or more cuttings in each pot. A method frequently practised by nurserymen and gardeners, who wish to have their plants fit for sale the same year, is to set them in pots in the hot-house, among the tan, on the flues, or round the curbs of the pit. They may be raised in this manner, either singly in small pots, or several together in larger ones, transplanting them singly when they have taken root. In this case it will be necessary to have a hot-bed ready to plunge the pots in as soon as they are transplanted. Thus their growth will be forwarded very much, and before autumn they will be fit for sale.

Mr. Michell prefers planting the cuttings in the bark without pots, both because he thinks the pots prevent the heat from being so kindly, and that so many more cuttings may be planted in the naked bark; four or five inches distance being sufficient, provided they are not suffered to grow there too long before they are potted. For cuttings forced in this way he does not think that old wood is either necessary or useful; a hot-house summer upon them being fully sufficient to ripen their wood, if not even almost to over-ripen it. This learned gentleman's reasons for preferring the short cuttings with a single eye are very philosophical, and are well confirmed by experience.

Mr. Speechly recommends forward shoots forced early, for cuttings; these having a longer summer to ripen the wood. He reprobates the choice of shoots of uncommon size, as abounding too much with pith: and directs an attention to the following particulars: 1. The eye or bud should be large, prominent, and bold. 2. The shoots should be moderately strong, round and short-jointed. 3. The texture of the wood should be close, solid, and compact. But the best criterion is its solidity and having very little pith.

*On the Pruning and Training of Vines.*

The wood must be strong, or the bunches will be small. If the latter be the case, cut the plant down to two or three eyes, in order to have strong wood for next year. If there be much old naked wood on the Vines, with some small weak shoots at the extremities, cut them down as near the ground as possible: you will then have no fruit for that year. Or you may cut every other shoot; leaving the old ones to produce some small Grapes. The next year, there will be plenty of fine wood, provided the strongest shoots have

\* Page 53.

\* Forsyth, p. 115 to 118.

\* Speechly, p. 55. note,

x Idem. p. 57.



been nailed in, and all the side shoots pinched off, or cut out with a sharp penknife close to the eye: but never twist them, for by twisting you hurt the bud that is to produce fruit next year: always observing to cut as near to a bud as possible, and taking care to lay in the wood very thin in summer, that the sun and air may be freely admitted to ripen it. Keep the shoots nailed to the wall, to prevent their being broken by high winds; and pick off all the side shoots every time they are nailed, which ought to be done several times during the summer months, according to the quickness of their growth. In fine weather they will require to be looked over once every fortnight or three weeks. Never suffer the Vines to run together in a cluster, and to mat; for that will infallibly ruin them for bearing the succeeding year. Top the shoots as soon as the Grapes come to the size of small peas, a joint or two above the fruit; but never top the leading shoot, nor that which you intend should bear fruit next year.

In the second year never prune till the beginning of february, except in very forward seasons, owing to a fine autumn and mild winter, after the wood has been well ripened in the preceding summer; in which case the Vines will be more forward in the middle of january, than in backward seasons at the end of march. It is common to begin pruning soon after the fall of the leaf; but if a frost sets in before the wood is hard, it will be very much injured. We have often fine weather in october and november, which helps to ripen the wood after wet autumns.

When the leaves begin to fall, take a soft broom, and sweep them off upwards gently; which will assist in hardening the wood.

In pruning, always make choice of the strongest and longest shoots, leaving them as long as the eyes are good and plump, and the wood round; but by no means leave them when they become flat, for such seldom bear fruit; or if they do, it will be very small. Never lay in any that has less than from fifteen to thirty good eyes, according to the strength of the shoot; which will produce two bunches from every good eye. The shoots that have borne fruit in the preceding year should be cut out next year, except when you want to fill the wall, and the shoots are very strong. Never leave any but fine strong wood, always cutting at the second, third or fourth eye; rubbing the lowest bud off, and that which comes out at the joint between the new and the last year's wood. By these means you will get as much fruit from these short shoots as you would have by the common way of pruning. Observe to leave two or three of the strongest shoots for next year's bearing wood, and never top them. If there is not room to train them, you may lead them over the tops of the other trees, if the Vines are planted against piers; or you may run them behind the standards, and thus cover the whole of the wall. You may also run the shoots at the bottom of the wall behind the dwarf trees; or you may tack them down over the top of the wall, on the other side, provided the walls are low; you may also train them over the tops of trees on each side; which never does any harm to the trees below, provided they are kept nailed to the wall; they may even be planted on north and east aspects, and trained over the tops of the south and west walls to fill the upper parts, till the Peaches and Nectarines cover them.

Although the foregoing directions are given chiefly for Vines on walls in the open ground, yet the same method may be practised for forced Grapes.

The following is the method which Mr. Forsyth pursued with some Vines which were planted against the piers of a south wall, among old peaches, nectarines, &c.

When he took them in hand, the fruit was so small and hard as to render it unfit to be sent to table. The Vines were trained upright, which caused them to grow so luxuriantly that the sap flowed into the branches instead of the fruit.

He let two strong branches grow to their full length without topping them in the summer. The next year he trained these in a serpentine form, leaving about thirty eyes on each shoot, which produced one hundred and twenty fine bunches of Grapes, weighing from one

pound to a pound and a quarter each. Next year he trained five plants in the same way, allowing the shoots intended for bearing wood to run their full length in summer, training them wherever there was a vacancy between the old trees; and where there were none, running them along the top of the wall without topping them. In winter he trained them in a serpentine manner so as to fill the wall as regularly as possible: they were as productive as those in the former year.

After at three year's trial, he followed the same practice with the whole; and in the year 1793 sent, for the use of the king and royal family, three hundred and seventy-eight baskets of Grapes, each weighing about three pounds, without planting a single Vine more than there were the preceding year, in which he was able to send only fifty-six baskets of the same weight, and those so bad and ill-ripened, that they were not fit to be sent to table.

Observe to bring the shoots as near as possible from the bottom of the Vine, that the wall may be well covered. When the walls are high, and the shoots from the serpentine branches strong, they may sometimes remain; but if the walls are low, and the serpentine branches produce weak shoots, they should be cut out in the autumnal pruning, and the strongest of the young wood trained up in their room.

For the method of pruning and training Vines in stoves, see Directions for their management in the Hot-house given above.

#### *On Watering the Vine.*

The Vine requires a warm dry soil in England, yet in a hot dry summer it should have a plentiful supply of water, especially in the hot-house. In hot countries the Vine is said to grow most luxuriant near water, and the allusions to this circumstance in Scripture are very frequent. In Madeira, we are told, they do not attempt to plant Vineyards, except where there is a command of water: and in Spain a copious vintage depends upon abundant rains.

With respect to Vines on walls in the open air, after the Grapes are set and begin to swell, they may be watered three times a week, if the weather be hot and dry, with the Barrow Engine; sprinkling them all over the leaves and fruit, pressing your forefinger over the top of the pipe, to throw the water as fine as small rain. This will keep the Vines clear from dust and insects, and promote the swelling of the fruit; but it must never be done when the nights are cold and frosty. The best time for the operation is about four o'clock, in a south aspect; for the sun will then be going off the wall, and the leaves will have time to dry before night. In very hot dry weather, a good bottom watering once a week, will forward the swelling of the fruit; but when the fruit is fully swelled, it should be left off, particularly when the nights begin to be cold, for it would then hurt the flavour of the fruit.

With respect to Vines in hot-houses, provision being made by drains, &c. as above directed, to keep the border in a dry state during winter; gentle and frequent waterings should be given in spring, when the weather is dry.

When the Vines are in flower, even the frequent sprinkling the flues and walks in a hot-house; and the border, &c. in a vinery, will greatly benefit the plants. A good heat however should be kept up, because Grapes set best in a vapourous heat of between seventy and seventy-five degrees.

In a hot-house, if the walks, &c. are sprinkled when there is a strong sun, the exhaled moisture will instantly form a kind of artificial dew, which is exceedingly nourishing to Grapes in their infant state.

When strong fires are kept, if the flues are frequently sprinkled with water, a steam will arise, which has also a good effect. With this view, contrivances have been made to introduce hot steam into stoves.

When the Grapes are grown to the size of small peas, the Vines will require a constant supply of water, till they are full grown. If the border be kept in a moderate moist state during the above period, the Vines will

<sup>1</sup> Forsyth, p. 123 to 127. <sup>2</sup> Specchly, p. 85, 87, 146.

<sup>3</sup> Forsyth, p. 127.



grow luxuriant, and the Grapes will swell to a large size. But when the Grapes are nearly ripe, the waterings should be less frequent, as too much water at that season would tend to debase their flavour.

When the crop is gathered, the border should be frequently watered, till the leaves of the Vines begin to change. But from that time, and during the winter, the border should be kept in a dry state.

It does not seem necessary to water the leaves of Vines growing in the stove, except they should be infected with insects. But during a mild rain, the upper lights may be let down, that the Vines on the back wall may reap the benefit of it.

During winter, the Vine-border may be watered with the drainage of dunghills; but this should only be applied when the roots are in a state of inaction<sup>b</sup>.

#### *On the Preservation of Vines and Grapes.*

Although the Vine is not very liable to be infested with insects, when growing in the open air; yet few plants suffer more from their ravages than when trained under glass, especially in Pine-stoves: the constant warmth kept up in these houses during winter serving to keep up the succession of them from one season to another.

A species of *Acarus*, commonly called the Red Spider, is the most pernicious; these insects frequently attack the leaves of the Vine early in the summer, and their increase in dry weather being very quick and great, they will soon greatly damage, and in time totally destroy the foliage. They generally reside and breed on the under side of the leaves; and when they are very numerous they work a fine web all over it, and round the edges. The upper surface appears full of very small dots or spots of a light colour.

The Red spider however does not confine itself to the leaves, but attacks the bunches of Grapes also, especially when they are almost ripe; and as they extract the juice from them, the Grapes soon become soft, flabby and ill-flavoured.

The Thrips, an hemipterous insect, sometimes attacks the young shoots of Vines growing in the open air, especially those which are weak or newly planted. If young shoots are injured by late spring frosts, the tender part of the leaf will curl up, and change to a dark-brown colour: in this state the Thrips attacks them with great greediness, especially the White Sweetwater and Muscadine. This insect however is seldom injurious to Vines growing in the open air, except in the spring: to those in the hot-house they are most hurtful when the Grapes are nearly ripe; they attack the bunches as well as the leaves, and commonly prey upon the extremities of the berries, particularly that next the footstalk. In white Grapes, the part injured changes to a dark colour, the footstalk turns black, and the berry withers.

Aphides or Plant-lice sometimes infest the young shoots of Vines, but as they grow very rapidly, these insects do not often greatly injure them.

Two or three species of *Cocci* sometimes infest the Vine, as *Coccus hesperidum* and *adonidum*. The latter is sometimes mistaken for the crimson tinged Pine-bug. These abound in hot-houses and conservatories, and breed upon the Coffee Tree, Oleander, &c. but they are not very prejudicial to the Vine.

All these insects, the *Acarus* excepted, may be destroyed by a strong fumigation of tobacco. For the method of doing this, see the article STOVES.

It would be improper to fumigate late in the spring, or in the summer, because the smoke would injure the Grapes, by giving them a disagreeable flavour. Where insects have been numerous the preceding season, they must be destroyed effectually before the Vines come into flower; this may be done by fumigating two or three different times, at the distance of three or four days between each operation. Pine-stoves are much more liable to be infested with these insects, than Grape-houses or Vineries, because in these it is usual to take off the glass-frames during the winter, by which the insects generally perish, but the warmth of the pine-

stove protects them through the winter. In these too, the Thrips is often greatly encouraged by the vegetables cultivated there, particularly by kidney-beans. In order therefore to prevent the increase of these insects, which is very rapid, after the stove has been fumigated, remove all the kidney-bean plants, and then sow a fresh crop of them immediately, placing the pots all over the flues, &c. that in case any insects should have escaped the fumigation, the young kidney-bean plants may attract them: as soon as these plants appear to be infected, take them away and sow a fresh crop.

The Red Spider may be destroyed by a composition of one pound of flowers of sulphur, and two ounces of common scotch snuff or very good tobacco dust, well mixed together. Take a small brush, such as is used for common painting, dip it lightly in the composition, then lay one hand on the upper surface of the leaf, and with the other draw the brush very gently backwards and forwards all over the under surface. The *Acarus* being soft and delicate, is hereby destroyed with the most gentle touch; the brush also readily wipes off their web, as well as their globular transparent eggs, which are fastened by a fine membrane to the leaves; and thus we are secured from the danger of a succeeding brood.

This process may seem tedious; but it is easily performed upon Vines trained in a regular manner, and a single operation is generally sufficient for a whole season. This should be performed as soon as the insects make their appearance. Sulphur alone is sufficient for the purpose, but the snuff or tobacco dust renders the mixture equally fatal to the Thrips also<sup>c</sup>.

Mr. Forsyth asserts, that the best thing to destroy the Red Spider and other insects is moisture. Frequent watering of trees with lime-water, and throwing it plentifully on the under side of the leaves, will in a short time extirpate the Red Spider.

In hot-houses, he recommends using water only, in the following manner. Between three and four in the afternoon, fill the barrow-engine with soft water, wheel it along the paths of the house, where they are wide enough to admit it, and sprinkle all the plants; play also in a fine shower against the top lights and shelves, till the water stands an inch deep in the paths. If you cannot conveniently get the barrow-engine into the house, and have not Philips's small copper engine, or some other of the like sort; open the front lights, or slide down the top lights, and throw water in from thence. When this operation is performed within, every light must be shut; when from without, keep one light only open at a time; the house must be then kept close shut till next morning: this will cause such an exhalation from the glass, tan, &c. that the plants will be covered with the vapour, which will infallibly destroy the *Cocci*, *Aphides*, and other insects: but the watering must be repeated every afternoon, during hot weather only. Before morning the plants will have imbibed all the moisture, and the paths will be perfectly dry.

To protect Grapes, as they ripen, from birds, in the open air, they must be bagged; or, where the bunches hang very thick, the Vines may be covered with nets, or buntine, which is the stuff of which ships' colours are made; these will admit the air freely to the Grapes; and will soon dry after rain. They are also the best covering in the spring, in cold, wet or snowy weather.

For Wasps and the large Flesh Fly or Blue-bottle as it is vulgarly called, there is no other remedy but hanging plenty of bottles with some sweet liquor in them upon the Vines. The Fly comes first, and is no less destructive to the fruit than the Wasp. The bottles should be hung up as soon as the former make their appearance; and should be emptied frequently. When the weather is very hot and the Wasps are numerous, they will frequently be so intent upon the fruit as not to enter fast enough into the bottles: if you then take a little oil in a cup and with a feather dipped in it touch their backs, they will instantly drop down. Great numbers may easily be destroyed this way: and so might

<sup>b</sup> Speechly, p. 146 to 152.

<sup>c</sup> Speechly, p. 160 to 168.



the flies, if their motions were not so quick that it is difficult to touch them.

The bunches of Grapes should be kept under the shade of the leaves till they begin to ripen; then those which cover the fruit may be picked off, leaving such as are a little above it to be a shelter from the wet and frost in the nights: this will assist in ripening the fruit; and take off only a few leaves at a time, according to the quantity of Grapes to be gathered at once: by these means the fruit will continue three times as long in succession, as it would if the leaves were picked off all at once. If all the leaves should be taken off soon after the fruit is set, the fruit will not swell, but become hard and small, and generally crack. When the leaves are not too thick, they admit the rays of the sun to pass through, and a warm glow of heat will be reflected from the wall.

Grapes will often hang on the Vines till the middle of november, if they are well covered with nets or buntine: but when the frost begins to set in sharp they should be gathered. Where several bunches are on one branch, it may be cut off, leaving six inches in length, or more, of the wood, according to the distance between the bunches, and a little on the outside of the fruit at each end: seal both ends with common sealing-wax; then hang them across a line in a dry room, taking care to clip out any berries that begin to decay or grow mouldy. In this way Grapes may be kept till february; or, if they are cut before the bunches are very ripe, they may be kept much longer. They may also be preserved in jars; each bunch being wrapped in soft paper, and layers of bran, well dried, being laid between them. Put some bran at the bottom and top; shake the whole gently; put some paper over it, and cover the jar with a bladder firmly tied on to exclude the air. Keep the jar in a dry room, or where you can have a fire in wet or damp weather<sup>d</sup>.

With respect to the transporting or carriage of Grapes, when they are to be conveyed by water, they may be packed in boxes or jars with sand. They are thus brought from Portugal. But sand is too heavy for land carriage, and the Grapes must then be washed before they can be eaten. They may also be packed with any small bright seed. Clover-feed is very proper for this purpose; but this also is heavy, and too valuable to be wasted. Some pack them in tow, wool, cotton or paper-shavings. Mr. Speechly recommends oat-chaff as most eligible, both on account of its lightness and its elasticity. Care should be taken that it have not any disagreeable smell, and that it be cleansed of all impure matter: the Grapes should be perfectly dry, and the branches well examined, that if there be any decayed, cracked or bruised berries, they may be clipped off: each bunch should then be tied in a bag of silver or gauze paper. Grapes packed in this manner, ought not to be more than two courses in depth, otherwise the lower bunches would be liable to suffer injury by the weight above. The course of chaff between the layers of fruit, and likewise at the top and bottom, ought, when it is well pressed down, to occupy a space of two or three inches.

When Grapes are to travel by a stage coach, the boxes should be made to suit the seats of the coach; for unless they go within or on the top, they will commonly be spoiled<sup>e</sup>.]

#### *Of Vineyards in England.*

There have of late years been but very few Vineyards in England, though it appears by ancient records that they were formerly very common, as may be gathered from the several places in divers parts of England, which yet retain that name, which testify the quantities of ground which were allotted for Vineyards, to abbeys and monasteries, for wine for the use of the inhabitants; but as to the quality of the wines which were then produced in England, we are at present ignorant; and how these Vineyards were rooted up, and became so generally neglected, we have no very good accounts left. Whatever might be the cause of this total neg-

lect in cultivating Vines in England, I will not pretend to determine, but such was the prejudice most people conceived to any attempts of producing wine in England, that for some ages past, every trial of that kind has been ridiculed by the generality of people, and at this day very few persons will believe it possible to be effected.

The first and great things to be considered in planting Vineyards is the choice of soil and situation, which, if not rightly chosen, there will be little hopes of success, for upon this the whole affair greatly depends. The best soil for a Vineyard in England is such, whose surface is a light sandy loam, and not above a foot and a half or two feet deep, above the gravel or chalk, either of which bottoms are equally good for Vines; but if the soil is deep, or the bottom either clay, or strong loam, it is by no means proper for this purpose; for although the Vines may shoot vigorously, and produce a great quantity of Grapes, yet these will be later ripe, fuller of moisture, and so consequently their juice not mature, nor well digested, but will abound with crudity, which in fermenting will render the wine sour and ill-tasted, which is the common complaint of those who have made wine in England.

Nor is a very rich, light, deep soil, such as is commonly found near London, proper for this purpose; because the roots of the Vines will be enticed down too deep to receive the influences of sun and air, and hereby will take in much crude nourishment, whereby the fruit will be rendered less valuable, and be later ripe, which is of ill consequence to these fruits, which are known to imbibe a great share of their nourishment from the air, which if replete with moisture (as is commonly the case in autumn,) must necessarily contribute greatly to render the juices less perfect, therefore great attention should be had to the nature of the soil upon which they are planted.

The next thing necessary to be considered, is the situation of the place, which if possible, should be on the north side of a river, upon an elevation inclining to the south, with a small gradual descent, that the moisture may the better drain off, but if the ground slopes too much, it is by no means proper for this purpose; but if, at a distance from this place, there are larger hills, which defend it from the north and north-west wind, it will be of great service, because hereby the sun's rays will be reflected with a greater force, and the cold winds being kept off, will render the situation very warm. Add to this a chalky surface; which if those hills do abound with (as there are many such situations in England,) it will still add to the heat of the place, by reflecting a greater quantity of the sun's rays.

The country about this should be open and hilly, for if it be much planted, or low and boggy, the air will constantly be filled with moist particles, occasioned by the plentiful perspiration of the trees, or the exhalations from the adjoining marshes, whereby the fruit will be greatly prejudiced (as was before observed.) These Vineyards should always be open to the east, that the morning sun may come on them to dry off the moisture of the night early, which, by lying too long upon the Vines, greatly retards the ripening of their fruit, and renders it crude and ill tasted. And since the fruit of Vines is rarely ever injured by easterly winds, there will be no reason to apprehend any danger from such a situation, the south-west, north-west, and north winds being the most injurious to Vineyards in England (as indeed they are to most other fruit,) so that, if possible, they should be sheltered therefrom.

Having made choice of a soil and situation proper for this purpose, the next thing to be done is, to prepare it for planting. In doing of which the following method should be observed: in the spring it should be ploughed as deep as the surface will admit, turning the sward into the bottom of each furrow; after this it should be well harrowed, to break the clods, and cleanse it from the roots of noxious weeds, and it must be often ploughed and harrowed for at least one year, to render the surface light; and hereby it will be rendered

<sup>d</sup> Forsyth, p. 128, 258, 278.

<sup>e</sup> Speechly, p. 28. note.



dered fertile, by imbibing the nitrous particles of the air (especially if it be long exposed thereto before it is planted;) then in march the ground should be well ploughed again, and after having made the surface pretty even, the rows should be marked out from south-east to north-west, at the distance of ten feet from each other; and these rows should be crossed again at five or six feet distance, which will mark out the exact places where each plant should be placed; so that the Vines will be ten feet row from row, and five or six feet asunder in the rows, nearer than which they ought never to be planted. And herein most people who have planted Vineyards have greatly erred, some having allowed no more than five feet row from row, and the plants but three feet asunder in the rows; and others, who think they have been full liberal in this article, have only planted their Vines at six feet distance every way, but neither of these have allowed a proper distance to them, as I shall shew: for in the first place, where the rows are placed too close, there will not be room for the sun and air to pass in between them to dry up the moisture, which, being detained amongst the Vines, must produce very ill effects: and, secondly, where the Vines are placed in exact squares, so near together as six feet, there can be no room for the current of air to pass between them, when their branches are extended on each side, and so consequently the damps in autumn will be entangled and detained amongst the Vines, to the great prejudice of their fruit; for since the autumns in England are often attended with rains, cold dews, or fogs, all proper care should be taken to remove every thing which may obstruct the drying up the damps which arise from the ground.

The skilful vigneron abroad are also sensible how much it contributes to the goodness of their Vines, to allow a large space between the rows; and therefore where the quality of the wine is more regarded than the quantity, there they never plant their Vines at less than ten feet row from row, and some allow twelve. It was an observation of Bellonius, almost two hundred years since, that in those islands of the Archipelago, where the rows of Vines were placed at a great distance, the wine was much preferable to those which were close planted; and this he positively affirms to be the case, in most countries where he had travelled. Indeed we need not have recourse to antiquity for the certainty of such facts, when we are daily convinced of this truth in all close plantations of any kind of fruit, where it is constantly observed, that the fruits in such places are never so well coloured, so early ripe, nor near so well flavoured, as those produced on trees, where the air can freely circulate about them, and the rays of the sun have free access to the branches, whereby the juices are better prepared before they enter the fruit.

Having thus considered the distance which is necessary to be allowed to these plants, we come next to the planting; but in order to this, the proper sorts of Grapes should be judiciously chosen; and in this particular we have egregiously erred in England. All the Vineyards at present planted here, are of the sweetest and best sort of Grapes for eating, which is contrary to the general practice of the vigneron abroad, who always observe, that such Grapes never make good wine; and therefore, from experience, make choice of those sorts of Grapes, whose juice, after fermenting, affords a noble rich liquor; which Grapes are always observed to be austere, and not by any means palatable. This is also agreeable to the constant practice of our cyder-makers in England, who always observe, that the best eating apples make but poor cyder; whereas the more rough and austere sorts, after being pressed and fermented, afford a strong vinous liquor. And I believe it will be found true in all fruits, that where the natural heat of the sun ripens and prepares their juices so as to render them palatable, whatever degree of heat these juices have more, either by fermentation, or from any other cause, will render them weaker and less spirituous. Of this we have many instances in fruits; for if we transplant any of our sum-

mer or autumn fruits, which ripen perfectly in England, without the assistance of art, into a climate a few degrees warmer, these fruits will be mealy and insipid; so likewise if we bake or stew any of these fruits, they will be good for little, losing all their spirit and flavour by the additional heat of the fire; and such fruits as are by no means eatable raw, are hereby rendered exquisite, which, if transplanted into a warmer climate, have, by the additional heat of the sun, been also altered so as to exceed the most delicious of our fruit in this country.

From whence it is plain, that those Grapes which are agreeable to the palate for eating, are not proper for wine; in making of which, their juices must undergo a strong fermentation; therefore since we have in England been only propagating the most palatable Grapes for eating, and neglect the other sorts; before we plant Vineyards, we should take care to be provided with the proper sorts from abroad, which should be chosen according to the sort of wines intended to be imitated; though I believe the most probable sort to succeed in England is the Auvernat, or true Burgundy Grape, (which is at present very rare to be found in the English Vineyards, though it is a common Grape in the gardens against walls.) This sort of Grape is most preferred in Burgundy, Champaign, Orleans, and most of the other wine countries in France; and I am informed, that it succeeds very well in several places to the north of Paris, where proper care is taken of their management; so that I should advise such persons as would try the success of Vineyards in England, to procure cuttings of this Grape from those countries; but herein some person of integrity and judgment should be employed, to get them from such Vineyards where no other sorts of Grapes are cultivated; which is very rare to find, unless some particular Vineyards of the citizens, who are very exact to keep up the reputation of their wines, nothing being more common than for the vigneron to plant three or four sorts of Grapes in the same Vineyard, and at the time of Vintage to mix them all together: which renders their wines less delicate, than in such places where they have only this one sort of Grape. And here I would caution every one against mixing the juice of several Grapes together, which will cause the wine to ferment at different times, and in different manners.

The cuttings being thus provided (for I would always prefer these to layers, or rooted plants, for the reasons given at the beginning of the article *VITIS*) about the beginning of April is the best season for planting, when it will be proper to put the lower ends of the cuttings in water about three inches, setting them upright for six or eight hours before they are used; then at the center of every cross mark already made by a line, to the distance the Vines are designed, should be a hole made with a spade, or other instrument, about a foot deep, into each of which should be put one strong cutting, placing it a little sloping; then the hole should be filled up with earth, pressing it gently with the feet to the cutting, and raising a little hill to each about three inches, so as just to cover the uppermost eye or bud, which will prevent the wind and sun from drying any part of the cuttings, and this upper eye only will shoot; the under ones most of them will push out roots, so that this shoot will be very strong and vigorous.

After they are thus planted, they will require no other care until they shoot, except to keep the ground clear from weeds, which should be constantly observed; but as the distance between the rows of Vines is very great, so the ground between them may be sown or planted with any kind of esculent plants, which do not grow tall, provided there is proper distance left from the Vines, and care taken that the Vines are not injured by the crops, or in the gathering, and carrying them off the ground; and this husbandry may be continued three or four years, till the Vines come to bearing; after which time, there should be no sort of crop put between them in summer, because the cleaner the ground is kept between the Vines from weeds or plants, the more heat will



be reflected to the Grapes; but after the Grapes are gathered there may be a crop of Coleworts for spring use planted between the rows of Vines, and the cultivating of these will be of use to the Vines, by stirring of the ground; but as to watering, or any other trouble, there will be no occasion for it, notwithstanding what some people have directed, for in England there is no danger of their miscarrying by drought. When the cuttings begin to shoot, there should be a small stick of about three feet long stuck down by each, to which the shoot should be fastened, to prevent their breaking or lying on the ground; so that as the shoots advance, the fastening should be renewed, and all small lateral shoots (if there are any such produced) should be constantly displaced, and the ground between the Vines always kept clean. This is the whole management which is required the first summer.

But at michaelmas, when the Vines have done shooting, they should be pruned; for if they are left unpruned till spring, their shoots being tender (especially towards their upper parts) will be in danger of suffering if the winter should prove severe.

This pruning is only to cut down the shoots to two eyes; and if, after this is done, the earth be drawn up in a hill about each plant, it will still be a greater defence against frost.

At the beginning of march the ground between the Vines should be well dug to loosen it, and render it clean; but you should be careful not to dig deep close to the Vines, lest thereby their roots should be cut or bruised, and at the same time the earth should be again laid up in a hill about each plant; but there must be care taken, not to bury the two young eyes of the former year's shoot which were left to produce new wood.

At the beginning of may, when the Vines are shooting there should be two stakes fixed down to the side of each plant, which must be somewhat taller and stronger than those of the former year; to these the two shoots (if so many are produced) should be fastened, and all the small trailing or lateral shoots should be constantly displaced, that the other shoots may be stronger, and the ground should also be kept very clear from weeds as before.

The autumn following these Vines should be pruned again in the following manner; those of them which have produced two strong shoots of equal vigour, must be cut down to three eyes each; but in such as have one strong shoot and a weak one, the strong one must be shortened to three eyes, and the weak one to two; and such Vines as have produced but one strong shoot, should be shortened down to two eyes also in order to obtain more wood against the succeeding year.

In the spring, about the beginning of march, the ground between the Vines should again be dug, as before, and two stakes should be placed down by the side of all such Vines as have two shoots, at such distance on each side of the plant as the shoots will admit to be fastened thereto, and the shoots should be drawn out on each side to the stakes, so as to make an angle of about forty-five degrees with the stem; but by no means should they be bent down horizontally, as is by some practised, for the branches lying too near the earth, are generally injured by the damps which arise from thence, but especially when they have fruit, which is never so well tasted, nor so early ripe upon those branches, as when they are a little more elevated.

In may, when the Vines begin to shoot, they must be carefully looked over, and all the weak dangling shoots should be rubbed off as they are produced, and those shoots which are produced from strong eyes, should be fastened to the stakes to prevent their being broken off by the wind.

This management should be repeated at least every three weeks, from the beginning of may to the end of july; by which means the shoots which are trained up for the succeeding year will not only be stronger, but also better ripened and prepared for bearing, because they will have the advantage of sun and air,

which is absolutely necessary to prepare their juices; whereas if they are crowded by a number of small dangling weak branches, they will shade and exclude the rays of the sun from the other shoots; and so by detaining the moisture a longer time amongst the branches, occasion the vessels of the young wood to be of a larger dimension; and hereby the crude juice finds an easy passage through them; so that the shoots in autumn seem to be mostly pith, and are of a greenish immature nature, and wherever this is observed, it is a sure sign of a bad quality in the Vines. The soil also should be constantly kept clean, because if there are any vegetables (either weeds or plants of other kinds) growing between the Vines, it will detain the dews longer, and by their perspiration, occasion a greater moisture than would be, if the ground were entirely clear; so that those who plant other things between their rows of Vines, are guilty of a great error.

In autumn the Vines should be pruned, which season I approve of rather than the spring (for reasons before given;) and this being the third year from planting, the Vines will now be strong enough to produce fruit; therefore they must be pruned accordingly. Now suppose the two shoots of the former year, which were shortened to three eyes, have each of them produced two strong branches the summer past, then the uppermost of these shoots upon each branch should be shortened down to three good eyes (never including the lower eye, which is situate just above the former year's wood, which seldom produces any thing, except a weak dangling shoot;) and the lower shoots should be shortened down to two good eyes each, these being designed to produce vigorous shoots for the succeeding year, and the former are designed to bear fruit; but where the Vines are weak, and have not produced more than two or three shoots the last season, there should be but one of them left with three eyes for bearing; the other must be shortened down to two, or if weak one good eye, in order to obtain strong shoots the following summer; for there is nothing more injurious to Vines, than the leaving too much wood upon them, especially while they are young; or the overbearing them, which will weaken them so much, as not be recovered again to a good state in several years, though they should be managed with all possible skill.

In march, the ground between the Vines should be well dug as before, observing not to injure their roots by digging too deep near them; but where there are small horizontal roots produced on or near the surface of the ground, they should be pruned off close to the places where they were produced; these being what the vignerons call day roots, and are by no means necessary to be left on: and after having dug the ground, the stakes should be placed down in the following manner: on each side of the Vine should be a stake put in at about sixteen inches from the foot, to which the two branches, which were pruned to three eyes, each for bearing, should be fastened, (observing, as was before directed, not to draw them down too horizontally;) then another taller stake should be placed down near the foot of the Vine, to which the two shoots which were pruned down to two eyes, should be fastened, provided they are long enough for that purpose; but if not, when their eyes begin to shoot, these must be trained upright to the stakes, to prevent their trailing on the ground, hanging over the fruit branches, or being broken by the wind.

In may, the Vines should be carefully looked over again, at which time all weak lateral branches should be rubbed off as they are produced; and those shoots which shew fruit, must be fastened with bafs to the stakes to prevent their being broken, until they are extended to three joints beyond the fruit, when they should be stopped; but the shoots which are designed for bearing the following season, should be trained upright to the middle stake, by which method the fruit branches will not shade these middle shoots, nor will the middle shoots shade the fruit, so that each will enjoy the benefit of sun and air.



This method should be repeated every fortnight or three weeks, from the beginning of may to the middle of july, which will always keep the shoots in their right position, whereby the leaves will not be inverted, which greatly retards the growth of the fruit; and by keeping the Vines constantly clear from horizontal shoots, the fruit will not be crowded with leaves and shaded, but will have constantly the advantage of the sun and air equally, which is of great consequence; for where the fruit is covered with these dangling shoots in the spring, and is afterwards exposed to the air, either by divesting it of the leaves, or else displacing the branches entirely, as is often practised, the fruit will become hard, and remain at a perfect stand for three weeks, and sometimes will never advance afterward, as I have several times observed; therefore there cannot be too much care taken to keep it constantly in a kindly state of growth, as the vigneron abroad well know, though in England it is little regarded by the generality of gardeners, who when their Grapes suffer by this neglect, immediately complain of the climate or the untowardness of the season, which is too often a cover for neglects of this nature. And here I cannot help taking notice of the absurd practice of those who pull off the leaves from their Vines, which are placed near the fruit, in order to let in the rays of the sun to ripen them; not considering how much they expose their fruit to the cold dews, which fall plentifully in autumn, which, being imbibed by the fruit, greatly retard it; besides no fruit will ripen so well when entirely exposed to the sun, as when gently screened with leaves; and by the pulling off these leaves, which are absolutely necessary to prepare the juices before they enter the fruit, the gross parts of which are perspired away by the leaves, the fruit must either be deprived of nourishment, or else some of the gross particles will enter with the more refined parts of the juice, and thereby render the fruit worse than it would otherwise be, were the leaves permitted to remain upon the branches; for if the weak dangling shoots are constantly displaced as they are produced, the fruit will not be too much shaded by the leaves that are upon the bearing branches.

When the fruit is ripe, if the stalks of the bunches are cut half through a fortnight before they are gathered, it will cause the juice to be much better, because there will not be near so great a quantity of nourishment enter the fruit, whereby the watery particles will have time to evaporate, and the juice will be better digested. This is practised by some of the most curious vigneron in the south of France, where they make excellent wine. But if after the fruit be cut, it is hung up in a dry room upon strings, so that the bunches do not touch each other, for a month before they are pressed, it will also add greatly to the strength of the wine, because in that time a great quantity of the watery parts of the juices will evaporate. This is a constant practice with some persons who inhabit the Tyrol, on the borders of Italy, where is made a most delicious rich wine, as hath been attested by Dr. Burnet in his travels; and I have heard the same from several gentlemen who have travelled that road since. But with all the care that can possibly be taken, either in the culture of the Vines, or in making the wine, it will not be near so good while the Vineyard is young, as it will be after it has been planted ten or twelve years; and it will be constantly mending, until it is fifty years old, as is attested by several curious persons abroad, as also by the most skilful wine-coopers at home, who can tell the produce of a young Vineyard from that of an old one, after it is brought to England by the colour of the wine. This difference is very easily accounted for from the different structure of the vessels of the plants; those of the young Vines being larger, and of a looser texture, easily admit a larger quantity of gross nourishment to pass through them; whereas those of old Vines, which are more woody, are more closely constricted, and thereby the juice is better strained in passing through them, which must consequently render it much better, though the Grapes from a young Vineyard will be larger, and afford a greater quantity of juice; so that

people should not be discouraged if their wines at first are not so good as they could wish, since afterward, when the Vineyard is a few years older, the wine may answer their expectation.

The Vineyard being now arrived to a bearing state, should be treated after the following manner: first, in the pruning there should never be too many branches left upon a root, nor those too long; for although by doing this, there may be a greater quantity of fruit produced, yet the juice of these will never be so good as when there is a moderate quantity which will be better nourished, and the roots of the plants not so much weakened; which is found to be of so bad consequence to Vineyards, that when gentlemen abroad let out Vineyards to vigneron, there is always a clause inserted in their leases to direct how many shoots shall be left upon each Vine, and the number of eyes to which the branches must be shortened; because were not the vigneron thus tied down, they would overbear the Vines, so that in a few years they would exhaust their roots, and render them so weak as not to be recovered again in several years; and their wine would be so bad, as to bring a disreputation on the Vineyard, to the great loss of the proprietor.

The number of branches which the Italians generally agree to leave upon a strong Vine are four; two of the strongest have four eyes, and the two weaker are shortened down to two eyes each.

Constantly keep the ground clean between the Vines; dig it carefully every spring; and every third year manure it. If the land be stiff and inclinable to bind, then lay on sea-sand, or sea-coal ashes; but if it be loose and dry; a little lime mixed with dung is the best manure. Spread it thin upon the surface, and in digging bury it equally in every part. It is much preferable to all dung, and where the Vineyard is large, a third part may be manured every year.

Dig and manure about the beginning of march, at which time all the superficial roots must be cut off, but the larger roots must not be injured; therefore the ground close to the stem of the Vines must not be dug very deep. After this is done, place the stakes, one on each side, at about sixteen inches from the stems, to which the longest bearing branches should be fastened; and one stake on each side close to the stem, to which train the two shorter branches upright, to furnish wood for the succeeding year.

In the summer look them over carefully, rubbing off all weak dangling shoots, and training the good ones to the stakes regularly, as they are produced. Stop those which have fruit in june, about three joints beyond the bunches; but the upright shoots, which are designed for bearing the following year, must not be stopped till the middle of july, when they may be left about five feet long.

All this summer dressing should be performed with the thumb and finger, and not with the knife, because wounds made by instruments in summer do not heal so soon; and the shoots being very tender whilst young, may easily be stopped by gently nipping the leading bud.

When a Vineyard is thus carefully dressed, the rows regular, the stakes exactly placed, and the upright shoots stopped to an equal height, it makes a beautiful appearance, and when the Vines are in flower, they emit a most grateful scent, especially in the morning and evening.

But as the beauty of a Vineyard depends upon the regular disposition of the Vine-branches, great care should be taken to train them regularly, and to provide every year for bearing wood; because that which has produced fruit is commonly cut away after the fruit is gathered, or at least is shortened down to two eyes, to force out shoots for the next year; where there is not a sufficient number of branches of those trained upright, so that in summer, when the Vines are in perfection, six upright shoots should be trained for the next year's wood, and three or four bearing branches with fruit on them: more than these ought never to be left on one Vine.

The Auvernat or true Burgundy Grape is valued in France before any other sort, because the fruit never grows



grows very close upon the bunches, and therefore is more equally ripened; for which reason it should also be preferred in England; for the Grapes in close bunches are commonly ripe on one side, and green on the other, which is a bad quality for such as are to be used in making wine.

[With respect to the practicability of having Vineyards in England, Mr. Speechly remarks, that the vinous latitude extending to the fifty-first degree in the northern hemisphere; that good wines are made in a part of Germany, which is under the same parallel of latitude with our southern counties; and that where the situation and soil are proper for Vines, the lands cannot possibly be more beneficially employed than by being converted into Vineyards.

He recommends an elevated situation, where there is a gentle declivity to the south or south-east, well sheltered from the north, north-west and north-east.

Plantations of forest trees would contribute much to give warmth and shelter; but they must not be too near, so as to confine the air.

Not only gentle declivities, but all slopes on the sides of calcareous hills and mountains are proper for Vineyards, provided they have a southern aspect; which is the case with the rocks on the south coast of England.

As to the soil, the Vine delights in such gravelly and rocky lime-stone soils as are frequently found on the sides of such steep hills and mountains, and will even flourish among mere stones, and the ruins of old walls. Indeed the soil can hardly be too dry in our climate for Vines.

Hence the introduction of Vineyards into this country ought not to have any bad effect on Agriculture, because all strong deep lands best adapted to tillage, are the most unsuitable to Vines; which will prosper in situations and soils, where the lands could hardly be rendered profitable any other way. Though they would not grow robust on steep slopes of poor gravelly rocky soils; yet they would be more prolific than such as are planted on rich lands, and the fruit would be higher flavoured.

Respecting the sorts of Vines which are best adapted to our climate, Mr. Speechly agrees with Mr. Miller, that the sweet early Grapes are improper for making wine in this country. He recommends those which are cultivated in Germany, particularly that of which rhenish wine is made, in preference to any sort cultivated in France<sup>f</sup>.

As to the management of a Vineyard sufficient directions have been already given. Mr. Speechly<sup>g</sup> would have the Vines trained horizontally, similar to the method practised in Holland, with Vines in frames, he thinks they would derive many advantages from this method of training, not only by warmth and shelter, but because they would easily be protected from spring frosts, by applying the boughs of trees, particularly evergreens, and because the Grapes would be greatly benefited by the reflection of the ground.

I am very doubtful of this; and should rather suppose that shading the ground so effectually would be rather injurious to the Grapes in our moist climate.

Most of what Mr. Speechly has delivered on the subject of Vineyards is speculative. The Hon. Charles Hamilton made a fair experiment at Pain's Hall. The Vineyard there was on the south side of a gentle hill; the soil a gravelly sand. It was planted entirely with two sorts of Burgundy Grapes, the Auvernat and the Black Cluster. The first year he attempted to make red wine in the usual way, but it was very harsh and austere; the second he succeeded better in making a white wine, which nearly resembled Champaign in flavour; in two or three years, as the Vines grew stronger, the wine had a finer flavour than the best Champaign. He sold it to wine-merchants for fifty guineas a hoghead; and one wine-merchant to whom he sold five hundred pounds worth at one time, assured him, that he sold some of the best of it from seven

<sup>f</sup> Speechly, p. 183 to 194.

<sup>g</sup> p. 196.

shillings and six-pence to ten shillings and sixpence the bottle

After many years experience he let the Grapes hang till perfectly ripe; they were then carefully cut off with scissors, and brought home in small quantities, to prevent their heating or pressing one another; then they were picked off the stalks, and all the mouldy and green ones were thrown aside, before the Grapes were put into the press; which was done in a few hours after they were gathered. As fast as the juice ran from the press, it was put into hogheads, and closely bunged up. These were left all winter in the cool barn. When the fermentation was over, it was racked off into clean hogheads, and carried to the vaults, before any warm weather could raise a second fermentation. In march if any of the hogheads were not quite fine, they were fined down with fish-glue. All were bottled at the end of march. In about six weeks the wine would be in perfect order for drinking, and be in prime for above one year. The second year the flavour and sweetness abated, and gradually declined till they failed entirely. Some that was kept sixteen years became very like old Hock. The only art ever used was putting three pounds of white sugar-candy to some of the hogheads, when the wine was first tunned from the press, in conformity to a rage that then prevailed for very sweet Champaign.

Mr. Hamilton on this experience declares himself convinced, that much good wine might be made in many parts of the south of England; many soils and situations being fitter for a Vineyard than his, which was much exposed to the south-west winds; and on a declivity rather too sharp. He allows that the uncertainty of our climate is much against Vineyards, and that many fine crops have been spoiled by may frosts and wet summers: but that one good year balances many disappointments.

Sir Edward Barry, who handed this account to the public, remarks that the prospect of some success, even from the first trials, seems almost certain, if conducted by the rules given by Mr. Hamilton and Miller, with the necessary assistance of a good vigneron; and that it is not improbable that in time Vineyards may be planted, for the profit arising from them, and this country supplied with native wines, very superior to many of those which are now imported<sup>h</sup>.

This prophecy has not yet been fulfilled, and there seems little probability that Vineyards should ever become a general article of cultivation in England. The difficulties and discouragements are great and various; those arising from the uncertainty of the climate, and the nicety requisite in the management of the wine, are obvious. Vineyards newly planted cannot be expected to yield a racy juice, and the English are in general of a temper too impatient to wait many years for a rich high-flavoured wine. In the mean time the expense of culture and management will be considerable, and the profit perhaps trifling; so that a large capital will be required for a speculation which may ultimately turn out to be disadvantageous. For even supposing a wine of good quality to be at length produced; unless it should have that sort of flavour which suits fashionable palates, like Claret, Burgundy, and Champaign; or is adapted to the taste of the million, like Port wine, the sale of it will never be so great as to answer an extensive cultivation.]

3. The third sort being a native of warm countries, will not live in England without artificial heat; it is easily propagated by seeds, when they are brought from the countries where the plants grow naturally, for they do not produce any here; these must be sown in small pots, which should be plunged into a hot-bed of tanner's bark. When the plants come up and are fit to remove, they should be each transplanted into a separate small pot filled with light earth, and plunged into a fresh hot-bed of tanner's bark, shading them from the sun till they have taken new root; then they must be treated in the same way as other tender exotic plants from the same countries, always continuing them in the stove, otherwise they will not

<sup>h</sup> Speechly, p. 205 to 209.

thrive.



thrive. These plants cast off their leaves every winter.

5. 6. The fifth and sixth sorts grow in great plenty in the woods of America, where I have been informed, are many other sorts, which produce fruit very little inferior to some of the fine sorts which are cultivated in Europe; notwithstanding which, it is generally thought impossible to make wine in America: this I dare say, must proceed from a want of skill, rather than any bad quality in the soil or climate; so that instead of planting Vineyards on their loose rich lands (as hath been generally practised by the inhabitants of these countries) if they would plant them upon rising ground, where the bottom was rocky or hard near the surface, I dare say they would have very good success; for the great fault complained of in those countries is, that the Grapes generally burst before they are fully ripe, which must certainly be occasioned by their having too much nourishment; therefore, when they are planted on a poorer soil, this will be in part remedied. Another cause of this may proceed from the moisture of the air, (occasioned by the perspiration of trees, &c.) which being imbibed by the fruit, may break their skins. This indeed cannot be prevented, until the country is better cleared of the timber: but however, this should caution people not to plant Vines in such places where there are great quantities of wood, because of this effect, which it hath on the Grapes. But to return:

These two Vines are preserved in the gardens of those who are curious in botany, but I have not seen either of them produce fruit in this country. They may be propagated by layers in the same manner as the common Grapes, which will take root in one year, and may be taken off, and transplanted in the spring where they are to remain, which should be against a warm wall; because if they are exposed to much cold in winter they are often destroyed, especially while they are young.

Their pruning and management is the same with any other sorts of Grapes, but only they should have fewer shoots, and those shortened down very low; indeed the Fox Grape does not like much cutting; otherwise it will make very weak shoots the following year, and never arrive to any considerable strength, so will not be capable of producing any fruit.

8. The eighth sort is planted against walls, and treated in the same way as the common Vines, and may be propagated by cuttings or layers in like manner.

12. The twelfth sort is preserved in some gardens for the sake of variety, but it rarely produces flowers in England, and has not much beauty; it is a native in Virginia and Carolina, from both which countries I have received the seeds. As this sort does not produce seeds here, it is generally propagated by laying down the young branches, which will put out roots in one year fit to remove, when they may be taken off, and transplanted where they are to remain. These require support; and as their young branches are tender, and liable to be killed by frost, if they are planted against a wall or pale, exposed to the south, they will succeed much better than when they are fully exposed to the open air, and supported by props. The young shoots of these plants should be shortened down to two or three buds in the spring, which will cause the shoots of the following summer to be much stronger, and when they are regularly trained against the wall or pale, they will produce flowers in warm seasons.

This plant is very apt to push out suckers from the root, by which it is often propagated, but the plants so raised are very subject to send out suckers again, whereby they are robbed of their nourishment, and do not thrive so well as those which come from layers.

[VITIS. See *Cissus*, *Cucumis*, *Hedera*, *Rhus*, *Tamus*.]

VITIS IDÆA. See [*Andromeda*, *Arbutus*, *Gualtheria*, *Lonicera*, *Mespilus*, *Myrsine*, *Royena*,] *Vaccinium*.

[VITMANNIA. (So named by Vahl, in honour of Abbé F. Vitmann, professor at Milan.)

Vahl. *symb.* 3. 51. t. 60. Samadera Gært. t. 156.

Class. 8. 1. Octandria Monogynia.

## GENERIC CHARACTER.

CAL. *Perianth* one-leaved, short, four-cleft: *segments* rounded, concave within, convex without.

COR. *Petals* four, linear-oblong, little concave, thickish, hoary on the outside, obtuse, unguicular. *Nectary* a small obovate scale at the base of each filament, shorter on the alternate ones.

STAM. *Filaments* eight, a little shorter than the petals, smooth. *Antbers* linear, subbifid at the base.

PIST. *Germ* superior, four-lobed: *lobes* semiorbicular, compressed, slightly connate, easily separable from one another and from the style: (perhaps they are rather four germs.) *Style* simple awl-shaped, length of the filaments. *Stigma* acute.

PER. *Nut* semilunar, compressed, one-celled, valveless.

SEED one, large, obovate-fickled, turgidly lenticular, smooth.

## ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. four-petalled. Nect. a scale at the base of each filament. Nut semilunar, compressed, one-seeded.

## SPECIES.

1. *Vitmannia elliptica*.

Vahl. *symb.* 3. 51. t. 60. Willd. *spec.* 2. 320.

Samundura. Lin. *zeyl.* n. 433.

Samadera. Gært. *fruct.* 2. 352.

## DESCRIPTION, &amp;c.

This is a tree, with round, smooth branches, compressed a little at the tip. Leaves alternate, a hand and more in length, elliptic, obtuse, quite entire, smooth on both sides, veined, stiffish, on a short petiole which is flattish above, but convex underneath. Stipules none. Peduncles lateral or a little below the top of the branch, solitary or sometimes two together, compressed a little. Pedicels umbelled, short, one-flowered<sup>1</sup>. Fruit a corky or woody nut, compressed like a lens, or concavo-convex, or snail-shaped, in the middle distinctly varicose with prominent vessels, but smooth towards the periphery, and gradually narrowing to an edge: the upper rim straightish, thick with a longitudinal groove and an oblong tubercle below the tip; the lower rim remarkably bowed, quite entire, compressed to an edge: the surface smooth and somewhat shining; the colour dun or yellow bay. Seed yellow or russet-cinnamon, fastened to a thick tubercle in the upper part of the cell: coat simple, coriaceous, thickish; albumen none: radicle placed behind the base of the cotyledons.

Size of the nut various, bigger than the palm of the hand, or scarcely an inch in diameter, and from a narrow beginning widening gradually into the shape of a fly's wing; but always somewhat concave and snail-shaped. Gærtner conjectures, that the fruit, when complete, is composed of two nuts, horizontally opposite; and that it belongs to the order of *Contortæ*<sup>2</sup>.

It differs entirely from *Heretiera*. Native of the East Indies, where it was found by Koenig<sup>1</sup>.]

ULEX. (The name of a shrub in Pliny, the ashes of which were used as a lye in separating gold from the substances with which it was mixed. Martinius derives it ab uligine; but if it be our Furze, or any thing like it, we should rather derive it from *ουλος*, *crispus*, *contortus*.)

Lin. *gen.* n. 881. Reich. n. 932. Schreb. n. 1169.

Gært. t. 330. Juss. 352. Genista-Spartium.

Tournef. t. 112.

Class. 17. 4. Diadelphia Decandria.

Nat. Order of *Papilionaceæ* or *Leguminosæ*.

## GENERIC CHARACTER.

CAL. *Perianth* two-leaved, permanent: *leaflets* ovate-oblong, concave, straight, equal, a little shorter than the keel: upper leaflet two-toothed, lower three-toothed.

COR. papilionaceous, five-petalled. *Standard* obcordate, emarginate, erect, very large. *Wings* oblong, obtuse, shorter than the standard. *Keel* two-petalled, straight, obtuse, converging by the lower margin.

STAM. *Filaments* diadelphous, simple and nine-cleft. *Antbers* simple.

PIST. *Germ* oblong, cylindrical, hirsute. *Style* filiform, rising. *Stigma* obtuse very small.

<sup>1</sup> Vahl.

<sup>2</sup> Gært.

<sup>1</sup> Vahl.

PER.



PER. Legume oblong, turgid, scarcely longer than the calyx, straight, one-celled, two-valved.

SEEDS few, roundish, emarginate.

ESSENTIAL CHARACTER.

Cal. two-leaved. Legume scarcely longer than the calyx. Filaments all connected.

SPECIES.

1. *Ulex europæus*. Common Furze, Whin or Gorse.  
*Lin. spec.* 1045. *syst.* 643. *Reich.* 3. 417. *Gertn. fruct.* 2. 330. *Huds. angl.* 312. *Wither. arr. ed.* 3. 626. 1. *Smith brit.* 756. *engl. bot. t.* 742. *Forst. in Sym. syn.* 160. *Hull.* 159. *Light. scot.* 385. *Relb. cant. ed.* 2. n. 581. *Sibth. oxon. n.* 614. *Abbot bedf. n.* 507. *Fl. dan. t.* 608. *Neck. gallob.* 311. *Villars dauph.* 3. 424. *Ger. proc.* 489.  
*U. grandiflorus.* *Pour. aët. tolos.* 3. 333.  
*Genista spinosa.* *Dod. pempt.* 659. 1.—*vulgaris.* *Ger. emac.* 1319. f. 1. *Raii hist.* 1729. *syn.* 475.  
*G. spin. major.* *Ger.* 1138. 1. *descr. non fig.*—*vulgaris, &c.* *Park. theat.* 1004. 1.  
*G. spin. major longioribus aculeis.* *Baub. pin.* 394.  
*Genistellæ spinosæ affinis, Nepa quibusdam.* *Baub. hist.* 1. 2. 400.  
*Genista-Spartium majus brevioribus & longioribus aculeis.* *Tournef. inst.* 645. item *fl. paris.*  
*Scorpius* 1. *Clus. hist.* 1. 106.  
*Calyx-teeth obsolete converging, bractes ovate lax, branchlets erect.*
- [2. *Ulex nanus.* Dwarf Furze.  
*Smith brit.* 757. *engl. bot. t.* 743. *Forst. in Sym. syn.* 160. *Relb. cant. ed.* 2. n. 582.  
*U. europæus* β. *Lin. spec.* 1045. *Reich.* 3. 418. *Huds. angl.* 312. *Wither. arr. ed.* 3. 626. *var.* 2. *Hull* 159. 2. *Lightf.* 385.  
*Genista spinosa minor.* *Park. theat.* 1004. 3. *Raii syn.* 475. 2.  
*G. spinosa major, brevibus aculeis.* *Baub. pin.* 394.  
*Calyx-teeth lanceolate distant, bractes minute pressed close, branchlets decumbent.]*
3. *Ulex capensis*.  
*Lin. spec.* 1046. *Reich.* 3. 418.  
*Genista-Spartium bacciferum, ericæ foliis africanum.* *Pluk. phyt. t.* 185. f. 6. *Pet. gaz. t.* 83. f. 9.  
*Leaves solitary obtuse, spines simple terminating.*

DESCRIPTIONS, &c.

[1. This shrub, so well known in England, has its branches very close, deeply furrowed, woolly or hirsute, full of thorns, which are stretched out, branched, angular, very sharp, smooth, evergreen, leafy, frequently flower-bearing; according to Withering, awl-shaped, a little bowed downwards, woolly at the base, yellow at the ends. Leaves at the base of the spines and spinules, solitary, awl-shaped, terminating in sharp yellowish thorny points, somewhat rugged, often hirsute, deciduous. Peduncles axillary, single or two together, one-flowered, villose. Bractes two, approximating to the calyx, loose, not pressed close, sometimes spreading, ovate, concave, tomentose, five times shorter than the calyx or thereabouts. Calyx pale green, somewhat rusty, tomentose; teeth small, obtuse, converging. Corolla half as long again as the calyx, bright-yellow or gold-coloured, having the smell of honey so strong as to scent the whole air, when the flowers are in full vigour. Withering remarks, that the standard and wings are fleshy at the base, the latter set with hairs along the lower edge, and curiously wrinkled along the upper; petals of the keel united by an intertexture of woolly hairs. Filaments all united in one, (which contradicts the character given by Linneus) with the tube cloven above. Legume oblong, pubescent<sup>m</sup>, about half an inch long, swelling a little, valves very smooth within, without any hollows or partitions. Seeds eight or ten, (I never observed more than four or five,) reniform-triangular, turgidly lens-shaped, smooth and somewhat shining, russet or greenish, with a very prominent navel<sup>n</sup>.

Native of Britain, Denmark, Brabant, France, Portugal and some parts of Germany, on dry gravelly and

sandy heaths and commons. Dr. Smith says it is more abundant in Portugal and the western parts of France than any other country except our own. Withering says, it does not flourish in very poor soil: certainly it is never found in strong or wet soils. In Cornwall it is extremely luxuriant, growing to the height of six or eight feet. I have frequently observed it as high in woods, and where it has been sown thick in inclosures. It begins to flower in may, and continues during a great part of the year. Withering says from february to august; and Dr. Stokes, that he observed it to be out of flower on the 19th of august. According to Ray, it flowers from may through the whole autumn till winter. This author relates that it is not less frequent in Belgium than it is in England; he mentions it as remarkable that he found it in Provence, where it is so warm: That seems to be its boundary south. Northwards it does not grow in Sweden or Russia; nor is it common in Scotland. Linneus lamented that he could hardly preserve it alive in a greenhouse. Many parts of Germany are wholly destitute of the Furze-bush, insomuch that Dillenius was in a perfect extasy when he first saw our commons covered with its golden flowers. And Gerarde relates that about Dantzick, Brunswick and in Poland, there was not a branch of it growing, except some few plants and seeds that he sent, which were most curiously kept in their fairest gardens, as also our common Broom, which he sent thither likewise, being first desired by divers earnest letters.

In the south of England it is called Furze; in the eastern counties Whins, and in the north Gorse. In French it is Ajonc or Jonc-marin, contracted to Jomarin.]

Some years ago the seeds of Furze were sown for hedges; and if the soil was light, it soon became strong enough for a fence against cattle; but in a few years these hedges became naked at bottom, and some of the plants failing, there were gaps in them: of late years therefore they have been little used. On very poor hungry gravel or sandy land this crop has produced more profit than any other, especially where fuel is dear: and it may be used in heating ovens, burning lime and bricks, and for drying malt.

[Mr. Evelyn recommends Furze not only for hedges, but for fodder to cattle in winter. Duhamel speaks much in its favour for the latter purpose. It has been used also for fodder in Scotland. The colliers in the forest of Dean, chop it small, and give it to their horses in winter, with great success<sup>o</sup>. In Cornwall, where fuel is scarce, it is cultivated to advantage, and is generally cut to make faggots for heating ovens, which it does soon, burning rapidly and with a great degree of heat. The ashes are used to make ley. Team horses may be supported by this shrub, if it is cut young, and bruised in a mill to break the thorns. Goats, kine, sheep and horses feed upon the tender tops. It is in some respects a very hardy plant, and will make fences upon the bleakest mountains, and close to the sea side, where the spray of the sea destroys almost every other shrub; but it is impatient of cold, and is often destroyed, or at least cut down to the roots, by severe frost<sup>o</sup>.

2. The dwarf procumbent Furze has been commonly considered as a mere variety of the greater upright sort; even Tournefort and Miller, who erected numberless varieties into species, have not distinguished them.] The latter says, there are two or three varieties, but they are not worthy to be enumerated: and he affirms that he sowed their seeds in the garden, and found all the varieties arise from the same seeds. [Parkinson has separated them, and says very justly, that the lesser Furze-bush groweth always lower, with smaller and shorter thorns; he remarks that the leaves abide much longer before they fall away, which is not until the end of spring or beginning of summer, so that both leaves and flowers are oftentimes seen a good while together; the flowers are smaller and of a paler colour; the cods are small and short, without any freeze upon them. Dr. Withering remarks, that the seed-vessels

<sup>o</sup> Silva and Hunter's edition. Young's annals, vol. 8.

<sup>o</sup> Withering.

<sup>n</sup> Smith.

<sup>n</sup> Gærtner.



In both are more or less woolly, so that Parkinson's distinction, taken from that circumstance, does not hold good. Ray, with his usual caution, hesitates whether he should consider them as distinct species, though this is smaller and more humble, with shorter slenderer spines, of a paler green, but not less frequent, and flowering in autumn, when the larger sort is for the most part going out of flower. He informs us also, that Doody had remarked this to differ from the common greater Furze, in having the branches always spread on the ground, the thorns shorter and less pungent, the flowers paler and not appearing before autumn. Dr. Withering distinguishes them thus; in the common one the corolla is longer than the calyx, and the thorns longer than the corolla: in the dwarf Furze the corolla is as long as the calyx, and the thorns are shorter than the corolla. Should these characters prove permanent, it will be readily allowed, he says, that they are distinct species. Dr. Stokes says this seems to be a truly distinct variety.

Dr. Smith says it is much lower than the common sort, with decumbent branches; the spines horizontal or partly deflexed; the bractes very small, brown, often scarcely apparent, pressed close to the calyx, as Mr. Stackhouse suggested to him; calyx more silky and less tomentose, with the teeth very conspicuous, deeply cut and distant; corolla little longer than the calyx, of a less flaming colour; legume rough-haired. It is found with the other chiefly on dry elevated heaths, but by no means so general; flowering from August to October. I must confess it always appeared to me sufficiently distinct from the preceding species.]

3. Stem woody and hard covered with a greenish bark when young, but afterwards becomes grayish. Branches slender and woody. It has not produced any flowers in the English gardens. Native of the Cape of Good Hope, where it usually grows to the height of five or six feet.

#### PROPAGATION AND CULTURE.

1. 2. These shrubs propagate themselves very plentifully by seeds, which when ripe are cast out of the pods to a considerable distance, and soon vegetate.

3. This is preserved in the greenhouse or dry stove with other hardy exotics. It is difficult to increase either by layers or cuttings.

ULMARIA. See *Spiraea*.

ULMIFOLIA. See *Grewia*.

ULMUS. (Derivation unknown. In Greek *Πτελεα*.)  
Lin. gen. n. 316. Reich. n. 345. Schreb. n. 443.  
and p. 285. Tournef. t. 372. Juss. 408. Gärtn.  
t. 49.

Class. 5. 2. Pentandria Digynia.

Nat. Order of Scabridæ. Amentaceæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, wrinkled: border five-cleft, erect, coloured within, permanent.

COR. none.

STAM. Filaments five, (sometimes four or eight.) awl-shaped, twice as long as the calyx. Anthers four-grooved, erect, short.

PIST. Germ orbicular, erect. Styles two, shorter than the stamens, reflexed. Stigmas pubescent.

PER. Berry oval, large, juiceless, compressed, membranaceous-winged, one-celled.

SEED one, roundish, slightly compressed.

#### ESSENTIAL CHARACTER.

Cal. five-cleft, inferior, permanent. Cor. none. Caps. membranaceous, compressed flat, one-seeded.

#### SPECIES.

1. *Ulmus campestris*. Common Elm.

Lin. spec. 327. syst. 265. Reich. 1. 631. Willd. 1. 1324. hort. cliff. 83. fl. succ. n. 226. mat. med. 75. Woodv. med. bot. 540. t. 197. Willd. arb. 391. Hudf. angl. 109. Wither. arr. ed. 3. 278. Smith brit. 281. Hall. belv. n. 1586. Hoffm. germ. 86. Roth. germ. 1. 118. 2. 301. Pollich pal. n. 255. Krock. files. n. 380. Villars dauph. 3. 797. Allion. pedem. n. 2068. Gmel. it. 1. 125. Pallas it. 1. 16. Desfont. atlant. 1. 220. Hunt. Evel. p. 114. 119. ic. Plenck. ic. t. 172.

*U. nuda*. Ebr. Beitr. 6. 86.

*Ulmus*. Dod. pempt. 837. Camer. epit. 70. Lob. ic. 2. 89. obs. 607. 1. Matth. 144.

*U. camp.* & Theophrasti. Baub. pin. 246.

*U. vulgarissima folio lato scabro*. Ger. 1297. 1. emac. 1480. 1. Raii hist. 1425. syn. 463.

*U. vulgaris*. Park. theat. 1404. 1.

β. *Ulmus minor folio angusto scabro*. Ger. emac. 1480. 2. Raii hist. 1426. syn. 469.

*U. minor*. Park. theat. 1404. 4.

*U. fativa*. Mill. dict. n. 3.

Leaves doubly-ferrate rugged, unequal at the base, flowers subsessile heaped.

2. *Ulmus suberosa*. Dutch Elm.

Lin. spec. ed. Willd. 1. 1324. arb. 391. Moench. weissenst. 136. Ehrh. Beitr. 6. 87.

*U. tetrandra*. Schkuhr bot. handb. 178. t. 57. b. et t. 57. a. f. g.

*U. fativa*. Du Roi barbecc. 2. 502.

*U. hollandica*. Mill. dict. n. 5.

*U. carpini folio, cortice arboris albido*. Mattusch. files. n. 170.

α. *arborea*.

β. *fruticosa*.

γ. *pumila*.

Leaves doubly ferrate somewhat unequal at the base, flowers subsessile conglomerate four-stamened, fruits smooth, bark of the branchlets corky-winged.

3. *Ulmus montana*. Broad-leaved Elm or Wyeh-Hasel.

Baub. pin. 427. Wither. arr. ed. 3. 279. Smith brit. 282. Relb. cant. ed. 2. n. 232.

*U. glabra*. Hudf. angl. ed. 1. 95.

*U. scabra*. Mill. dict. n. 2.

*U. campestris*. Fl. dan. t. 632. Hudf. angl. 129. γ.

*U. effusa*. Willd. spec. 1. 1325. Sibth. oxon. n. 267. Sym. syn. 67. Abbot. n. 192.

*U. latifolia*. Cullum 96.

*U. ætandra*. Schkuhr. bot. handb. 178. t. 57. b. Hoffm. germ. 86.

*U. hollandica*. Du Roi barbecc. 2. 505.

*U. ciliata*. Ehrh. Beitr. 6. 88.

*U. longioribus floribus et seminum petiolis*. Rupp. jén. 330.

*U. folio latissimo, floribus in petiolis pendentibus*. Buxb. balens. 340.

*U. folio latissimo scabro*. Ger. emac. 1481. 3. Raii hist. 1426. syn. 469.

*U. latiore folio*. Park. theat. 1404. 2.

β. *Ulmus glabra*. Mill. dict. n. 4. Cullum 97.

*U. folio glabro*. Ger. emac. 1481. 4. Park. theat. 1404. 3. Raii hist. 1426. syn. 469.

Leaves doubly-ferrate acuminate unequal at the base, flowers peduncled diffused.

[4. *Ulmus americana*. American Elm.

Lin. spec. 327. Reich. 1. 632. Willd. 1. 1325. Du Roi barbecc. 2. 506. Wangenb. amer. 46. Gron. virg. 145. Gärtn. fruct. 1. 225.

α. *rubra*. American Red Elm.

Ait. kew. 1. 319. Clayton in Gron. virg. 39.

Leaves ovate wrinkled rugged, branches red.

β. *alba*. American White Elm.

Ait. kew. 1. 320. Clayt. in Gron. virg. 39.

Leaves oblong rugged, branches whitish.

γ. *pendula*. American drooping Elm.

Ait. kew. 1. 320.

Leaves oblong smoothish, branches pendulous.

Leaves equally ferrate, unequal at the base.

5. *Ulmus nemoralis*. Hornbeam-leaved Elm.

Ait. kew. 1. 320. Willd. spec. 1. 1526. arb. 395.

Leaves oblong smoothish equally ferrate almost equal at the base, flowers sessile.

6. *Ulmus pumila*. Dwarf Elm.

Lin. spec. 327. Reich. 1. 632. Willd. 1. 1326. Gmel. fib. 3. 105. n. 82. Pallas rofs. 76. t. 48.

*U. humilis*. Amm. ruth. n. 160.

*U. pumila, foliis parvis, glabra, cortice fungoso*. Pluk. alm. 293.

Leaves equally ferrate, equal at the base.

7. *Ulmus integrifolia*. Entire-leaved Elm.

Roxb. corom. 1. 56. t. 78. Willd. spec. 1. 1326.

Leaves quite entire.

#### DESCRIPTION



1. Bark cloven, on the branches corky. Leaves rugged on both sides, villose beneath along the small veins. Flowers from their proper gems, clustered, scarcely peduncled, numerous, brownish-flesh-coloured. Capsules oblong. Timber hard tough<sup>a</sup>. The flowers have a violet smell<sup>r</sup>.

This Elm is a very great high tree. The bark of the young trees, and the boughs of the elder trees are smooth and very tough, and will strip or pill from the wood a great length without breaking: the bark of the body of the old tree, as the trees grow in bigness, tears or rents, which makes it very rough. The innermost wood is of a reddish yellow or brownish colour and curled, and after it is dry very tough and hard to cleave. The wood next the bark or sap is white. Before the leaves come forth, the flowers appear, about the end of march, growing on the twigs or branches, closely compacted or thrust together, of a red colour: after which come flat seeds, more long than broad, not much unlike the garden Arach seed in form and bigness; for the most part falling away before or shortly after the leaves spring forth, but some hang on a great part of the summer. Leaves dark green, the middle-sized ones two inches broad and three inches long, rough or harsh on both sides, indented about the edges, and many times crumpled, having a nerve in the middle, and many smaller nerves growing from it; on one side always longer than on the other<sup>s</sup>.

Native of Europe and Barbary. Linneus says it is scarcely to be found above Helsing and Finland. (64°). Evelyn informs us, that before the walks and vistas were planted at Aranjuez, Casal del Campo, Madrid, the Escorial, &c. with trees which Philip the second caused to be brought out of England, it does not appear that there were any elms in Spain<sup>t</sup>. It is doubted by this learned planter and others whether the Elm be indigenous of England. Some affirm, says Evelyn, that it was first brought out of Lombardy; there are no considerable woods of it any where; Shropshire and several other countries, and rarely any beyond Stamford to Durham, having any growing in many miles together<sup>u</sup>. Aubrey informed Mr. Ray that the Elm is not to be found to the north of Grantham or Stamford.

However this may be, we certainly possessed this tree in the Saxon times: and there can be no stronger proof, says Dr. Hunter, that the Elm is a native of England, than that there are near forty places which take their names from it, and most of them mentioned in Doomsday-book. Chaucer lived at Newelm in Oxfordshire; Dryden at Nine-elms near Lambeth. There is also Barn-elms, &c.] Mr. Miller says, it is very common in the north-west counties of England, where it is generally believed to grow naturally in the woods.

The Elm grows to a great size; in little more than forty years, says Mr. Evelyn, it will arrive to a load of timber. He mentions many then standing in Epsom parish, which would bear almost three feet square for more than forty feet. An Elm planted by Henry IV. was still standing in the Luxembourg gardens at Paris, when the Revolution broke out; but whether it has survived that event, I am unable to say. This great monarch's famous contemporary queen Elizabeth is said to have planted an Elm with her own hand at Chelsea, where her father had a palace in which she was brought up when an infant. It went always by her name, and I remember it a stately flourishing tree, except that the top was decayed. It stood at the upper end of Church lane, near where the turnpike now is, and was a boundary of the parish on the north side. It was felled, to the great regret of the neighbourhood, on the eleventh of november 1745, and sold for a guinea by Sir Hans Sloane, Bart. lord of the manor. It was thirteen feet in circumference at bottom, and six feet six inches, at the height of forty-four feet: the height was one hundred and ten feet, of which fifteen feet at the top were decayed, the tree having suffered by the hard frost in 1739—40.

<sup>a</sup> Smith.

<sup>r</sup> Withering.

<sup>s</sup> Goodyer in Ger. emac.

<sup>t</sup> Silva, b. 1. c. 4. § 7.

<sup>u</sup> Id. ib. § 8.

In a manuscript obligingly lent me by Craven Ord, Esq. and probably written by Oldys, mention is made of several remarkable Elms. As of one at Charlton, in Kent, about which Horn-fair is kept, spreading eight yards on every side, the height about ten yards, but the trunk not above a foot in diameter.

One of Sir Francis Bacon's Elms in Gray's Inn walks was felled upon a suspected decay in 1720 or 1726, and was above twelve feet round: it had forty-five feet of timber in it. In 1750 not above eight trees of his plantation were left. They were planted in 1600.

At Fulham are or were some Elms, planted in the time of king Edward VI: and one at Richmond, said to be planted by a courtier of king Henry VII; whilst that king kept his court there, and yet (in Oldys' time) in its prime.

The walk of Elms on that side of the Mall in St. James's Park next to the palace, are some of them about one hundred and sixty years of age. One which stood at the upper end turning up to the Green Park, being blown down, was found to be above sixty feet in height, and near twelve in circumference near the root. (They are now considerably more than two hundred years old, but very few (in 1805) are remaining, and those very much decayed.)

Two Elms at St. John's College in Oxford, were sizeable trees in the reign of queen Mary.

Stately rows of Elms at Hilhall in Essex, are said to have been planted by Sir Thomas Smith.—So far Mr. Ord's manuscript.

Mr. Boucher informs us that he sold a line of English Elms, above sixty in number, at a guinea a tree, at twenty-four year's growth: they were about eighteen inches in diameter, a foot above ground, and forty feet high.

Mr. Coxe, in his account of Monmouthshire, mentions an ancient Elm at Raglan Castle, which is twenty-eight feet five inches in circumference near the root.

Mr. Marshall says, the largest Elms he has seen of the fine-leaved sort, as he calls it, grow in the Vale of Gloucester; and that there are several in the parish of Church-down, which girt, at five feet high, from ten to twelve feet. But the finest Elm in the vale stands in the road between Cheltenham and Tewkesbury, within a few hundred yards of the Boddington Oak. It is known by the name of Piffe's Elm; and the toll-gate is called Piffe's Elm pike. The smallest girt of this tree, which falls about five feet high, was in 1783 exactly sixteen feet. At ten feet high it throws out large arms, which have formerly been lopped, but are now furnished with tree-like shoots, rising seventy or eighty feet high, with an extent proportionable. There is an Elm of the small-leaved sort in Hyde Park, the stem of which is larger than this; but it is hollow, its head much impaired, and is a mere dotard compared with Piffe's Elm<sup>x</sup>.

Elm timber, says Mr. Evelyn, is of singular use; especially where it may lie continually dry, or wet, in extremes; therefore proper for water-works, mills, the ladles and soles of the wheel, pipes, pumps, aqueducts, pales, ship planks beneath the water-line: also for wheelrights, handles for the single hand-saw. Rails and gates of Elm, thin-sawed, are not so apt to rive as Oak. The knotty for naves and hubs; the straight and smooth for axle-trees; and the very roots for curiously dappled works. It has scarce any superior for kerbs of coppers, feather edge, and weather-boards; but it does not without difficulty admit the nail, without boring. Chopping-blocks, blocks for the hat-maker, trunks and boxes to be covered with leather; coffins; dressers and shovel-board tables of great length, of a lustrous colour, if rightly seasoned. Also and for the carver by reason of the tenor of the grain, and toughness which fits it for all those curious works of frutages, foliage, shields, statues, and most of the ornaments appertaining to the orders of architecture, and for not being much subject to warping. Vitruvius commends it both for tenons and mortaises. It makes also the second sort of charcoal<sup>y</sup>.

Mr. Marshall adds, that in places where bricks are rendered dear, by the want of a proper supply of fuel,

<sup>x</sup> Planting, 2. 429.

<sup>y</sup> Silva, b. 1. c. 4.



as in Surry and Kent, great quantities of this tree are cut up for studs and weather-boarding for the sides of barns, stables, and even dwelling-houses: and in the southern counties in general it is much used in carpenter's work of all kinds as a substitute for oak<sup>a</sup>.

The bark dried and ground to powder has been mixed with meal in Norway to make bread, in times of scarcity.—The leaves suffered to dry upon the branches, and laid up in a dry barn prove a great relief to cattle in winter, where fodder is scarce: they are acceptable to horses, kine, sheep, goats, and swine. In some parts of Herefordshire they gather them in sacks for this purpose. It is said that silk-worms will devour the leaves when tender with great avidity<sup>a</sup>.

The inner tough bark has no remarkable smell, but a bitterish taste, and abounds with a slimy juice, which has been recommended in nephritic cases, and externally as a useful application to burns; the bark of the branches is more bitter than that of the trunk, and therefore probably more efficacious.

The complaints for which it is chiefly recommended are of the cutaneous kind allied to herpes and lepra. A decoction drank freely has been known to carry off the water in dropsies. Dr. Lettsom found it most effectual in what he supposes to be the lepra ichthyosis of Sauvages, in which it succeeded after all the medicines usually employed in such cases had failed. A remarkable instance of its efficacy also in lepra vulgaris, affecting the whole body, is related by Banau; who proposes its use in various other diseases, as fluor albus, rheumatism, old ulcers, cancerous and scrophulous affections, tinea capitis, scurvy, &c. In very obstinate cases it is necessary to persevere in the use of the decoction for some months<sup>b</sup>.

Elm twigs were anciently used as instruments of chastigation. For Plautus speaks of a rogue who had been chastised so often, that he had wasted all the Elms in the country in rods and cudgels.

The Elm, says Mr. Gilpin, naturally grows upright; and when it meets with a foil it loves, rises higher than the generality of trees; and after it has assumed the dignity and hoary roughness of age, few of its forest brethren, though properly speaking it is not a forester, excel it in grandeur and beauty. The character of the Elm, in its skeleton partakes much of the Oak; so much, that when it is rough and old, it may easily, at a little distance, be mistaken for an Oak. In full foliage its character is better marked; and no tree is better adapted to receive grand masses of light; nor is its foliage, shadowing as it is, of the heavy kind. Its leaves are small, and this gives it a natural lightness; it commonly hangs loosely, and is in general very picturesque<sup>c</sup>.

β. The narrow-leaved Elm is like the other, but much lesser and lower; the leaves are usually about two inches and a half long, and an inch or an inch and quarter broad; indented about the edges, and having one side longer than the other, and being harsh on both sides like the other. Mr. Goodyer says he saw it growing but once, and that in the hedges by the high road between Christchurch and Lymmington in the new forest in Hampshire, about the middle of September 1624; and that he brought some small plants of it, not a foot in length, which when he was giving this account in 1633, were rising up ten or twelve feet high, and growing with him by the other, were easily to be discerned apart<sup>d</sup>.]

This is called in the nurseries the English Elm; Mr. Miller says improperly, for it is not a native of England, and is only found near London, or in plantations where the trees were procured from that neighbourhood. Some persons, he says, have supposed that it was brought from Germany. [Dr. Smith states it to be the opinion of Mr. Crowe, that this is the origin of all the cultivated varieties.

Mr. Miller says, that there are several other varieties, but not worth noticing; among these is that with variegated or blotched leaves. Mr. Gilpin mentions the

Weeping Elm, of which the finest specimens are in St. John's Walks at Cambridge.

2. The cork-barked, or as we commonly call it, the Dutch Elm, because it was introduced from Holland at the beginning of king William's reign, is chiefly remarkable for its quick growth, and fungous rough bark. The leaves are very large and harsh on both sides, not so unequal at the base as the others. The flowers according to Schkuhr and Willdenow, have only four stamens. Native of Europe. The wood is of very inferior quality.

3. The broad-leaved Elm, called also the Wych Hazel, has the bark of the branchlets smooth and even. The leaves are wider than in the preceding, less harsh, and acuminate. The flowers are on longer peduncles, and spread out loosely. The fruit is roundish. The wood is less solid<sup>e</sup>.

The trunk soon divides into long wide-spreading winged branches; and when at its full growth seldom rises to above one-third of the height of the campestris. It flowers when even under thirty feet high, whilst that seldom flowers till it has gained a much greater age and height. The branches are very brittle. Leaf-buds and flower-buds distant. Flowers scentless, from six to fifteen in a corymb, on long pedicels: clefts of the calyx five, six, and in one instance four and nine. Stamens five and six (according to Schkuhr eight.) Stigmas three<sup>f</sup>. This growth, says Goodyer, to be a very great tree, and also very high, especially in woods among other trees. The bark on the outside is blacker than that of the first, and is also very tough, so that when there is plenty of sap, it will strip or peel from the wood of the boughs from the one end to the other, a dozen feet in length or more without breaking; whereof ropes are often made. The timber hereof is in colour near like the first: it is not so firm or strong for naves, but will more easily cleave. The branches or young boughs are grosser and bigger, and do spread themselves broader, and hang more downwards. The seed is somewhat bigger. The leaves are much broader and longer than any of the kinds of Elm, usually three or four inches broad, and five or six inches long, also harsh on both sides, indented about the edges, near resembling the leaves of the Hazel; the one side of them is most commonly longer than the other. This prospereth and groweth naturally in any soil moist or dry, on high hills and in low vallies in good plenty in most places in Hampshire, where it is commonly called Witch Hazel. Old men affirm, that when long bows were in use, there were very many made of the wood of this tree, for which purpose it is mentioned in the English Statutes by this name of Witch Hazel. It hath little affinity with Carpinus, which in Essex is called Witch Hazel<sup>g</sup>.

It is found in shady lanes and the outskirts of woods in most parts of England, and seems clearly to be indigenous. In Scotland and the north of England, it appears to prevail more peculiarly, from the scarcity of the campestris, which is found only near villages; whereas this is found in woods and brakes, as well as hedgerows<sup>h</sup>.

Mr. Cook mentions a Witch Elm felled in Sir Walter Bagot's park in Staffordshire, which lay forty yards in length; was at the stool seventeen feet diameter; broke in the fall fourteen load of wood, forty-eight load in the top; yielded eight pair of naves, eight thousand six hundred and sixty feet of boards and planks: the whole was esteemed ninety-seven tuns<sup>i</sup>.

A Wych Hazel, though it had lost a considerable leading branch in the great storm of 1703, yet when felled contained eight loads of timber, and being sawn off at seven feet above the but, measured near eight feet in diameter. It was a planted tree<sup>k</sup>.

The Wych Elm, says Mr. Gilpin, is perhaps generally more picturesque than the common sort, as it hangs more negligently; though at the same time with this negligence, it loses, in a good degree, that happy surface for catching masses of light, which we admire in the common Elm. We observe also, when we see

<sup>a</sup> Planting, 2. 430. <sup>a</sup> Evelyn, b. 1. c. 5. and Withering, 278. note. Transf. Arts, 2. 157. <sup>b</sup> Woodville, 541. Withering. Med. transf. 2. 203. Med. mem. 152. <sup>c</sup> Forest scenery, 1. 39, 40. <sup>d</sup> Goodyer in Ger. emac. 1480.

<sup>e</sup> Smith. <sup>f</sup> Stokes and Gough in Withering. <sup>g</sup> Ger. emac. 1481. <sup>h</sup> Stokes in Withering. <sup>i</sup> Evelyn, 6. 3. c. 3. <sup>k</sup> White's Selburne.



this tree in company with that, its bark is somewhat of a lighter hue: The Wich Elm is found in Scotland, not only in the plains and vallies of the Lowlands; but is hardy enough to climb the steeps and flourish in the remotest Highlands, though it does not attain, in those climates, the size to which it grows in England<sup>1</sup>.

I have preserved the various orthography of different authors, not knowing which is right. Old writers always spell it *Witch*, as Goodyer, Ray, Evelyn, &c. and it is so pronounced in some parts; but the prevailing mode of pronunciation and spelling seems now to be *Wych*, and this tree is commonly called by that name, without the adjunct of Elm or Hasel. Mr. Gilpin is singular in his mode of orthography.

This species being undoubtedly indigenous, and formerly much used for bows, if it could be proved that it was anciently known by the name of Elm, probably was the occasion of Elm forming part of the appellation of so many villages, and not the campestris. It is certain however that in the Statutes it is called Witch Hasell.

The timber of this tree may be applied to the same uses with the other, but it is inferior in toughness and strength.

β. The smooth-leaved Elm is in bigness and height like the first, but the boughs grow as those of the Witch Hasell do, hanging more downwards than those of the common Elm. The bark is blacker than that of the first kind, but will also peel from the boughs. The flowers and seeds are like those of the first. The leaves also, inform, are like that, but smooth in handling on both sides. My worthy friend and excellent Herbarist of happy memory, Mr. William Coys of Stubbers in the parish of Northokington in Essex, told me, that the wood of this kind was more desired for naves of carts than that of the first. I observed it growing very plentifully as I rode between Rumford and the said Stubbers, in the year 1620, intermixed with the first kind, but easily to be discerned apart. It is in those parts usually called Witch Elm<sup>m</sup>. Mr. James Sherard observed it in the road beyond Dartford in Kent. Ray remarks that it is very frequent in Cambridgeshire. It is so still, and I have sometimes thought that it bids at least as fair as the Dutch Elm to be taken for a distinct species. Dr. Plot speaks of a variety of this with narrower and more acuminate leaves. *Miller, n. 6.*

Linneus considered all the European Elms as making only one species; Goodyer, as we have seen, described four. Ray followed him. Our modern Botanists distinguish two species, and consider each of the two others as forming a variety of these. The German botanists make the Dutch Elm a third species, not merely from the cork-like appearance of the bark on the twigs, but also because the flowers have only four stamens; whereas the campestris has five, and the montana eight. But the number of stamens is too uncertain to form specific characters upon them only.]

Mr. Miller has six species. 1. *Ulmus campestris*. The common rough, or broad-leaved Witch Elm. The Mountain Elm of Evelyn. The branches spread, and do not grow so erect as those of the third sort. The leaves about three inches long and two broad, on short foot-stalks. The flowers come out in march upon the slender twigs, in clusters; they are of a deep red colour, and are succeeded by oval bordered capsules, containing one roundish compressed seed, which ripens in may. The leaves not coming out till late in the spring, few persons plant this tree near their habitations.

2. *Ulmus scabra*. The Witch Hazel, or rough and very broad-leaved Elm; by some unskilful persons called the British Elm. (*Ulmus montana*, n. 3.) This grows naturally in the north of England where it is frequently called Witch Hazel, from the resemblance of the young shoots and leaves to those of Hazel. They are six inches long, and almost four broad. It grows to a great size: the bark of the young shoots is very smooth and tough, of a yellowish brown colour with spots of white. The flowers grow in clusters towards

the end of the twigs; they have long leafy calyxes of a green colour, and appear in the spring before the leaves: the seeds ripen at the end of may. The wood is inferior to that of the first sort.

[This, says Mr. Evelyn, (*silva*, b. 1. c. 4. §. 5.) has a more scabrous harsh leaf, but very large, it becomes an high tree, and is distinguished by the name of Witch Hazel in our Statute Books, as serving formerly to make long Bowes of. The timber is not so good as the first more vulgar; but the bark at time of year, will serve to make a coarse bast-rope with.

This sort is not proper for hedge-rows, but for woods. There, being planted near each other, instead of throwing out their monstrous arms, they will aspire; and carry up a noble trunk to a vast height<sup>n</sup>.]

3. *Ulmus sativa*. Small-leaved or English Elm; (by some called Cornish Elm.) The flowers are of a purplish red colour, and generally appear the beginning of march; but Mr. Miller says that he could never observe any seeds upon this sort. It is a variety of the first.

4. *Ulmus glabra*. Smooth-leaved Witch Elm. (called by Evelyn the French Elm. *U. montana* β. n. 3.) It is very common in several parts of Hertfordshire, Essex and other north-east counties: grows to a large tree and is much esteemed. The branches spread out like those of the first sort. The leaves are ovate, sharply serrate, smoother than the other sorts, and do not appear till the middle or end of may; for which reason it is seldom planted near habitations.

[Mr. Evelyn says, the leaves are thicker and more florid, glabrous and smooth, delighting in lower and moister grounds, where it will sometimes rise to above an hundred feet in height, and a prodigious growth, in less than an age; myself having seen one planted by the hand of a countess living not long since, which was near twelve feet in compass, and of an height proportionable<sup>o</sup>.]

5. *Ulmus hollandica*. The Dutch Elm. (*U. suberosa*, n. 2.) It was brought from Holland in the beginning of king William's reign; was for some time a fashionable tree, and was recommended for its quick growth. It was in great request for forming hedges in gardens, for which purpose it was one of the most improper trees that could be chosen, on account of its very strong irregular shoots, which are distant from each other. The leaves are very large and rough, and the branches being covered with a fungous bark, when the hedges were sheared, they appeared naked the whole summer after. The wood of this tree being good for nothing, it is almost banished this country.

6. *Ulmus minor*. The smooth narrow-leaved Elm; by some called the Upright Elm; by others the Irish Elm. The branches have a smooth grayish bark, and grow erect. The leaves are narrower and more pointed than those of the English Elm, and are smoother: they are later in coming out in the spring, but continue longer in autumn. It is found in hedge-rows in several parts of England: [and seems to be a variety of the smooth-leaved Elm, n. 3. β.

Mr. Hanbury enumerates seven sorts of the European Elm. 1. The true English Elm. 2. The narrow-leaved Cornish Elm. 3. The Dutch Elm. 4. The black Worcestershire Elm. 5. The narrow-leaved Wych Elm. 6. The Broad-leaved Wych Elm. 7. The upright Wych Elm.

He observes however that it would be endless to enumerate all the sorts, (or rather varieties), having counted more than twenty in woods and hedges.

Upon which Mr. Marshall justly remarks, that although we see, among cultivated Elms, individuals widely different from each other, yet every man who has attended closely to these trees as they grow in different soils and situations, must have observed such a chain of intermediate varieties, as renders it very difficult to distinguish them specifically; and must frequently have met with an individual, which he was puzzled to find a name for. He allows however that we cannot describe more than two obviously distant varieties, (or species as our modern English botanists think them to be.) These he calls 1. The Coarse-

<sup>1</sup> Forest scenery, 1. 41.    <sup>m</sup> Goodyer in Ger. emac. 1482.  
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<sup>n</sup> Hunter on Evel. silva.

<sup>o</sup> Silva, b. 1. c. 4.



leaved Elm; the Chestnut-leaved, the broad-leaved, the Wych Elm, or the North-country Elm. (Our *Ulmus montana*.)

2. The Fine-leaved Elm; the Hazel-leaved, Narrow-leaved, or South-country Elm, (Our *Ulmus campestris*.)

If we examine, he says, the extremes of the chain of varieties, we shall find two very different in their general appearance, and sufficiently distinct to be considered as distinct species. The leaf of the one is nearly oval, with an obtuse lance-like point; that of the other is nearly circular, saving a narrow slender point, growing as it were out of the periphery of the circle. The membrane of the one is gross and rigid, of the other comparatively thin, delicate and supple: when held against a strong light, the former appears opaque; the latter comparatively transparent. The nerves of that are stronger, set closer, and run more parallel: of this more slender, fewer in number, and dividing more into branches. That, in its general appearance, bears some resemblance to the leaf of the Chestnut; this, a very strong one to that of the Hazell. The branches of the Coarse-leaved sort are clear, straight and slender, with a silvery bark: those of the fine-leaved are more divided, run shorter lengths, and are covered with a less delicate bark. The general tendency of the latter is more upright, being easily trained to a greater length of stem: that of the former is to divide into spreading arms, and when attempted to be trained up with a tall straight stem, generally grows stooping with a nodding head like the panicle of an oat. The Coarse-leaved Elm matures its seed in this island, and is probably a native: the Fine-leaved seldom if ever perfects its seed with us, and is probably an exotic.

The Coarse-leaved Elm will grow to a very great size. Mr. Marshall mentions a Wych Elm by Bradley Church in Suffolk, which in 1754, at five feet high, measured twenty-five feet five inches and a half round, and in 1767, twenty-six feet three inches.

The general appearance of this tree sometimes comes near to that of the Oak: but in general it is liable to be ragged, rather than irregular, and in point of ornament is frequently exceeded by the Lime, the Beech and the Fine-leaved Elm.

The whole tribe of Elms have a peculiar excellency by which they stand alone, and are rendered in a great measure independent of other woods; namely, their tenacity or adhesive quality, being less liable to be split than other woods: this renders them singularly useful for many important purposes. The keels of ships are now almost universally laid with Elm; and sometimes the gunwales, especially of ships of war, are made of this wood; it being less liable to splinter off in action even than English Oak; as keels made of this wood are less apt to split in taking the ground. Another very important use of Elm is for naves of carriage wheels, both of use and pleasure. There is a sort in Yorkshire peculiarly adapted to this purpose, which goes by the name of the Nave Elm. It is of the coarse-leaved kind.

The Fine-leaved Elm will also grow to a great height and considerable bulk. Notwithstanding we are accustomed to see the hedge-row Elms trimmed up to mere may-poles, or at best with close aspiring heads; yet, if planted singly, and suffered to form their own heads, they will take an outline equal to that of the Beech or Lime: and where an immediate object or screen is wanted the Elm has two advantages; it may be removed when of a great size, and its growth is quicker than that of any other tree which is equally ornamental. The uses of it are similar to those of the Coarse-leaved kind.

We now turn to the American Elms, which are not noticed by Mr. Miller, though they were cultivated by Mr. James Gordon in 1752; that is sixteen years before the last folio edition of the Dictionary was published.

4. Three varieties of the American Elm are mentioned in the catalogue of the Royal Botanic Garden at Kew:

1. The Red or Canada Elm, which grows in its

native country to a vast size. The leaves are ovate, wrinkled and scabrous, broader than those of our Dutch or Wych Elms, smoother and of a much more lively green. The branches are red, whence it has the name of Red Elm. It grows very fast here. Gronovius distinguishes it from the White, not only by the leaves, but by its not attaining so great a height or thickness.

2. The White Elm is so named from the whiteness of the branches. The leaves are scabrous, but oblong. Gronovius describes it as having narrower leaves than the red, and the trunk beset at intervals with twigs closely clustered together below the boughs. Boats are made from the bark of it. Kalm describes the method of making them very particularly. He says that the White and Red Elm are so called from the colour of the wood.

3. The Drooping or Weeping Elm; distinguished by its oblong smoothish leaves, and its pendent branches.

The American differs from the European Elm in having the leaves equally, or as Gronovius expresses it quite simply or singly ferrate.

Gartner describes the fruit as a superior, leafy-compressed, obovate capsule, attenuated into the peduncle which is guarded by the permanent calyx, one-celled, valveless: cell in the centre of the capsule, spongy on the outside, very smooth within, compressed like a lens. Seed ovate, pointed at the end, compressed like a lens, of a greenish bay colour; fastened by a thread which springs from the top of the cell, and adheres to one margin of the seed to the very base.

Native of the forests of Virginia and other parts of North America.

5. The Hornbeam-leaved Elm is also a native of North America; and was cultivated by Mr. James Gordon in 1760.

6. In southern Russia, the *Ulmus pumila* often contends with the Oak in stature. The branches are more slender than in the other species, divaricating, and of a grayish ash-colour. Leaves alternate, some simply, others unequally, others again doubly ferrate, smoother than in *U. laevis*, (our *campestris*  $\beta$ ); equal or unequal at the base, less so however than in the others, and the petioles a little longer: both petioles and twigs are smooth. Stipules rust-coloured, membranaceous-bristle-shaped. Seeds on short peduncles, collected into sessile globular umbels; the surrounding membrane is almost orbicular, cut but not acuminate, with the teeth of the cut very shortly curved in; it is smooth, very tender, and finely veined, pale gray: the seed itself is also gray; and ripens in May, if not sooner.

Wood very hard, and tough, gray, remarkably waved with transverse lines of a deeper colour, larger fibred, and when exposed to the air becomes yellower than Oak, and is preferable to it. The ashes exported from Riga under the name of *Waidasche* are made entirely from the wood of this and other Elms, burnt in brick furnaces. The root is beautifully variegated and fit for the use of the turner, &c. The bark does not readily peel off, and therefore is not used for making ropes.

A variety of this is common, with both young and old branches winged and rendered irregular with compressed fungous excrescences of the bark variously interrupted.

Beyond the lake Baikal, on the banks of the lake it differs less, but in the mountains very much, from the Russian. The branches are slender, wand-like, whitish-gray, divaricating. Leaves frequent, small, lanceolate, equal at the base, uniformly ferrate, the serratures very seldom cut. Petioles longish, scarcely pubescent. Stipules membranaceous-fetaceous. Seeds smaller and whiter, on very short peduncles, almost orbicular, except the notch, and the linear process by which they are inserted into the calyx. They ripen in June.

In mountain rocks there is a variety with shorter, thicker branches, winged with fungous excrescences of the bark. When Pallas observed it in the middle of May, it was in flower without leaves: the flowers dusky



purple, pubescent, sessile, in subsessile little balls; with large, twin, pale anthers, edged with red.

In sandy lands on the contrary the trees are small, very finely branched, with small leaves, full of bladders formed by the Chermes.

The leaves, in this part of Russia, are sometimes used as a succedaneum for Tea.

Besides this, Pallas has our small-leaved Elm, (*U. campestris*  $\beta$ ), which he names *Ulmus lævis*.—*Ulmus campestris*, our common Elm, n. 1.—And *U. hollandica*; which he thinks may be a degenerate variety of the *campestris*\*; and in that I cannot but agree with him.

7. Trunk straight and high. Bark a little scabrous, of a dirty-gray colour. Branches numerous, spreading so as to form a large shady head. Leaves alternate, two-faced, short-petioled, ovate (sometimes cordate); entire, smooth, shining; from three to five inches long, and about two broad. Stipules lanceolate, falling. Flowers hermaphrodite and male mixed, from little gems over the naked branchlets. Calyx four, five or six-leaved: leaflets spreading, small, oval, falling. Filaments seven, eight, or nine, exceedingly short. Anthers linear, erect, two-lobed. Germ superior, obovate, emarginate, compressed. Styles two, short, incurved, permanent. Stigmas acute, woolly. Capsule pedicelled, orbicular, leafy, compressed, emarginate, one-celled, one-valved, not opening. Seed one. The male flowers are the same, except that there is no rudiment of a pistil.

The first parts of the flower that appear, are the anthers, which are then reddish; next the calyx increases, and becomes visible to the naked eye, but is at all times small, and if not looked for, may pass unperceived.

This whole leaved Elm is a very large timber tree, a native of the Circar mountains; called by the Telingas *Naulie*. It flowers during the cold season, and casts its leaves about the close of the wet season; but these come out again in march. The wood is by the natives reckoned of a good quality, and employed for a variety of uses†.]

#### PROPAGATION AND CULTURE.

All the sorts of Elm may be either propagated by layers or suckers taken from the roots of the old trees, the latter of which is generally practised by the nursery gardeners; but as these are often cut up with indifferent roots, they often miscarry, and render the success doubtful; whereas those which are propagated by layers are in no hazard, and always make better roots, and come on faster than the other, and do not send out suckers from their roots in such plenty, for which reason this method should be more universally practised. And since a small compass of ground filled with stools of these plants will be sufficient to furnish a nursery of a considerable extent, annually, with layers to be transplanted, it is richly worth every person's while, who would cultivate these trees, to allot a spot of ground for this purpose.

The best soil for such a nursery is a fresh Hazel loam, neither too light and dry, nor over moist and heavy; this ground should be well trenched, and if a little rotten dung is buried therein, it will be of service; in doing of this great care should be taken to pick out all the roots of pernicious weeds, which, if left in the ground, would be very injurious to the layers, and cannot afterwards be so easily rooted out; then having laid the ground level, the plants must be planted at about eight feet asunder each way. The best season for this work is in autumn, as soon as the leaves begin to decay, that they may take root before the dry weather in the spring comes on, whereby a great expence of watering them will be saved; for if they are well settled in the ground before the dry weather, they will require little more than to mulch their roots to keep the earth from drying.

These plants should be permitted to grow rude two years, during which time the ground between should be carefully cleaned and dug every spring, by which time they will be well rooted and have made pretty strong shoots, so that they may be laid in the ground. The manner of performing this being already de-

\* Flora Rossica.

† Roxburgh.

scribed in the article LAYING, I shall forbear repeating it in this place.

When these layers are well rooted, which will be in one year, they should be taken off, and transplanted out into a nursery, which should be upon a good soil, and well prepared, (as before for the stools.) The plants should be planted in rows about four feet asunder, and two feet distance plant from plant in the rows. This should be done in autumn as soon as the leaves begin to decay, and if there is some mulch laid upon the surface of the ground about their roots, it will preserve them from being hurt by frost in winter, and from drying winds in spring, and thereby secure them from all hazard.

The following summer the ground between them should be constantly kept clean from weeds, and in autumn they should be pruned up, cutting off all strong lateral branches, which, if left on, would impede their upright growth; but there must be some of the smaller shoots left on to detain the sap, in order to augment the stems of the trees; for where they are pruned up too naked, they are apt to grow up too slender to support themselves, so that their heads will recline to the ground, and cause their stems to grow crooked.

In this nursery they may remain four or five years, observing constantly to dig the ground between them every spring, and to trim them as before directed, which will promote their growth, and render them strong enough to transplant out where they are to remain, in the time before mentioned.

All sorts of Elms, the Wych excepted, on account of the large arms which it throws out, are very proper to plant in hedge-rows, upon the borders of fields, where they will thrive much better than when planted in a wood, or close plantation, and their shade will not be very injurious to whatever grows under them; but when these trees are transplanted out upon banks after this manner, the banks should be well wrought, and cleared from all other roots, otherwise the plants, being taken from a better soil, will not make much progress in these places. About michaelmas will be a good time for this work, for the reasons before assigned; but when they are planted, there should be some stakes fixed in by them, to which they should be fastened to prevent their being displaced by the winds, and part of their heads should be taken off before they are planted, which will also be of use in preventing their being easily overturned by winds; but by no means should their leading shoot be stopped, nor the branches too closely cut off; for if there are not some shoots left on to draw and attract the sap, they will be in danger of miscarrying.

These trees are also proper to plant at a distance from a garden or building to break the violence of winds, for which purpose there is not any tree more useful; for they may be trained up in form of a hedge, keeping them cut every year, which will cause them to grow very close and handsome to the height of forty or fifty feet, and be a great protection against the fury of winds; but they should not be planted too near a garden, where fruit trees or other plants are placed, because the roots of the Elms run superficially near the top of the ground to a great distance, and will intermix with the roots of the other trees, and deprive them of nourishment; nor should they be planted near gravel or grass walks, which are designed to be well kept, because the roots will run into them, and send forth suckers in great plenty, which will deface the walks, and render them unsightly.

But for large gardens, where shade is required, there is scarcely any tree so proper for that purpose, being easy to remove when grown to a considerable size, so that a person who is willing to have his plantations for shade in a short time, may procure trees of near one foot circumference in their trunk, which will be in little danger of succeeding, provided they are removed with care. And these will take root, and grow very well, though not so well as young plants, which is what few other sorts of trees will do; but then they should be such trees as have been thus regularly trained up in a nursery, and have good roots, and not such



as are taken out of hedge-rows (as is by some practised,) which seldom rise with any tolerable roots and consequently often miscarry; and this has been the occasion of so many plantations of these trees failing, for although some of them may live a few years, yet few of them are of long duration, and they rarely increase much in their stems, but frequently grow hollow, their heart decaying first, so that they are supported only by their bark or shell, for a few years, and the first severe winter, or very dry summer, they are generally destroyed.

But although I have said, that Elms which are trained up in a nursery may be removed with safety, at a larger size than most other trees, yet I would not have it understood that by this I would recommend the planting of them when large, for if people would have a little patience when they plant, and never plant any of these trees which are more than four or five inches in the girth of their stems, they will in a few years become better trees than any of those which are transplanted of a much larger growth, and they will always grow to a much larger size; besides, they are much more easily removed, and do not require to be so strongly supported, nor is there much danger of the young trees miscarrying; therefore it is much more eligible to make choice of young thriving trees (but not out of a better soil than that where they are to be planted,) and never to plant any large trees, unless where a small number may be wanted for an immediate shade, and in such cases it is always proper to plant some young trees amongst the large ones, to succeed them when they fail.

In planting of these trees great care must be taken not to bury their roots too deep, which is very injurious to them, especially if they are planted on a moist loam or clay; in which case, if the clay is near the surface, it will be the best way to raise the ground, in a hill, where each tree is to be planted, which will advance their roots above the surface of the ground, so that they will not be in danger of rotting in winter with moisture.

When these trees are propagated by suckers taken from the foot of old trees, they are commonly laid into the ground in rows pretty close together in beds, where in dry weather, they may be frequently watered to encourage their putting out roots. In these beds they are left commonly two years, by which time those that live will be rooted (though a great many of them generally die;) they then are transplanted into the nursery, and managed as has been directed for the layers.

There are some who raise the Witch Elm from seeds which it generally produces in great plenty, and they are ripe in May; these should be sown upon a bed of fresh loamy earth, and gently covered. In dry weather they should be watered, and if the bed is shaded from the violent heat of the sun, it will be of great service to the seeds (for I always observe the plants to come up better in the shade, than when exposed to the sun.) When the plants come up, they should be carefully cleared from weeds, and after they have stood two years in the seed-bed, they will be fit to plant out into the nursery, where they must be managed as the former.

When we view many of the late plantations which have been made in parks and gardens within forty years past, at a very great expence, and observe the little progress they have made, it is enough to deter others from attempting to make plantations of this tree; for, as great part of the trees have been taken out of hedge-rows and from places where they have sprung up from the roots of old trees, they had but few roots, and those not furnished with fibres, so such of the trees as survived their removal have made scarce any progress; and I have seen many plantations which had been growing ten, twelve, or more years, almost totally destroyed in a severe winter, and sometimes by a very dry summer; for, as their roots had not extended far in the ground, the trees were weak, and though they kept alive, yet were not able to resist a severe frost, or a great drought; but the planters were in a hurry, and wanted immediate shade and prospect, so in order to obtain these, pursued a method

in which they could never hope to have either, in any degree of perfection; whereas if they had planted trees no bigger in their stems than a man's thumb, in ten or twelve years time they would have had both, with the pleasure of seeing an annual progress of their trees, at a time when their large-planted trees are decaying.

I have seen some expensive plantations of this kind, which have seemed to succeed for two or three years, by making strong shoots most part of the length of their stems, which has greatly deceived their planters, who did not doubt but their trees were out of danger, but in a few years after, they found most of their tops decay, and their hearts were rotting apace, so became hollow; and although they continued to put out lateral shoots, yet their stems never increased in size.

In some plantations made in the same place a few years after, with trees not a tenth part so large as the former, they are now more than double the size of the large ones, and in a most thriving state, whereas the others do little more than just keep alive; therefore I advise every person, who wishes to have his trees thrive and become large, to plant them young, which may be performed for a very small sum, when compared with that of the other.

Another piece of advice may be also necessary here, which is not to top or cut the trees, as is too much practised near London, which not only impedes their growth, but occasions their decaying soon.

[In order to raise the Elm from seed, gather the seeds at the beginning of June; spread them in a dry place for a few days. Mark out beds four feet wide, with alleys between them a foot and half or two feet broad. Sow the seeds thinly over the beds, and cover them with thin mould near half an inch thick. Hoop the beds in order to cover them with mats occasionally in hot weather; when they must also be sometimes refreshed with water. In about a month many of the young plants will appear, and the rest the spring following. Uncover the beds in cloudy or showery weather; and take the mats wholly away about the end of August, that the plants may be hardened against winter. In October or the spring following, the plants may be taken out of the seed-bed, and planted in a nursery in rows three feet asunder, and each plant at eighteen inches distance, there to remain, with the usual care of digging and hoeing, till planted out where they are to remain, which may be done at almost any age, especially if they are removed every two or three years<sup>u</sup>.

Mr. Boucher recommends the seeds to be well dried and kept in bags, and not to be sown till the February following. But I have found them to rise very readily, when sown in a shady border, as soon as they are ripe; without any particular attention, except keeping the border clean.

All sorts of Elms may also be increased by grafting upon the broad-leaved Wych Elm. These may be raised from seed, and when they have been two years in the nursery will be of proper size to receive the graft. The beginning of March is the best time for the work, (Mr. Hanbury says the last week in January;) and they are to be grafted only two inches above the root, so that the clay may be wholly covered, to guard against frost. This is supposed to be a valuable improvement of the English Elm, which will thus arrive at timber many years sooner than trees raised by layers, and grow to a greater size; the Wych Elm being the largest sort, and growing the fastest\*. Mr. Hanbury has given a very detailed account of the mode of performing this operation. Mr. Boucher recommends these grafted trees for walks, lawns or avenues; because they produce few or no suckers. He also remarks, that the variegated varieties may be grafted on the plain ones, or may be propagated from layers; but that in order to preserve the variegation, they should be planted on a poor light soil.

Mr. Marshall observes, that an error prevails respecting the Elm, that it will not flourish in close plantations. Whereas how often do we see two Elms standing close together, both equally well stemmed.

<sup>u</sup> Hanbury and Hunter.

\* Hunter and Hanbury.



Indeed the shoots of the Elm will interweave with each other in a manner we seldom see in any other sort of tree. In groups and close groves we see them thrive abundantly. We must remark however, that their stems then running up clean, and in a great measure free from side shoots, the timber is different from that which is raised in more exposed situations; where the lateral shoots being numerous and lopped off from time to time, the stems become knotty; by which means the natural tenacity, in which the peculiar excellence of Elm timber consists, is considerably increased<sup>y</sup>.

The American Elms produce plenty of seeds in their native country; but they seldom arrive fresh; the readiest way therefore to propagate them here is from layers. They may also be grafted on English, Wych or Dutch stocks<sup>z</sup>.

The time for felling the Elm is from november and december to february.

ULMUS. See *Celtis*.

ULVA.

*Lin. gen. Schreb. n. 1670. Dill. gen.*

Class. 24. 5. Cryptogamia Algæ.

GENERIC CHARACTER.

*Fruifications* are small globules dispersed through a pellucid membranaceous or gelatinous substance, or frond. See *Woodward, in Linn. trans. 3. 48.*

SPECIES.

Fourteen species are enumerated in Murray's edition of *Systema Vegetabilium*. Withering has twenty-six british species: two of them he has figured; and he has described them all. For what is new since Dillenius and Hudson, we are much indebted to Mr. Stackhouse, Major Velley, and Mr. Woodward.

*U. pruniformis* a singular species, is figured in English botany, t. 968. It grows on aquatic plants under water, and is of various sizes from a pea to a bullace plum, of a dull olive green: the skin is fleshy or gelatinous, enveloping a mass of pale soft pulp, in which Linneus observed the minute seeds. He has described it well in *Flora Suecica*. Mr. Stackhouse is of opinion, that neither this nor the *pisiformis* properly belong to this genus.

*U. diaphana*, figured in the same work, t. 263, is another singular production, with the appearance of pale barley-sugar. The whole substance abounds with minute seeds.

*U. atomaria* is described by Mr. Woodward in the *Transactions of the Linnæan Society*; and figured in English Botany, t. 419. It spreads out like a fan, and is divided like a hand, not down to the base; of an olive brown. The seeds are very minute, of a darker colour, and disposed somewhat irregularly in numerous transverse concentric lines or stripes.—This is not in Withering.

*U. ligulata*, also described by Mr. Woodward, and figured in English Botany, t. 420. The fronds are five or six inches high, flat and branched; branches dilated somewhat forked with obtuse angles; terminated and fringed with ligulate or strap-shaped segments. The substance is semipellucid, of a brightish red. Seeds very minute, scattered separately, throughout the substance of the frond; which distinguishes it from *Fucus ciliatus* and *palmatus*.

*U. Lactuca* is well known under the name of Oyster-green. It is thin, pellucid, and of a fine green.

*U. palmata* is the Dulleth of the Irish; Dills of the Scotch; Dulls or Dulse in Northumberland. Various-ly cut like a hand expanded: it is thin, pellucid, green or reddish. Being soaked in fresh water, it is eaten either boiled or dried, and in the latter state has something of a violet flavour. It is sold in the streets of Dublin, being dried, and is said to sweeten the breath and kill worms. The poor in the north of Ireland eat it boiled.

*U. incrassata* figured in English botany, t. 967. Gelatinous and slippery, grass-green. Found on Hypnum riparium, and the stalks of Horse-tail in ponds and ditches.

*U. fistulosa* and *purpurascens* are both figured in

<sup>y</sup> Planting, vol. 1. p. 147. Woodlands. <sup>z</sup> Boucher.

English Botany, t. 642 and 641. and are described by Mr. Woodward in the *Linnæan Transactions*, vol. 3.

A sufficient idea of this genus may be obtained from the above hints and references. Most of the species are maritime plants; but some are found in fresh waters, and a few on land. For more complete information, See Woodward in *Linn. trans. 3. 46.*

UMARI. See *Geoffroya*.

UMBELLIFERA. See *Peucedanum* & *Cicuta*.

UMBILICUS. See *Cotyledon*.

UMBRELLA TREE. See *Magnolia*.

UNCARIA. (*So named from the hooked prickles on the stem, in the second species.*)

*Lin. gen. Schreb. n. 311. Ourouparia. Aubl. t. 68. v. Juss. 209.*

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, widened at top, five-toothed; *teeth* sharpish, equal.

COR. one-petalled, salver-shaped: *tube* narrow, longer than the calyx: *border* five-cleft: *segments* roundish, villose without.

STAM. *Filaments* five, very short, inserted into the tube below the orifice. *Anthers* oblong, in the mouth of the tube.

PIST. *Germ* roundish, fastened to the bottom of the calyx, crowned with a gland. *Style* capillary, longer than the corolla. *Stigma* oblong two-grooved.

PER. two-celled.

SEEDS numerous, fastened to the partition.

ESSENTIAL CHARACTER.

*Cor.* salver-shaped. *Germ* crowned with a gland. *Stigma* two-grooved. *Peric.* two-celled, many-seeded.

SPECIES.

1. *Uncaria inermis*.

*Willd. in Usteri delect. 2. 199. t. 3.*

*Nauclea africana. Willd. spec. 1. 929.*

*Leaves oblong-ovate acuminate, stem unarmed.*

2. *Uncaria aculeata*.

*Willd. in Ust. delect. 2. 200.*

*U. guianensis. Gmel. syst. 370.*

*Nauclea aculeata. Willd. spec. 1. 929.*

*Ourouparia guianensis. Aubl. guian. 1. 177. t. 68.*

*Leaves ovate acute, stem prickly.*

DESCRIPTIONS, &c.

1. On a more accurate examination of this plant, says Willdenow, I perceived that the receptacle is hairy; and the germ inferior. It differs from *Nauclea parvifolia*, which it resembles very much, in having wider leaves, more ovate, and acuminate; the calyx dilated, obscurely five-toothed, the teeth roundish, not sharpish; the stamens longer than the tube of the corolla, reflexed and hanging down: and in the heads being subsessile. Native of Guinea.

2. Stem four-cornered, beset with large opposite prickles, which are recurve-hooked, and compressed. The germ is truly inferior. Native of the forests of Guiana<sup>a</sup>.

This genus is now merged in that of *Nauclea*: and that according to Willdenow, scarcely differs from *Cephalanthus*, except in the number of parts in the fructification.

UNEDO. See *Arbutus*.

UNGUIS CATI. See *Mimosa*.

UNIFOLIUM. See *Convallaria*.

UNIOLA. (*Dimin. from the union of the glumes.*)

*Lin. gen. n. 85. Reich. n. 91. Schreb. n. 116.*

*Juss. 32.*

Class. 3. 2. Triandria Digynia.

Nat. Order of *Gramina. Gramineæ Juss.*

GENERIC CHARACTER.

CAL. *Glume* many-flowered, many-valved: *valves* imbricate in a double row, awl-shaped, compressed, navicular, keeled, one closed over the other: the last pair many-flowered, containing an ovate flattened *Spikelet*, sharp at the edge.

COR. two-valved: *valves* lanceolate-compressed, like

<sup>a</sup> Willdenow.



# U N O

those of the calyx; the inner valve surpassing the other a little.

STAM. Filaments three, capillary. Anthers oblong, linear.

PIST. Germ conical. Styles two, erect, simple. Stigmas pubescent.

PER. none. Corolla incloses the seed.

SEED one, ovate-oblong.

## ESSENTIAL CHARACTER.

Cal. many-valved. Spikelet ovate keeled.

## SPECIES.

### 1. Uniola paniculata.

Lin. spec. 103. Reich. 1. 195. Willd. 1. 406. hort. cliff. 23. Gron. virg. 136.

Gramen myloicophorum oxyphyllon carolinianum.

Pluk. phyt. t. 32. f. 6. Catesb. car. 1. t. 32.

Panicled, spikelets ovate.

### 2. Uniola mucronata.

Lin. spec. 104. Reich. 1. 196. Willd. 1. 406.

Spike distich, spikelets ovate, calyxes somewhat awned.

### 3. Uniola spicata.

Lin. spec. 104. Reich. 1. 196. Willd. 1. 406.

Gramen parvum maritimum spicatum, foliis angustis rigidis. Clayt. 507.

Subspiked, leaves rolled in rigid.

## DESCRIPTIONS, &c.

1. Native of Virginia and Carolina. Called there Sea-side Oat.

2. Culm a foot high, even. Leaves narrow, smooth, with striated sheaths. Spike composed of eleven or twelve alternate, distich, sessile, ovate, smooth flowers, each having seven florets. Calyx mucronate almost into an awn. Native of the East Indies.

3. Culm a span high, with alternate rigid leaves, rolled in and mucronate. Panicle very small, squeezed so close that there is scarcely any sign of pedicels, all directed one way. Calyx and glumes keeled, with four florets. Native of North America on the coast<sup>b</sup>.

UNIOLA. See Briza and Poa.

UNONA (So named from the union of the anthers upon the germ.)

Lin. gen. Schreb. n. 947. suppl. 44. Juss. 283.

Class. 13. 7. Polyandria Polygynia.

Nat. Order of Coadunatae. Anonae Juss.

## GENERIC CHARACTER.

CAL. Perianth three-leaved, very small, acute, pressed close.

COR. Petals six, lanceolate, sessile, gibbous at the base on the outside, at the same time excavated within into the shape of a pitcher.

STAM. Filaments none. Anthers very numerous, oblong, collected into a ball within the pitcher of the corolla.

PIST. Germs many, sessile. Styles about ten, bristle-shaped, approximating, rather longer than the anthers. Stigma.

PER. Berries many, pedicelled, ovate, gibbous, jointed like a necklace.

SEEDS two or three, ovate, very smooth, one above the other.

OBS. Very nearly allied to Xylopia and Annona, Linn. also to Uvaria, to which it is united by Swartz. But Willdenow keeps them separate.

## ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. 6. Berries two or three-seeded, jointed like a necklace.

## SPECIES.

### 1. Unona discreta.

Lin. syst. 509. Willd. 2. 1271. suppl. 270. Vahl. symb. 2. 63.

Leaves lanceolate silky beneath.

### 2. Unona tomentosa.

Lin. spec. ed. Willd. 2. 1271.

Desmos cochinchinensis. Lour. cochinch. 352. ed. Willd. 431.

Leaves lanceolate tomentose.

### 3. Unona discolor.

Lin. spec. ed. Willd. 2. 1271. Vahl. symb. 2. 63. t. 36.

<sup>b</sup> Linn. spec.

# U N X

Desmos chinensis. Lour. cochinch. 352. ed. Willd. 431. Leaves ovate-oblong smooth on both sides.

### 4. Unona concolor.

Lin. spec. ed. Willd. 2. 1271.

Uvaria zeylanica. Aubl. guian. 1. 605. t. 243.

Leaves oblong acuminate smooth on both sides concolor, peduncles two-flowered.

## DESCRIPTIONS, &c.

1. This is a tree with wand-like narrow flexile branches. Leaves two-faced alternate resembling those of the Privet, smooth quite entire a finger's length, on very short petioles. Pedicels of the berries within the corolla umbelled. Flower of Annona, but the fruit is different purple sapid aromatic, which distinguishes the genus as in Theobroma and Abroma<sup>c</sup>.

Branches pubescent. Leaves an inch and half long, very much attenuated narrow resembling those of the Willow scarcely petioled<sup>d</sup>.

Native of Surinam, where it was found by Dalberg.

2. This is a shrub five feet in height, with an upright stem, and weak reclining branches. Leaves alternate, quite entire, petioled. Flowers yellow-green, terminating, solitary, hanging down by a very long peduncle. Berries red-green, sessile, adhering to a hemispherical receptacle. Native of Cochinchina<sup>e</sup>.

Father Loureiro has named this Desmos, from the berries being joined like the links of a chain.

3. This is a tree with round purplish smooth branches, scarcely villose at the end. Leaves alternate, three inches long, and two inches wide, rounded at the base a little acuminate at the tip, bluntish, quite entire, membranaceous, nerved, somewhat veined and glaucous underneath, also silky when young. Petioles very short, villose. Peduncles lateral, below the leaves, an inch and half long, a little thicker at top, having a blunt lanceolate leaflet in the middle, one-flowered, solitary. Calyx-leaves ovate, villose. Petals coriaceous, tomentose, lanceolate; the three inner ones narrower. Fruits pedicelled, umbelled, two or three-jointed: joints globular, a little smaller than a pea, the end ones mucronate and smooth. Receptacle globular, the size of a pea, somewhat villose. Native of the East Indies, where it was found by Koenig<sup>f</sup>.

Willdenow suspects that the Desmos chinensis, which Loureiro found near Canton, may be the same plant. —He describes it as an upright branching shrub, six feet high, with ovate-lanceolate smooth leaves, and the corolla spreading; in other respects agreeing with the preceding, of which he thinks it may be a variety.

4. Native of Guiana.

UNXIA. (From ungo, unxi, to smear or anoint.)

Lin. gen. Schreb. 1288. suppl. 56. Juss. 186.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. Order of Compositae Discoideae. Corymbiferae Juss.

## GENERIC CHARACTER.

CAL. Common roundish, five-leaved: leaflets ovate.

COR. Compound, radiate: ray indistinct. Corollets hermaphrodite five in the disk; Females as many in the ray.

Proper to the hermaphrodites funnel-form, five-cleft; to the females ovate, small.

STAM. in the Hermaphrodites. Filaments five. Anther cylindric, tubular.

PIST. to each. Germ ovate. Style simple. Stigma bifid.

PER. none. Calyx unchanged.

SEEDS to all ovate, hard, naked.

REC. naked.

## ESSENTIAL CHARACTER:

Cal. five-leaved, leaflets ovate. Florets of both disk and ray five. Seed-down none. Recept. naked.

## SPECIES.

### 1. Unxia camphorata.

Lin. syst. 774. suppl. 368. Gertn. fruct. 2. 421.

## DESCRIPTION, &c.

Stem herbaceous, filiform, dichotomous, two feet high. Leaves opposite at the divisions, sessile, lanceolate, five-nerved, hirsute, soft. Flowers solitary from the divisions, subpeduncled, the size of a pea. Ray of the corolla spreading small. The plant has a strong

<sup>c</sup> Linn. suppl.

<sup>d</sup> Vahl.

<sup>e</sup> Loureiro.

<sup>f</sup> Vahl.

smell.



smell of plaster or Camphor. A decoction of it in water is esteemed an admirable sudorific, and of great efficacy in the obstinate Lumbago of the inhabitants of Surinam. The dried herb is used externally, when the transpiration is supposed to be impeded. Native of Surinam, where it is called Camphor-plant. Communicated by Dalberg<sup>s</sup>. Gærtner remarks, that if the androgynous florets are barren, as there is reason to suspect from what Jussieu has said, this genus ought to be placed next to *Milleria*.

Vochy. See *Cucullaria*.]

**VOLKAMERIA.** (So named by Linneus in memory of John George Volkamer, physician at Nuremberg. Author of *Flora Noribergensis*, 1700.)

*Lin. gen. n.* 788. *Reich. n.* 851. *Schreb. n.* 1056.

*Gærtner. t.* 56. *Juss.* 107. *Douglasia Rel. Houst.* t. 13.

Class. 14. 2. Didynamia Angiospermia.

Nat. Order of *Personate*. *Vitices* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, turbinate, five-cleft, nearly equal, acute.

COR. monopetalous, ringent: tube cylindric, twice as long as the calyx: border five-parted, nearly equal, flat: segments reflexed to one side, gaping chiefly on the upper side.

STAM. Filaments four, filiform, very long, on the gaping side of the corolla. Anthers simple.

PIST. Germ four-cornered. Style filiform, length of the stamens. Stigma bifid; one of the segments acute, the other indistinct.

PER. Berry (Drupe) roundish two-celled, four-grooved.

SEED. Nut solitary, two-celled, grooved.

OBS. The fruit is called by some a Berry; by others a Drupe; and by others again a Capsule.

#### ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. segments directed the same way. Drupe two-seeded. Nuts two-celled.

#### SPECIES.

1. *Volkameria aculeata*. Prickly *Volkameria*.

*Lin. spec.* 889. *syft.* 577. *Reich.* 3. 196. *Willd.* 3. 383. *Gærtner. fruct.* 1. 267. *Jacqu. amer.* 185. t. 117. *piet.* 91. t. 177. *Brown. jam.* 262. t. 20. f. 2. (*Clerodendrum*.)

*Ligustrum*. *Lin. hort. cliff.* 489.

*Ligustrum aculeatum*, fructu testiculato. *Plum. spec.* 17. ic. 164. f. 1.

*Douglasia spinosa*, *ligustri folio*. *Amm. herb.* 576.

*Douglasia*. *Rel. houst.* 6. t. 13.

*Paliuro affinis ligustrifolia*, &c. *Sloan. jam.* 2. 25. t. 166. f. 2, 3. *Raii dendr.* 95. *Pluk. phyt.* t. 352. f. 2.

Leaves oblong acute quite entire, spines from the rudiments of the petioles.

2. *Volkameria ligustrina*. Long-leaved smooth *Volkameria*.

*Lin. spec. ed. Willd.* 3. 383. *Jacqu. collect. suppl.* 118. t. 5. f. 1.

*V. inermis* β. *Ait. kew.* 2. 364.

Leaves oblong-lanceolate quite entire, petioles, peduncles, and calyxes hirsute.

3. *Volkameria inermis*. Ovate-leaved smooth *Volkameria*.

*Lin. spec.* 889. *syft.* 577. *Reich.* 3. 197. *Willd.* 3. 383. *fl. zeyl. n.* 231. *Jacqu. collect. suppl.* 117. t. 4. f. 1. *Pluk. phyt.* t. 211. f. 4. (*Periclymeni similis*.)

*Pet. gaz.* t. 42. f. 7. (*Jasmini flore frutex*, &c.)

*Clerodendrum inermis*. *Gærtner. fruct.* 1. 271. t. 57.

*Jasminum litoreum*. *Rumph. amb.* 5. 86. t. 46.

*Nir-notsjit*. *Rheed. malab.* 5. 97. t. 49.

Leaves ovate quite entire shining, petioles, peduncles and calyxes smooth.

[4. *Volkameria capitata*. Headed *Volkameria*.

*Lin. spec. ed. Willd.* 3. 384.

Leaves ovate quite entire scabrous, flowers in terminating heads, calyx leafy.

5. *Volkameria ferrata*. Serrate-leaved *Volkameria*.

*Lin. syft.* 578. *Reich.* 3. 197. *Willd.* 3. 384. n. ant. 90.

Leaves broad-lanceolate ferrate subsessile.

<sup>s</sup> Linn. suppl.

6. *Volkameria scandens*. Climbing *Volkameria*.

*Lin. syft.* 578. *ed. Willd.* 3. 384. *suppl.* 292.

Leaves petioled cordate ovate quite entire, panicle corymboid terminating, branchlets dichotomous.

7. *Volkameria japonica*. Japanese *Volkameria*.

*Lin. syft.* 578. *ed. Willd.* 3. 385. *Thunb. jap.* 255.

Unarmed, leaves cordate ovate acute toothed, racemes directed one way.

8. *Volkameria Kämpferi*. Kämpfer's *Volkameria*.

*Lin. spec. ed. Willd.* 3. 385. *Jacqu. collect.* 3. 207.

ic. rar. 3. t. 500. *Kämpfer. ic. select.* t. 58.

Leaves cordate pubescent toothletted, panicle terminating divaricate on coloured peduncles.

#### DESCRIPTIONS, &c.

1. This is a shrub five or six feet high, branched; upright, the whole loaded with white flowers, which have no scent. Stamens most commonly five, but sometimes six, purple. Fruit brown<sup>h</sup>. Gærtner describes it to be a roundish juiceless berry, swelling into four little bumps at top, four-grooved, shining, consisting of two parts, and opening two ways. Stones (or nuts) two, cartilaginous, obcordate, convex on one side, marked with a groove along the middle, flat on the other, smoothish, two-celled. One seed in each, ovate-oblong, convex on one side, somewhat angular on the other, fastened to the base of the cells.—According to Houstoun, the fruit is roundish, divided into two parts, each of which contains a shell, having two seeds in it, contained in as many cavities.]

Miller says, that it rises in the West Indies to the height of twenty feet, (but Jacquin and Browne assign only five or six feet to it.) The branches are pliable and much diffused, covered with a light smooth bark. Leaves opposite, lucid. The flowers come out from the side of the stalk, five or six on the same peduncle, almost in form of an umbel, in shape somewhat like those of the common Jasmine, but with a curved tube.

[According to Sir Hans Sloane it has several small stems, ten or twelve feet long, inclining their heads downwards and covered with a whitish-gray smooth bark. Towards the ends of the branches are many short crooked prickles, opposite at half an inch distance; and many leaves likewise opposite, two inches long, and half an inch broad in the middle, on petioles half an inch in length.]

Native of the West Indies. Browne says it is one of the most common plants in the Lowlands of Jamaica, in a dry gravelly soil; and is abundant in most of the other sugar islands.—It was cultivated in 1739 by Mr. Miller<sup>i</sup>. It is singular that he has omitted this and the inermis in the later folio editions of his Dictionary, and yet has inserted them in the Abridgments in quarto.

2. This differs from the inermis which it resembles very much, in having oblong-lanceolate leaves, the branches, &c. hirsute, the tube of the corolla only three times (not six times) as long as the calyx, the filaments white not purple, the anthers brown not violet. Native of the island of Mauritius.

3. Leaves opposite, annual, petioled, bluntish. Peduncles from the upper axils, opposite, solitary, a little shorter than the leaf, three-cleft, three-flowered, more seldom simple and one-flowered. It so resembles the first, that if that were deprived of its spines, they would scarcely be distinguished<sup>k</sup>.]

This rises higher than the first sort, the stem and branches are stronger and grow more erect; the bark is very white, the leaves frequently grow round the branches in clusters or whorls. Flowers on long axillary peduncles, supporting several flowers, which generally stand erect.

[Gærtner makes this shrub a *Clerodendrum*, and describes the fruit as a turbinate berry, swelling into four bumps at top, four-parted, and the parts separable when ripe. Flesh thickish, corky, growing to the back of the parts or shells; which are coriaceous crustaceous, whitish, remarkably acuminate downwards, roundish-gibbous at top, one-celled. Seeds corresponding with the cavity of the shells or stones.]

<sup>h</sup> Jacquin.

<sup>i</sup> Hort. kew.

<sup>k</sup> Linn. zeyl.

Native



Native of the East Indies. Cultivated in 1692 at the Royal Garden, Hampton Court<sup>1</sup>.

Willdenow informs us, that he has seen a variety with smaller and very blunt leaves.

4. Branches bluntly quadrangular hoary smooth, tubercled with the blunt prominent rudiments of the petioles. Leaves opposite, remote, oblong-ovate, acuminate with a blunt mucronate point, quite entire, veined, somewhat scabrous on both sides with distant hairs. Flowers white in a terminating head, which is shortly peduncled and five-flowered. Calyx bell-shaped, with a three-parted border, the segments very large, oblong, leafy, mucronate, netted-veined, ciliate. Tube of the corolla filiform two inches long and more; border five-parted unequal, with oblong blunt segments. The stamens reach very far beyond the flower. Fruit unknown. Native of Guinea<sup>m</sup>.

5. Branches roundish. Leaves naked on both sides. Panicle brachiate. Berries composed of four. Calyxes bell-shaped, undivided, scarcely toothed. Native of the East Indies<sup>n</sup>.

6. This is a scandent tree, with very long flexuose four-cornered branches, tomentose at the top. Leaves large, very smooth, opposite, obtuse. Panicle tomentose. Flowers not long as in *V. inermis*. Calyxes blunt tomentose. Capsule oblong, conical. It climbs up the highest trees, crowning them with its snow-white flowers. Native of the vast forests of Ceylon<sup>o</sup>.

7. This is a vast lofty tree, smooth and branched. Branches compressed, paniced at the end. Leaves alternate, deeply cordate, acuminate and veined, paler and smooth underneath; the lower ones a span wide and a foot long, the upper ones gradually less and blunter. Petioles to the larger leaves a span long, in the smaller ones half an inch. Flowers at the end of the branchlets in racemes. Bractes under each peduncle, awl-shaped, solitary, shorter than the peduncle. Peduncle simple, one-flowered, erect. Calyx brownish, five-parted, with the segments divaricate at the base, concave, lanceolate, awned. Tube of the corolla purple: border shorter than the tube. Capsule ovate, the size of a plum, four-valved, two-celled, opening transversely. Native of Japan<sup>p</sup>.

A small tree is cultivated in some of the European gardens, under the name of *Volkameria japonica*, with double flowers, the plant resembling that which is figured in Kämpfer's select plates edited by Sir Joseph Banks. On account of the flowers being double, it cannot with certainty be reduced to its proper genus; but it differs in many respects from *Volkameria japonica*<sup>q</sup>.

8. Leaves opposite, deeply cordate, roundish, shortly acuminate, very finely and remotely toothletted. Panicle wide, composed of opposite two-parted racemes. The peduncles of the whole panicle, the floral leaves, the calyxes and corollas scarlet. Drupe black, the size of a Currant, shorter than the calyx, two-celled. Nuts two-celled. Native of China and Japan<sup>r</sup>.]

#### PROPAGATION AND CULTURE.

The plants are propagated in Europe by cuttings, which readily put out roots, when they are planted in pots, and plunged into a moderate hot-bed, covering them close with hand glasses. The cuttings may be planted any time from the middle of may to the end of july when they have put out roots; separate the plants carefully and put each into a separate small pot: plunge the pots into a gentle hot-bed, till they get fresh roots: then inure them to the open air, if the weather be warm; and continue them abroad in a sheltered situation until the nights begin to be cold; when they must be removed into the house. There they require some warmth; they should be placed therefore in a moderate stove. In too much heat they are subject to shoot and grow weak; but they will not survive the winter in a common greenhouse.

[*VOLKAMERIA*. See *Clerodendrum* & *Clethra*.

*VOLUBILIS*. See *Dioscorea*, *Epidendrum*, *Ipomœa*, *Polygonum*.

<sup>1</sup> Hort. kew. <sup>m</sup> Willdenow. <sup>n</sup> Linn. mant.  
<sup>o</sup> Linn. suppl. <sup>p</sup> Thunberg. <sup>q</sup> Willdenow. <sup>r</sup> Idem.

*VOLVULUS*. See *Convolvulus*.

*VOTOMITA*. See *Gleffoma*.

*VOUAPA*. See *Macrolebium*.

*VOYRIA*. See *Lita*.

*UPUDALI*. See *Ruellia*.

*URAGOGA*. See *Myginda*.

*URANIA*. (*The name of one of the Muses.*)

Lin. gen. Schreb. n. 539. Ravenala. Adans, 67.

Juss. 62. Sonnerat ind. 2. t. 124—126.

Class. 6. 1. Hexandria Monogynia.

Nat. Order of *Musæ* Juss.

#### GENERIC CHARACTER.

CAL. *Spathes* Common alternate, ovate-lanceolate, concave, many-flowered. *Partial* two-valved, lanceolate-linear, long, channelled, coloured, acuminate, erect, permanent. *Perianth* none.

COR. *Petals* three, oblong, channelled, erect, acute, equal. *Nectary* two-leaved, one of them bifid.

STAM. *Filaments* six, filiform. *Anthers* linear, long, erect, inclined at the tip.

PIST. *Germ* inferior, oblong. *Style* a little longer than the stamens. *Stigma* six-cleft, converging.

PER. *Capsule* oblong, truncate, three-sided, three-celled, three-valved at the tip.

SEEDS numerous, oblong, in two rows, covered with succulent lacinate arils.

#### ESSENTIAL CHARACTER.

Cal. none. Cor. three-petalled. Nect. two-leaved, with one of the leaves bifid. Caps. inferior three-celled, many-seeded. Seeds in two rows, covered with an aril.

#### SPECIES.

1. *Urania speciosa*.

Willd. spec. 2. 7.

*Ravenala madagascariensis*. Sonn. it. ind. ed. germ. 2. 175. t. 124—126. Jacqu. hort. Schoenbr. 1. 47. t. 93.

#### DESCRIPTION, &c.

This is a very lofty tree with the appearance of *Musa* or *Heliconia*. Trunk undivided. Leaves distich, like those of *Heliconia* on petioles two feet in length. Spadix axillary, erect, shorter than the leaves. Spathes distich ovate concave as in the *Heliconias* many-flowered. Native of Madagascar in marshy places<sup>s</sup>.

URED O Frumenti. Figured in Sowerby's Fungi. 2. t. 140. A small Fungus, occasioning the Blight in Wheat. See Linn. transf. 4. 193. & 5. 122.]

URENA. (*From Uren the vernacular name in Malabar.*)

Lin. gen. n. 844. Reich. n. 909. Schreb. n. 1137.

Dill. elth. t. 319. Cavan. diff. 6. 334. Gertn. t. 135. Juss. 272.

Class. 16. 6. Monadelphia Polyandria.

Nat. Order of *Columniferae*. *Malvaceæ* Juss.

#### GENERIC CHARACTER.

CAL. *Perianth* double: outer one-leaved, five-cleft: segments wider: inner five-leaved; leaflets narrow, angular, permanent.

COR. *Petals* five, oblong, wider at the tip, blunt with a point, narrower at the base, growing to the tube of stamens.

STAM. *Filaments* numerous, united at bottom into a tube, at top free. *Anthers* roundish.

PIST. *Germ* roundish, five-cornered. *Style* simple, length of the stamens, ten-cleft. *Stigmas* headed, hairy, reflexed.

PER. *Capsule* roundish, echinate, five-cornered, five-celled, or soluble into five close cells.

SEEDS solitary, on one side roundish, on the other angular-compressed.

#### ESSENTIAL CHARACTER.

Cal. double; outer five-cleft. Caps. five-cleft, divisible into five parts, with the cells closed and one seed in each.

#### SPECIES.

1. *Urena lobata*. Angular-leaved *Urena*.

Lin. spec. 974. Juss. 627. Reich. 3. 354. Willd. 3. 800. hort. cliff. 348. upf. 200. fl. zeyl. n. 256.

<sup>s</sup> Willdenow.

Cavan.



*Cavan. diff. 6. 336. t. 185. f. 1. Gartn. fruct. 2. 252. Laur. cochinch. 416. ed. Willd. 507. Forst. prodr. n. 258.*

*U. sinica, xanthii facie. Dill. elth. 340. t. 319. f. 412.*

*Trifolio affinis Indiæ orientalis; xanthii facie. Breyn. cent. 82. t. 35.*

*Lappago amboinica. Rumph. amb. 6. 59. t. 25. Burm. ind. 149.*

*Leaves roundish-cordate angular, three-glanded underneath.*

[2. *Urena reticulata. Netted-leaved Urena.*

*Willd. spec. 3. 801. Cavan. diff. 6. 335. t. 183. f. 2. Leaves one-glanded underneath; lower ones three-lobed, upper ones panduriform.*

3. *Urena tricuspis. Three-pointed Urena.*

*Willd. spec. 801. Cavan. diff. 6. 334. t. 183. f. 1. Leaves one-glanded underneath, three-lobed acuminate, stem rough-haired.*

4. *Urena americana. American Urena.*

*Lin. syst. 627. Willd. 3. 801. suppl. 308. Sloan. jam. 1. 37. t. 11. f. 2. (Malva).*

*Leaves trifid entire at the base.*

5. *Urena sinuata. Cut-leaved Urena.*

*Lin. spec. 974. syst. 627. Reich. 3. 354. Willd. 3. 802. fl. zeyl. n. 257. Cavan. diff. 6. 336. t. 185. f. 2. Burm. ind. 149. Lour. cochinch. 417. ed. Willd. 507. Pluk. phyt. t. 74. f. 1. et t. 5. f. 3. (Alcea). Burm. zeyl. t. 69. f. 2. (Malvinda.)*

*Uren. Rheed. malab. 10. 3. t. 2.*

*Leaves three-glanded underneath sinuate-five-lobed, lobes angular, toothblotted obtuse.*

[6. *Urena multifida.*

*Willd. spec. 3. 802. Cavan. diff. 6. 336. t. 184. f. 2. Leaves one-glanded underneath hirsute five-lobed, lobes oblong acuminate gash-toothed.*

7. *Urena procumbens. Trailing Urena.*

*Lin. spec. 975. syst. 627. Reich. 3. 355. Willd. 3. 802. Lour. cochinch. 417. ed. Willd. 507.*

*Leaves oblong sinuate serrate, stem procumbent.*

8. *Urena viminea.*

*Willd. spec. 3. 803. Cavan. diff. 6. 335. t. 184. f. 1.*

*U. monopetala. Lour. cochinch. ed. Willd. 508? Leaves one-glanded somewhat rhombed toothed.]*

#### DESCRIPTIONS, &c.

1. This rises with an upright stalk upwards of two feet high, which becomes woody towards the autumn. It sends out a few side branches which are taper, stiff, and have a dark-green bark. Leaves about two inches and a quarter broad, dark green above and pale green beneath, upon pretty long footstalks. Flowers axillary, solitary, sessile, shaped like those of the Mal- low, but small and of a deep blush colour. Capsules roundish, armed with prickly hairs.

[Stem round, hairy. Leaves three-lobed serrate, hairy, alternate. Loureiro remarks, that Rumphius's plant has the leaves lacinated. The leaves have a glandular pore on three intermediate ribs underneath. Capsules five, united into a subglobular rounded-pen- tagon fruit, they are coriaceous; on one side convex, and echinated with hooked bristles; on the other wedgeform-angular, unarined; one-celled, not open- ing. Seed one in each cell, kidney-shaped, very thick on the back, very finely striated, ash-coloured. In the centre of the fruit is a subulate-pentagon receptacle; and each seed is fastened by a very short umbilical cord reaching from the middle of the central angle to the middle of the seed.

Native of China and Cochinchina. Forster says, every where within the tropics. Cultivated by James Sherard, M. D. in 1732. It flowers here in July and August. Dillenius reports, that the seeds came from China by an Ostend ship, and were communicated by Egmont van Nyenborg, a noble Fleming.

2. Leaves underneath whitish, tomentose, netted- nerved, all toothed, the uppermost lanceolate. Native of South America.

3. Leaves unequally toothed; the lobes of the lower

leaves angular. It differs from the preceding, in having the stem rough with hairs, not tomentose, and all the leaves three-lobed. Native of the islands of Mauri- tius and Bourbon.

4. Stem frutescent, round, scarcely scabrous. Leaves petioled, half-three-lobed, with the sinuses obtuse, not hol- lowed out roundish, serrate except at the base, bluntish, the middle lobe a little larger than the others, the outer ones more distant: under the nap is a single nec- tareous pore, at the base of the middle nerve on the lower surface. Calyx and fruit as in the other species; but the corolla smaller. Observed in Surinam by Dal- berg: and in Barbadoes by Sloane. Swartz is of opinion, that it is scarcely more than a variety of the next species which frequently varies with the upper leaves trifid.

5. Mr. Miller makes two species of this, *aculeata*, n. 2. and *sinuata*, n. 3. The *aculeata*, he says, rises with a woody stalk three feet high, dividing into four or five branches, and has a grayish bark. Lower leaves angular, an inch and half long, and about the same breadth: those above are cut some into three, others into five angular obtuse lobes: they are dark green above, but pale beneath, sharply serrate, on long footstalks. Flowers axillary, solitary, larger than those of the first species; the petals narrower at their base, with deep-red bottoms. *U. sinuata* has hairy stalks, dividing into many branches, and rising about two feet high. Leaves oblong, divided into three obtuse lobes to the midrib: lobes indented in several parts; light green on both sides and hairy. Flowers axillary, soli- tary, sessile, pale blush-coloured with a deep-red bot- tom.

[Stem suffruticose, upright, three feet high, with ascending branches. Leaves sinuate-palmate with ob- tuse sinuses, serrate, rough, alternate, petioled, having a single glandular pore on the middle rib underneath. Flowers rose-coloured, small, subsolitary, axillary: both calyxes five-cleft. Arils five, ovate, echinate.

Stem shrubby from one to two feet high, branched; upright, round, pubescent. Branches nearly simple; erect, round. Leaves petioled, alternate: lower roundish, five-cornered, subserrate: middle cordate- five-cornered, with the corners blunt, serrate-tooth- letted: upper sinuate, five-lobed, tooth-sinuate, nerved, hirsute, hoary underneath, having a glandular pore in the middle nerve. Petioles longish, round, erect, pubescent. Flowers axillary, on very short peduncles, blood-red, the same size as in *Malva sylvestris*. Outer calyx five-leaved, linear, erect, blunt: inner five- parted, with erect lanceolate segments the length of the outer. Petals five, contiguous at the base, oblong, obtuse, entire. Capsules five, close, connected, echi- nate. Seeds oblong, compressed, even.

Native of the East Indies. Cultivated in 1759, by Mr. Miller. Loureiro says it grows wild in Cochinchina. According to Swartz, it ought not to be sepa- rated from the East Indian species, and is found in Ja- maica, in dry pastures. Accordingly he gives the synonym of Sloane, which may be found here under the preceding species. Also the second *Urena* of Browne, which he says is remarkable for the lobed form of the leaves, and the compressed make of its rugged capsules.

Willdenow thinks that the *sinuata* of Swartz is a different species from this. I have therefore kept his description distinct, and should rather refer it to the preceding.

6. The whole plant is rough-haired. It has the ap- pearance of the preceding, but the leaves are one- glanded, and the lobes acuminate, gash-toothed. Na- tive of the island of Mauritius.

7. Stem frutescent, procumbent, creeping, very much branched. Leaves the same size as in *Origa- num*, subcordate, entire not lobed, even, sharply ser- rate. Flowers larger than the leaves. Found in China by Osbeck; who says that it has a very low stem, with the boughs hanging round about on the ground.

According to Loureiro, it is found in sandy places in Cochinchina as well as China. He describes the

<sup>1</sup> Loureiro. <sup>2</sup> Linn. syst. <sup>3</sup> Gærtner. <sup>4</sup> Hort. kew.

<sup>5</sup> Willdenow. <sup>6</sup> Linn. suppl. <sup>7</sup> Obs. 265. <sup>8</sup> Loureiro. <sup>9</sup> Swartz. <sup>10</sup> Hort. kew. <sup>11</sup> Willdenow. <sup>12</sup> Linn. spec. <sup>13</sup> stem



stem as suffruticose, three feet high, procumbent, round, reddish, branched. The leaves hastate, unequally and deeply serrate, rough, alternate. Flowers saffron-coloured, axillary, clustered. Both calyxes five-cleft. Stamens ten. Capsule round, echinate, four-celled.

8. Lower leaves roundish-ovate, acute, angular, toothed, the rest roundish-rhomboid, toothed, except the uppermost which are lanceolate. Outer calyx longer than the inner. Native of Brasil.

Loureiro has a Cochinchinese species, which he names *U. monopetala*. Willdenow suspects that it may be the same with the viminea of Cavanilles. Loureiro thus describes it. Stem suffruticose, two feet high, erect, branched. Leaves ovate-lanceolate, entire, serrate, veined, tomentose, alternate. Flowers violet, axillary, solitary. Outer calyx five-leaved, shorter. Corolla one-petalled; tube equal to the calyx; border spreading, five-parted, with the upper segment larger and emarginate. Capsule roundish, muricate, five-celled.

He has another species, which he entitles *U. polyflora*, found near Canton in China. But Willdenow suspects this to belong to the genus *Malachra*.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which should be sown on a hot-bed early in the spring; and when the plants are fit to remove, they should be transplanted into pots, and plunged into a fresh hot-bed to bring them forward, and afterward they must be treated in the same manner as has been directed for the tender sorts of *Hibiscus*. If the plants are brought forward in the spring, and afterward placed in the stove, or under a deep frame, they will ripen seeds the first season; but if they should not, they may be preserved through the winter in the stove, and will ripen their seeds the following season, after which the plants seldom continue.

[*URENA*. See *Hibiscus*, and *Pavonia*.

*URINARIA*. See *Phyllanthus*.]

**URTICA**. (Of *Pliny*; ab urendo, from its stinging when touched.)

*Lin. gen. n.* 1054. *Reich. n.* 1149. *Schreb. n.* 1422. *Tournef. t.* 308. *Juss. 403.* *Gartn. t.* 119.

*Class.* 21. 4. Monoecia Tetrandria.

*Nat. Order of Scabridae.* *Urtica* *Juss.*

GENERIC CHARACTER.

\* *Male Flowers.*

**CAL.** *Perianth* four-leaved: leaflets roundish, concave, obtuse.

**COR.** *Petals* none.

*Nectary* in the centre of the flower, cup-shaped, entire, narrower below, very small.

**STAM.** *Filaments* four, awl-shaped, length of the calyx, spreading, each within each calyx-leaf. *Anthers* two-celled.

\* *Female Flowers* either on the same or a distinct plant.

**CAL.** *Perianth* two-valved, ovate, concave, erect, permanent.

**COR.** none.

**PIST.** *Germ* ovate. *Style* none. *Stigma* villose.

**PER.** none. *Calyx* converging.

**SEED** one, ovate, blunt, compressed, shining.

ESSENTIAL CHARACTER.

**MALE.** *Cal.* four-leaved. *Cor.* none. *Nect.* (Rudiment of a germ) central, cup-shaped.

**FEM.** *Cal.* two-leaved. *Cor.* none. *Seed* one, superior, shining.

SPECIES.

\* *Opposite-leaved.*

1. *Urtica pilulifera*. Roman Nettle.

*Lin. spec.* 1395. *fyst.* 849. *Reich. 4.* 128. *hort. cliff.* 440. *ups.* 282. *mat. med.* 200. *Huds. angl.* 417. *Witber. arr. ed.* 3. 202. *Smith brit.* 1014. *engl. bot. t.* 148. *Sauv. monsp.* 307. *Villars dauph.* 2. 344. *Allion. pedem. n.* 2025. *Desfont. atlant.* 2. 341. *Mill. illustr. t.* 79. *Berg. phyt.* 2. 227.

\* Willdenow.

*Urtica* 1. *Matth.* 1125. 2. 469. *Camer. epit.* 861.

*U. urens* prior. *Dod. pempt.* 151. 1.

*U. romana.* *Fuchs. hist.* 106. *Tabern. ic.* 534. *Ger.* 570. 1. *emac.* 706. 1. *Park. theat.* 440. 1. *Raii hist.* 161. *Blackw. t.* 321. 1. *Petiv. brit. t.* 1. f. 11.

*U. rom. f. mas cum globulis.* *Bauh. hist.* 3. 445. 1.

*U. rom. et U. sylvestris, femine Lini.* *Lob. ic.* 1. 522. 1. *obs.* 281. 2.

*U. urens pilulas ferens* 1 *Dioscoridis, femine Lini.* *Bauh. pin.* 232. *Mor. hist. f.* 11. t. 25. f. 5. *Tournef. inst.* 535. *Dodart. ic.*

*U. pilulifera, folio profundius Urticæ majoris in modum serrato, femine magno lini.* *Raii syn.* 140.

*Leaves opposite ovate serrate, female flowers in round balls or beads.*

2. *Urtica balearica.*

*Lin. spec.* 1395. *Reich. 4.* 129. *Murr. prodr.* 185. *Blackw. t.* 321. *Hall. belv. ed.* 1. 27.

*Leaves opposite cordate serrate, female flowers in round beads.*

3. *Urtica Dodartii.* Pellitory-leaved Nettle.

*Lin. spec.* 1395. *Reich. 4.* 129. *Blackw. t.* 321. f. 2. *Dod. mem.* 4. 323. *Mor. hist.* 3. 435. n. 5.

*Leaves opposite ovate almost quite entire, female flowers in round beads.*

4. *Urtica pumila.* Dwarf Nettle.

*Lin. spec.* 1395. *Reich. 4.* 129. *Gron. virg.* 114. 145.

*Leaves opposite ovate, racemes two-parted very short.*

5. *Urtica grandifolia.* Great-leaved Nettle.

*Lin. spec.* 1396. *Reich. 4.* 129. *Swartz obs.* 357. *Brown. jam.* 337. 6. *Sloan. jam.* 1. 124. t. 83. f. 2.

*Leaves opposite ovate, stipules cordate undivided, racemes paniced length of the leaves.*

6. *Urtica verticillata.* Whorled Nettle.

*Vahl. symb.* 1. 76. *Forsk. descr.* 160.

*Leaves opposite ovate serrate, flowers numerous axillary sessile.*

7. *Urtica reticulata.* Netted-leaved Nettle.

*Swartz prodr.* 35. *act. holm.* 6. 1. 30. et 8. 1. 70. *descr.* 286.

*Leaves opposite oblong acute netted underneath, stipules ovate entire, racemes paniced, leaves shorter.]*

8. *Urtica urens.* Small Nettle.

*Lin. spec.* 1396. *fyst.* 849. *Reich. 4.* 130. *hort. cliff.* 440. *fl. lapp. n.* 375. *suec. n.* 862. *Huds. angl.* 417. *Witber. arr. ed.* 3. 202. *Smith brit.* 1015.

*engl. bot. t.* 1236. *Hull* 210. *Lightf. scot.* 578. *Curt. lond.* 6. t. 70. *Relb. cant. ed.* 2. n. 783. *Sibth. oxon. n.* 194. *Abbot bedf. n.* 683. *Fl. dan. t.* 739. *Hall. belv. n.* 1615. *Pollich pal. n.* 900.

*Neck. gallob.* 383. *Villars dauph.* 2. 344. *Allion. pedem. n.* 2026. *Gmel. sib.* 3. 30. n. 18. *Desfont. atlant.* 2. 341. *Berg. phyt.* 2. 69.

*U. urens minor.* *Bauh. pin.* 232. *Mor. hist. f.* 11. t. 25. f. 4. *Tournef. inst.* 535.

*U. urens minima.* *Dod. pempt.* 152.

*U. minor.* *Brunf. herb.* 1. 154. *Fuchs. hist.* 108. *Tabern. ic.* 535. *Ger.* 570. 3. *emac.* 707. *Park. theat.* 441. 4. *Raii hist.* 161. *syn.* 140. *Petiv. brit. t.* 1. f. 10.

*U. minor annua.* *Bauh. hist.* 3. 446.

*U. minor acrior.* *Lob. ic.* 1. 522. 2. *obs.* 282. 1.

*U. 3. Matth.* 1127. 2. 471.

*Leaves opposite elliptic three or five-nerved, racemes almost simple.*

9. *Urtica laxa.* Loose-stalked Nettle.

*Swartz prodr.* 35. *descr.* 288. *act. holm.* 8. 1. 58.

*Leaves opposite ovate acuminate serrate, flowers dioecious, males peduncled crowded, females in racemes, stem lax.*

10. *Urtica betulæfolia.* Birch-leaved Nettle.

*Swartz prodr.* 35. *descr.* 291. *act. holm.* 8. 1. 59.

*Leaves opposite cordate-roundish serrate, stipules entire, flowers in racemes, stem prostrate ascending.*

11. *Urtica diffusa.* Diffused Nettle.

*Swartz prodr.* 35. *descr.* 290. *act. holm.* 6. 1. 30.

*Leaves opposite ovate acutely serrate hispid, stipules rolled back, racemes paniced longer than the leaf, stems procumbent.*

12. *Urtica rufa.*

*Swartz*



- Swartz prodr.* 35. descr. 292. *act. holm.* 8. 1. 59.  
Entirely hirsute, leaves opposite oblong serrate, stipules  
roundish permanent, racemes terminating, stem suffrute-  
scent branched.]
13. *Urtica dioica*: Great Nettle.  
*Lin. spec.* 1396. *synt.* 849. *Reich.* 4. 130: *hort. cliff.*  
440. *fl. lapp. n.* 374. *succ. n.* 863: *mat. med.* 201.  
*Woodv. med. bot.* 396. *t.* 146. *Gærtn. fruct.* 2.  
183. *Huds. angl.* 417. *Wither. arr. ed.* 3. 201.  
*Smith brit.* 1016. *Hull* 210. *Lightf. scot.* 578.  
*Curt. lond.* 6. *t.* 69. *Relb. cant. ed.* 2. *n.* 784.  
*Sibth. oxon. n.* 195. *Abbot bedf. n.* 684. *Fl.*  
*dan. t.* 746. *Hall belv. n.* 1614. *Pollich pal. n.*  
901. *Neck. gallob.* 383. *Villars dauph.* 2. 345.  
*Allion. pedem. n.* 2027. *Gmel. fib.* 3. 30. *n.* 19.  
*Desfont. atlant.* 2. 340. *Thunb. jap.* 69. *Blackw.*  
*t.* 12. *Berg. phyt.* 2. 225. *Regnault. bot.*
- U. urens.* *Ger.* 570. 2. *emac.* 706. 2. —item *rubra.*  
*Ger.* 570. 4. —altera. *Dod. pempt.* 151. 2.  
*U. urens maxima.* *Bauh. pin.* 282. *Mor. hist. f.* 11.  
*t.* 25. *f.* 1. *Tournef. inst.* 534.  
*U. major.* *Brunf. herb.* 1. 151. *Fuchf. hist.* 107.  
*Tabern ic.* 534. *Petiv. brit. t.* 1. *f.* 9.  
*U. vulgaris major.* *Bauh. hist.* 3. 445. 2. *Raii hist.*  
160. —et *media sylvestris.* *Park. theat.* 440. 2. et  
441. 3.  
*U. sylvestris asperior, f. U. communis.* *Lob. ic.* 1.  
521. 2. *obs.* 281. 1.  
*U. 2.* *Matth.* 1126. 2. 470.  
*U. racemifera major perennis.* *Raii syn.* 139.  
Leaves opposite cordate, racemes very much branching in  
pairs, mostly dioecious.
14. *Urtica caudata.*  
*Vahl. symb.* 2. 96.  
*U. dubia.* *Forsk. arab.* 121. *n.* 544.  
*U. dioica β.* *Lin. spec.* 1396.  
*U. Aegypti maxima.* *Hasselqu. it.* 486.  
*U. annua longius caudata vulgatissima lusitanica &*  
*africana.* *Grisl. in Raii syll. ext.* 392.  
Leaves opposite cordate, racemes in pairs quite simple and  
very long.
15. *Urtica membranacea.*  
*Desfont. atlant.* 2. 340. *Poiret encyl.* 4. 638.  
Leaves on long petioles, male racemes filiform membra-  
ceous naked underneath, females sessile.
16. *Urtica rugosa.*  
*Swartz prodr.* 35. descr. 293. *act. holm.* 8. 1. 60.  
Leaves opposite oblong serrate nerved wrinkled, raceme-  
lets terminating, dioecious, stem simple erect.
17. *Urtica repens.*  
*Swartz prodr.* 35. descr. 294. *act. holm.* 8. 1. 61.  
Leaves opposite oval, racemes monoecious, stem simple  
creeping.]
18. *Urtica cannabina.* Hemp-leaved Nettle.  
*Lin. spec.* 1396. *Reich.* 4. 131. *hort. ups.* 282. *Gmel.*  
*fib.* 3. 31. *n.* 20. *Willich in nov. act. nat. cur.* 4.  
105. *Kniph. cent.* 1. *n.* 93.  
*U. foliis profunde laciniatis, femine lini.* *Amm. ruth.*  
249. *t.* 25. *Tizzet. app.* 185.  
Leaves opposite three-parted gashed.
19. *Urtica gracilis.* Slender-stalked Nettle.  
*Ait. kew.* 3. 341.  
Leaves opposite ovate-lanceolate almost naked, stem and pe-  
tioles hispid, racemes in pairs.
20. *Urtica alienata.*  
*Lin. syst.* 849. *Reich.* 4. 131.  
*Parietaria zeylanica.* *Lin. spec.* 1492. *fl. zeyl. n.* 371.  
Leaves opposite ovate quite entire marked with lines.
21. *Urtica nudicaulis.* Naked-stalked Nettle.  
*Swartz prodr.* 35. descr. 311. *act. holm.* 6. 1. 36. et  
8. 1. 71.  
Leaves subterminating opposite oblong acuminate entire  
three-nerved, stem angular naked below, racemed,  
flowers dioecious.
22. *Urtica stolonifera.*  
*Swartz prodr.* 36. descr. 296. *act. holm.* 8. 1. 62.  
Subcaulescent, leaves opposite oblong subserrate, flowers  
dioecious, runners radical.
23. *Urtica Parietaria.*  
*Lin. spec.* 1397. *Reich.* 4. 131. *Swartz obs.* 357.  
*Sloan. jam.* 1. 144. *t.* 93. *f.* 1. (*Parietaria*)  
Leaves opposite lanceolate quite entire narrower on one  
side.
24. *Urtica ciliata.*  
*Swartz prodr.* 36. descr. 298. *act. holm.* 6. 1. 32.  
Leaves opposite ovate ciliate serrate, flowers terminating  
aggregate subpeduncled monoecious, stem divaricate.
25. *Urtica radicans.*  
*Swartz prodr.* 36. descr. 299. *act. holm.* 6. 1. 29. et  
8. 1. 71.  
Leaves opposite cuneate-ovate crenate shining, flowers ax-  
illary subsessile, stem and branches radicans.
26. *Urtica ciliaris.*  
*Lin. spec.* 1396. *syst.* 850. *Reich.* 4. 132.  
*Parietaria racemosa, foliis ad oras villosis.* *Plum. spec.*  
10. *ic.* 120. *f.* 2.  
Leaves opposite ovate ciliate, racemes divaricate.
27. *Urtica nummularifolia.*  
*Swartz prodr.* 36. descr. 301. *act. holm.* 8. 1. 63. *t.*  
1. *f.* 2. *Sloan. jam.* 1. 206. *t.* 131. *f.* 4. (*Num-*  
*mularia*).  
Leaves opposite orbicular crenate hirsute, flowers terminat-  
ing clustered monoecious, stem filiform simple creeping.
28. *Urtica depressa.*  
*Swartz prodr.* 36. descr. 303. *act. holm.* 8. 1. 64.  
Leaves opposite roundish crenate smooth, flowers terminat-  
ing clustered, stem creeping subdivided.
29. *Urtica herniarioides.*  
*Swartz prodr.* 36. descr. 309. *act. holm.* 8. 1. 64. *t.*  
2. *f.* 1.  
Leaves opposite roundish entire terminating in fours,  
flowers monoecious distinct, stem filiform diffused.
30. *Urtica ferrulata.*  
*Swartz prodr.* 36. descr. 313. *act. holm.* 8. 1. 65.  
Leaves opposite lanceolate serrate smooth, peduncles ax-  
illary shorter than the leaves, flowers in little heads  
monoecious, stem frutescent four-cornered.
31. *Urtica lucida.*  
*Swartz prodr.* 36. descr. 315. *act. holm.* 6. 1. 31. 8.  
1. 70.  
Leaves opposite semipinnate shining, peduncles axillary  
longer than the leaf, flowers in little heads, stem frutes-  
cent angular.
32. *Urtica microphylla.*  
*Swartz prodr.* 37. descr. 305. *Brown. jam.* 336. 4.  
*Parietaria microphylla.* *Lin. spec.* 1492. *amoen.* 5.  
412. *act. holm.* 8. 1. 60.  
Leaves ovate acute quite entire, with smaller ones ovate  
opposite and intermixed, flowers dioecious, stems almost  
simple ascending.
33. *Urtica trianthemoides.*  
*Swartz prodr.* 37. descr. 307. *act. holm.* 8. 1. 68.  
Leaves opposite oblong quite entire, the alternate ones  
greater, flowers monoecious, stem erect branched.
34. *Urtica cuneifolia.*  
*Swartz prodr.* 37. descr. 319.  
*U. crenulata.* *Act. holm.* 6. 1. 35. et 8. 1. 70.  
Leaves opposite cuneate obovate toothed at the top, the al-  
ternate ones larger, racemelets peduncled, flowers mo-  
noecious.
35. *Urtica spicata.*  
*Lin. syst.* 850. *Thunb. jap.* 69.  
*U. japonica.* *Lin. suppl.* 48.  
Leaves opposite ovate acute serrate smooth, spikes capillary  
interrupted.
36. *Urtica macrophylla.*  
*Lin. syst.* 850. *Thunb. jap.* 69.  
Leaves opposite roundish doubly-serrate flowers panicled.
37. *Urtica rhombea.*  
*Lin. syst.* 850. *suppl.* 417.  
Leaves opposite quite entire subrhomboid three-nerved.
38. *Urtica virgata.*  
*Forst. prodr. n.* 345.  
Leaves opposite ovate serrate three-nerved, spikes axillary  
solitary interrupted.
39. *Urtica ferox.*  
*Forst. prodr. n.* 346.  
Leaves opposite hastate cordate bristly-serrate, racemes in  
pairs divaricate, stipules cordate.  
\*\* Alternate-leaved.
40. *Urtica lappulacea.*  
*Swartz prodr.* 37. descr. 317.  
*U. humilis.* *Act. holm.* 6. 1. 34. et 8. 1. 69. *t.* 2. *f.* 2.  
Leaves



- Leaves alternate ovate somewhat scabrous, flowers terminating subsessile monoecious, seeds three-cornered, stem diffuse.
41. *Urtica fessiliiflora*.  
Swartz prodr. 37. descr. 321. act. holm. 6. 1. 33.  
Leaves alternate lanceolate-ovate crenate, racemes very short axillary, flowers monoecious distinct, stem erect.
42. *Urtica elata*.  
Swartz prodr. 37. descr. 322.  
Leaves alternate ovate acute serrate, stem arboreous, branches almost naked racemiferous, flowers dioecious.
43. *Urtica æstivans*.  
Lin. spec. 1397. Reich. 4. 132. Forst. prodr. n. 342.  
Rameum majus. Rumph. amb. 5. 214. t. 79. f. 1?  
Pino f. *Urtica*. Pison. bras. 235.  
Leaves alternate cordate, racemes dichotomous, fruits orbicular-corymbed.
44. *Urtica argentea*.  
Forst. prodr. n. 343.  
Leaves alternate elliptic-lanceolate entire glaucous underneath, spikes axillary solitary interrupted.
45. *Urtica ruderalis*.  
Forst. prodr. n. 344.  
Leaves alternate cordate-ovate bluntly serrate, panicles axillary divaricate-corymbed.
46. *Urtica heterophylla*.  
Vahl. symb. 1. 76.  
U. palmata. Forst. descr. 159.  
U. urens racemifera major. Pluk. alm. 393.  
Ana-schorigenam. Rheed. mal. 2. 77. t. 41.  
Leaves ovate entire and three-lobed serrate-toothed.
47. *Urtica capitata*.  
Lin. spec. 1397. Reich. 4. 132.  
Leaves alternate cordate, glomerules in spikes.
48. *Urtica divaricata*.  
Lin. spec. 1397. Reich. 4. 132. Forst. ægypt. cent. 6. 160. Pluk. phyt. t. 237. f. 2.  
Leaves alternate ovate, racemes compound divaricate.]
49. *Urtica canadensis*. Canada Nettle.  
Lin. spec. 1397. Reich. 4. 133. hort. cliff. 441.  
Gron. virg. 145. Gouan. monsp. 485. Mor. hist. 3. 434. f. 11. t. 25. f. 2.  
Leaves alternate cordate-ovate, aments branched distich erect.
- [50. *Urtica hirsuta*.  
Vahl. symb. 1. 77.  
U. divaricata. Forst. descr. 160.  
Leaves alternate cordate-ovate serrate, racemes compound, stem and petioles rough-haired.
51. *Urtica interrupta*.  
Lin. spec. 1398. syst. 850. Reich. 4. 133. fl. zeyl. n. 336. Lour. cochinch. 557. ed. Willd. 682.  
Rumph. amb. 6. t. 20. Burm. zeyl. 231. 232. t. 110. f. 1, 2. Pluk. phyt. t. 201. f. 5.  
Batti-schorigeram. Rheed. mal. 1. 75. t. 40.  
Leaves alternate ovate-cordate serrate somewhat shorter than the petiole, spikes solitary interrupted.]
52. *Urtica nivea*. Chinese or White-leaved Nettle.  
Lin. spec. 1398. syst. 850. Reich. 4. 133. hort. cliff. 441. Jacqu. hort. 2. 78. t. 166. Thunb. jap. 71. Lour. cochinch. 558. ed. Willd. 683. Pluk. amaltb. 212. Burm. ind. 197.  
Rameum majus. Rumph. amb. 5. 214. t. 79. f. 1. v. n. 44.  
Leaves alternate suborbicular sharp at both ends tomentose beneath.
53. *Urtica baccifera*.  
Lin. spec. 1398. Reich. 4. 133. Swartz obs. 358.  
Brown. jam. 337. Plum. spec. 11. ic. 260.  
Leaves alternate cordate toothed prickly, stem shrubby, female calyxes berried.
54. *Urtica capensis*.  
Lin. syst. 850. suppl. 417.  
Leaves alternate cordate inert pubescent underneath, spikes interrupted.
55. *Urtica frutescens*.  
Lin. syst. 851. Thunb. jap. 70.  
U. fruticosa. Lin. suppl. 417.  
Leaves alternate oblong cusped snow-white underneath.
56. *Urtica stimulans*.  
Lin. syst. 851. suppl. 418.

- Leaves alternate oblong attenuated towards the base entire, panicles axillary.
57. *Urtica japonica*.  
Lin. syst. 851. Thunb. jap. 70.  
Leaves alternate cordate villose, flowers glomerate-headed.
58. *Urtica muralis*.  
Vahl. symb. 1. 77.  
U. parasitica. Forst. descr. 160.  
Leaves alternate ovate three-nerved pubescent serrate, heads axillary sessile.
59. *Urtica villosa*.  
Lin. syst. 851. Thunb. jap. 70.  
Leaves alternate cordate rough-haired, globules sessile.

DESCRIPTIONS, &c.

1. Stem from eighteen inches to two feet in height. Leaves on long footstalks, varying in shape, most frequently cordate, but often ovate, surrounded with very deep serratures except near the insertion of the footstalk, where they are entire. Flowers axillary, peduncled; those of the males branched, longer and more slender than those of the females, which are simple, about half an inch long, each bearing one ball, three or four lines in diameter, when in seed pendent. The whole plant is thick set with stinging hairs, more pungent than the two common Nettles<sup>b</sup>.

Dr. Smith says it is an annual of very luxuriant growth; the stem obtusely angular, often purple. Leaves ovate, sometimes heart-shaped, pointed, very strongly serrate, paler beneath. Flower-stalks mostly in pairs, those of the male flowers panicled. The supposed nectary is an obsolete concave tubercle, which seems rather to be the rudiment of a germ, and the stamens surround it. The calyx is of four equal leaves: whereas that of the female flowers, (which are in a round head), has two hemispherical valves closely embracing the germ, and holding the seed till it is quite ripe. Seed dark-brown, highly polished.

Dr. Smith farther remarks, that his specimens seem intermediate between those of the pilulifera and balearica in the Linnean herbarium, and notwithstanding the opinion of Professor Murray, he believes these species not to be distinct.

Mr. Woodward also supposes, that our species includes both. The only specific difference given by Linneus consists in the words *ovatis* and *cordatis*: but from frequent observations, he can see no reason to think this difference in the leaves to be any thing more than accident and scarcely worthy to be noticed as varieties. If the plant grows very close to a wall, it is frequently taller and more slender, the leaves are then generally small and ovate, and the serratures very shallow: when more distant from the wall, the plant is shorter and stronger, the leaves larger and heart-shaped, and the serratures very deep. He cannot perceive any difference in the fruitstalks or balls of flowers.

Native of the south of Europe, the east coast of England, and about Tunis in Barbary. Ray found it plentifully at Yarmouth in Norfolk near the quay, as also about Aldborough in Suffolk, and elsewhere on that coast. It has since been observed about Lowestoft and Bungay in Suffolk. Parkinson says it has been found growing time out of mind at Lidde by Romney in Kent, and in the streets of Romney itself. He conjectures, that the Roman soldiers, who came with Julius Cæsar, sowed it there. Mr. Dillwyn informs us, that it is extinct at old Romney, but that it still grows plentifully a little south of Lyd churchyard<sup>c</sup>. Gerarde affirms that it is a stranger to England, and Johnson does not correct the error. It is commonly found among rubbish and stones, and flowers in June and July.

2. Linneus allows this to be too nearly allied to the preceding, and thinks it may be a variety or a daughter of that. The leaves are cordate and wrinkled; Murray remarks, that the leaves at the base are so oblique, that they are more prominent on one side; that they are entire towards the base and top, but in other parts serrate with obtuse sinuses; and that in those which are far advanced the margin is contracted, so that they ap-

<sup>b</sup> Woodw. Mff.

<sup>c</sup> Linn. trans. 6. 182.



pear to be convex. In his specimens, he says, some of the leaves are ovate, others cordate; some of the stems and petioles purple, others not. He had the seeds from Oeder, who doubted whether it is a distinct species. They seem to compare it with *U. Dodartii*, which is distinct: but it is probably a variety of *U. pilulifera*, as Linneus suggested, and as Woodward and Smith assert.] Miller says, it differs from that in having narrower leaves and globular katkins; but being somewhat like it, is not often distinguished from it. It was discovered in the Balearic Islands (Majorca and Minorca) by Mr. Salvadore, an apothecary in Barcelona, who sent the seeds to many botanic gardens. By mistake, Linneus has set it down as a native of India, though he names it *balearica*.

3. Root annual. Stems much more slender than those of the former, and seldom branching. Leaves upon very slender footstalks, for the most part entire. Male and female flowers axillary, shaped like those of the former. The whole plant is armed with stinging hairs.

[Linneus says, it is too nearly allied to the two preceding, the male flowers being also placed below; but the leaves are scarcely ferrate. According to Dr. Smith, it appears different enough from both.

Native of the south of Europe (Miller says Spain and Italy.) Cultivated here in 1713. It flowers in July and August<sup>k</sup>.

4. Root fibrous. Stem the height of a finger, simple. Leaves three-nerved, naked, ferrate, on petioles almost a finger's length. Racemes axillary, two-parted, or even dichotomous, length of the petioles<sup>l</sup>: or shorter according to Gronovius. Native of Canada, in watery places.

5. Root small, brown, fibrous. Stem a foot and half high. Leaves four inches long, and three inches broad in the middle, rough, of a fresh green colour, a little indented about the edges, having three ribs running from the end of the footstalk, with several transverse ones. Flowers at top in a bunch together, brownish, very small, muscose, reticulated<sup>m</sup>.

It varies from a foot in height to four feet, with leaves to a span in length, with smaller racemes to very large diffused ones, often bigger than the leaves, and white, green and red flowers; both sexes on the same plant. Native of the West Indies in shady moistish places: on dry ground it is a lower plant. It flowers in the middle of summer<sup>n</sup>.

6. Stem a foot high, erect, tender, hairy, especially towards the top, branched at bottom. Branches shorter than the stem. Leaves bluntly ferrate, with the last ferrature elongated, quite entire at the base, somewhat hairy, paler underneath, an inch long, on a filiform hairy petiole, the length of the leaf. Flowers in a sort of whorl, hairy.

7. Native of Jamaica.

8. The small Nettle is distinguished from the great one (*U. dioica*) by its humbler size, being scarcely one-third of the height of that; its annual, white, fibrous root, its brighter green colour, and elliptical leaves, much smaller and rounder, three or five-nerved and scabrous. The stalks are much branched, the stipules small and reflexed, the racemes androgynous, nearly simple, commonly shorter than the petioles. Female calyx ovate, compressed a little<sup>o</sup>.

Native of Europe, Siberia and Barbary. It is a common weed in cultivated ground, especially on a light soil, and is a great pest of gardens, where it often feeds abundantly twice in one season.

9. 10. Natives of Hispaniola.

11. 12. Natives of Jamaica<sup>p</sup>.

13. Root perennial, creeping, tough, yellowish, sending down from the joints some pretty large fibres. Stems many, three feet (or from two to four feet) high, upright very little branched, bluntly quadrangular, each side furrowed. The whole plant is pubescent, and clothed with stinging bristles. Leaves cordate-ovate, acuminate, widely ferrate, petioled; the upper side wrinkled and veiny. Stipules in fours, ovate, acute, erect, membranaceous, - (spreading, linear, bluntish, the under side compressed and channelled,

*Curtis*). Racemes in pairs on each side, or four together at a joint, branching and spreading very much, many-flowered. Flowers dispersed in small clusters, commonly dioecious, but often monoecious<sup>q</sup>. The seed is small, of an attenuated ovate shape, compressed like a lens, of a pale whitish colour; the two calyx-leaves serve it instead of a pericarp<sup>r</sup>.

The great common Stinging-Nettle grows all over Europe, in Barbary, Siberia and Japan, in hedges, neglected fields, gardens and pastures, flowering from June to September.

In this numerous genus all the species do not sting, as the three sorts which are natives of this country are well known to do. The small projecting prickles or bristles with which they are covered are tubular, and stand on a bag filled with a poisonous juice; they are perforated at the point, and when they are gently pressed vertically, the pressure at once forces the poison to ascend the tube, and enables the point to lodge it in the skin.

Nettle-tops in the spring are gathered by many of the poorer people as a pot-herb, and are put into diet-drinks to purify the blood. In Arran and other Scottish Isles a rennet is made of a strong decoction of Nettles; a quart of salt is put to three pints of the decoction and boiled up for use: a common spoonful of this liquor will coagulate a large bowl of milk very readily and agreeably<sup>s</sup>.

The stalk of the Nettle is found to have a texture somewhat like that of Hemp, and to be capable of being manufactured into cloth, ropes and paper.

The Nettle is refused by quadrupeds in general, except the Ass. Cows however will eat it, when it is cut and lies to wither a little. Haller says it affords excellent food for milch kine, and that it has even been cultivated advantageously in Sweden, for that purpose. The leaves are chopped small to mix with the food of young turkeys and other poultry. The nettle is the only food of the caterpillars of three of our most beautiful butterflies, *Atalanta*, *Paphia*, and *Urtica*; the principal food of the *Io*; and the occasional food of the *Comma album*: the caterpillars also of the *urticata* and *verticalis* moths feed on it: a great number of other indiscriminate feeders devour its foliage; and the base of the leaves in autumn are frequently disfigured by tubercles, which contain small maggots, probably producing *Musca Urticae*<sup>t</sup>.

As a styptic the Nettle was formerly much used; and we are told of various hæmorrhagic affections in which it was successfully employed. Dr. Withering says, a leaf put upon the tongue, and then pressed against the roof of the mouth, is efficacious in stopping a bleeding at the nose. It is also said to manifest a diuretic character, and to be useful in calculous complaints, scurvy, gout, jaundice, &c. But these accounts have now little credit.

The sharp bristles readily entering the skin, and thereby producing considerable irritation and inflammation, have been employed as a rubefacient, a practice which was termed urtication, and found of advantage, in restoring excitement in paralytic limbs, or in other cases of torpor or lethargy<sup>u</sup>.

The juice of the Dock, or even of the Nettle plant itself, is a speedy remedy for the sting<sup>v</sup>.

14. This in habit and various circumstances is sufficiently allied to the preceding; but it differs at first sight, in having the racemes a span long, quite simple, erect; the leaves much wider; and the stipules ovate not linear-lanceolate as in the common Nettle. If it be a variety, which it scarcely seems to be, it is certainly very worthy of remark<sup>w</sup>.

Vahl found it growing very abundantly about Tunis, where he never observed our common Nettle. Hasselquist found it in Egypt, and remarks, that the Arabians call it *Curcis*. It is in Forskahl's catalogue of Arabian plants.

15. This also has the appearance of the common Nettle, but the hairs are scattered thinly over it. Stem branched. Leaves ovate, toothed, on long petioles. Bractes lanceolate, acute. Flowers monoecious: the

<sup>q</sup> Curtis lond. and Smith brit.

<sup>r</sup> Gartner. <sup>s</sup> Curtis. <sup>t</sup> Lightfoot. <sup>u</sup> Curtis, Withering.

<sup>v</sup> Woodville.

<sup>w</sup> Engl. bot.

<sup>x</sup> Vahl.

<sup>k</sup> Hort. kew. <sup>l</sup> Linn. spec. <sup>m</sup> Sloane. <sup>n</sup> Swartz.

<sup>o</sup> Smith brit. and engl. bot. Curt. lond.

<sup>p</sup> Swartz.



males from the top of the branches in spikes, which are in pairs, axillary, filiform, simple, directed one way, sessile on a widish rachis, membranaceous on each side: the females below collected into short axillary racemes. Barbary near la Calle<sup>a</sup>.

16. 17. Natives of Hispaniola<sup>b</sup>.]

18. Root perennial. Stems five or six feet high. Leaves oblong, deeply cut into three lobes, which are acutely indented on their edges; and placed on long petioles. Flowers axillary in long cylindrical catkins: males on the lower part, females on the upper. Seeds like those of flax, inclosed in the three-cornered calyx. The stem and leaves are armed with stinging hairs.

Native of Siberia, whence the seeds were brought to the Imperial garden at Petersburg, and dispersed to most parts of Europe. It flowers in July, and the seeds ripen in autumn. [Cultivated by Mr. Miller in 1752.

19. Native of Hudson's Bay. Introduced by the Hudson's Bay Company, in 1782. It flowers from June to August<sup>c</sup>.

20. Stem shrubby, rugged, round, stiffish, nearly upright: branches opposite, horizontal, diffused. Leaves petioled, nodding, rugged especially on the edge. Two stipules on each side. Flowers axillary, sessile: males in pairs, with a four-parted calyx, and four white stamens: a female flower sits close to the males, with one long pubescent white style. Fruit ovate, emarginate, grooved with eight swellings. Seed very smooth, ovate, black with a white base. It is a little evergreen plant. From its male flowers it is an *Urtica*; but from its female flowers and fruit, a *Parietaria*: therefore between both<sup>d</sup>. Native of Ceylon.

21. Native of Jamaica.

22. Native of Hispaniola<sup>e</sup>.

23. Roots numerous, long thready. Stem herbaceous, suffrutescent at bottom, from two to eight feet in height, branching very much, erect, angular, four-sided, striated. Branches long, subdivided, quadrangular, red: branchlets filiform, opposite to the leaves, loose, smooth. Leaves three-nerved, veined, ciliate at the edge. Leaflets of the same shape, but twice or four times smaller. Petioles long, spreading, red. Racemes axillary, terminating, opposite. Peduncles longer than the petioles, filiform, coloured, four-sided, erect, smooth. Flowers dioecious: females very small on paniced racemelets. Seed very small, black and shining. Native of the West Indies, on high mountains; flowering all the year<sup>f</sup>.

24. 25. Natives of Jamaica<sup>g</sup>.

26. Native of South America<sup>h</sup>.

27. 28. Natives of Jamaica.

29. Native of Hispaniola.

30. 31. 32. Natives of Jamaica.

33. Native of Hispaniola.

34. Native of Jamaica<sup>i</sup>.

35. Stem round, purple, smooth. Branches filiform, hispid at the base. Leaves three-nerved, rugged, on capillary petioles shorter than the leaf. Flowers in axillary capillary solitary spikes, a finger's length, interrupted.

Native of Japan, near Nagasaki and in the mountains of Kofido; flowering from July to October.

36. Stem four-cornered, grooved, purplish. The whole plant very finely pubescent. Leaves not at all cordate, acute, deeply and doubly gash-ferrate, three-nerved, hairy and scabrous, on petioles shorter than the leaf. Flowers axillary paniced. Native of Japan, in the same places<sup>k</sup>.

37. Stem herbaceous, a foot high, erect. Leaves rhomb-ovate, unarmed, an inch long, bluntish, on petioles the length of the leaves. Racemes branched, axillary, length of the petals. Found in Mexico by Mutis<sup>l</sup>.

38. Native of the Society Isles.

39. Native of New Zealand<sup>m</sup>.

40. 41. 42. Natives of Jamaica; the first of St. Domingo also<sup>n</sup>.

<sup>a</sup> Desfontaines.

<sup>b</sup> Swartz.

<sup>c</sup> Hort. kew.

<sup>d</sup> Linn. syst. <sup>e</sup> Swartz prodr. <sup>f</sup> Swartz obs. <sup>g</sup> Swartz prodr.

<sup>h</sup> Linn. spec.

<sup>i</sup> Swartz prodr.

<sup>k</sup> Thunberg.

<sup>l</sup> Linn. suppl.

<sup>m</sup> Forster.

<sup>n</sup> Swartz prodr.

All these Nettles from the West Indies are particularly described by Swartz, in his *Flora Indica Occidentalis aucta atque illustrata*: icil. n. 7. 9. 10. 11. 12. 16. 17. 21. 22. 24. 25. 27. 28. 29. 30. 31. 32. 33. 34. 40. 41. 42.

43. Stem simple, a foot high, rough, with unarmed prickles. Lower leaves opposite, the rest alternate, cordate with the lobes of the base approximating, serrate, three-nerved, petioled, rough-haired. A branch and a peduncle from each axil. Raceme horizontal, lateral, spreading. Male flowers solitary from each division, with snow-white anthers. Female flowers minute. Seeds drooping in a ring<sup>o</sup>.

Native of Surinam, and the Society Isles.

44. 45. Natives of the Society Isles<sup>p</sup>.

46. Stem herbaceous, simple, grooved, villose with awl-shaped scattered white shining bristles. Leaves alternate, the lower ones entire, the upper trifid, grossly and bluntly ferrate, the last ferrature elongated, somewhat villose, paler underneath, having a few bristles scattered along the nerves, two inches long, on a petiole hispid with bristles, shorter than the leaf. Flowers axillary: males above in globular spikes; females below. Fruiting rachis branched dichotomously, hispid<sup>q</sup>.

Native of the East Indies.

47. Stem upright, angular, naked. Leaves acuminate, equally ferrate, naked twice as long as the petioles, three-nerved. Raceme glomerate, many, disposed in a simple sessile solitary spike. It differs from dioica in having wider alternate leaves. Native of Canada, where it was found by Kalm<sup>r</sup>.

48. Native of Virginia and Canada.]

49. Root perennial. Stems two feet high. Flowers in axillary branching aments; appearing towards autumn, but seldom followed by seeds in this country.

[The plant is at first male only, but afterwards male and female flowers are produced on the same plant. Native of Canada and Virginia<sup>s</sup>. Cultivated here in 1713<sup>t</sup>.

50. Stem herbaceous, a foot high, flexuose, grooved, rough-haired especially at top. Leaves acute, paler underneath, villose along the nerves, an inch long on rough-haired petioles, the length of the leaf. Stipules lanceolate-linear. Racemes axillary, solitary, spreading, compound, longer than the leaf; racemelets small, somewhat branched, remotish, hairy, spreading: flowers glomerate. At first view it approaches to the next species, but differs in its shagginess, the leaves ferrate not entire at the base, sharp at the end but not acuminate, and in having branched spikes.—It recedes from the preceding species in having smaller leaves ferrate at the base, in its shagginess, and the racemes being longer than the leaf, not superdecompound<sup>u</sup>.

51. Stem herbaceous, annual, two feet high, roundish, hispid, red, sometimes creeping. Leaves hispid on both sides. Flowers reddish, in long spikes; male and female in distinct spikes: calyx in the males oftener five-leaved than four-leaved: stamens also commonly five. Native of China and Cochin China<sup>v</sup>.]

52. This is a perennial plant, sending up many stalks from the root, which rise three or four feet high. Leaves four inches long, and two inches and a half broad, ferrate, of a deep green on their upper side, but very white on their under; having five longitudinal veins; they stand upon very long footstalks. Flowers axillary in loose aments, and not succeeded by seeds in England.

[Stem herbaceous, biennial, erect, round, five feet high. Leaves attenuated at the apex, but not at the base, with a slender point, crenate, above of a dusky green colour, hispid, underneath tomentose, white. Flowers in many small lateral racemes, male and female in the same racemes, the females at the tip. Calyx of the male four-leaved: filaments four, awl shaped, flexuose, three times as long as the calyx. The females have neither calyx nor corolla; germ roundish, surrounded with many barren filaments; stigmas two, oblong, villose<sup>w</sup>.

<sup>o</sup> Linn. spec.

<sup>p</sup> Forster.

<sup>q</sup> Vahl.

<sup>r</sup> Linn. spec.

<sup>s</sup> Reich. ex Fabric. helmst.

<sup>t</sup> Hort. kew.

<sup>u</sup> Vahl.

<sup>v</sup> Loureiro.

<sup>w</sup> Idem.



Native of the East Indies, China, CochinChina and Japan. Cultivated in 1739, by Mr. Miller. It flowers here in august and september.

Thread and cordage even of the thicker kind which might serve on board ships, are made of Nettles in Japan. Different sorts grow wild on the hills there, and frequently attain a considerable size. The species mostly used are this and the japonica. The bark of these, properly prepared, produce strong cordage, and also threads so fine, that even linnen is made of them. From the seeds of the nivea an oil is expressed<sup>2</sup>.

Loureiro informs us that it is cultivated abundantly in China and CochinChina, and that it affords an admirable strong thread for ropes of all kinds, and for very durable nets.

Of the bark of one species of Nettle, they make, at Otaheite, the best fishing lines in the world, which will hold the strongest and most active fish. They call it Erowa<sup>2</sup>.

53. This is a small tree from sixteen to eighteen feet high, simple except at the top where it is subdivided, scabrous, prickly. Prickles thick, shortish, standing out, occupying the stem longitudinally. Branches herbaceous, prickly, stinging very powerfully. Leaves large, a span long, petioled, cordate-ovate, ferrate, nerved, smooth: the nerves underneath and the petioles prickly: the upper side of the leaves has convex points terminated by a prickle scattered over them. Racemes cauline, many-parted prickly, red. Flowers at the end of the branchlets of the racemes, sessile, dioecious. Calyx of the males one-leaved five-cleft, convex: border spreading, little reflexed, with lanceolate, red segments: nectary, the bottom of the calyx cup-shaped, white. Filaments five, thicker at the base, attenuated at the top, twice as long as the segments of the calyx, inserted below the divisions of it. Anthers three-celled, roundish, whitish. The rudiment of a pistil in the middle. Calyx of the female flowers four-lobed, two of the lobes a little bigger. Germ ovate, acute, compressed, green. Stigma villose, purple. Calyx berried, enlarging, at first embracing the germ to the middle but afterwards becoming like a berry, oblong, blunt at the end, four-lobed inclosing the seed, white, pellucid. Seed small, black.

Native of the West Indies, on lofty mountains and in shady places; flowering in the spring<sup>3</sup>.

54. Stem erect, round, scarcely pubescent, harmless. Leaves petioled, ferrate. Spikes lateral, two or three, on a weak rachis, erect. Flowers at remote points, few, heaped. Native of the Cape of Good Hope; found by Thunberg<sup>4</sup>.

55. Stem suffruticose, erect, purple. Branches alternate, from erect spreading, resembling the stem. Leaves petioled, rounded-attenuated towards the base, entire, having a lanceolate entire cusp at the end an inch long, ferrate; above scabrous, smooth; underneath white-tomentose, three-nerved, veiny, unequal, from an inch to a finger's length. Native of Japan<sup>4</sup>.

56. This is a little tree or shrub, with large leaves, which sting like our common Nettles, but much more violently, and to such a degree as to cause an inflammation in the skin. On every vein they have sharp-pointed transparent prickles, containing a fluid, which causes this irritation. The Javanese are well acquainted with it, and call it Kamadu: the Dutch colonists have named it Buffelblad, or Buffalo's leaf. It is customary with the Javanese princes on holidays, by way of diversion, to turn out a Tiger and a Buffalo to fight, in an area fenced in with planks. If the Buffalo should prove tardy in attacking his adversary, they flog him with this plant, which causes such an heat and inflammation in his skin, that he at length becomes quite wild and outrageous. When any one is stung with this Nettle-tree, they anoint the part with oil, or with rice boiled to a soft consistence; washing with water would only render the pain more intolerable. Native of Java<sup>5</sup>.

57. Stem four-cornered, grooved, erect, pubescent. Leaves cordate-ovate, acuminate, unequally ferrate, villose-scabrous, green above, pale beneath, an inch

and half long, on petioles shorter by half than the leaves. Flowers axillary, glomerate; the glomerules peduncled, round. It differs from the capitata, in having a pubescent stem, hairy leaves unequally ferrate, and subglobular little balls of flowers. Native of Japan about Nagasaki; flowering in september and october. Thick ropes or cables for ships are made of the bark of this Nettle<sup>6</sup>.

58. Stem round, pubescent, hoary at top. Leaves acutely ferrate, acuminate, softly villose, especially the upper ones, quite entire at the base and point, an inch and half long, on a spreading petiole shorter than the leaf. Stipule on each side lanceolate acuminate. Balls of flowers axillary, sessile, villose, hoary: distinguished from the preceding by having the leaves equally ferrate and even, and the balls of flowers sessile<sup>7</sup>.

59. Stem herbaceous, round, scarcely a span high. Branches alternate, spreading very much. Leaves on very short petioles, obtuse, ferrate-crenulate, unequal, small. Globules of flowers scattered over the branches, small, sessile. Native of Japan, on the island Nipon<sup>8</sup>.

Linneus has subdivided the numerous species of this genus into two sections from the leaves, which from one to thirty-nine inclusive are opposite, and in the rest alternate. We may add, that most of the species are perennial, and some of these shrubby: a few however are annual as n. 1. 2. 3. 8. 17. and 43; perhaps 4. 5. 6. and 9. Linneus has rightly placed this genus in the class Monoecia; for although some of the species are Dioecious, as 9. 13. 16. 21. 22. 23. 28. 32. 42, yet it is certain that female flowers are found among the males in some, and it is probable that a more minute examination will inform us that the case is the same in all. Ray, who had juster notions of the sexes in plants than most other botanists of his time, remarks, that Nettles have not only male and female flowers on separate plants, but that they are also androgynous, having barren and fertile flowers on the same plant, but remote from each other<sup>1</sup>.]

PROPAGATION AND CULTURE.

1, 2, 3, &c. Sow the seeds in march, upon a bed of rich light earth. When the plants are come up transplant them into beds, or the borders of the pleasure-garden. In july they will flower, and the seeds will ripen in autumn. If these are permitted to shed, they will come up the following spring, and flourish without farther care.

8. This is a common weed in gardens, and if suffered to stand, will fill the ground with seeds; but as it is an annual, it may be easily extirpated by the hoe.

13. The great Stinging Nettle is a formidable root-weed upon the sides of banks and ditches, in hedges, in uncultivated places in general, and in pastures; the roots spread very much, and it cannot be extirpated without the rooting-iron: pieces of the roots that are left in the ground will grow again.

18. This is easily propagated either by seeds or parting the roots, and will thrive in most soils and situations.

49. This may be increased by parting the roots in the spring. It may be planted in almost any soil or situation, and will endure the severest cold of this climate in the open air.

52. This also may be increased by parting the roots in may. The plants must be set in pots filled with light earth. They must be housed in winter, and exposed to the open air only for three months in the heat of summer.

[URTICA. See *Acalypha*, *Axyris*, *Parietaria*, *Tragia*. —iners. See *Galeopsis* and *Lamium*.

Urticæ folio. See *Ayenia*.

URUCU. See *Bixa*.

USNEA. See *Lichen*.

USTERIA. (So named by Willdenow, in honour of Paulus Uster, author of *Annalen der Botanik*, Zurich, 1792 to 1797, 8°.—*Delectus opusculorum botanicorum*. Argent. vol. 1. 2. 1790. 1793. 8°.)

Lin. gen. Schreb. n. 1704. p. 782. Willd. *alt. soc.* Berol. 10. 52. t. 2.

Class. 1. 1. Monandria Monogynia.

<sup>1</sup> Thunb. jap. <sup>2</sup> Vahl. <sup>3</sup> Thunb. jap. <sup>4</sup> Hist. 1370.

GENERIC

<sup>2</sup> Thunb. voy. 3. 63. engl. ed. <sup>3</sup> Hawkesw. voy. 2. 218.  
<sup>4</sup> Swartz obs. <sup>5</sup> Linn. suppl. <sup>6</sup> Thunb. jap.  
<sup>7</sup> Thunb. trav. 4. 140. engl. ed.



GENERIC CHARACTER.

CAL. *Perianth* one-leafed, four-toothed, permanent, segments four, obtuse, three of them very small, the fourth much larger, lanceolate.  
COR. one-petalled, funnel-form: tube narrow, longer than the calyx: border four-toothed, acute, erect.  
STAM. *Filament* one, short, placed on the tube. *Anther* oblong.  
PIST. *Germ* oblong, superior. *Style* capillary, shorter than the corolla. *Stigma* bifid.  
PER. *Capsule* oblong, compressed, two-grooved, one-celled, two-valved.  
SEEDS two, oblong, clothed with a thin membranaceous aril.

ESSENTIAL CHARACTER.

*Cal.* four-toothed, with one segment much larger than the rest. *Cor.* funnel-form, four-toothed. *Caps.* one-celled, two-seeded. *Seeds* arilled.

SPECIES.

1. *Ustertia guineensis*.  
*Willd. spec.* 1. 18. *act. soc. Berol.* 10. 52. t. 2.  
*Monodynamis Iferti.* *Gmel. syst.* 15.

DESCRIPTION, &c.

This is a shrub with opposite branches. Leaves opposite, roundish-ovate, quite entire. Flowers in terminating panicles. Native of Guinea<sup>k</sup>.

USUBIS. See *Schmidelia*.

UTRICARIA. See *Nepenthes*.

UTRICULARIA. (*Dimin. from uter, a bottle. Utriculus, a little bottle. So called from the small appendages to the root.*)

*Lin. gen. n.* 31. *Reich. n.* 34. *Schreb. n.* 41. *Juss.* 98. *Lentibularia.* *Vaill. act. gall.* 1719. *Dill. gen.* 6.

*Class.* 2. 1. *Diandria Monogynia.*

*Nat. Order of Corydalis.* *Lyfimachia* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* two-leaved: leaflets ovate, concave, very small, equal, deciduous.  
COR. one-petalled, ringent: upper lip flat, obtuse, erect; lower bigger, flat, entire. *Palate* heart-shaped, prominent between the lips. *Nectary* horned, produced from the base of the petal.  
STAM. *Filaments* two, very short, curved in. *Anthers* small, cohering.  
PIST. *Germ* globular, large, one-celled. *Style* filiform, length of the calyx. *Stigma* conical.  
PER. *Capsule* globular, large, one-celled.  
SEEDS numerous.

ESSENTIAL CHARACTER.

*Cor.* ringent, spurred. *Cal.* two-leaved, equal. *Caps.* one-celled.

SPECIES.

1. *Utricularia alpina*.  
*Lin. spec.* 25. *syst.* 65. *Reich.* 1. 50. *Willd.* 1. 111. *Jacqu. amer.* 7. t. 6. *piet.* 9. t. 8.  
*Nectary* awl-shaped, leaves ovate quite entire.
2. *Utricularia foliosa*.  
*Lin. spec.* 26. *Reich.* 1. 50. *Willd.* 1. 111. *Loefl.* it. 281.  
*Litaria palustris, fœniculi folio.* *Plum. spec.* 6. ic. 165. f. 2.  
*Nectary* conical, fruits drooping, radicles destitute of appendages.
3. *Utricularia vulgaris.* *Common Bladder-wort* or *Hooded Milfoil*.  
*Lin. spec.* 26. *syst.* 65. *Reich.* 1. 51. *Willd.* 1. 112. *fl. lapp. n.* 14. *suec. n.* 28. *fl. zeyl. n.* 22. *Huds. angl.* 8. *Wither. arr. ed.* 3. 19. *Smith brit.* 28. *engl. bot. t.* 253. *Lightf. scot.* 77. *Relb. cant. ed.* 2. n. 21. *Sibth. oxon. n.* 18. *Abbot bedf. n.* 16. *Fl. dan. t.* 138. *Hall. helv. n.* 290. *Roth. germ. 1.* 10. 2. 27. *Hoffm. germ.* 8. *Pollich pal. n.* 24. *Krock. files. n.* 38. *Villars dauph.* 2. 446. *Allion. pedem. n.* 197. *Berg. phyt.* 2. 101.  
*Lentibularia.* *Riv. mon.* 78. *Raii syn.* \* 286.  
*Millefolium palustre galericulatum.* *Ger. emac.* 828. 5. *Raii hist.* 1322.

<sup>k</sup> Willdenow.

*M. aquaticum flore luteo galericulato.* *Baub. hist.* 3. 783. 3. *Park. theat.* 1258. 9.  
*M. aquat. lenticulatum.* *Baub. pin.* 141.  
*Great Bladder-snout.* *Petiv. brit. t.* 36. f. 11.  
*Nectary conical, scape few-flowered.*

4. *Utricularia minor.* *Small Bladderwort* or *Hooded Milfoil*.

*Lin. spec.* 26. *syst.* 65. *Reich.* 1. 51. *Willd.* 1. 112. *fl. suec. n.* 29. *Huds. angl.* 9. *Wither. arr. ed.* 3. 20. *Smith brit.* 28. *engl. bot. t.* 254. *Lightf. scot.* 78. *Relb. cant. ed.* 2. n. 22. *Abbot bedf. n.* 17. *Fl. dan. t.* 128. *Hall. helv. n.* 291. *Roth. germ. 1.* 11. 2. 28. *Hoffm. germ.* 8. *Pollich pal. n.* 25. *Villars dauph.* 2. 446. *Berg. phyt. t.* 103. *Schmidel. ic. t.* 21. f. 1.

*Lentibularia minor.* *Vaill. act. gall.* 1719. *Raii syn.* \* 286.

*Millefolium aquaticum minus.* *Park. theat.* 1256. 3. *Raii hist.* 1322.

*M. palustre galericulatum minus.* *Pluk. phyt. t.* 99. f. 6.

*Aparine aquis innatans trevisana, foliis percheper capreolis donata.* *Bocc. mus.* 1. 23. t. 4.

*Small Bladder-snout.* *Petiv. brit. t.* 36. f. 12.

*Nectary keeled very short obtuse.*

5. *Utricularia obtusa.* *Blunt-horned Bladder-wort.*

*Lin. spec. ed.* *Willd.* 1. 112. *Swartz prodr.* 14. *descr.* 1. 41. *Brown. jam.* 119. 1.

*Nectary bent in obtuse subemarginate.*

6. *Utricularia subulata.* *Awl-shaped Bladder-wort.*

*Lin. spec.* 26. *syst.* 65. *Reich.* 1. 51. *Willd.* 1. 113. *Gron. virg.* 6.

*Nectary awl-shaped.*

7. *Utricularia gibba.* *Gibbous Bladder-wort.*

*Lin. spec.* 26. *Reich.* 1. 51. *Willd.* 1. 113. *Gron. virg.* 129.

*Nectary gibbous.*

8. *Utricularia bifida.* *Cloven Bladder-wort.*

*Lin. spec.* 26. *Reich.* 1. 51. *Willd.* 1. 113. *Osfb. it.* 243. t. 3. f. 2. vol. 2. p. 1. ed. angl.

*Scape naked bifid.*

9. *Utricularia capillacea.* *Hair-like Bladder-wort.*

*Lin. spec. ed.* *Willd.* 1. 113.

*Scape naked capillary three-flowered, flowers nodding, capsule awl-shaped.*

10. *Utricularia cœrulea.* *Blue Bladder-wort.*

*Lin. spec.* 26. *Reich.* 1. 52. *Willd.* 1. 113. *fl. zeyl. n.* 23.

*Nelipu.* *Rheed. mal.* 9. 137. t. 70.

*Scape naked, scales alternate wandering awl-shaped.*

11. *Utricularia stellaris.* *Starry Bladder-wort.*

*Lin. syst.* 65. *Willd.* 1. 113. *suppl.* 86. *Vahl. symb.* 1. 6.

*U. inflexa.* *Forsk. descr.* 9. n. 26.

*Bladdery whorl of the bractes ciliary.*

12. *Utricularia recurva.* *Recurved Bladder-wort.*

*Lour. cochinch.* 26. ed. *Willd.* 32.

*Leafless, nectary recurved, spike simple.*

13. *Utricularia aurea.* *Golden Bladder-wort.*

*Lour. cochinch.* 26. ed. *Willd.* 32.

*Leafless, nectary conical-compressed, flowers in racemes.*

DESCRIPTIONS, &c.

1. Roots fibrous, ash-coloured, with small round tubercles as in the Potato. Scape simple, leafless, one or two-flowered, smooth, erect, half a foot high. Leaves radical, two, obovate, attenuated at the base into the petiole, acute, shining, thickish, veinless, convex, opposite, an inch and half long. Flowers elegant, very large, white with the calyx and nectary slightly tinged with yellow. Native of Martinico, in the highest mountains, on a wet open meadow; flowering in february<sup>1</sup>.

2. This resembles our common sort very much, but the root is creeping. Flowers on the scape many, from six to ten. It has no bladders at the roots. Native of South America<sup>m</sup>.

3. The fibrous floating roots, slightly attached to the mud, are supposed to be perennial. The stem likewise floats horizontally under water alternately divided

<sup>1</sup> Jacquin.

<sup>m</sup> Linn. spec.



into capillary branches, with bristly leaves bearing little compressed curved bladders, open, and bearded at the tip, containing a bubble of air, and a drop of watery fluid, in which, when highly magnified appears a quantity of extremely minute solid particles. Aquatic insects frequently take up their lodging in these bladders. The stalk rises erect only a few inches above the water, and is rendered conspicuous by its spike of large handsome alternate flowers (3 to 8): the peduncle and calyx reddish or purple; the corolla of one irregular labiate petal, the spur conical and recurved, the mouth closed, the palate prominent and orange-coloured. Stamens thick and short. Germ superior; style short; stigma concave and bearded<sup>n</sup>. Stem cylindrical, scaly towards the top; one scale serves as a bracte to each flower, and is lanceolate. Calyx permanent; its lower leaf very slightly notched at the end. Corolla full yellow, with purplish-red streaks. Nectary blunt, lined with minute shining globular glands. Filaments thick, fleshy, crooked, fixed to the base of the germ. Stigma two-lipped; one lip very small, the other broad, flat, thin, fringed at the edge: after the impregnation of the germ, this larger lip closes the aperture of the style<sup>o</sup>.

Native of Europe, in ditches and stagnant waters; flowering after midsummer. It is perfectly an aquatic, and not extremely common in Britain.

4. Roots capillaceous, very tender, floating, loaded with very small membranaceous bladders. Scape length of the finger, simple, very slender, dividing towards the top into three peduncles, having a bracte under each. Leaves radical, pinnate, capillaceous, with very few equal pinnae. Lower leaflet of the calyx reflexed. Upper lip of the corolla horizontal, cordate, perforated at the base, inserted into the receptacle: lower cordate, bent back at the sides, at the base underneath gibbous, prominent, keeled not horned: throat open, without any prominent palate. Filaments converging, resembling a ring, narrower below: anthers roundish. Germ ovate: style simple, short: stigma ovate, tongue-shaped<sup>p</sup>.

It differs from the preceding in having a short blunt nectary, which projects so little, that Linneus calls it carinated, not conical or awl-shaped; the palate not so prominent as to close the orifice of the corolla; the upper lip blunt; and the corolla of a paler colour. It has also fewer flowers, and the plant is only about half the size of the other. They agree however in habit and structure<sup>q</sup>.

Native of Europe; flowering at the same time with the other. On Hounslow heath, in the river. Hinton, Teversham, Fulbourn, Sawston and Chippenham moors, and Gamlingay bogs in Cambridgeshire. At Cawston decoy, near Yarmouth, and on St. Faith's bogs near Norwich. Ampthill, and Potton marshes in Bedfordshire. Near Glastenbury, Somersetshire. On turf bogs in Westmoreland and Cumberland. In ditches adjoining Outerthwaite near Flookbury in Cartmell. In a bog at Coryattachan in Skie, and other places in Scotland, but more rarely than the other.

5. Roots capillary, branched, whitish. Leaves floating, furnished with small ovate bladders. Scape from two to three inches long, filiform, erect, simple, sometimes divided at top, naked, smooth. Flowers terminating, alternate, three or four, small, yellow, on long one-flowered peduncles. Tube of the corolla very short, cylindrical: upper lip ovate, convex, entire; lower a little smaller, ovate, the orifice closed: nectary scarcely longer than the lip, conical: palate orange streaked with purple. Filaments inserted at the aperture of the tube, sabre-shaped; anthers roundish, growing to the inner side of the filaments, one-celled. Germ roundish: style very short and thick: stigma funnel-form, oblique, one-lipped. Capsule roundish. Seeds compressed, membranaceous at the side. It resembles the preceding sort very much; but is distinct from it, in having a blunt submarginate nectary. Native of Jamaica, in marshy rivulets; flowering the whole summer<sup>r</sup>.

6. Leaves capillaceous. Flowers white<sup>s</sup>. Native of Virginia.

7. This also is a native of Virginia.

8. Stem filiform, a finger's length, bifid or with a double raceme. Flowers alternate, yellow, with the upper lip sharp at the sides<sup>t</sup>.—Osbeck adds, that it is very like the vulgaris, but somewhat less: the calyx-leaf permanent: the nectary conical: the capsule ovate. The plant is a hand's breadth in length; the root fibrous and branched; the bractes very small and ovate; peduncles alternate, compressed; flowers small, yellow. Native of China: found by Osbeck in low swampy ground, not under water.

9. Plant scarcely an inch high, with a naked root somewhat branching. Peduncles nodding, supported by a very small ovate sessile bracte. Capsule awl-shaped, covered by the permanent calyx. Native of the East Indies<sup>u</sup>.

10. Scape half a foot high, filiform, erect. Flowers few, terminating, subsessile, with a spur the length of the flower. Herman says that the colour of the corolla is blue. Native of Ceylon<sup>x</sup>, and Malabar.

11. Roots capillary, branched, whorled, floating as in vulgaris, but without bladders. Scape a finger's length, filiform, naked, racemed at the top. In the middle of the scape and at the surface of the water are from four to six sessile ovate ciliate two-celled follicles in whorls, in order to support the scape in the water. The corolla has no spur; only the lower lip is bagged. Native of the East Indies, in rice fields, where the water is deepest<sup>y</sup>: found by Koenig.—It was also found by Forskahl in Egypt. This differs from the Indian in having oblong bladders at the base of the scape, instead of ovate ones in the middle, but in all other respects they are very much alike. There are frequently radical fibres at the top of the bladders of the scape<sup>z</sup>.

12. Root fibrous, short, without bladders. Stem four inches high, slender, quite simple, erect. Leaves none. Calyx-leaves large, round-compressed. Corolla yellow, with a conical nectary, curved back and almost equal to the petal. Capsule lens-shaped, protected by the closed calyx. In Hon-mo river, near the capital of Cochinchina.

13. Stem slender, very long, branched, fluctuating. Root fibrous, capillary, green, branched, having bladders. Scape round, erect, three inches high. Calyx-leaves lanceolate, curved in. Corolla golden-coloured, with a convex emarginate throat, and a conical compressed nectary. Native of Cochinchina, in slow-flowing rivers<sup>a</sup>.

UVA CRISPA. See *Ribes*.

UVA MARINA. See *Ephedra*.

UVARIA. (From the figure of the fruit like a bunch of grapes.)

Lin. gen. n. 692. Reich. n. 750. Schreb. n. 944. Gartn. t. 114. Juss. 284. Roxb. corom. 1. t. 33—36.

Class. 13. 7. Polyandria Polygynia.

Nat. Order of *Coadunatae*. *Anonæ* Juss.

GENERIC CHARACTER.

CAL. Perianth three-leaved, flat: leaflets ovate, acute, permanent.

COR. Petals six, lanceolate, sessile, spreading, longer than the calyx.

STAM. Filaments none. Anthers numerous, truncate, oblong, covering the germ on which they are placed.

PIST. Germ ovate. Styles numerous, length of the anthers, terminating the head. Stigmas obtuse.

PER. Berries numerous, distinct, globular, peduncled, fastened to an oblong Receptacle.

SEEDS numerous.

ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. six. Berries numerous, pendulous, four-seeded.

SPECIES.

1. *Uvaria zeylanica*.

Lin. spec. 756. Reich. 2. 627. Willd. 2. 1261. mat. med. 140. fl. zeyl. n. 224. Gartn. fruct. 2. 155. Lour. cochinch. 348. ed. Willd. 426.

Funis musarius. Rumph. amb. 4. 78. t. 42.

<sup>t</sup> Linn. spec.

<sup>u</sup> Willdenow.

<sup>x</sup> Linn. zeyl.

<sup>y</sup> Linn. suppl.

<sup>z</sup> Vahl.

<sup>a</sup> Loureiro.

<sup>n</sup> Engl. bot. <sup>o</sup> Withering. <sup>p</sup> Linn. succ. <sup>q</sup> Linn. succ. and Engl. bot. <sup>r</sup> Swartz descr. <sup>s</sup> Linn. syst. Vol. II.



- Narum-panel. *Rheed. mal.* 2. 11. t. 9. *Raii hist.* 1636.  
*Leaves lanceolate acuminate, peduncle one-flowered solitary, petals roundish obtuse equal.*
2. *Uvaria lanceolata.* *Lance-wood Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1261. *Swartz prodr.* 87.  
*Brown. jam.* 370.  
*Leaves lanceolate quite entire, flowers axillary solitary, branches wand-like.*
3. *Uvaria cerasoides.* *Cherry-fruited Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1261. *Roxb. corom.* 1. 30. t. 33.  
*Leaves lanceolate acute pubescent beneath, peduncles one-flowered solitary, petals ovate acute equal.*
4. *Uvaria suberosa.* *Cork-barked Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1261. *Roxb. corom.* 1. 31. t. 34.  
*Leaves oblong acute smooth, peduncles one-flowered solitary, the three inner petals lanceolate.*
5. *Uvaria tomentosa.* *Downy-leaved Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1262. *Roxb. corom.* 1. 31. t. 35.  
*Leaves oblong acute tomentose, peduncles one-flowered solitary, the three inner petals ovate.*
6. *Uvaria odorata.* *Sweet-smelling Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1262. *Lamarck encycl.* 1. 589.  
*Cananga.* *Rumph. amb.* 2. 195. t. 65.  
*Leaves ovate-lanceolate, peduncles one-flowered solitary, petals linear-lanceolate very long.*
7. *Uvaria monosperma.* *Capsuled Uvaria.*  
*Lin. spec. ed. Willd.* 2. 1262. *Lamarck encycl.* 1. 590.  
*Cananga Ouregou.* *Aubl. guian.* 1. 608. t. 244.  
*Leaves elliptic acuminate ferruginous beneath, peduncles one-flowered aggregate, petals ovate acute.*
8. *Uvaria lutea.*  
*Lin. spec. ed. Willd.* 2. 1262. *Roxb. corom.* 1. 32. t. 36.  
*U. coriacea.* *Vahl. symb.* 3. 72.  
*Leaves oblong acute shining, peduncles three-flowered solitary, petals ovate obtuse.*
9. *Uvaria ligularis.*  
*Lin. spec. ed. Willd.* 2. 1263. *Lamarck encycl.* 1. 590.  
*Cananga sylvestris angustifolia.* *Rumph. amb.* 2. 198. t. 66. f. 2.  
*Leaves ovate acute, peduncles many-flowered solitary, petals linear acute very long.*
10. *Uvaria longifolia.*  
*Lin. spec. ed. Willd.* 2. 1263. *Vahl. symb.* 3. 72.  
*Lamarck encycl.* 1. 500. *Sonnerat itin.* 2. 233. t. 131.  
*Leaves lanceolate waved at the edge, peduncles umbelled, petals lanceolate acute.*
11. *Uvaria japonica.*  
*Lin. spec.* 756. *Reich.* 2. 628. *Willd.* 2. 1263.  
*Thunb. jap.* 237. *Kämpf. amoen.* 476. t. 477.  
*Leaves oblong acuminate serrate, peduncles one-flowered solitary, petals roundish.*

DESCRIPTIONS, &c.

1. This is a climbing shrub, by means of a long unarmed branching stem, but without tendrils. Leaves alternate, quite entire, smooth, on short petioles. Flowers scattered, on long peduncles. Calyx short, spreading. Corolla dusky red. Anthers sessile, longish, compressed, placed on a large hemispherical receptacle. Germs many, oblong, on the centre of the same receptacle. Stigmas as many as the germs, scarcely longer than the stamens<sup>b</sup>. Berries disposed in a simple, rounded, pendulous raceme, formed of the receptacle which is elongated in ripening; they are oblong or cylindric-ovate, knobbed where the seeds are, and on the other side marked with an indistinct groove, peduncled, whitish ash-coloured, (Loureiro says black, smooth, juicy, acid.) Divided internally into as many horizontal cells as there are seeds, and in a double row: partitions membranaceous, very thin. Seeds one in each cell, twelve or fewer, semicircular, flat on both sides, very smooth and shining, chestnut-coloured except the um-

<sup>b</sup> Loureiro.

bilicus, with a white callous margin; fastened longitudinally to the grooved side of the berry<sup>c</sup>.

Native of the East Indies.

Gærtner has two other species. 1. *Uvaria trifoliata*, which he refers to *Cananga sylvestris prima f. trifolia* of Rumphius, 2. 197. t. 66. f. 1. though he says that the specimen he examined did not quite agree with Rumphius's description. It is however clearly a different species from the *zeylanica*.—2. *U. monilifera*; which he thinks may possibly be the same with *Unona discreta*. Linn. suppl. 44 & 270.

Loureiro also has a species which he names *Uvaria uncata*, because it agrees in habit with *Funis uncatus* of Rumphius; the flower of that however is different, and it seems to belong to *Cephalanthus*. *U. uncata* is found about Canton, where it is used as a beautiful covering to walls, and is extended and put up without violence.

2. Leaves smooth. Flowers in umbels: umbellules scattered. Berries small, soft, one-celled, containing only one seed. Native of Jamaica, and pretty common in the woods of Portland; reckoned one of the best timber trees in the island, especially where strength or elasticity is required; but it seldom grows to any considerable size<sup>d</sup>. It is imported under the name of *Lance-wood*, and is used for the shafts of very light carriages.

3. Trunk erect, long, and perfectly straight. Branches spreading, horizontal: branchlets two-faced. Leaves alternate, two-faced, short-petioled, lanceolate or oblong, entire, about four inches long, and an inch and half broad. Stipules none. Peduncles axillary, simple, bowing, bracted near the base, round, downy, about an inch long. Filaments very numerous, short, clubbed, grooved, fleshy, ascending, placed so very close as to press upon one another, inserted into a globular fleshy receptacle. Anthers four or five-sided, truncate, a little concave in the centre. Germs about forty, occupying the disk or centre, oblong, sessile, hairy: styles short: stigmas large, purple. Berries many, pedicelled, diverging, in a sort of umbel, globular, size of a small cherry, and very like one when ripe, (dark red,) one-celled. Seed one, round like the berry. Duduga of the Telingas.

It is a large tree, a native of the mountainous inland parts of the Circars. It does not cast its leaves, and flowers during the hot season. The wood is employed for many purposes by the natives. The berries are eaten by them when ripe, and are pretty good, but rather too astringent.

4. Trunk remarkably straight, with a scabrous bark, very deeply split in various directions. Branches horizontal, two-faced. Leaves alternate, two-faced, short-petioled, waved, smooth on both sides, of a deep shining green, from two to three inches long, and one inch or an inch and half broad. Peduncles opposite to a leaf, bowing. Calyx may be said to be six-leaved, and corolla three-petalled, as only the three interior of the nine are coloured, coral-like. Stamens as in the preceding. Berries numerous, as in the former, only when ripe black. Seed one, shaped as the berry.

This is much more common than the former; seldom acquiring the size of a tree, except among the mountains. It is in flower and fruit all the year, and does not cast its leaves. The wood is more useful than that of the former; is of a chocolate colour, durable, and very elastic.

5. Trunk straight, of considerable height and size. Branches numerous, horizontal, forming a very large shady head. Branchlets two-faced alternate. Leaves alternate, two-faced, short-petioled, oblong or oval, very downy, soft, entire, from two to three inches long, by one or two broad. Stipules none. Peduncles scattered, generally single, bowing, slender, woolly, half the length of the leaf. Calyx and corolla as in *U. suberosa*. Filaments numerous, very short, not clubbed. Anthers oblong, twin. Germs as in the other, glutinous. Berries size of a large nutmeg, round, downy, pulpy, dark purple when ripe. Seeds generally four, nidulant, kidney-form, size of a kidney-bean.

It is a large tree, native of the Circar mountains; and flowers during the hot season<sup>e</sup>.

6. Leaves acuminate, quite entire. Petals flat, acute,

<sup>c</sup> Gærtner and Loureiro.

<sup>d</sup> Browné.

<sup>e</sup> Roxburgh.

and



and remarkable for their length. Native of Java and China.

7. Leaves quite entire. Fruit a capsule, (not a berry), one-seeded, elliptic, allied to *Xylopia*, but the capsule is neither four-cornered or two-valved. Native of Guinea, in remote woods<sup>f</sup>.

8. Trunk remarkably straight, with the bark dark-coloured and pretty smooth. Leaves horizontal, two-faced, short-petioled, oblong or oval, very smooth and shining, firm, waved, entire, about three inches long and an inch and half broad. Peduncle generally opposed to a leaf, very short, from one to six-flowered. Flowers dirty, greenish, rust-coloured, short-pedicelled. Calyx small. Corolla four or five times larger than the calyx. Filaments very short. Anthers oblong, pointed. Germs from four to six. Berries the same, short-pedicelled, placed in form of a star round their receptacle for a common centre, size of a partridge's egg, oval, smooth, pulpy, when ripe of a bright yellow. Seeds about six, kidney-form, nidulant.

This is also a pretty large tree, and grows only among the mountains. Its flowering time is in the hot season; and it does not cast its leaves<sup>g</sup>.

9. This approaches to *U. odorata* in the form of the petals. Native of Amboina<sup>h</sup>.

10. Branches smooth, with a purple bark, a little flexuose at the top. Leaves alternate, a span long, membranaceous, veined, smooth on both sides, gradually attenuated, acute, quite entire. Petiole short, wrinkled beneath. Peduncles lateral, very short, tomentose: pedicels six or seven, subumbelled, an inch long, villose, a little thicker at top, having a small ovate downy leaflet in the middle. Calyx-leaves ovate, downy, four times shorter than the petals. Receptacle the size of a Coriander seed, downy. Native of the East Indies<sup>i</sup>.

11. Stem frutescent, twining and decumbent, tubercled with scars, nodding at the top, naked, rufescent. Branches alternate, like the stem, almost naked, nodding, branchleted. Branchlets short, leafy, like the branches, two inches long. Leaves scattered, toothed from the middle to the tip, very finely nerved, thickish, smooth, paler underneath, two inches long. Petioles semicylindric, rufescent, short. Flowers monoecious, scattered, peduncled, axillary, drooping. Peduncle filiform, compressed, smooth, an inch long, curved, having a few small bractes. Corolla subglobular, white; petals imbricate, ovate, obtuse, entire with the margin thinner. Receptacle with the germs subglobular, striated, purple, the size of a middling pea, inclosed by the calyx and corolla. Filaments two in each aperture between the germs, very short. Anthers standing out, twin, permanent but shrivelling, white. Germs numerous, smooth, increasing, red. Berries sessile on the receptacle, ovate, smooth, unequal, aggregate, succulent, red, one-celled, the size of a pea. Seeds two, kidney-form, white<sup>k</sup>.

It is distinct from all the rest, in having a twining stem, ferrate leaves, and a large receptacle of the fruit<sup>l</sup>.

Native of Japan, and growing very plentifully in several places round the harbour of Nagasaki. It is remarkable on account of the great quantity of clear mucus which it contains. When the twigs are deprived of their outer bark, and placed in a glass of water, the mucus exuding, expands itself round them for about the thickness of a line and upwards, and appears as clear as crystal. This mucus is sometimes used for the manufacturing of paper, instead of that which they extract from *Hibiscus Manihot*; the ladies likewise use it to render their hair smooth and glossy<sup>m</sup>.

UVARIA. See *Aletris*.

UVA SPINA. See *Ribes*.]

UVA URSI. See *Arbutus* [and *Mespilus*.

UVEDALIA. See *Polymnia*.

UVIFERA. See *Coccoloba*.]

VULNERARIA. See *Anthyllis*.

[VULVARIA. See *Chenopodium*.]

<sup>f</sup> Willdenow.

<sup>g</sup> Vahl.

<sup>h</sup> Roxburgh.

<sup>i</sup> Thunb. jap.

<sup>j</sup> Willdenow.

<sup>k</sup> Willdenow.

<sup>l</sup> Thunb. voy. 4. 12. engl. ed.

UVULARIA. (From the form of the uvula in the inflorescence.)

Lin. gen. n. 412. Reich. n. 445. Schreb. n. 560.

Juss. 48.

Class. 6. 1. Hexandria Monogynia.

Nat. Order of *Sarmentaceæ*. Lilia Juss.

#### GENERIC CHARACTER.

CAL. none.

COR. Petals six, oblong-lanceolate, acute, erect, very long. Nectary an oblong hollow in the base of each petal.

STAM. Filaments six, very short, widish. Anthers long, erect, shorter by half than the corolla.

PIST. Germ roundish. Style three-cleft half way, longer than the stamens. Stigmas simple; reflex.

PER. Capsule ovate-oblong, triangular, three-celled, acute.

SEEDS many, roundish, compressed.

#### ESSENTIAL CHARACTER.

Cor. six-petalled, erect. Nect. a hollow at the base of each petal. Filam. very short.

#### SPECIES.

1. *Uvularia amplexifolia*. Heart-leaved *Uvularia*.

Lin. spec. 436. syst. 325. Reich. 2. 48. Willd. 2.

93. Hall. helv. n. 1237. Krock. files. n. 520.

Villars dauph. 2. 274. Allion. pedem. n. 1889.

Hoffm. germ. 118.

*Smilax perfoliata* ramosa, flore albo: Barr. rar. 58. t. 720. et t. 719.

*Polygonatum latifolium* ramosum. Baub. pin. 303.

Baub. hist. 3. 531. Park. theat. 696. 6. Raii hist.

665. Mor. hist. 3. 537. f. 13. t. 4. f. 11.

*P. ramosum*. Ger. 756. 4. emac. 904. 4.

*P. latif.* 4. ramosum. Clus. hist. 1. 276.

*Laurus alexandrina*. Camer. epit. 936.

Leaves embracing, they and the stem smooth.

2. *Uvularia hirta*. Hairy *Uvularia*.

Lin. syst. 325. Willd. 2. 94. Thunb. jap. 136.

Leaves embracing rough-haired, stem villose.

3. *Uvularia lanceolata*. Spear-leaved *Uvularia*.

Ait. kew. 1. 434. Willd. spec. 2. 94.

*Polygonatum ramosum* flore luteo minus. Corn. canad. 40. t. 41.

Leaves perfoliate ovate-lanceolate acuminate.]

4. *Uvularia perfoliata*. Perfoliate *Uvularia*.

Lin. spec. 437. Reich. 2. 48. Willd. 2. 94. amoen.

2. 337. hort. cliff. 121. Gron. virg. 37. Cold.

noveb. 74.

*Polygonum ramosum*, flore luteo majus. Corn. canad.

38. Mor. hist. 3. 538. f. 13. t. 4. f. 12. Raii

hist. 666. 10.

*Polygonatum latifolium* perfoliatum brasiliannum. Baub.

pin. 303. prodr. 139.

Leaves perfoliate ovate.

5. *Uvularia sessilifolia*. Sessile-leaved *Uvularia*.

Lin. spec. 437. syst. 325. Reich. 2. 48. Willd. 2.

95. Cold. noveb. 73.

*U. sessilis*. Thunb. jap. 135.

Leaves sessile.

6. *Uvularia cirrhosa*. Tendril-leaved *Uvularia*.

Lin. syst. 325. Willd. 2. 95. Thunb. jap. 136.

Leaves sessile cirrhose.]

#### DESCRIPTIONS, &c.

1. Root perennial. Stalk annual, rising about two feet high, and sending out one or two branches from the lower part. The flowers come out singly from the bosoms of the leaves upon long slender footstalks; they are yellow, hang downwards, and appear at the latter end of april.

[The peduncle has a bent joint in it; and the corolla resembles that of *Medeola asparagoides*.]

Native of Bohemia, Silesia, Saxony, Switzerland, Dauphiné, Piedmont.—Cultivated in 1752, by Mr. Miller. It flowers in may<sup>n</sup>.

2. Stem round, very hirsute with long dense hairs,

<sup>n</sup> Linn. spec. and syst.

<sup>o</sup> Hort. kew.



erect, the thickness of a quill, a foot high. Leaves alternate, cordate, oblong, acuminate, seven-nerved, spreading, villose with very short hairs, two inches long. Native of Japan near Jedo<sup>p</sup>.

3. Native of North America. Introduced in 1785 by Mr. Archibald Menzies. It flowers in July<sup>q</sup>.]

4. Root perennial, composed of many thick fleshy fibres, from which spring up several annual stalks, which for the most part divide into two at a small height from the ground; these spread asunder, and have oblong, smooth, pointed leaves, broad at their base and surrounding the stem. Petals yellow, oblong, ending in acute points, and standing upon slender peduncles, which rise from the bosom of their leaves, and hang downward. Native of North America.

[Cultivated in 1734, by Peter Collinson, Esq<sup>r</sup>.]

5. This has the habit of the preceding. Stem bifid, one-flowered. Leaves lanceolate-ovate, alternate, but where the flower comes out there are two leaves. Peduncle naked. Native of Canada<sup>r</sup>.

6. Stem round, jointed, striated, smooth, simple, erect. Leaves from the same bud two, linear, entire, smooth, a finger's length. Flowers from the buds of the leaves, peduncled, drooping. Peduncle reflex, one-flowered, half an inch long. Petals oblong, yellow, about an inch long. Filaments inserted into the germ, white, half the length of the corolla: anthers oblong, twin, included. Style a little shorter than the corolla; but longer than the stamens. Stigmas three, reflex. Native of Japan<sup>s</sup>.]

#### PROPAGATION AND CULTURE.

1. 3. 4. 5. These are very hardy plants, and will live in the full ground, but as the flowers have not much beauty, they are only cultivated for the sake of variety. They are increased by parting their roots, the best season for which is about Michaelmas. They may be removed every third year; but if they are removed oftener the plants will not flower so strong. They delight in a soil not too wet or too stiff, but in a gentle hazel loam.

## W.

WACHENDORFIA. (So named by Burman in honour of Everh. Joh. van Wachendorff, professor of botany at Utrecht, author of Hortus Ultrajectinus, 1747.)

Lin. gen. n. 61. Reich. n. 67. Schreb. n. 85. Gært. t. 15. Juss. 59.

Class. 3. 1. Triandria Monogynia.

Nat. Order of *Ensatæ*. Irides Juss.

#### GENERIC CHARACTER.

CAL. Spathes two-valved.

COR. Six-petalled, unequal: petals oblong; the three upper ones more erect, three lower spreading. Nectary of two bristles at the inner sides of the upper petal.

STAM. Filaments three, filiform, declined, shorter than the corolla. Anthers incumbent.

PIST. Germ superior, roundish, three-cornered. Style filiform, declined. Stigma simple.

PER. Capsule subovate, three-sided, obtuse, three-celled, three-valved.

SEEDS solitary, rough-haired.

#### ESSENTIAL CHARACTER.

Cor. six-petalled, unequal, inferior. Caps. three-celled, superior.

#### SPECIES.

1. Wachendorfia thyrsiflora. Simple-stalked Wachendorfia.

Lin. spec. 59. Reich. 1. 112. Willd. 1. 243.

<sup>p</sup> Thunberg.

<sup>q</sup> Hort. kew.

<sup>r</sup> Idem.

<sup>s</sup> Linn. spec.

<sup>t</sup> Thunb. jap.

Burm. monogr. 2. f. 2. nov. act. nat. cur. 1. obs. 50. t. 2. f. 1. Gært. fruct. 1. 50. Thunb. prodr. 12.

Scape almost simple, panicle contracted, leaves ensiform five-nerved plaited smooth.

2. Wachendorfia paniculata. Panicked Wachendorfia.

Lin. spec. 59. syst. 94. Reich. 1. 112. Willd. 1. 248. Thunb. prodr. 12. Smith ic. pict. 1. t.

5. Curt. magaz. t. 616. Burm. monogr. 4. f.

1. nov. act. nat. cur. 1. obs. 51. t. 2. f. 10.

Breyn. prodr. 3. 22. t. 9. f. 1. (Asphodelus).

Pluk. mant. 70. (Erythrobolbus.)

Scape many-clustered, panicle spreading, leaves ensiform three-nerved plaited smooth.

[3. Wachendorfia hirsuta. Hairy Wachendorfia.

Lin. spec. ed. Willd. 1. 249. Thunb. prodr. 12.

Curt. magaz. t. 614.

Sifyrinchium ramosum æthiopicum. Breyn. cent. 85.

t. 37? Rudb. elyf. 2. 13. f. 10?

Scape many-clustered, panicle spreading, leaves ensiform three-nerved plaited villose.

4. Wachendorfia tenella. Delicate Wachendorfia.

Lin. spec. ed. Willd. 1. 249. Thunb. prodr. 12.

Scape many-clustered, panicle spreading, leaves linear three-nerved smooth.

5. Wachendorfia graminea. Grass-leaved Wachendorfia.

Lin. spec. ed. Willd. 1. 249. Thunb. prodr. 12.

W. graminifolia. Lin. syst. 94. suppl. 101.

Scape many-clustered, panicle spreading, leaves ensiform channelled smooth.]

#### DESCRIPTIONS, &c.

1. Root thick, tuberous, reed-like, of a deep-red colour, sending out many perpendicular fibres of the same colour, and spreading into several offsets. The leaves which rise immediately from the root are large, with five plaited folds. The biggest are two feet long, and three inches broad, of a deep green-colour. The flower stalk rises from the centre of the heads between the leaves to the height of three or four feet, with leaves of the same form with those below, but narrower, and ranged alternately, embracing the stalk half round with their base. The flowers, when young, are inclosed in sheaths, which, after some time, open and make way for the flowers to come out; then they wither and dry, but remain upon the stalk like those of the yellow Asphodel. They form a loose spike, and there are several upon one common peduncle, which open one after the other. The upper flowers stand almost upright, but the lower nod; they are hairy and of a saffron colour on the outside, but smooth and yellow within. Sometimes the lower petal of the six is wanting, but then the place is occupied by the pistil. [Capsule superior, roundish, sharply three-cornered, three-celled, three-valved: valves bearing the partition in the middle, and striated on the outside with a few transverse nerves. Seeds in each cell one, flattened a little, obovate or narrowed downwards and ending in a beaked base, hirsute all over with soft chaffy bristles, of a brown-black colour; fastened to the base of the cells near the axis<sup>u</sup>.]

Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1759<sup>x</sup>.

2. Plant when in flower a foot high. Root perennial, a little creeping; furnished with oblong cylindrical and nearly perpendicular tubercles. Leaves radical, two-ranked, sessile, equitant, vertical, spreading, dilated on the inner side at the base, channelled, linear-lanceolate, pointed, entire, nerved, bright green, very like those of thyrsiflora, but only one-third of the size, dying soon after the plant has done flowering, and not appearing again for some months. Stalk erect, cylindrical, bearing one or two small leaves, branched, many-flowered. General flower-stalks alternate, spreading, racemose, bearing from three to five flowers, cylindrical, downy: partial ones short, downy, all directed upwards, single-flowered. Bractes solitary at the base of each of the flower-stalks, oblong, pointed, membranaceous, externally downy, soon withering, the uppermost gradually smaller. Petals somewhat irregular, obovate, pointed, spreading, yellow, externally downy and reddish, the three uppermost standing nearest to-

<sup>u</sup> Gærtner.

<sup>x</sup> Hort. kew.

gether



gether, and marked near the base with a purple or greenish femilunar spot, common to them all. Filaments length of the corolla, cylindrical, bent, curved upwards, smooth, yellow. Anthers versatile, reddish. Germ small, roundish. Style pointing upwards, length of the stamens, red towards the top. Stigma marked with a hollow depression, smooth, small. Capsule invested with the decayed corolla. Seeds roundish, rough.

Native of the Cape of Good Hope, where it was gathered in a sandy soil by Mr. Francis Maffon<sup>y</sup>.—Introduced in 1767, by Mr. William Malcolm<sup>z</sup>. This is not the paniculata of Miller, Burman, and Acta nat. cur<sup>a</sup>.

3. This seems chiefly to differ from the preceding in having hairy leaves, a more slender and taller stem, reddish-brown and not green as in that, its branches more divaricate, the two upper lateral petals more contiguous, and its flowers when closed form a slenderer and more compact column; the incumbent anthers seem also to be shorter and rounder. Root-leaves oblong lanceolate three or four, about three or four inches high. Stem about three times their length. Segments traversed longitudinally on the outside by a brown hairy fillet; outer upper one wholly brown and pubescent outwards. Flowers scentless, opening in succession, closing towards evening: they expand in the month of July.

Native of the Cape of Good Hope; whence it was introduced by Mr. Williams, nursery-man at Turnham Green, who received the bulbs about the year 1799 or 1800.

Burman's figure comes nearer to this than to paniculata. The synonyms of Breynius and Rudbeck belong to a species named by Solander, Wachendorfia brevifolia<sup>b</sup>.

4. 5. Both these are also natives of the Cape of Good Hope.]

#### PROPAGATION AND CULTURE.

These plants may be increased by offsets, which are sent out from the main head, after the same manner as some of the flag-leaved Irises. Take them off at the end of August or the beginning of September, and plant them in pots filled with soft loamy earth mixed with a little sea sand; and if the season prove hot and dry, place the pots where they may have only the morning sun, until the offsets have put out new roots; then they may be placed in a sheltered situation, where they may enjoy the full sun. Here they may remain until there is danger of frosty mornings: then they should be placed in a frame with Ixias, &c. and treated in the manner directed for them.

[The paniculata is impatient of cold, and rarely flowers in England; whereas the thyrsiflora frequently does. The latter always appears covered with luxuriant leaves in the open air; the former even in a greenhouse loses its leaves soon after flowering, and does not recover them till the end of winter<sup>c</sup>.

WACHENDORFIA. See *Dilatris*.

WADAPU. See *Gomphrena*.

WÆMBU. See *Acorus*.

WAKE-ROBIN. See *Arum*.

WALDSCHMIDIA. See *Menyanthes*.

WALKERIA. (So named from the Rev. Richard Walker, D. D. Vice-Master of Trinity College, and Founder of the Botanic Garden at Cambridge.)

Lin. gen. Schreb. n. 378. Meesia Gært. t. 70.

#### GENERIC CHARACTER.

CAL. Perianth five-parted inferior: segments lanceolate, acute, spreading, permanent.

COR. Petals five, lanceolate, acute, spreading, a little longer than the calyx.

STAM. Filaments five, capillary, ascending, shorter by half than the petals. Anthers roundish.

PIST. Germ globular, five-cleft. Style setaceous, erect, height of the stamens. Stigma simple.

PER. Drupes five, obovate-reniform, one-celled.

SEEDS solitary, reniform, inclosed in a kind of bony shell.

<sup>y</sup> Smith.

<sup>z</sup> Hort. kew.

<sup>a</sup> Curt. magaz.

<sup>b</sup> Idem.

<sup>c</sup> Smith.

#### ESSENTIAL CHARACTER.

Cal. five-parted, inferior. Cor. five-petalled. Drupes five, one-seeded. Nuts reniform.

#### SPECIES:

1. *Walkeria ferrata*.

Lin. spec. ed. Willd. 1. 1145.

Meesia ferrata. Gært. fruct. 1. 344. t. 70. f. 6.

Tsjocatti. Rheed. mal. 5. 95. t. 48.

#### DESCRIPTION, &c.

This is a small tree, about twelve feet high. Leaves alternate petioled oblong acuminate ferrate ribbed; Corymbs terminating. Flowers small, yellow, inodorous<sup>d</sup>. Fruit berried drupes, distant, erect, red, finally brown and somewhat wrinkled: pulp thin, drying up with age into a leathery crust: shell of the same form with the drupe, somewhat bony, one-celled, valveless. Common receptacle small, conical, obtuse, fungous, emarginate at the edge for the insertion of the drupes. Proper receptacle, a very short thread from the base of the shell and inserted into the middle of the seed within side. Seed softish to the touch<sup>e</sup>.

Native of the East Indies.

WALKERIA. See *Nolana*.]

WALKS are made either of gravel, sand, or grass; these three sorts of Walks are the most common in England, but where gravel or sand cannot be procured, they are sometimes laid with powdered coal, sea-coal ashes, and sometimes powdered brick, but these are rarely used, when either gravel or sand can be procured; however, where sea-coal ashes can be had, it is preferable to the powdered coal or bricks, because they bind very hard and never stick to the feet in frosty weather, which is a good quality; but the darkness of its colour has been an objection to the use of it in gardens, however for the wilderness Walks I think it is preferable to most other materials; but I shall proceed to give directions for the making of the several sorts of Walks, and first of the gravel Walks. In order to the laying of Walks in gardens, when they are marked out, the earth should be taken away to a certain depth, that the bottom of them be filled with some lime rubbish, or coarse gravel, flint-stones, or other rocky materials, which will be serviceable to prevent weeds from growing through the gravel, and also to keep away worm-casts. This bottom should be laid ten inches or a foot thick, over which the coat of gravel should be six or eight inches, which gravel should be very fine, but yet not screened, because that spoils it. This should be laid on a heap, rounding, that the larger rough stones may run down on the sides, which being every now and then raked off, the gravel by that means will be sufficiently fine. After the gravel has been laid to the thickness above-mentioned, then the Walks must be exactly levelled, and raked true from all great drips, as well as little holes. By this means most of the stones of the Walks will be raked under your feet, which should rather be gently sprinkled back again, over the last length that is raked, than buried (as is the practice of many gardeners;) by this means the Walk will lie much harder, and the coarsest stones will very much contribute to its firmness.

There is also a great fault committed frequently, in laying Walks too round, and some to that degree, that they cannot be walked on with that ease and pleasure that ought to be; and besides, this too great rounding takes off much from the seeming breadth and beauty of the Walk.

The common allowance for a gravel Walk of five feet breadth, is an inch rise in the crown; so that if a Walk be twenty feet wide, according to this proportion, it will be four inches higher in the middle than on each side; and a Walk of twenty-five feet will be five inches, one of thirty feet six inches, and so on. When a Walk has been thus carefully laid, trodden down, and raked, or rather, after every length or part of it (which commonly is about fifteen feet each,) then it should be rolled well, both in length and also cross-ways. The person who rolls it should wear shoes

<sup>d</sup> Willdenow.

<sup>e</sup> Gærtner.



with flat heels that he may not make holes in the Walks, for when these are once made in a new Walk, it will not be easy to roll them out again.

In order to lay gravel Walks firm, it will be necessary to give them three or four water rollings, that is, they must be rolled when it rains so very fast, that the Walks swim with water; this will cause the gravel to bind, so that when the Walks come to be dry, they will be as hard as terrace.

Iron-mould gravel is accounted the best for binding, or gravel with a little binding loam amongst it; which latter, though it be apt to stick to the heels of shoes in wet weather, yet nothing binds better in dry weather.

When the gravel is over-sandy or sharp, loam is frequently mixed with it, which, if they be cast together in heaps, and well mixed, will bind like a rock; whereas loose gravel is as uncomfortable and uneasy to walk on, as any other fault in a walk can render it.

The best gravel for Walks is such as abounds with smooth pebbles (as is that dug at Black-heath,) which, being mixed with a due proportion of loam, will bind like a rock, and is never injured by wet or dry weather, and the pebbles being smooth, are not liable to be turned up and loosened by the feet in walking; as are those which are angular and rough; for where Walks are laid with such gravel as is full of irregular stones, they appear unsightly in a day's time after rolling, because the stones will rise upon the surface whenever they are walked upon, but the smooth pebbles will remain handsome two or three days without rolling.

Gravel Walks are not only very necessary near the house, but there should always be one carried quite round the garden, because being soon dry after rain, they are proper for walking on in all seasons; but then these should be but few, and those adjoining to the house ought to be large and magnificent, proportionable to the grandeur of the house and garden. The principal of these walks should be elevated and carried parallel with the house, so as to form a terrace; this should extend itself each way, in proportion to the width of the garden, so that from this there may be a communication with the side Walks, without going on the grass, that there may be a dry Walk continued quite through the gardens; but there is not a more ridiculous sight than that of a straight gravel Walk, leading to the front of the house, intersecting the grass, so as to make it appear like the stiff formal grass plats frequently made in little court yards by persons of low taste.

Grass Walks in gardens were formerly in great esteem, and looked upon as necessary ornaments to a garden, but of late years they have justly been banished by every person of true taste; for those narrow slips of grass were very unsightly, and far from being ornamental, and for the most part useless, being generally too damp for persons of tender constitutions to walk upon; and whenever they were constantly used, they became bare in the places frequently trodden, so were rendered more unsightly; and as the intention of Walks in gardens is to have at all seasons a dry communication throughout the garden, for exercise and recreation, grass Walks were very improper, because every shower of rain made them so wet, as not to be fit for use a considerable time, and the dews rendered them too damp for use either in the morning or evening; and if the grass of Walks is not very fine and short like that of the downs, it will be very troublesome to walk upon; besides, whenever the ground is so dry, as that persons may with safety walk upon grass, the lawns and other parts of verdure in gardens are better adapted for use than any of those formal stiff walks which were so much esteemed in the last age.

Having given directions for the making of gravel Walks, I shall come next to treat of sand Walks, which are now very frequently made in gardens, as being less expensive in the making, and also in keeping, than the former; and in very large irregular gardens, which are such as most persons esteem, this is a very great article; for as the greatest part of the

Walks which are made in gardens are carried about in an irregular manner, it would be very difficult to keep them handsome, if they were laid with gravel, especially where they are shaded by trees; for the dripping of the water from their branches, in hard rains, is apt to wash the gravel in holes, and render the Walks very unsightly; and when these wood Walks are of grass, they do not appear sightly, nor are they very proper for walking on; for after rain they continue so long damp as to render them unfit for use, and the grass generally grows spiry and weak for want of air, and by the continual dropping of the trees, will by degrees be destroyed; therefore it is much better to lay these Walks with sand, which will be dry and wholesome; and whenever they appear mossy, or any weeds begin to grow on them, if they are scuffled over with a Dutch hoe in dry weather, and then raked smooth, it will destroy the weeds and moss, and make the Walks appear as fresh and handsome as if they had been new laid.

In the modern way of laying out gardens, the Walks are carried through woods and plantations, so that these are shady and convenient for walking in the middle of the day. These are usually carried about, winding as much as the ground will admit of, so as to leave a sufficient thickness of wood to make the Walks private; and that the persons who are walking in one part of them may not be seen by those who are in any of the other parts. Where these Walks are contrived with judgment a small extent of ground will admit of a great many turns, so that a person may walk some miles in a small garden. But these turns should be made as natural as possible, so as not to appear too much like a work of art, which will never please so long as the former.

The breadth of these Walks should be proportioned to the size of the ground, which in a large extent may be twelve or fourteen feet wide, but in small gardens five or six feet will be sufficient. There are some persons who allow a much greater breadth to their Walks than what I have assigned to the largest gardens, but as these Walks are supposed to be shaded by trees, so when they are made too broad, the trees must be planted close to the sides of the Walks; and then it will be a long time before they will afford a sufficient shade, if the trees are young. Therefore I imagine, the width here allowed will by most people be thought sufficient, especially as the walks are designed to wind as much as the ground will allow, because the wider they are, the greater must be the turns, otherwise the Walks will not be private for any small distance. Besides, as it will be proper to line the sides of these Walks with Honeysuckles, Sweetbriar, Roses, and many other sweet flowering shrubs, so the tall trees should be placed at least five or six feet from the Walk, to allow room for these. But as I shall particularly treat of the method of laying out Wildernesses, and planting of them, in such a manner as to render them as nearly resembling a natural wood as possible, under its proper head, I shall add nothing more in this place, except a few common directions for making of these sand Walks.

When the ground is traced out in the manner as the Walks are designed, the earth should be taken out of the Walks, and laid in the quarters. The depth of this must be proportioned to the nature of the soil; for where the ground is dry, the Walks need not be elevated much above the quarters, so the earth should be taken out four or five inches deep in such places; but where the ground is wet, the bottom of the Walks need not be more than two inches below the surface, that the Walks may be raised so high as to throw off the wet into the quarters, which will render them more dry and healthy to walk on.

After the earth is taken out to the intended depth, the bottom of the walks should be laid with rubbish, coarse gravel, or whatever of the like nature can be most readily procured. This should be laid four, five, or six inches thick, and beaten down as close as possible, to prevent the worms from working through it; then the sand should be laid upon this about three or four inches thick, and after treading it down as close



as possible, it should be raked over, to level and smooth the surface. In doing of this, the whole should be laid a little rounded to throw off the wet, but there will be no necessity of observing any exactness therein; for as the whole ground is to have as little appearance of art as possible, the rounding of these Walks should be as natural, and only so contrived, as that the water may have free passage from them.

The sand with which these Walks are laid, should be such as will bind, otherwise it will be very troublesome to walk on them in dry weather; for if the sand be of a loose nature, it will be moved with strong gales of wind, and in dry weather will slide from under the feet. If after these Walks are laid, they are well rolled two or three times, it will settle them, and cause them to be firm. If the sand is too much inclinable to loam, it will also be attended with as ill consequence as that which is too loose, for this will stick to the feet after every rain; so that where sand can be obtained of a middle nature, it should always be preferred.

In some countries where sand cannot be easily procured, these Walks may be laid with sea shells well pounded, so as to reduce them to a powder, which will bind extremely well, provided they are rolled now and then; but where neither of these can be easily procured, sea-coal ashes, or whatever else can be gotten, which will bind, and will be dry to the feet, may be used for this purpose; and where any of these can only be had in small quantities, the Walks should have a greater share of rubbish laid in their bottom, and these spread thinly over them; and in most places rubbish, rough stones, or coarse gravel, may be easily procured.

WALLS are absolutely necessary in gardens, for the ripening of all such fruits as are too delicate to be perfected in this country without such assistance. These are built with different materials; in some countries they are built of stone, in others with brick, according as the materials can be procured best and cheapest.

Of all materials proper for building Walls for fruit-trees, brick is the best; in that it is not only the handsomest, but the warmest and kindest for the ripening of fruit; besides that, it affords the best convenience of nailing, for smaller nails will serve in them than in stone Walls, where the joints are larger; and brick Walls, with copings of free-stone, and stone pilasters or columns, at proper distances, to separate the trees and break off the force of the winds, make not only the most beautiful, but the most profitable Walls.

In some parts of England there are Walls built both of brick and stone, which are very commodious. The bricks of some places are not of themselves substantial enough for Walls, nor are they any where so durable as stone; and therefore some persons, that they might have Walls both substantial and handsome, have built double ones, the outside being of stone, and the inside of brick, or a stone Wall lined with brick; but when these are built, there must be great care taken to bind the bricks well into the stone, otherwise they are very apt to separate one from the other, especially when frost comes after much wet, which swells the mortar, and frequently throws down the bricks when the Walls are only faced with them, and not well tied into the stone.

Where the Walls are built entirely of stone, there should be trellisses fixed up against them, for the more convenient fastening the branches of the trees: the timbers of these espaliers need not be more than an inch and a half thick, and about two inches and a half broad; these should be fixed cross each other, at about four inches distance; for if they are at a much greater distance, it will be difficult to fasten the shoots of the trees properly. As this trellis will be laid close to the Wall, the branches of the trees will lie about two inches from the Wall, in which position the fruit will ripen better than when it lies quite close to the Wall; so that where stone Walls are built, there should always be these espaliers framed against them, which will render these Walls very good for fruit trees, which, with-

out the espaliers, seldom are found to answer the purpose of ripening the fruits well, besides the inconvenience of having no good fastening for the branches of the trees.

There have been several trials made of Walls built in different forms; some of them having been built semicircular, others in angles of various forms, and projecting more towards the north, to screen off the cold winds; but there has not been any method as yet which has succeeded near so well, as that of making the Walls straight, and building them upright.

The fairest trial which I have seen made of circular Walls, was at Goodwood in Sussex, the seat of the Duke of Richmond, where, in the middle of two fourth Walls, there were two large segments of circles, in which were the same sorts of fruit-trees planted, as against the straight parts of the Walls; but there never was any fruit upon the trees in the circular part of the Walls, which came to maturity; nor were the trees of long continuance, being blighted every spring, and in a few years were totally destroyed; and when the branches of those trees which grew upon the straight parts of the Walls, had extended themselves so far, as to admit of their being led into the circular parts of the Walls, they were constantly blighted and killed.

When the trees which had been planted in the circular parts were destroyed, the Walls were filled with Vines; but the Grapes of the same sort were a full month later than those growing against the straight parts of the Walls, so that they rarely ripened, which occasioned their being rooted out, and Figs were afterwards planted, but the fruit of these succeeded little better; nor can it be supposed that any trees or plants will thrive so well in these circles, where there is a constant draught of air round them, which renders the situation much colder than the open free air.

I have also seen at Mr. Le Cour's garden in Holland, some Walls built in angles of different forms, but these succeeded no better than the circles before-mentioned; for I did not find one tree in health against the Walls, nor did they produce fruit.

There are several other schemes which have been proposed by different persons, for the building of Walls to accelerate the ripening of fruits; among which there was a very ingenious book written some years ago, intitled, *Fruit Walls improved*, by inclining them to the horizon; in which the author has shewn by calculation that there will be a much greater number of the rays of the sun fall upon such Walls, than upon those which are built perpendicular; and from thence he has drawn calculations, that Walls so built will be of great service in the accelerating of fruit; and he has taken the trouble of calculating the different inclinations which such Walls should have in the different climates, in order to receive the greatest number of the sun's rays. This theory seems to have all the demonstration necessary for its support, but upon trial they have not succeeded in the least; for as these Walls must be built against banks of earth, the damps which arise from the ground overbalance the advantage of the sun's rays; besides, these sloping Walls being more exposed to the cold dews in the night, the fruit will be much more chilled thereby; and in the spring the morning frosts will prove much more destructive to the tender blossoms of the fruit-trees, as they will be more exposed to them, than against an upright Wall; add to this, their being much more exposed to the winds and the rain; and it will be found, by comparing the advantages proposed from these Walls, with the disadvantages to which the fruit-trees will be exposed, that upright Walls will have the preference; for it is not the strongest rays of the sun in the heat of summer, which are so much wanting for ripening of fruit, as the continuance of a moderate share of warmth; and above all, the having of the sun in a morning, to dry off the cold dews of the night early, is of the greatest use; and in this respect the upright Walls are much preferable to the sloping, as they will have the direct rays of the sun in the morning, which will be oblique on the other, and renders those Walls which are built inclining to the east preferable to



South Wales, as the fruit will always ripen earlier against them.

There are some persons who recommend the painting of Walls black, or of a dark colour, as they suppose the dark colour will imbibe more of the sun's rays, so will retain the warmth longer; this also answers better in theory than in practice; for although it must be allowed that a black Wall is warmer to the touch than a common brick Wall, yet, as the fruit generally is situated at a small distance from the Wall, it receives no benefit from the warmth of the Wall, and it is the reflected heat which accelerates the ripening of fruit; therefore I would advise every one to make fair trials of these things, before they put them in practice, and not to take upon trust what they may be told by persons who are too sanguine in recommending to others schemes which they have adopted upon very slight principles, or perhaps upon a single trial; this painting of the Walls is recommended by the same person who wrote upon inclining Walls, and he has proposed this upon the same principles; but the introducing of these schemes should be avoided, until there have been sufficient trials made to warrant their use.

Where persons are willing to be at the expence, in the building of their Walls substantial, they will find it answer much better than those which are slightly built, not only in their duration, but also in their warmth; therefore a wall two bricks thick, will be found to answer better than one brick and a half; and if in the building of garden walls they are grouted with soft mortar, to fill and close all the joints, the Walls will be much stronger, and the air will not so easily penetrate through them, as it does through those which are built in the common way.

According to the modern taste in gardening, there are very few Walls built round gardens, which is certainly very right, not only with regard to the pleasure of viewing the neighbouring country from the garden, but also in regard to the expence, 1. Of building these Walls; 2. If they are planted with fruit, as is frequently practised, to maintain them will be a constant charge, without receiving much profit or pleasure; for when there is too much Walling planted with fruit-trees, they are seldom taken much care of; so that the quantity of fruit produced will be small, and that ill-nourished and bad tasted, therefore the quantity of Walling should be proportioned to the fruit consumed in the family; but as it will be necessary to inclose the kitchen-garden for the security of the garden stuff, so if that be walled round, it will contain as much fruit as will usually be wanted in the family; because the kitchen-garden is always proportioned to the number of persons maintained; but if the quantity of Walling which surrounds the kitchen-garden should be judged too little for the supply of fruit, there may be a cross Wall built through the middle of the kitchen garden; or, where the size of the garden will admit, there may be two cross Walls built; but this must not be done where there is not room to place the Walls at least eighty or one hundred feet asunder; and if they are allowed a much greater distance it will be better; and as the kitchen-garden should always be placed out of sight from the house, the Walls may be hid by plantations of trees, at some little distance, which will be of use in sheltering the fruit.

The best aspect for Walls in England is, to have one point to the eastward of the south, for these will enjoy the benefit of the morning sun, and will be less exposed to the west and south-west winds (which are very injurious to fruits in England) than those Walls which are built due south. I know there are many persons who object to the turning of Walls the least point to the east, on account of the blights which they say come from that quarter in the spring; but from many years experience and observation I can affirm that blights as often attack those Walls which are open to the south-west, as those which are built to any other aspect; and I believe, whoever will be at the trouble to observe for seven years, which aspected Walls suffer most from blights, will find those which are built with a point to the eastward of the south, as seldom blighted, as those which are turned to any

other aspect; therefore, in the contrivance of a kitchen-garden, there should be as great length of these Walls built, as the situation of the ground will admit.

The next best aspect is due south, and the next to that south-east, which is preferable to the south-west, for the reasons before assigned; but as there will, for the most part, be south-west, and west Walls in every garden, these may be planted with some sorts of fruit, which do not require so much heat to ripen them, as those designed for the best Walls; but wherever there are north Walls, those will only be proper for baking Pears, Plumbs and Morello Cherries for preserving, or some Duke Cherries may be planted against these Walls, to continue them longer in the season, which will be found useful in supplying the table till Peaches, Nectarines, and Plums, are ripe.

Where persons are very curious to have good fruit, they erect a trellis against their Walls, which projects about two inches from them, to which they fasten their trees; which is an excellent method, because the fruit will be at a proper distance from the Walls so as not to be injured by them, and will have all the advantage of their heat; and by this method the Walls will not be injured by driving nails into their joints, which by every year being drawn out, draws out the mortar from between the bricks, and thereby makes holes, in which snails and other vermin will harbour and destroy the fruit, and the Walls will be also greatly impaired.

These trellisses may be contrived according to the sorts of fruit which are planted against them. Those which are designed for Peaches, Nectarines, and Apricots (which, of the most part, produce their fruit on the young wood) should have their rails three, or at most four inches asunder every way; but for the other sorts of fruit, which continue bearing on the old wood, they may be five or six inches apart, and those for Vines may be eight or nine inches distance. For as the shoots of Vines are always trained at a much greater distance than those of any other sort of fruit, the trellisses for these need not be near so close, especially as those must for Peaches and Nectarines, whose shoots are generally shortened to about five or six inches or less; so that if the rails are not pretty close, many of the short branches cannot be fastened to them.

These trellisses may be made of any sort of timber, according to the expence which the owner is willing to bestow; but Fir is most commonly used for this purpose, which if made of yellow deal, well dried and painted, will last many years; but if any person will go to the expence of Oak, it will last found much longer, especially if the trees are fallen in winter. And if any one is unwilling to be at the expence of either, then a trellis may be made of Ash poles, in the same manner as is practised in making espaliers for counter borders, with this difference only, that every fourth upright rail or post should be very strong, and fastened with iron hooks to the Wall, which will support the whole; and as these rails must be laid much closer together, than is generally practised for espaliers, these strong upright rails or posts should not be farther distant than three, or at most four feet from each other. To these the cross rails which are laid horizontally should be well nailed, which will secure them from being displaced, and also strengthen the trellis, but the other smaller upright poles need only be fastened with wire. To these trellisses the shoots of the trees should be fastened with osier twigs, rope-yarn, or any other soft bandage, for they must not be nailed to it, because that will decay the wood-work.

These trellisses need not be erected until the trees are well spread, and begin to bear fruit plentifully; before which time the young trees may be trained up against any ordinary low espaliers, made only of a few slender Ash poles, or any other slender sticks; by which contrivance the trellisses will be new when the trees come to bearing, and will last many years after the trees have overspread them; whereas, when they are made before the trees are planted, they will be half decayed before the trees attain half their growth.

Where



Where these trellisses are intended to be made against new Walls, it will be proper to fasten some strong iron hooks into the Wall as it is built, at the distance which the upright posts are intended to be placed; because when these are afterwards driven into the Wall, they displace the mortar in the joints, and injure the Wall. In the building of the Walls round a kitchen-garden, the insides which are designed to be planted with fruit-trees should be made as plain as possible, so that the piers should not project on those sides above four inches at most; and these should be placed about fourteen feet asunder, in such Walls as are designed for Peach and Nectarine-trees; so that each tree may be planted exactly in the middle between the piers, which will render them more slightly, and be better for the trees; but where Apricots, Plumbs, or Cherries are to be planted, the piers may be only ten feet asunder; and against every other pier the trees should be planted, which will allow them sufficient room to spread; as the trellis will project as forward as the piers, the branches of the trees may be trained on a plain; but when the piers project no more on the inside of the garden, they should be built stronger on the outside, for the better supporting of the Walls.

The usual thickness which garden Walls are allowed, if built with bricks, is thirteen inches, which is one brick and a half, but this should be proportionable to the height; for if they are built twelve or fourteen feet high or more, as is often practised, then the foundations of the Walls should be at least two bricks and a half thick, and brought up a foot or more above the level of the surface of the ground, of the same thickness; then they should be set off two inches on each side, which will reduce them to two bricks; and five or six feet above the surface of the ground, they may be diminished on each side, to reduce them to the thickness of a brick and a half; which must be continued to the top of the Walls, and the piers in these high Walls should also be proportionably stronger than is commonly allowed to lower Walls; for as these will be much more exposed to strong gales of wind, if they are not well built, they will be in danger of being blown down; therefore the piers of these Walls should be projected the length of a brick on their back-side, and the thickness of a brick on their front; and if these are built about ten or twelve feet asunder, they will greatly strengthen the Walls.

But there is no necessity for building Walls higher than nine or ten feet, unless it be for Pears, which, if properly managed, will spread over a great compass of walling; but as only some of the latest winter Pears require the assistance of a Wall, there need no more but that part of the Wall where these are designed to be built higher; for Peaches and Nectarines never require a Wall higher than nine or ten feet, provided they are rightly managed; because whenever they are carried to a greater height, the lower part of the Wall is unfurnished with bearing branches; and although Apricots, Plumbs, and Cherries will frequently grow higher, yet if they are planted at a proper distance, and the branches trained horizontally from the bottom, they will not soon cover a Wall of this height; and Vines may be kept as low as any sort of fruit, for when they are planted against low Walls, they must be treated somewhat after the same manner as those in vineyards, which is, to cut out the greatest part of the wood which produced fruit the preceding year, and train in new shoots for the next year's bearing, which are rarely left a yard in length, therefore will not require very high Walls.

If the Pears which are designed to be planted, are allowed a south-west aspect, on which they will ripen very well, then the Wall to this aspect should be built fourteen feet high or more; for as these trees spread very far when on free stocks, they should not be shortened and stopped in their growth, which will prevent their bearing, by causing them to send out a great number of gross luxuriant shoots, which will never produce fruit; therefore these should never be planted amongst other sorts of fruit-trees which are of less growth, because then the Walls must appear very unsightly in having some trees planted more than

double the distance which the others require; so that there is no other sort of fruit which requires the assistance of Walls to ripen their fruit; which need so great room for spreading as Pears; except it be Figs, a few trees of which may be planted against the same Walls where there is room; though these may be planted against the back Walls of offices or stables, where there is conveniency; because this fruit is seldom coveted by servants; and being planted in places which are much frequented, they will not be in so much danger of being destroyed by birds, as those which are in private places. But I shall now proceed to give some directions for the building of hot Walls, to accelerate the ripening of fruits, which is now pretty much practised in England.

In some places these Walls are built at a very great expence, and so contrived as to consume a great quantity of fuel; but where they are judiciously built, the first expence will not be near so great, nor will the charge of fuel be very considerable, because there will be no necessity of making fires more than three or four months, beginning about the middle or latter end of January, and ending by the end of May, when there will be no want of fires, if the glasses are close shut every night, or in bad weather; for half an hour's sun-shine on the glasses at that season will sufficiently warm the air inclosed in the glasses, for the growth of any of our European fruits.

There are some persons who plant Vines, and other fruit-trees by the sides of stoves, and draw some of their branches into the stove, in order to obtain early fruit; but this is by no means right, where the stove is designed for Ananas, because the air must be kept much warmer for them than is required for any of the other fruits, so that they can never succeed well together; for when there is only a sufficient quantity of air admitted for the growth of the other fruit, the Ananas are starved for want of proper heat; and so on the contrary, when the stove is kept up to the proper heat for the Ananas, it will be too hot for other fruits; and it will also be proper to have the Vines on a particular Wall by themselves, because these require to have a greater share of air admitted to them when they begin to shoot, than some other sorts of fruit, so that it is by much the better method to have them separate.

The ordinary height of those hot Walls is about ten feet, which will be sufficient for any of those sorts of fruits which are generally forced; for by forcing of the trees, they are commonly weakened in their growth, so that they will not grow so vigorously as those which are always exposed to the open air; and where there is not a quantity of Walling planted sufficient to let one part rest every other year, the trees will never be very healthy, and will last but a few years. The quantity of Walling to produce early fruit for a middling family cannot be less than eighty or one hundred feet in length; therefore where a person is desirous to have the fruit in perfection, and the trees to continue in a good condition many years, there should be three times this quantity of Walling built; so that by dividing it into three parts, there will be two years for the trees to recover their vigour between the times of their being forced, whereby a greater quantity of bearing wood may be obtained, and the fruit will be fairer, and in larger quantities, than when they are forced every year, or every other year; and as the glasses may be contrived so as to move from one to the other, the expence of building the Walls so much longer, will not be very great, because the frames and glasses will be the same as for one year's fruit.

The foundations of these Walls should be made four bricks and a half thick, in order to support the flues; otherwise, if part of them rest on brick-work, and the other part on the ground, they will settle unequally, and soon be out of order; for wherever there happen any cracks in the flues, through which the smoke can make its escape, it will prevent their drawing; and if the smoke gets within the glasses, it will greatly injure the fruit, and give it a smoky taste.

This thickness of Wall need not be continued more than



than six inches above the ground, where should be the foundation or bottom of the first flue, which will be sufficient to raise it above the damps of the earth; then the Walls may be set off four inches on each side, which will reduce it to the thickness of three bricks and a half, so that the back Wall may be two bricks thick, which is absolutely necessary to throw the heat out more in front; for when the back Walls are built too thin, the heat will escape through them. The Wall in front next to the fruit, should be only four inches thick, whereby there will be allowance of nine inches for the flues, which may be covered with twelve inch tiles; for if they have an inch and a half bearing on each side, it will be sufficient. The ovens in which the fires are made, must be contrived on the backside of the Walls, which should be in number proportionable to the length of the Walls. The length usually allowed for each fire to warm is forty feet, though they will do very well for fifty feet; but I would not advise the flues to be longer than this to each fire, because when the ovens are made at a great distance, there is a necessity of making the fires so much stronger to warm the Walls, which will occasion the heat to be too violent near the fires. These ovens should be shedded over to keep out the wind and rain, otherwise the fires will not burn equally. Some people make these sheds of timber, but it is much better to build them of brick, and tile them over, because the wooden sheds will in a few years decay, and afterwards be a constant charge to keep them in repair; and besides they may be in danger of firing, if great care is not constantly taken of the fires. As it is absolutely necessary to have the ovens below the foundation of the first flues, there must be steps down into the sheds, to come to the mouth of the ovens to supply the fuel, therefore the sheds should not be narrower than eight feet in the clear; for as the steps will require four feet space, there should be at least four feet more for the person who attends the fire, to have room to turn himself to clear out the ashes, and to put in the fuel. Where the length of Walling requires two ovens, it will be proper to have them in the middle included in one shed, which will save expence, and allow more room to attend the fires; for in this case the sheds must be at least ten feet long, and they need not be more than six in breadth. The steps down into these should be at one end, so that the door opening into the sheds will not be opposite to the mouths of the ovens, therefore the fires will burn more regular; for whenever the doors are contrived to front the mouth of the ovens, if the wind sets directly against them, it will cause the fire to burn too fiercely, and the fuel will be soon consumed.

These ovens may be contrived in the same manner as those which are already described for stoves, wherefore I shall not repeat it again in this place; but must observe, that when the two ovens are joined together, there should be a partition Wall at least three bricks thick between them, otherwise the fires will soon destroy it; and if there should be the least hole in the Wall, through which the smoke of the two fires can communicate, it will prevent their drawing.

The lower flue through which the smoke first passes from the fire, may be two feet and a half deep: therefore the back Wall should be at least two bricks and a half thick, as high as to the top of this flue; and then it may be set off to two bricks, which must be continued to the top of the Wall. The second flue, which should return over the first, may be made two feet, the third a foot and a half, and the fourth one foot deep; which four flues, with their coverings, will rise near eight feet in height; so that there will be about two feet left for fixing of the frames at the top to support the glasses, and for the coping of the Wall. And these four returns will be sufficient to warm the air in the frames, for the smoke will have lost its heat by the time it has passed thus far.

In the carrying up of these Walls, there should be some strong iron hooks fastened at convenient distances which should project about two inches from the Wall, to which the trellis must be fastened which is to sup-

port the trees. These hooks should be long enough to fasten into the back Wall, for the Wall in front being but four inches thick, will not be strong enough to support the trellis; but in placing of them care should be taken not to lay them cross the middle of the flues, because they would obstruct the clearing the flues of soot whenever there should be occasion; so that the best way is to lay them just under the tiles which cover each flue, at about three or four feet asunder, which will be near enough, provided the hooks are made sufficiently strong. As the flues must be well pargetered with loam on their inside, so likewise should the loam be spread under the tiles which cover them, to the thickness of the hooks, that the flues may be very smooth, otherwise the soot will hang to the iron hooks and stop the smoke from passing. It will be very proper to cover these flues on the side next the trellis with hop-bags, or some such coarse cloth, in the manner as hath been directed for the stoves, which will make them so tight that no smoke will find its way into the frame, which, without this covering, it is very apt to do through the joints of Walls, especially when they are so thin as these must be built; and this covering will also strengthen the Wall of the flues, and join the whole work together. If at each end of these flues there are small arches turned in the back Walls, in such a manner that there may be holes opened to clean the flues of soot whenever there is a necessity for it, the trouble will be much less than to open the flues in front, by which there will be no damage done to the trees, nor will the flues be in the least injured by this, which they must be, when they are opened in front.

The borders in front of these hot Walls should be about four feet wide, which will make a sufficient declivity for the sloping glasses; and in these borders there may be a row of Dwarf Peas planted to come early, or a row of dwarf Kidney-beans, either of which will succeed very well; and if they are not planted too near the trees, will not do them much injury. On the outside of these borders should be low Walls erected, which should rise four or six inches above the level of the borders, upon which the plate of timber should be laid, on which the sloping glasses are to rest; and this Wall will keep up the earth of the border, and also preserve the wood from rotting.

The glasses which are designed to cover these Walls, must be divided into two ranges, for as they must reach from the ground-plate (just above the level of the border) to almost the top of the Wall, they will be more than twelve feet long, which will be too great a length for single frames, which when they are much more than six feet long, are too heavy to move, especially if the frames are made of a proper strength to sustain the glass. These frames should be contrived in such a manner, as that the upper row may slide down; and by making on one side three small holes in the wood-work which supports the frames, at about a foot distance, and having a small iron pin to fix into them, the top glasses may be let down one, two, or three feet, according as there may be occasion to admit air. The lower row of glasses may be contrived so as to take easily out; but as they must lie sloping, and the upper row must bear on them, they cannot be contrived to slide upwards; nor indeed will there be any occasion for their moving, because it is much better to let the air in at the top, than in the front of the trees.

The sloping timbers which are to support the glass frames must be fastened at bottom into the ground-plate in the front of the border, and at the top into strong iron cramps fixed in the upper part of the Wall for that purpose. These timbers should be made of Fir, which will not twist, as Oak and some other wood will, where it is laid in such position. They must be made substantial, otherwise they will not last many years, especially as they are designed to be moveable. On the top of these should be fixed a strong board, under which the upper row of glasses should slide. The use of this board is to secure the upper part of the glasses from being raised by the winds, and also to keep the wet from getting to the trees; therefore



therefore it should be joined as close as possible to the Wall, and should project about two inches over the glass frames, which will be enough to throw the wet on the glasses, and likewise to secure them fast down.

The breadth of these frames for the glasses may be about three feet or a little more, according as the divisions of the length of the Wall will admit; for a small matter in their width is of no consequence, provided they are not too wide to be easily moved; for when they are wider than a man can easily reach his arms to manage, they will be very troublesome to carry from one place to another. The bars of these frames, which are to support the glass, should be placed lengthwise of the frames; for when they are placed across, they stop the moisture which is lodged on the inside of the glasses, and cause it to fall in drops on the borders at every bar, which will be very injurious to any plants which are put there; and if it falls on the trees will greatly damage them, especially when they are in blossom. The lead into which the glasses of these frames are fixed, should be very broad, and the joints well cemented, otherwise the wet will find an easy passage through, and do great damage to the fruit.

At each end of the range of glasses, there will be an angular space between the glasses and the Wall, which must be closely stopped to prevent the air from getting in, which might greatly injure the fruit. These are by some persons closely boarded up; but if they are closed with glasses, so contrived as to open to let in air at proper times, it will be of great advantage; because when the wind may be strong against the front-glasses, one or both of these end-glasses may be opened, according to the warmth of the air inclosed, which will be often very useful to cool the air, and to admit a small quantity of fresh air to the fruit.

The sorts of fruit which are usually planted for forcing, are Cherries, Plums, Peaches, Apricots, and Nectarines, but the last-mentioned rarely succeed well, nor will the trees continue long, so that they are scarce worth planting against hot Walls. As for the Vines, I would propose they should be planted by themselves against a particular Wall; for as they will require more air to be admitted to them when they begin to shoot, than any of the above-mentioned fruits, they will not all succeed if they are included in the same frame. As to the others, they will do very well in the same border, and will demand the same temperature of warmth. The best of these sorts to plant against these hot Walls, are those here mentioned:

Cherries.

The Early May, and May Duke.

Plums.

The Mirabelle.

The Early Black Damask, or Morocco.

The Great Damask Violet of Tours.

The Drap d'Or.

Peaches.

The Red Nutmeg.

The Red Magdelain.

The Montauban.

Early Newington.

Violet Hative.

Nectarines.

Fairchild's Early Nutmeg.

The Elruge.

Apricot.

The Masculine.

These being the sorts which ripen early, are the most proper to plant against these Walls, although they are not so valuable as some other sorts of these fruits; yet, as they naturally ripen three weeks or a month earlier in the season, they will be very early ripe, when they are brought forward by artificial warmth.

In the preparing of the borders for planting these fruit-trees, there should be the same care taken as for those against open borders, which, being fully treated of in another part of this work, I shall not repeat

here. There must also be the same care in training up the trees when they shoot; but the trellises need not be made against these Walls till the trees are grown large enough to spread, and produce a quantity of fruit; till which time they may be supported by any low ordinary trellis, which will do very well till the time that the trees will have strength enough to force, which will not be until the fourth or fifth year after planting, according to the progress they have made; for if they are forced too young, it will weaken them so much, as that they seldom make vigorous trees afterward; besides the quantity of fruit which such young trees produce, is not worth the expence and trouble of forcing; for the quantity of fuel used, and the trouble will be the same for small trees, which are not capable of producing more than six or eight fruit each, as for those trees, which may produce three or four dozen; so that the greater time the trees have to grow before they are forced, the better they will pay for the trouble and expence.

But it will be the best way not to have any of the frames made, nor the trellis, or any other of the wood-work, until the trees are strong enough to force; for if these are done when the Walls are first built, as is by some persons practised, they will be half decayed before there is any use for them; but then the persons who are employed in making the trellis, must be very careful in putting it up, not to injure the trees.

When the trees have acquired strength enough to produce a quantity of fruit, the part which is designed to be forced the following spring, should be carefully pruned early in autumn, when the very weak shoots must be either entirely cut out, or pruned very short, because these, by being forced, will for the most part decay; and though some of them may be full of flower-buds, yet these shoots being weak cannot nourish them; so that the flowers having exhausted all the sap, the shoots will die soon after, and rarely produce any fruit, or at least do not bring them to perfection. The other more vigorous shoots should also be shortened to a proper length, after the same manner as is directed for those trees in the open air, with this difference only, viz. that these which are designed for forcing, should not have their shoots left so long, because the forcing of them will weaken them; and consequently, should there be as great a length of branches, there will probably be a greater number of fruit on them; because, as these will be screened from the open air they will not be liable to blasts, or the injuries of the frost; and the having too many fruit on the trees will render them small, and also too much weaken the trees; then the shoots should be all regularly fastened to the trellis, at a proper distance from each other, so that when the branches shoot the following spring, they may not over-hang each other. The reason for my advising these trees to be pruned so early in the season, is, that those branches which are left on, may enjoy the whole nourishment of the sap, so that the buds will become very turgid during the winter season, and will be prepared to open when the fires are set to work.

The time for beginning to make the fires is about the middle or latter end of January, according as the season is more or less favourable; for if the trees are forced too early into flower, they will be in some danger of miscarrying, if the weather should prove severe; so that it is by much the surest method to begin about the time here directed, because there will be a necessity of admitting fresh air to the trees when they are in flower, which cannot be done safely when they flower in very bad weather. And those trees which are forced into flower by the middle of February, will ripen their fruit as early as most people will desire to eat them; for the Cherries will ripen early in April, and the Apricots by the beginning of May, and soon after the Plums, Peaches, and Nectarines, will be ripe.

There are some persons who plant Strawberries in their borders before the fruit-trees, in order to have early fruit, which often succeed very well; but wherever this is practised, great care should be taken to



keep them from spreading over the border, because these plants will exhaust the principal goodness of the earth, and thereby injure the trees; so that when it is designed to have Strawberries in these borders, I would advise, that the roots should be either planted in pots, or singly at a good distance on a shady border of loamy earth, one year before they are designed to be forced; during which time the runners should be diligently pulled off, to encourage the main roots for fruiting; and at Michaelmas these plants may be transplanted, with large balls of earth to their roots, into the borders, before the fruit-trees which are to be forced the following spring, so that they may have time to get new root before that season; and if these plants are carefully watered when they begin to shew their flower-buds, they will produce a good quantity of fruit, which will ripen the latter end of april, or the beginning of may; but then I would also advise, that these plants be taken away as soon as they have done bearing, that they may not rob the trees of their nourishment.

Since I have mentioned this method of having early Strawberries, I shall take the liberty to insert another method, which is often practised to obtain this fruit early in the spring, though it doth not so properly come under this article, which is to train up the plants either in pots or borders, after the manner before directed, for at least one year or more; then in the beginning of february there should be a moderate hot-bed prepared, in length proportionable to the number of plants designed to be forced, and the breadth should be proportionable to the width of the frames which are designed to cover them. These frames may be such as are used for common hot-beds, to raise early Cucumbers, &c. This hot-bed must be covered with fresh loamy earth about eight inches thick, into which the Strawberry plants should be placed, with large balls of earth to the roots, as close as they can conveniently be planted; (for as they must be kept clear from runners, they will not spread much during the time they remain in the bed, which will be no longer than until their fruit is gone.) Then they should be gently watered to settle the earth to their roots, which must be frequently repeated as the earth becomes dry, otherwise they will produce no fruit. While the nights continue cold, the glasses of the hot-bed should be covered with mats, to preserve a kindly warmth in the beds; but in the day time, when the weather is favourable, the glasses should be raised to admit fresh air to the plants; for if they are too much drawn, (especially when they begin to flower) they will not produce much fruit. If the season should continue long cold, and the heat of the bed should decline, it will be proper to lay some fresh hot dung round the sides of the beds to renew their heat, being always careful not to make them too hot, for that will scorch their roots and prevent their fruiting. If the plants which are planted in these beds are strong, and in a good condition for bearing, and care be taken in transplanting of them to preserve good balls of earth to their roots, as also to keep a due temperature of warmth in the beds, they will produce ripe fruit by the end of april, or the beginning of may, in plenty; and will continue bearing, until some of those in the open air come in to succeed them.

The best kinds of Strawberries to plant for forcing, are the Scarlet and Alpine, for the Hautboys grow too rampant for this purpose.

But to return to the subject of hot Walls; what I have here inserted concerning the forcing of fruits, has been only to obtain these fruits earlier in the season, than they would naturally ripen against common Walls. But in some parts of England, where most of our good kinds of fruits seldom ripen, it might be very well worth while to build some of these Walls, to obtain good fruit from the best kinds of Peaches, Plums, &c. especially in such places where fuel is plenty, because there the expence will not be great after the first building the Walls. For I would not propose to have coverings of glass, excepting for a small proportion of the Walls; the rest may have frames of canvas, or oiled paper, to shut over them, in the

same manner as the glasses are contrived, which will succeed very well where proper care is taken; for as there will not be occasion to cover these trees until the beginning of march, at which time also the fires must be made; so before the trees are in flower, the weather may be frequently warm enough to open the covers to admit sun and air to the trees in the middle of the day; for if these covers are kept too closely shut, the shoots of the trees will draw very weak, and their leaves will turn pale for want of light and air. And as the design of these contrivances is only to bring the trees into flower three, or at most four weeks earlier, than they would naturally come against common Walls, there will be no necessity of making very large fires, or keeping the covers too closely over the trees.

Instead of canvas for these covers, oiled papers may be used, which should be done in the manner directed for raising of Melons, by pasting as many sheets of paper together, as will fit the frames on which they are to be fixed; and when the paste is dry, the paper should be fastened into the frames, and then the oil rubbed over on the outside with a brush, which will soak through the paper, and when the paper is dry, the covers may be used. This paper will last very well one season, and the expence of repairing it will not be very great; wherefore these are to be preferred to the canvas, because all sorts of plants will thrive much better under them, than they will under canvas, or any other close covering, which will not admit the rays of the light so well through to the plants. The frames designed for either canvas or paper may be made much slighter than those for glass, because these being very light, will not require so much strength to support them; and if these are well painted, and every year when their use is over, carried into shelter, they will last a long time, for they will not be wanted abroad longer than three months, viz. from the beginning of march to the end of may; for after this time the fruit will not require any covering, the trees being then full of leaves, and the young shoots will by that time have made such progress, as to become a good defence of the fruit; but these covers should not be too suddenly taken away, but by degrees the trees should be inured to the open air, otherwise the change will be too great, and may occasion most of the fruit to fall off, especially if cold nights should follow.

By this method gentlemen may be supplied with most of the best kinds of fruit in the northern parts of England, where without some such care, they cannot expect much good fruit in their gardens. And as coal is in great plenty in those places, the expence will be very little; therefore I am surprised that most of the gentlemen who live in the north, do not put this method in practice. That there are some few of these Walls built in the north is well known, but then they are chiefly designed to produce a little early fruit, more for curiosity than any real use; and these Walls are, for the most part, so ill contrived, that four times the fuel is expended, as will be requisite when the Walls are built after the manner here directed; and where the heat is not pretty equally distributed through every part of the Wall, some of the trees will have too much heat, while others will have little benefit from the fires.

There are some persons who build their hot Walls in such a manner, as to have the greatest heat under the border, near the roots of the trees, supposing there is a necessity for heat to the roots, as well as the branches; but this is a great mistake, for the fires must greatly injure the roots of the trees, by drying up the moisture of the earth, as also in scorching the tender fibres of those roots which lie near them; therefore this practice should not be continued, for it is much the better method to elevate the first flue nine inches or a foot above the level of the border, according as the ground is dry or wet, than to place it the least below ground, which will only dry the earth, and not warm the air about the trees, which is the only use of artificial heat; for it is very commonly practised to draw a branch of a Vine, or other fruit-



fruit-tree, into a stove, which branch will produce its fruit as early as if the whole tree had been forced; when at the same time, all the other branches of the same tree, which are exposed to the open air, will not be the least forwarded, though they are all nourished by the same root; which is a plain proof, that there is no necessity for adding any warmth to the roots of fruit-trees, to have their fruit earlier or better ripened.

I have also heard of some Walls which have been built for forcing of fruit, with one continued chasm from their bottoms to the top, so that they have been like double Walls, with places at proper distances to make the fires; but these can be of little use, for if the Walls are open at their tops to let out the smoke, the heat will also escape with it; because if the smoke be not led about three or four times in flues in order to warm the bricks, the heat will pass off at the top, without doing much service to the trees.

Where the Walls are planted with the best kinds of fruit, which are designed to ripen them in perfection, if the autumns should prove cold, or very wet, before the fruit is ripe, it will be proper to put the covers over the trees; and if there are some slow fires made to dry off the damps, it will be of great use to prevent the fruit from growing mouldy, and to hasten the ripening; but when this is practised, the covers should be taken off, whenever the weather will admit of it, that the fruit may enjoy the benefit of the free air, without which it will be insipid or ill-tasted. Although in the former directions for forcing trees in order to have early fruit, I have advised, that such trees should have one or two years rest in order to recover vigour, yet that is not to be understood of these trees, which are only designed to be brought forward enough to produce their fruit in perfection; for as the fires are not designed to be made till the beginning of march, the trees will not be weakened thereby, because they will be inured to the open air long before their fruit is ripe, and will have time to ripen their shoots, and form their buds for the next year's bearing; therefore these trees may be thus forced every year, without doing them much injury, provided they are carefully managed.

In forcing of fruit-trees people generally hang up thermometers under their glasses, for the better adjusting the heat and regulating the fires; but when this is practised, they should be hung where the sun can never shine on them, for one hour's sun-shine upon the ball or tube of the thermometer, in the spring of the year, will so much rarefy the spirits, that they will rise to the top of the tube, when, at the same time, the circumambient air may not be much more than of a temperate heat; but as the principal use of these thermometers is to regulate the fires, they are seldom of much use in the day time; because if there be only one hour's sun-shine in the day on the glasses, it will warm the air sufficiently for the production of European fruits, without any additional heat; wherefore there will rarely be occasion for continuing of the fires in the day, unless the weather should prove very bad. And if, by the fires in the night, the air is warmed to the temperate point marked on the botanic thermometers, the fruit will thrive much better than in greater heat.

There are some persons near London, who make it their business to raise early fruit to supply the markets, which they perform by the heat of dung only, having no fire-walls in their gardens. The method which these people follow, is to have a good quantity of new dung laid in a heap to warm (after the same manner as is practised for making of hot-beds.) When this dung is in a proper temperature of heat, they lay it close on the back side of their fruit Wall, about four feet thick at the bottom, and sloping to about ten inches or a foot thick at the top. This dung should be gently beat down with a fork to prevent the heat going off too soon, but it should not be trodden down too hard, lest that should prevent its heating. The outside of the dung should be laid as smooth as possible, that the wet may run off more easily; and if there is a covering of thatch, as is sometimes practised, it

preserves the dung from rotting too soon, whereby the heat is continued the longer. The time for laying this dung to the back of the Wall is somewhat later than for making the fires, i. e. about the middle of february. The first parcel of dung will continue warm about a month or five weeks, when there should be a supply of new dung prepared, and the old taken quite away, or mixed up with this new dung, to renew the heat, which, if it works kindly, will be sufficient to last the season. These Walls are covered with glasses or oiled paper, in the same manner as the fire Walls, and the trees must be treated in the same way; but there must be more care taken to open the glasses against these Walls, whenever the weather will permit, otherwise the steam of the dung will occasion a great dampness through the Wall, which, if pent in about the trees, will be very pernicious to them, especially at the time they are in flower.

By this method some gardeners have forced long Walls filled with old well-grown fruit-trees, which have produced great quantities of fruit annually, which has well answered their expense; but as, in many parts of England, it will be very difficult to procure a sufficient quantity of new dung for this purpose, therefore fire Walls are most useful, and least expensive in such places.

I have seen in some places long timber fences erected to force fruit-trees, by laying new dung against the back side, in the same manner as is practised for the Walls, but these are by no means proper, because the steam of the dung will easily get through every little crack or joint of the boards, to the great prejudice of the trees; besides, these boards will continue very damp, as long as any moisture remains in the dung, which will also be very injurious to them; and as these boards will in a few years decay, these will be more expensive than Walls, if they are kept in repair for some years, and will never answer the design so well.

[WALL-CRESS. See *Arabis*.

WALLENIA. (So named by Swartz, in honour of Matthew Wallen, Esq. a native of Ireland, many years resident in Jamaica, who cultivated both indigenous and exotic plants there at a considerable expense, and much assisted Dr. Browne in his *Natural History of Jamaica*.)

Lin. gen. Schreb. n. 1722 p. 789. Swartz prodr.

31. Petesioides Jacq. amer. 17.

Class. 4. 1. Tetrandria Monogynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, four-cleft, permanent: segments erect, obtuse.

COR. one-petalled, tubular: tube cylindrical, erect, longer than the calyx: border four-cleft; segments ovate, obtuse, erect, converging, small.

STAM. Filaments four, from the bottom of the corolla, wider at the base, erect, longer by half than the corolla, (above the border) diverging. Anthers ovate, erect.

PIST. Germ oblong, superior. Style awl-shaped, shorter than the stamens and corolla, permanent. Stigma simple, obtuse.

PER. Berry roundish, one-celled.

SEED. one, roundish, covered with a brittle crust.

#### ESSENTIAL CHARACTER.

CAL. four-cleft, inferior. Cor. tubular, four-cleft. Berry one-seeded.

#### SPECIES.

1. Wallenia laurifolia.

Lin. spec. ed. Willd. 1. 618. Swartz prodr. 31. descr. 1. 247.

Petesioides laurifolium. Jacq. amer. 17.

Bryonia nigra fruticosa, foliis laurinis. Sloan. jam. 2. 234. t. 145. f. 5.

#### DESCRIPTION, &c.

This is a tree with a trunk from ten to twenty feet high, covered with an even unarmed bark. Branches long; branchlets round, warted by the fallen leaves. Leaves petioled, oblong, acuminate, with a blunt point, entire, slightly nerved, somewhat striated, smooth and shining.



shining, paler beneath, membranaceous and thickish. Petioles short, round, smooth. Stipules none. Panicle terminating, spreading: branches alternate, subfastigate, subdivided, branchlets alternate, subterminating; flowers pedicelled, yellow, inodorous. Calyx embracing the corolla, permanent, pale coloured. Berry scarlet.

The calyx, corolla, genitals, and fruit have dots or glandular orange-coloured atoms scattered over them. The fruit, when ripe, is subacid and aromatic, like the other parts of the fructification. The seed has the flavour of the Piperitæ. It flowers spring and autumn. There are sometimes male flowers, which are barren, having no pistil.

Jacquin describes the leaves as alternate, greasy to the touch, brittle, five inches long. Flowers in compound racemes, (which are thyrses-shaped, and two inches long), numerous, extremely small, with reddish calyxes, and white corollas. Style double the length of the corolla.

Native of Jamaica and Hispaniola; Jacquin says on the mountain above Cape François in Domingo; flowering in november.]

WALL-FLOWER. See *Cheiranthus*.

[WALL-PENNYWORT. See *Cotyledon*.

WALL-PEPPER. See *Sedum*.

WALL-RUE. See *Asplenium*.

WALL-WORT. See *Sambucus*.

WALNUT TREE. See *Juglans*.]

WALTHERIA. (So named by Linneus, in honour of Augustin. Frider. Walther, professor of medicine at Leipzig. Author of *Hortus proprius*, 1735.)

Lin. gen. n. 827. Reich. n. 892. Schreb. n. 1108.

Juss. 289. Cavan. diff. 6. 315. Monospermalthæa Isnard act. gall. 1721.

Class. 16. 2. Monadelphia Pentandria.

Nat. Order of *Columniferae*. *Tiliaceæ* Juss.

#### GENERIC CHARACTER.

CAL. Perianth (double: outer one-sided, three-leaved, deciduous; Cav. inner) one-leaved, half-five-cleft, acute, cup-shaped, permanent.

COR. Petals five, obcordate, spreading, fastened at bottom to the tube of filaments.

STAM. Filaments five, united into a tube, free above, spreading, short. Anthers ovate.

PIST. Germ ovate. Style filiform, longer than the stamens. Stigmas pencilled.

PER. Capsule obovate, one-celled, two-valved.

SEED one, obtuse, wider above.

#### ESSENTIAL CHARACTER.

Cal. double: outer lateral three-leaved deciduous. Petals five. Style one. Caps. one-celled, two-valved, one-seeded.

#### SPECIES.

##### 1. *Waltheria americana*.

Lin. spec. 941. Syst. 610. Reich. 3. 301. Willd. 3. 586. hort. cliff. 342. Swartz obs. 254. Brown. jam. 276. Sloan. jam. 2. 218. Raii suppl. 320. (Malva). Herm. lugdb. 2. 267. (Altheæ similis.) Pluk. phyt. t. 150. f. 6. (Betonica).

W. indica. Jacqu. ic rar. 1. t. 130. misc. 2. 323.

Monospermalthæa arborefcens villosa, folio majore.

Ismard act. 1721. p. 562. t. 14.

Leaves oval plaited sharply and unequally toothed tomentose, heads peduncled.

##### 2. *Waltheria indica*.

Lin. spec. 941. Syst. 610. Reich. 3. 302. Willd. 3. 587. hort. cliff. 343. (Melochia). Burm. zeyl. 149. t. 68. ind. 142. (Malvinda). Pluk. mant. 31. (Betonica).

Leaves oval plaited bluntly toothed tomentose, head sessile.

##### [3. *Waltheria Lophanthus*.

Lin. spec. ed. Will. 3. 587. Forst. prodr. n. 252.

Lophanthus tomentosus. Forst. gen. t. 14. p. 27.

Leaves roundish-cordate serrate silky-tomentose petioled, heads peduncled imbricate-bracted.

##### 4. *Waltheria ovata*.

Lin. spec. ed. Willd. 3. 588. Cavan. diff. 6. 317. t. 171. f. 1.

Leaves roundish-ovate unequally toothed tomentose, heads sessile.]

Swartz deser.

##### 5. *Waltheria angustifolia*.

Lin. spec. 941. Reich. 3. 301. Willd. 3. 588. fl. zeyl. n. 244. Pluk. phyt. t. 150. f. 5. Raii suppl. 297. (Betonica).

W. microphylla. Cavan. diff. 6. 317. t. 170. f. 2.

Monospermalthæa arborefcens villosa, folio minore. Isnard act. 1721. p. 278.

Leaves oblong obtuse plaited toothed hoary, heads sessile.

##### [6. *Waltheria elliptica*.

Lin. spec. ed. Willd. 3. 588. Cavan. diff. 6. 316. t. 171. f. 2.

Leaves lanceolate-oblong obtuse plaited toothed tomentose, heads sessile.]

#### DESCRIPTIONS, &c.

1. Stem soft, woody, about two feet high, sending out two or three side branches. Leaves alternate, of a pale yellowish green colour, soft and hairy. Flowers collected in a close thick spike at the top of the stem, having soft hairy calyxes. Petals connected at their base, small, bright, yellow, spreading.

[Stem suffrutescent, branched, subdivided, round, hirsute. Leaves petioled, nerved, whitish beneath. Peduncles length of the leaves, axillary, solitary, erect, pubescent. Flowers aggregate, yellow.]

Willdenow says, it resembles the indica very much, but differs in having the teeth of the leaves sharp and unequal, and the heads peduncled. The heads in that and the following are axillary or aggregate on a long common peduncle; in W. americana they are axillary but always peduncled, and in W. indica sessile without any peduncle.

Native of South America, and the islands of the West Indies, Brasil, Bahama, Barbices, Surinam, Jamaica, Domingo, &c.—Cultivated 1691, in the Royal Garden at Hampton Court<sup>b</sup>.]

2. This rises with a shrubby branching stalk to the height of eight or ten feet, and is covered with soft hairs. Leaves alternate, petioled, four inches long, and two inches broad in the middle, rounded at both ends, of a yellowish green colour, very hairy and soft, having several longitudinal veins. Heads axillary, sessile, composed of clusters of very small yellow flowers, which just peep out of their soft yellow calyxes. Native of India.

3. Forster made a distinct genus of this under the name of *Lophanthus*, from *λοφος* a crest, and *ανθος* a flower; the flowers having under them a bractee resembling a crest. He allows it to be very nearly allied to this genus, and considers it as a species of *Waltheria* in his *Prodromus*. Native of the Marquesas islands in the south seas.

4. This is very distinct from the others in having roundish-ovate acuminate leaves, shaped almost like those of the Hasell (*Corylus Avellana*). Heads sessile, few-flowered, without bractees. Seems to be like the preceding. Native of Peru<sup>i</sup>.]

5. Stalks woody, six or seven feet high, dividing into several branches, which are less hairy than those of the second sort. Leaves about three inches and a half long, and an inch and half broad, of a yellowish green colour, not so soft as those of W. indica, having many veins running from the midrib, standing upon very long footstalks. Flowers very small, yellow, collected into round clusters, standing upon very short peduncles, close to the axils. They appear in June, July and August, as the other sorts do; and the seeds ripen in autumn.

[Willdenow remarks, that the whole plant is covered with a thin nap; that the leaves are small, half an inch long, oblong, and blunt at each end; and that the heads are supported upon a very short peduncle. Native of the East Indies. Mr. Miller says, that the seeds were sent him from Campeachy.

6. This is allied to the preceding, but is more tomentose; the leaves are three times as long, but of the same breadth with the preceding; and the petals are obtuse not retuse. Native of the East Indies<sup>k</sup>.]

<sup>i</sup> Swartz obs.

<sup>b</sup> Hort. kew.

<sup>i</sup> Willdenow.

<sup>k</sup> Idem.



## PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be sown on a hot-bed; and when the plants are fit to transplant, they must be each planted into a separate small pot, and plunged into a fresh hot-bed, and afterward treated in the same manner as other tender plants of the same country, for they must be kept in the bark-stove, otherwise they will not thrive in England. The second year the plants will flower and produce good seeds, but the plants may be continued three or four years if they are often shifted, and the roots pared, to keep them within compass; for if they are permitted to remain long undisturbed in the tan-bed, their roots will run out through the holes in the bottom of the pots, and extend to a great distance in the tan; and when this happens, if their roots are torn, or cut off, the plants seldom survive it. When the plants root into the tan, they grow very luxuriant, and cannot be kept within reasonable compass; but on their roots being disturbed, their branches will hang, and their leaves shrivel up and drop off; therefore, to keep these plants within bounds, they should be drawn up out of the tan at least once in six weeks, during the summer season, and the plants shifted out of the pots once in two months; with this management the second and fifth sorts may be continued several years, but the first seldom lives longer than two years.

[WARNERA or WARNERIA. See *Hydrastis*.

WARTWORT. See *Euphorbia*.

WATER ALOE. See *Stratiotes*.

Apple. See *Annona*.

Betony. See *Scrophularia*.

Caltrops. See *Potamogeton* and *Trapa*.

Chickweed. See *Montia*.

Cress. See *Sisymbrium*.

Dock. See *Rumex*.

Dropwort. See *Oenanthe*.

Germander. See *Teucrium Scordium*.

Gladiol. See *Butomus* and *Lobelia Dortmanna*.

Hemlock. See *Cicuta virosa*.

Hemp-Agrimony. See *Bidens*.

Horehound. See *Lycopus*.

Hyssop. See *Gratiola*.

Leaf. See *Hydrophyllum*.

Lemon. See *Passiflora*.

Lily. See *Nymphaea*.

Melon. See *Cucurbita Citrullus*.

Millfoil. See *Myriophyllum*.

Mint. See *Mentha*.

Parfnep. See *Sium*.

Pepper. See *Polygonum Hydropiper*.

Pimpernel. See *Samolus*.

Plantain. See *Alisma*.

Purslane. See *Peplis*.

Radish. See *Sisymbrium*.

Rocket. See *Sisymbrium sylvestre*.

Soldier. See *Stratiotes*.

Speedwell. See *Veronica*.

Tupelo. See *Nyssa*.

Violet. See *Horionia*.

WATERWORT. See *Elatine*.]

WATSONIA. (So named by Mr. Miller, in honour of his learned friend William Watson, M. D. F. R. S. whose knowledge in the science of Botany, as Mr. Miller with good reason observes, justly demands this tribute.)

Curt. magaz. t. 533. 537. Juss. 58.

Class. 3. 1. Triandria Monogynia.

Nat. Order of *Ensatæ*. Irides Juss.

## GENERIC CHARACTER.

CAL. Spathes pressed close, mortified at top, for the most part coloured.

COR. curved back: tube slender; throat cup-cylindric: border six-parted, the parts spreading-regular or subbilabiate, equal or nearly so in breadth, quite equal in length.

STAM. Filaments three, growing to the tube, but distinct from the throat.

PIST. Germ inferior, triangular-cylindric. Style simple, filiform, erect. Stigmas three, slender, bifid.

PER. Capsule stiff-leathery, triangular-cylindric, drawn to a point at each end.

SEEDS numerous, somewhat oblong.

OBS. Throat many times shorter, or many times longer than the border, or equal to it. Coat of the seed much bigger than the nucleus, whitish, opaque, compressed into an unequal margin. Seeds often somewhat like those of *Pinus sylvestris*.—In those species which have a very short throat, the margin of the seed is indistinct, the nucleus bigger than in *Gladiolus*. Gawler.

## ESSENTIAL CHARACTER.

COR. six-parted, spreading or subbilabiate, equal. Stigmas three, bifid. Caps. triangular-cylindric, attenuated at each end.

## SPECIES.

[1. *Watsonia aletroides*. *Aletris-like Watsonia*.

Curt. magaz. t. 533.

*Antholyza aletroides*. Burm. cap. prodr. 1. Houtt.

Lin. pfl. syst. 11. 77.

A. *Merianella*. Ait. kew. 1. 6. Curt. mag. t. 441.

A. *tubulosa*. Andrews bot. reposit. 174.

*Gladiolus tubulosus*. Jacqu. collect. 4. 153. ic. rar. 2. 229.

Corollas somewhat drooping, tube nearly equal to the spathe, throat almost four times as long as the short ovate equal segments of the border.

2. *Watsonia roseo-alba*. Long-tubed *Watsonia*.

Curt. magaz. t. 537.

*Gladiolus roseo-albus*. Jacqu. hort. Schoenbr. 1. 7. t. 13.

Corolla regular, tube twice as long as the spathe throat or border, segments equal spread out flat acuminate, stamens equal to the throat.

3. *Watsonia iridifolia*. Flag-leaved *Watsonia*.

Curt. magaz. 600.

α *cinerea*. Ash-coloured Flag-leaved *Watsonia*.

*Gladiolus iridifolius*. Jacqu. collect. 4. 151. ic. rar. 2. t. 234. Willd. spec. 1. 215.

Leaves ash-green, corolla dull scarlet.

β. *fulgens*. Scarlet Flag-leaved *Watsonia*.

Curt. magaz. t. 600.

*Antholyza fulgens*. Andrews bot. reposit. t. 192.

*Gladiolus marginatus* γ *floribus fanguineis*. Thunb. diff. n. 20.

Leaves deep-green shining, corolla bright scarlet.

Corolla refracted, tube erect longer than the spathe equal to the segments, which spread out very wide obliquely, indistinctly two-lipped, oval-oblong somewhat sharp equal to the throat.

4. *Watsonia brevifolia*. Short-leaved *Watsonia*.

Curt. magaz. t. 601.

*Gladiolus caryophyllus*. Houtt. Linn. pfl. syst. 11. 77. t. 79. f. 3.

G. *marginatus* β. Thunb. diff. n. 20?

*Antholyza spicata*. Andr. bot. rep. t. 56. ejus recens. 24. app. 41.

Leaves very low somewhat oblong shining, tube throat and border equal in length, segments regular-spreading, the inner ones wider, stamens resupine declined.

5. *Watsonia marginata*. Long-spiked *Watsonia*.

Curt. magaz. t. 608.

*Gladiolus marginatus*. Thunb. diff. 20. α. prodr. 8. suppl. 95. Dict. nostr. n. 23.

Leaves thick at the edge, spike elongated composed of close-pressed spikelets confluent continuous, border regular, throat short six-toothed within, stamens erect looking three ways.]

6. *Watsonia laccata*. Lake-coloured *Watsonia*.

Curt. magaz. t. 631.

W. *humilis*. Mill. dict. n. 2. fig. t. 297. f. 2.

W. *erubescens*. Herb. banks.

*Gladiolus laccatus*. Jacqu. collect. 4. 171. ic. rar. 2. t. 232. Willd. spec. 1. 215.

*Antholyza Merianella*. Dict. nostr. n. 6.

Leaves narrower vertically ensiform strict twisted a little, spathe tube throat and border equal, pistil nearly equal to the segments which are acute alike and regularly spreading.

## DESCRIPTIONS, &amp;c.

[The root in this elegant genus is tuberous-tunicated, hemispherical, toothed at the edge. Scape very stiff, frequently inclined to woody, simple, or little branched.

Leaves



Leaves ensiform, attenuated at each end, often shining. Flowers in loose terminating spikes. Spathes one-flowered. All the species are natives of the Cape of Good Hope, and flower late in the summer, or in the autumn<sup>1</sup>.

1. This is readily distinguished from the other species by the form of the corolla, which strongly resembles some species of *Aletris*, *Lachenalia*, and *Aloe*: the alternate segments are interior. Bulb compressed and tunicated.

It is very subject to vary: having either a simple scape six or eight inches high, with three or four distant flowers, sometimes one-ranked; or a three or four-branched stem two feet high, with a terminating spike of from twenty to thirty closely imbricated distich flowers, and appressed spikelets in proportion. The same bulb will one year produce pale pink, the next deep crimson, and the following variegated or striped corollas, always scentless. One of these varieties is figured in Curtis's Botanical Magazine, t. 441. under the name of *Antholyza Merianella*. But the real *Antholyza Merianella* of Linneus, or *Gladiolus Merianellus* of Thunberg is a different plant, having pubescent leaves, fewer in number, nearly sheathing the whole stem; flowers differently formed, with larger and rounder segments; stigmas entire and complicate: in fact it is a *Gladiolus*, nearly allied to *G. hirsutus* in leaf, and to *G. Watsonius* in its tubular throat.

Jacquin has given a good figure of one of the varieties, but has erroneously described it as having a three-valved spathe.

This species was probably introduced in 1778.

2. Leaves linear-ensiform, smooth, shorter than the stem, and somewhat twisted at the base. Scape rather flexuose, with two or three ancipital spathe-like leaves, and simple; but since all the plants of this order which have spathaceous stem-leaves are subject to branch, it may probably be sometimes polytachyous. Spathes green, sphacelate or mortified towards the point, keeled, and much shorter than the tube. Corolla about three inches long: tube widening gradually into the throat, and joined by a geniculate curvature: segments as long as the throat, margins of the alternate ones slightly revolute. Stamens closely accumbent: anthers deep blue. Style projecting nearly equal to the segments. Bulb smaller than in many of its congeners and roundish.

The length of the tube relative to the faux or throat, is the permanent specific distinction; although Jacquin describes the segments, faux, and tube, as of equal length, his own figure shows his mistake. As some authors speak of these flowers as having a double tube, it may not be amiss to observe, that the part only to which the filaments are joined is called the tube; where these become free the faux or throat begins, and extends to the base of the segments of the limb or border. Imported by Messrs. Grimwood and Wykes, about 1800. Mr. Alderman Hibbert possesses a variety with deep purple flowers, but with the mouth always of a still deeper colour within.

3. Bulb compressed, generally reniform. Radical leaves four to seven, ensiform, attenuated at each end, smooth, shining, slightly edged, equitant at the base, midrib prominent: stem-leaves conduplicate, gradually shorter. Stem two or three times longer than the leaves, somewhat woody, strict, round, from three to six feet high, with several upright branches all spike-bearing. Spikes loose, the primary one ten to twenty-flowered; flowers springing from opposite sides, when fully expanded inclining to the same front; colour (of  $\beta$ .) bright scarlet; scent none. Spathes green below, sphacelate and red upwards, shorter than the tube, which is about the length of the throat, and that again of the border; segments nearly equal, narrowed at their bases, somewhat sharp, the alternate ones rather more so. Parts of fructification prominent, nearly equal to the corolla, and equal among themselves. Anthers dark violet. It is the tallest of the genus yet known to us. Blows freely towards the end of summer, with a succession of bloom for a month or longer. It seeds and

<sup>1</sup> Gawler in Curt. mag. and Juss. gen.

produces offsets in abundance. Both varieties are now common in the nurseries about London. They agree in every thing except in the colour of the leaf and corolla.

Jacquin, in his *Icones plant. rar.* has united two very distinct species as varieties, namely variety  $\alpha$  of the present species, figured in his 234th plate; and *Gladiolus marginatus*  $\delta$  of Thunberg (*Watsonia rosea* Herb. banks.) in his 235th plate.

4. Leaves four, oblong, ensiform, distich, very short, smooth and shining, mucronate, with a filiform cartilaginous edging. Stem straight, branched, from six inches to a foot high. Spathe green, broad, upright, conduplicate, embracing, at the end truncately subacute, sphacelate, and coloured. Corolla recurved, regular, patent: faux or throat narrow-turbinate: segments nearly obovate, shortly pointed, the inner ones almost twice as broad as the others, flat, the outer ones laterally subrevolute. Parts of fructification declined, assurgent: Segments of the stigmas short, revolute, extending rather beyond the anthers. Corolla micaceous, glittering very much in the sun; its colour not to be represented by art. It flowers about May, and is scentless. Imported by Messrs. Kennedy and Lee.

5. Bulb compressed, subreniform. Leaves lanceolate, subcoriaceous, nerved, far shorter than the stem, edged with a very thick brownish cartilage. Stem round, strict, woody at the base, gracilescens upwards appressedly polytachyous, from three to four feet high. Flowers numerous, close set, distichly subimbricate, diffusing a kernelly smell something resembling that of *Heliotropium peruvianum*. Spathes green at the base, sphacelate upwards. Corolla salver-shaped, nodding: tube recurved: faux twice shorter than the tube; cyathiform-turbinate, with six lamellous appendices on the inside alternating with the stamens: segments elliptic, the interior ones somewhat broader. Filaments semicolumnar, upright: anthers sagittate, yellow, surrounding the style, not parallel.

Thunberg enumerates four varieties— $\alpha$  white— $\beta$  pale red— $\gamma$  blood-coloured— $\delta$  purple.  $\alpha$  seems to be this plant— $\beta$  *Watsonia brevifolia*— $\gamma$  *W. iridifolia*  $\beta$ — $\delta$  *W. rosea*. He found them on the summits of the Table and other high mountains, and on hills below the mountains from Cape Town to Houteniquas-Land, growing among the grass in such abundance, that whole hills appeared as if covered with a beautiful scarlet carpet.

Introduced into Kew garden by Mr. Masson in 1774. It flowers in July or August, and is known among the nurserymen under the name of *Ixia Sceptum*. Owing to the intimate union of the spikelets with the main stem it appears as if it began to flower at the middle, but on examination, will be found to begin at the base of the primary spike, as is usual with its congeners. For Thunberg's description, see *Gladiolus marginatus*.

6. This is one of the smaller species, the Cape specimens being from eight inches to a foot high, and the leaves about the third of an inch broad, linear and shorter than the stem. Corolla, of one uniform colour, recurved, in Jacquin's figure refracted. Spathe acute. Faux a complete cylinder. Segments quite regular, oblong-ovate, acute. Anthers above the faux below the stigmas. In the primary spike from four to six flowers. It differs from *W. roseo-alba* in a proportionably shorter tube; from *W. Meriana* in a regularly and recurvedly spreading border; from *W. iridifolia* in a proportionably longer spathe, quite regular border, and equal segments. It flowers in May<sup>m</sup>. For Mr. Miller's description, &c. see *Antholyza Merianella*; but this is not the *A. Merianella* of Linneus. See n. 1.

#### PROPAGATION AND CULTURE.

See *ANTHOLYZA*.

3. Requires a biggish and very deep pot, light earth, and plenty of water after it has shown the flowering stem. It produces seeds and offsets in abundance.

4. Is yet a rare plant, though it may be increased with the usual facility of the genus.

<sup>m</sup> Curt. magaz.



5. This increases rapidly both by seeds and offsets, and is now one of the commonest of its tribe. It requires a very deep pot<sup>n</sup>.

WATSONIA. See *Antholyza*, *Gladiolus*, *Ixia*.

WATSONIA MERIANA. See *Antholyza Meriana*.

———— plantaginea. See *Gladiolus alopecuroides*.

———— spicata. See *Gladiolus spicatus*.

WATTA-TALI. See *Caturus*.

WAY-BREAD. See *Plantago*.

WAYFARING-TREE. See *Viburnum*.

WAY-THISTLE. See *Serratula arvensis*.

WEBERA. (So named by Schreber, in honour of George Henry Weber, author of *Spicilegium Floræ Goettingensis*, Gothæ. 1778. 8vo.)

Lin. gen. ed. Schreb. n. 1733. p. 794. Chomelia.

Lin. gen. ed. 2. n. 167. Canthium Lamarck  
encycl. 1. 602. Juss. 204. Roxb. corom. t. 51.

Class. 5. 1. Pentandria Monogynia.

#### GENERIC CHARACTER.

CAL. Perianth one-leafed, half-five-cleft, erect, acute, permanent.

COR. one-petalled, funnel-form: tube longer than the calyx: border five-cleft; segments ovate-oblong, recurved.

Nectary a fleshy ring surrounding the base of the style.

STAM. Filaments five, very short, placed upon the tube of the corolla. Anthers linear, incumbent, spreading.

PIST. Germ roundish, inferior. Style simple, longer than the tube of the corolla. Stigma club-shaped.

PER. Berry subglobular, two-celled, crowned with the calyx.

SEEDS solitary, orbicular, flattish on one side, convex on the other.

Obs. Allied to *Gardenia*, but distinguished by a two-celled berry. Are *Gardenia spinosa*, (*Canthium* of Lamarck,) *micranthus* and *scandens* of Thunberg, of this genus?

Chomelia Linn. or *Rondeletia asiatica* of spec. plant. supplied the above character: to which we may add, respecting this species, that the segments of the corolla from the middle downwards are villose: the anthers membranaceous at the tip, the cells opening in the upper side of each anther: the style round, striated, ending in an obliquely club-shaped obtuse stigma, angular with ten membranaceous narrow wings decreasing towards the style, and finally passing into the raised lines of the style. Seeds fastened to the centre of the flat side in the middle of the partition of the berry. Certainly not in fours, as Linneus, from the *Hortus Malabaricus*, has made them, but solitary.

#### ESSENTIAL CHARACTER.

Contorted. Berry inferior, two-celled, cells one-seeded. Style elevated. Stigma club-shaped. Cal. five-cleft.

#### SPECIES.

1. *Webera corymbosa*.

Lin. spec. ed. Willd. 1. 1224.

*Rondeletia asiatica*. Lin. spec. 244. Juss. 212. Reich. 1. 474. fl. zeyl. n. 80.

Cupi Rheed. mal. 2. 37. t. 23. Raii hist. 1492.

Unarmed, leaves oblong acute, corymb terminating.

2. *Webera cymosa*.

Lin. spec. ed. Willd. 1. 1224.

Unarmed, leaves ovate acuminate, cymes many-flowered axillary peduncled.

3. *Webera tetrandra*.

Lin. spec. ed. Willd. 1. 1224.

*Canthium parviflorum*. Roxb. corom. 1. 39. t. 51. Lamarck encycl. 1. 595.

*Gmelinia coromandelica*. Burm. ind. 132.

*Lycium putatum*, &c. Pluk. phyt. 1. 97. f. 4.

Tsjerou-Kara. Rheed. mal. 5. 73. t. 37.

Spiny, leaves roundish, cymes few-flowered axillary peduncled, flowers four-stamened.

#### DESCRIPTIONS, &c.

1. This is a shrub of the human stature. Stems and branches round, ash-coloured, knobbed; wood white, yellow towards the middle. Leaves or petioles an

<sup>n</sup> Curt. magaz.

inch long, of a close texture, flat, dark green and shining above, paler beneath; having a somewhat astringent bitter taste and a pleasant smell. Flowers whitish, becoming yellow with age. Segments of the corolla five or six. Berries small, hard, round, resembling those of the Bay, black when ripe. Seeds about seven or eight, in two rows along the partition<sup>o</sup>.

Native of Malabar and Ceylon.

2. This is a tree with round pubescent branches. Leaves opposite, petioled, obtuse, quite entire and very smooth, shining above, stiff, simply veined. Cymes convex. Peduncles pubescent. Corolla twice as small as in the preceding. Style much longer than the corolla. Stigma headed-two-lobed. Berry the same size as that of Juniper. Native of the East Indies<sup>p</sup>.

3. Trunk scarcely any, but branches innumerable; the small ones regularly cross-armed, and spreading. Thorns simple, opposite, above the axils, spreading, cross-armed, very strong, and very sharp: in luxuriant plants they are sometimes three-cleft. Leaves on the young shoots opposite, on the elder branchlets fascicled, short-petioled, reflected, ovate, entire, smooth, various in size. Stipules connecting, awl-shaped. Umbellets (cymes) opposite, below the thorns, small, about the length of the leaves. Peduncle and pedicels smooth, round. Flowers small, yellow. Calyx four-toothed. Tube of the corolla bellied, short; mouth downy; border four-parted; segments ovate, expanded. Stamens four in the mouth of the corolla: anthers ovate. Germ globular: stigma headed. Fruit an obcordate drupe, compressed a little, with a hollow on each side, size of a cherry, crowned with the remaining calyx, fleshy, smooth, yellow, two-celled: in each cell one oblong, one-celled nut.

This is one of the most common scraggy thorny bushes, on the coast of Coromandel, every soil and situation suiting it. Flowers in the hot season, and makes excellent fences.

The ripe fruit is eaten by the natives; the leaves are eaten generally in curries: on both accounts this shrub has the additional name of Kura, which means esculent. The Telingas call it Ballusoo-Kura<sup>q</sup>.

WEBERA. See *Bryum* and *Buxbaumia*.

WEDELIA. (From John Wolffg. Wedel, physician at Jena: author of *Tentamen Botanicum* 1747 & 1749.)—See *Allionia* & *Polymnia*.

WEEDS, are all plants noxious in gardening or agriculture. Many plants which are useful, are Weeds in a relative sense, because they are out of their proper place, or occupy the room of still better things.

A catalogue of the principal Weeds which infest gardens, arable lands and pasture grounds is here given; distinguishing the annual from the perennial, because the methods of extirpation are different.

#### Annual Weeds infesting Gardens and Arable Lands.

*Veronica agrestis*. Procrumbent Speedwell, or German-der Chickweed. April to september.

*Veronica arvensis*. Wall Speedwell, or Speedwell Chickweed. May.

*Veronica hederifolia*. Ivy-leaved Speedwell, or small Henbit, in Norfolk, Winter-weed. April to september.

The above are small plants, feeding abundantly, but easily destroyed by the hoe.

*Alopecurus agrestis* f. *myosuroides*. Slender or Field Fox-tail or Mouse-tail Grass. July. Common in some arable lands, and easily known by its upright growth and very slender spike. I am not absolutely certain that it is annual.

*Agrostis Spica venti*. Silky Bent-grass. June and July. Among corn in light moistish lands, but not very common.

*Poa annua*. Annual Meadow-grass. An excellent sweet Grass in pastures, but a troublesome weed in gardens; flowering and feeding during a great part of the year.

*Bromus arvensis*. Field Brome-grass. July.

<sup>o</sup> Hort. malab.

<sup>p</sup> Willdenow.

<sup>q</sup> Roxburgh.



*Bromus sterilis*. *Barren Brome-grass*. June and July.  
*Avena fatua*. *Wild Oats* or *Haver*. August. Fallowing, hoeing and hand-weeding are the only means of extirpation.  
*Lolium temulentum*. *Bearded* or *annual Darnel Grass*, or *Droke*. July.  
*Hordeum murinum*. *Wall Barley-grass*, *Mouse Barley-grass*, *Way-Barley*, *Way Bennet*, or *Bent*. *Pick-purse*. The whole summer.  
*Hordeum maritimum*. *Sea Barley-grass* or *Squirrel tail Grass*. June and July. Said to be notorious for sticking in the gums of horses.  
Several other Grasses are bad weeds in cultivated land. Some of these will be found among the Perennials.  
*Sherardia arvensis*. *Little Field Madder*. May through the summer.  
*Galium tricornis*. *Corn Bedstraw*, or *Three-flowered Goose Grass*. Among Tares, &c. July.  
*Galium Aparine*. *Goose-grass*, or *Gosling-grass*, *Cleavers*, *Catchweed*, or *Scratchweed*, *Hairof* or *Hair-rough*. May to August.  
*Alchemilla arvensis*. *Field Ladies Mantle*, *Parsley Piert*. May through the summer.  
*Sagina apetala*. *Small-flowered Pearlwort* or *Chickweed Breakstone*. Common in sandy soils on walls, walks, &c. May and June.—This small weed infests gravel walks, and if suffered to feed will increase prodigiously and grow very troublesome.  
*Sagina erecta*. *Upright Pearlwort*. May. In pastures and heaths among barren sand and gravel.  
*Myosotis scorpioides*. *Mouse-ear Scorpion-grass*. The whole summer. Dry fields. A handsome large variety, that seems to be perennial, is common in water.  
*Lithospermum arvense*. *Corn Gromill*, *Bastard Alkanet*, *Bastard Gromill* or *Gromwell* (Gray Millet), *Salfern*, or *Stony-hard*.  
*Lycopsis arvensis*. *Small Bugloss*. June.  
*Anagallis arvensis*. *Pimpernel*. June.  
*Campanula hybrida*. *Corn Bell-flower*, *wild Venus's Looking-glass*, or *coddled Corn-Violet*.  
*Viola tricolor*. *Pansies* or *Heart's ease*. May to September.  
*Solanum nigrum*. *Common* or *Garden Nightshade*. June to September. In gardens and on dunghills.  
*Chenopodium urbicum*—*rubrum*—*album*—*fiscifolium polyspermum*. The *Goosefoots* flourish on dunghills, and hence have the name of *Muckweed*. From their succulency they are called *Fat-ben*. Mr. Marshall says he has heard Red Goosefoot called *Drought-weed*. July to September. These and other succulent weeds are often suffered to occupy dunghills unmolested, and must exhaust the dung very much.  
*Cuscuta europæa*. *Great Dodder*. On beans, hops, nettles, thistles, &c.  
*Cuscuta Epithymum*. *Small Dodder*. On heaths, thyme, &c.  
These plants flower in August, and are indifferently called *Hell-weed*, *Devil's Guts* and *Scald*.  
The former frequently strangles crops of beans. The latter killed much of my Lucern last year.  
*Bupleurum rotundifolium*. *Thorow-wax*. July. Chalky fields.  
*Caucalis latifolia*. *Great* or *broad Bur Parsley*. July.  
*Caucalis Anthriscus*. *Upright Hedge Parsley*. July. Hedges and Balks.  
*Caucalis infesta*. *Spreading Hedge Parsley*. July.  
*Caucalis nodosa*. *Knotted Stone Parsley*. May and June.  
*Sison segetum*. *Corn Honewort*. August.  
*Achusa Cynapium*. *Small Hemlock*, *thin-leaved wild Hemlock* or *Fool's Parsley*. July and August. Common in gardens.  
*Scandix Pecten Veneris*. *Shepherd's Needle*, *Beggar's Needle*, *Crake-needle*, *Needleweed*, *Venus's Comb*.  
*Polygonum aviculare*. *Knot-grass*, *Hogweed*. From April to October. Remarkably full of seed, and propagates itself abundantly, both in grass and arable fields, especially where the ground is much trodden. Small birds are very fond of the seed, and hogs of the herb.  
*Polygonum Convolvulus*. *Climbing Buckwheat*, *Corn-bind*, or *Black Bindweed*. June and July.

*Saxifraga tridactylites*. *Rue-leaved Saxifrage*. May.  
*Scleranthus annuus*. *Annual Knawel* or *German Knot-grass*. July. Sandy fields.  
*Stellaria f. Alfine media*. *Common Chickweed*. The pest of gardens, flowering and feeding almost all the year; supplying constant food to small birds.  
*Arenaria rubra*. *Purple Sandwort* or *Spurrey*. July and August. In sandy fields.  
*Agrostemma Githago*. *Cockle* or *Popple*. June and July.  
*Spergula arvensis*. *Corn Spurrey*, *Sandweed* or *Pick-purse*. July and August. Cultivated in sandy soils on the Continent.  
*Euphorbia Peplus*. *Petty Spurge*. July and August.  
*Euphorbia exigua*. *Dwarf Spurge*. July.  
*Euphorbia helioscopia*. *Sun Spurge*, *Wartwort* or *Wretwort*. July and August. The first and last very common in gardens: the second in corn.  
*Papaver Rhoeas*. *Red Poppy*, *corn Poppy*, *corn Rose*, *cup-Rose*, *Redweed*, or *Cankerweed*. June and July.  
—Other Poppies, as *P. Argemone* or *Long rough-headed Poppy*, and *P. dubium* or *Long smooth-headed Poppy*, are found among corn, but not so common. Their flowers are much smaller and paler.  
*Delphinium Consolida*. *Field Larkspur*. This has increased so much in Cambridgeshire, as to become one of the common weeds among corn. June and July.  
*Adonis autumnalis*. *Corn Adonis-flower*, *Pheasant's-eye*, *red Maithes*, *Red Morocco*. Frequent in some corn fields of Kent. May to October.  
*Ranunculus arvensis*. *Corn Crowfoot*. June. Very common among corn. Known by the paleness of its leaves and flowers, and the prickliness of the seeds; which do not usually vegetate till the second year after sowing.  
*Lamium purpureum*. *Red Archangel* or *Dead Nettle*. Common in gardens. May.  
*Lamium amplexicaule*. *Henbit Archangel* or *Great Henbit*. February to June. Sandy fields.  
*Galeopsis Ladanum*. *Red Hemp-Nettle*. August and September. Dry fields, especially in a calcareous soil.  
*Galeopsis villosa*. *Downy Hemp-Nettle*. July and August. Northern counties and Wales, sandy fields.  
*Galeopsis Tetrahit*. *Common Hemp-Nettle*. July and August.—In Yorkshire called *Dea-nettle*. Marshall.  
*Galeopsis verticillata*. *Large-flowered Hemp-Nettle*, or *Bee-Nettle*. July and August. Sandy fields in the north, and in Norfolk.  
*Stachys arvensis*. *Corn Woundwort* or *round Ironwort*. July and August. Common in gravelly and calcareous soils.  
*Thymus Acinos*. *Basil Thyme* or *small wild Basil*. July and August. Sandy or calcareous soils.  
*Antirrhinum spurium*. *Round-leaved Fluellin*.  
*Antirrhinum Elatine*. *Sharp-leaved Fluellin*. Both from July to September.  
*Antirrhinum minus*. *Least Snapdragon*. June to August. Sandy fields.  
*Antirrhinum Orontium*. *Lesser Snapdragon*. July and August. Sandy and calcareous fields.  
*Draba verna*. *Common Whitlow-grass*. March and April. A very small weed, common in dry pastures, walls, banks, gravel-walks, pavements, &c.  
*Alyssum (or Myagrum) sativum*. *Gold of Pleasure*. June. Among flax.  
*Thlaspi arvense*. *Penny Cress* or *Smooth Mithridate Mustard*. June and July.  
*Thlaspi campestre*. *Common Cow-cress* or *Mithridate Mustard*.  
*Thlaspi Bursa Pastoris*. *Common Shepherd's Purse*.  
*Sinapis nigra*. *Common Mustard*. In some districts takes the place of the next.  
*Sinapis arvensis*. *Wild Mustard*, *Charlock*, *Chadlock*, *Cadlock*, *Catlock*, or *Wild Rape*. May.—*Sinapis alba* and *nigra*, *White* and *Common Mustard*, are also found wild among corn.  
*Raphanus Raphanistrum*. *Wild Radish* or *jointed Charlock*. June and July. Distinguished from the preceding by its pale yellow or white flowers, and by its round smooth jointed pod. The plant is covered with bent pellucid bristles.—In Yorkshire these weeds are called *Runsh*.



These two plants are a disgrace to the spring crops in many parts of the country. Women and children are employed to hook them, but ineffectually; sometimes a scythe is run over them to cut off the flowering top; and sheep are frequently turned into the bean crop to eat the Charlock. The sheep will sometimes eat the beans, but upon the whole they do more good than harm.

*Geranium dissectum.* *Jagged-leaved Crane's-bill.* May and June. On fallows.

*Geranium columbinum.* *Long-stalked Crane's-bill.* June and July. Gravelly and calcareous soil; not common.

*Fumaria officinalis.* *Common Fumitory.* April or May to August.

*Lathyrus Aphaca.* *Yellow Vetchling.* June to August. Not uncommon in the corn fields of Cambridge-shire.

*Ervum tetraspermum.* *Smooth Tare, or Tine Tare* with smooth pods. June.

*Ervum hirsutum.* *Hairy Tare, small wild Tare, or Tine Tare.* June.

*Trifolium officinale.* *Common Melilot.* June and July. A bad weed among wheat.

*Trifolium arvense.* *Hare's-foot Trefoil.* July and August. Sandy soils.

*Sonchus oleraceus.* *Common Sowthistle or Swinethistle,* both smooth and prickly; the latter is sometimes called *Boarhistle.* July to September. Common in gardens.

*Lapsana communis.* *Nipplewort.* Common in gardens. June and July.

*Carduus nutans.* *Musk Thistle.* July and August. Common on fallows in gravelly and calcareous soils. Easily known by its handsome nodding heads, and the musky smell of the flowers, like sweet fultan.

*Gnaphalium germanicum.* *Common Cudweed.* July and August. In barren gravel.—*G. gallicum* or *Narrow-leaved Cudweed*; and *G. minimum* or *Least Cudweed* are also found in the same sort of soil.

*Senecio vulgaris.* *Common Groundsel or Simson.* In flower almost all the year. No weed is more common in gardens and on fallows.

*Chrysanthemum segetum.* *Corn Marigold, Yellow Ox-eye, Golden Corn-flower, Yellow Buddle.* June to August. The pest of light sandy soils. It is said not to be fond of dung; and that in Denmark there is a law for the extirpation of it.

*Pyrethrum* (or *Chrysanthemum*) *inodorum.* *Corn Feverfew or scentless Mayweed.* August and September. Chiefly in a gravelly soil.

*Matricaria Chamomilla.* *Wild Chamomile.* May to July. Common among corn and on dunghills about London.

*Anthemis arvensis.* *Corn Chamomile.* Among corn, especially in a gravelly soil. June and July. The herb has little scent, but the flowers are sweet.

*Anthemis Cotula.* *Stinking Mayweed or Chamomile.* June and July. Too common among corn, known by the names of *Mayweed* or *Maithes*, and in Yorkshire *Dog finkle.* Frequently confounded with the three preceding; but this is much the worst weed, and is so acrimonious as to affect the hands of those who pull it up.

*Centaurea Cyanus.* *Corn Blue-bottle, Boddle or Buddle,* which are merely corruptions of *Bottle.* *Blue-Bonnet.* July and August.

*Urtica urens.* *Small Stinging Nettle.* June to October. Common in gardens.

*Amaranthus Blitum.* *Small Garden Blight or Wild Amaranth.* August. In gardens and on dunghills, but not very common.

*Mercurialis annua.* *Annual Mercury.* July to September. In gardens.

*Atriplex patula.* *Spreading Halbert-leaved Orache.* June to August.

*Atriplex angustifolia.* *Spreading narrow-leaved Orache.* June to August.

These are found with the *Chenopodiums* or *Goosefoots* in gardens and on dunghills.

More annual plants might have been added as Weeds, but they are either not common enough, or

too inconsiderable to deserve notice as such. Several of the above can hardly be reputed as very noxious. Most of them may be destroyed easily, in gardens by hoeing, and in arable lands by ploughing. Wild Oats, Poppy, the Charlocks, and Mayweed, have so filled the ground of the slover, that they cannot be got rid of without assiduous culture, and frequent fallowing.

*Annual Weeds in Meadows and Pastures.*

*Jasione montana.* *Sheep's-bit or Sheep's Scabious.* June and July. Dry sandy pastures and heaths.

*Chironia* (or *Gentiana*) *Centaureum.* *Common Centaury.* July and August. Dry pastures.

*Gentiana Amarella.* *Autumnal Gentian.* August. In calcareous pastures.

*Gentiana campestris.* *Field Gentian.* September. High Pastures, in a gravelly or calcareous soil.

*Linum catharticum.* *Purging Flax or Mill Mountain.* June to August. Dry pastures.

*Juncus bufonius.* *Toad Rush.* Wet pastures and marshes. July and August.

*Peplis Portula.* *Water Purslane.* July and August. Marshes and wet heaths.

*Polygonum aviculare.* *Knot-grass.* See Arable weeds.

*Cerastium vulgatum.* *Broad-leaved Mouse-ear Chick-weed.* April and May.

*Cerastium viscosum.* *Narrow-leaved Mouse-ear Chick-weed.* May to September.

*Cerastium semidecandrum.* *Little Mouse-ear Chick-weed.* March and April.

*Bartsia* (or *Euphrasia*) *Odontites.* *Red Bartsia or red Eyebright.* July and August.

*Rhinanthus Crista-galli.* *Yellow Rattle or Cock's-comb. Penny-grass or Penny-weed.* In Yorkshire *Henry-penny.* June. Moist meadows. This weed keeps its ground, for the seeds are ripe at the time of cutting grass for hay.

*Euphrasia officinalis.* *Eyebright.* July to September. Dry pastures and heaths.

*Draba verna.* *Common Whitlow-grass.* Dry pastures. See Arable weeds.

*Geranium molle.* *Dove's-foot, Crane's-bill.* April to August.

*Geranium rotundifolium.* *Round-leaved Crane's-bill.* June and July.

*Geranium dissectum.* *Jagged-leaved Crane's-bill.*

*Lathyrus Nissolia.* *Crimson Grass-vetch.* May.

*Ornithopus perpusillus.* *Common Bird's-foot.* May. Sandy pastures.

*Trifolium subterraneum.* *Subterraneous Trefoil.* May. Barren pastures and heaths.

*Trifolium scabrum.* *Rough-Trefoil.* May and June. Chalky and sandy fields.

*Trifolium glomeratum.* *Round-headed Trefoil.* June. Gravelly pastures; not common.

*Trifolium striatum.* *Soft knotted Trefoil.* June. Dry barren pastures.

*Medicago polymorpha.* *Heart Medick, Clover or Trefoil.* May and June.

These five plants are hardly to be considered as weeds, for cattle will eat them, but they are not cultivated. The last species is found commonly mixed with Clover, particularly with black Medick, Trefoil or Nonesuch. Its prickly seeds make it not to be so good for cattle, if it should stand long enough to produce them. It is easily distinguished by the spots upon the leaves, as well as by its seeds.

*Crepis tectorum.* *Smooth Succory-Hawkweed.* June to September. Dry pastures, walls and roofs.

*Gnaphalium germanicum.* *Common Cudweed.* July and August. Barren gravelly pastures.

*Inula pulicaria.* *Small Fleabane.* September. Sandy inundated meadows or heaths.

*Centaurea Calcitrapa.* *Star-thistle.* July and August. Dry pastures and by way sides.

Annual weeds in pastures are neither so numerous nor so destructive as those on arable land; many of them are insignificant, and many others are eaten by the cattle along with the herbage.

*Biennial Weeds in Corn.*

*Echium vulgare.* *Viper's Bugloss or Cat's-tail.* June and



and July. It infests corn very much every third year in some counties.

*Pieris hieracioides.* *Hawkweed Ox-tongue.* July and August.

*Carduus lanceolatus.* *Spear Thistle,* in some places *Boar-thistle,* or *Bur-thistle.* June to September.

*Onopordum Acanthium.* *Cotton Thistle.* July.

These Thistles, with many other species, and various kinds of weeds with downy seeds, are suffered to remain untouched on banks, way-sides and fallows, in order to serve as a nursery for a constant supply of weeds. If the waste places were to be run over with a scythe once a year, this evil would soon be prevented.

#### *Biennial Weeds in Pastures.*

*Daucus Carota.* *Wild Carrot, Bird's-nest* or *Bee's-nest.* June and July.

*Heracleum Sphondylium.* *Cow Parsnep, Meadow Parsnep,* or *Madnep.* July.

*Pastinaca sativa.* *Wild Parsnep.* July. This grows chiefly in a calcareous soil. The flowers are yellow; those of the preceding species are white, and that is a much larger plant.

*Carum Carui.* *Caraway.* June. This is commonly reputed to be biennial; but I have many plants which I sowed in my garden, now in the fourth year of their life.

*Tragopogon pratensis.* *Yellow Goat's-beard.* June.

*Tragopogon porrifolius.* *Purple Goat's-beard.* Moist Meadows. Not common. May and June.

*Crepis foetida.* *Stinking Hawkweed* or *Hawk's-beard.* June and July. Dry chalky pastures. Not common.

*Crepis biennis.* *Rough Succory-Hawkweed,* or *Rough Hawk's-beard.* Chalky pastures. June and July.

*Carduus palustris.* *Marsh Thistle* or *Red-thistle.* July and August. Common in wet meadows.

*Carduus eriophorus.* *Woolly-beaded Thistle.* August. Calcareous soil.

*Carlina vulgaris.* *Common Carline Thistle.* June. Dry sandy pastures.

*Conyza squarrosa.* *Ploughman's Spikenard.* July and August. Calcareous soil.

*Erigeron acre.* *Blue Flea-Bane.* July and August. Gravelly and calcareous pastures.

#### *Perennial Weeds in Corn.*

*Agrostis stolonifera.* *Creeping Bent-grass,* or *running Quick* or *Twich.* July and August.

*Holcus mollis.* *Creeping Soft-grass,* in Yorkshire *White-grass.* July and August.

*Festuca duriuscula.* *Hard Fescue-grass,* *Black Quick,* *Twich* or *Couch.* Marsh. Gloc.

*Triticum repens.* *Creeping Wheat-grass,* *Dog's-grass,* *Quick,* *Quick,* *Twich,* *Whicks,* *Couch.* June to September. As every bit of this detestable weed will grow, it is rather increased than checked by common ploughing and digging; nor is there any way of destroying it effectually, but by deep and frequent ploughings, picking it out and burning it.

*Scabiosa arvensis.* *Field Scabious* or *Great Bluecaps.* July.

*Convolvulus arvensis.* *Small Bindweed* or *Corn-bind.* June and July.—Its roots spread deep and wide, and every piece of them will grow; it is no easy matter to eradicate this pernicious plant.

*Silene inflata* f. *Cucubalus Behen.* *Bladder-Campion* or *Catchfly,* *White Corn Champion,* *Spatling Poppy* or *Frothy Poppy,* *White Bottle,* or *White Ben.* July.

*Lychnis dioica.* *Wild White Champion.* May to September. I never saw the Red Champion in a corn field.

*Cerastium arvense.* *Field Chickweed.* May to August.

*Rubus caesius.* *Small Bramble* or *Dewberry.* June and July.

*Potentilla anserina.* *Silver-weed* or *wild Tansy.* June and July; in moist furrows.

*Mentha arvensis.* *Corn Mint.* June to September. It is said that this herb will prevent milk from curdling, and that when hungry cows have been put into a field, after harvest, where this plant abounds, it has been scarcely possible to turn the milk for cheese.

*Glechoma hederacea.* *Ground Ivy,* *Gill,* *Ale-boef,* *Tun-boof.* April and May. On fallows, as well as among bushes and under hedges.

*Lamium album.* *White Archangel* or *Dead Nettle,* *Dea Nettle.* In gardens, and under hedges, as well as in pastures.

*Orobanche elatior.* *Tall Broom-rape.* July and August.

*Orobanche ramosa.* *Branched Broom-rape.* August and September.

*Malva sylvestris.* *Common Mallow.* May to August.

*Ononis arvensis.* *Corn Rest-barrow* or *Cammock,* *Petty Whin* or *Ground Furze.* June to August.—The roots matting together with great strength, are very troublesome where land is to be ploughed for corn. This property however makes it an excellent plant to set on sea and fen banks, to keep them firm and compact.

*Sonchus arvensis.* *Corn* or *Tree-Sowthistle* or *Swine-Thistle.* August.

*Leontodon Taraxacum.* *Common Dandelion.* April to July.

*Carduus arvensis.* *Way Thistle,* *Corn Thistle* or *Creeping Thistle.* July. The only common Thistle that is perennial. The fallows in strong lands, and the way sides are commonly full of it. The downy seeds are carried a long way by the wind, and it is not eradicated without great difficulty.

*Tussilago Farfara.* *Colt's-foot.* March and April. On wet fallows.

*Chrysanthemum Leucanthemum.* *Great White Ox-eye.* June and July.

*Centaurea Scabiosa.* *Great Knapweed* or *Knob-weed,* *Great Horse Knobs,* *Matfellow* or *Bulweed.*

*Equisetum arvense.* *Corn Horsetail* or *Snake-pipe.* March and April. In a wet soil.

#### *Perennial Weeds in Meadows and Pastures.*

*Veronica officinalis.* *Male* or *common Speedwell.* May and June. Dry pastures and heaths.

*Veronica serpyllifolia.* *Smooth Speedwell* or *Paul's Betony.* May and June.

*Veronica Chamædrys.* *Germander Speedweed* or *wild Germander,* or *Bird's-eye.* May.

*Salvia verbenaca.* *Wild English Clary.* June to October.

*Valeriana dioica.* *Small* or *marsh Valerian.* June. Wet meadows and marshes.

*Valeriana officinalis.* *Great wild Valerian.* June. Hedges and dry pastures.

*Schoenus compressus.* *Compressed Bog-rush.* July. In spongy meadows as well as bogs.

*Scirpus cæspitosus.* *Scaly-stalked Club-rush.* July. Boggy heaths.

*Scabiosa succisa.* *Devil's-bit Scabious* or *Blue caps.* August to October.

*Scabiosa columbaria.* *Small Scabious.* June and July. Gravelly and calcareous pastures.

*Asperula cynanchica.* *Squinancy-wort,* or *small Wood-ruff.* June. Open calcareous pastures.

*Galium saxatile.* *Smooth heath Bedstraw.* July and August. Heaths and mountain pastures.

*Galium uliginosum.* *Rough marsh Bedstraw.* August. Wet meadows.

*Galium erectum.* *Upright marsh Bedstraw.* June and July. Moist Meadows.

*Galium verum.* *Yellow Ladies Bedstraw,* or *Cheesereneing.* July and August. Common in dry pastures. It does not seem that this plant will coagulate milk; it is probably put into rennet to give it a flavour.

*Plantago major.* *Great Plantain,* or *Way-Bread.* June through the summer.

*Plantago media.* *Hoary Plantain.* In a calcareous or gravelly soil.

*Plantago lanceolata.* *Ribwort Plantain,* *Cock's-heads,* or *fighting Cocks.*—Now cultivated under the name of *Rib-grass.* June and July.

*Sanguisorba officinalis.* *Great Burnet.* June and July. Moist calcareous pastures.—A coarse plant. For common Burnet see *Poterium Sanguisorba.*

*Alchemilla vulgaris.* *Common Ladies Mantle.* June and July. High Pastures.



*Primula veris.* *Cowslips, Paisles or Pagils.* April.  
*Lysimachia Nummularia.* *Creeping Loosestrife, Money-wort, or Herb Twopence.* June and July. Moist meadows.  
*Campanula rotundifolia.* *Round-leaved Bell-flower.* August and September. Dry pastures and heaths.  
*Campanula glomerata.* *Clustered Bell-flower, lesser.*  
*Thesium linophyllum.* *Bastard Toad-flax.* July. In high chalky pastures.  
*Bunium Bulbocastanum et flexuosum.* *Great and common Earth-nut (corruptly Ter-nut) Kipper-nut or Pig-nut.* May and June.  
*Peucedanum Silaus.* *Meadow Sulphur-wort or Saxifrage.* Moist meadows. August.  
*Chærophyllum sylvestre.* *Smooth Cow-parsley or Wild Chervill, Orchard-weed or Cicely.* April and May. Hedges abundantly, and frequently in the body of the pasture.  
*Pimpinella Saxifraga.* *Common Burnet-Saxifrage.* July and August.  
*Linum perenne,* *Perennial Blue Flax.* June and July. Chalky pastures.  
*Galanthus nivalis.* February. *Snowdrop.* Meadows, orchards, and hedges.  
*Narcissus Pseudonarcissus.* *Common Daffodil.* March. Orchards and among bushes.  
*Allium vineale.* *Crow Garlick.* July. Dry pastures. It gives milk and butter an insufferable strong taste.  
*Allium ursinum.* *Broad-leaved Garlick or Ramsoms.* May and June. Moist Meadows and thickets.  
*Scilla nutans, or Hyacinthus non scriptus.* *Wild Hyacinth or Hare-bell.* May. Hedges, thickets, pastures.  
*Juncus glaucus.* *Hard Rush, or Wire Rush.* July.  
*Juncus conglomeratus.* *Common Rush.* July.  
*Juncus effusus.* *Soft Rush.*  
*Juncus squarrosus.* *Moss Rush or Goose Corn.* June and July. Barren sandy heaths.  
*Juncus articulatus.* *Jointed Rush.* June. Wet meadows.  
*Juncus uliginosus.* *Little Bulbous Rush.* June and July. Wet sandy and boggy heaths.  
*Juncus campestris.* *Hairy Field Rush.* April and May. Dry barren pastures.—Rushes are called *Seaves* in Yorkshire.  
*Rumex crispus.* *Curled Dock.* June and July.  
*Rumex acutus.* *Sharp Dock.* July.  
*Rumex obtusifolius.* *Broad-leaved Dock.* July and August.  
*Rumex Acetosa.* *Common Sorrel, Sour Docken, or Green Sauce.* June.  
*Rumex Acetostella.* *Sheep's Sorrel.* June and July. Barren pastures.  
*Colchicum autumnale.* *Meadow Saffron.* September.  
*Erica vulgaris.* *Common Heath or Ling.* June and July.  
*Erica cinerea.* *Fine-leaved Heath.* July and August.  
*Polygonum Bistorta.* *Great Bistort or Snakeweed.*  
*Saxifraga granulata.* *White Saxifrage or Sengreen.* May. Dry pastures.  
 From a want of sufficient distinction in English names, much confusion has arisen between Meadow Saxifrage (*Peucedanum Silaus*), Burnet Saxifrage (*Pimpinella Saxifraga*), Burnet (*Poterium Sanguisorba*), and this White Saxifrage.  
*Silene inflata.* *Bladder Campion.* July.  
*Stellaria graminea.* *Lesser Stickwort.* May.  
*Lychnis Flos cuculi.* *Meadow Lychnis or Ragged Robin.* June. Wet Meadows.  
*Cerastium viscosum.* *Narrow-leaved Mouse-ear Chickweed.* May to September.  
*Agrimonia Eupatoria.* *Common Agrimony.* June and July.  
*Spiræa Filipendula.* *Common Dropwort.* July. In a calcareous or gravelly soil. Hogs are fond of the roots.  
*Spiræa Ulmaria.* *Meadow-sweet, or Queen of the Meadows.* June and July. Wet meadows.  
*Fragaria sterilis.* *Barren Strawberry.* March and April. Dry pastures.  
*Potentilla anserina.* *Silver Weed, Wild Tansey, or Goose Tansey.* June and July. Wet meadows.

*Potentilla repans.* *Common creeping Cinquefoil.*  
*Tormentilla officinalis.* *Common Tormentil or Septfoil.* June and July. Barren pastures and heaths.  
*Cistus Helianthemum.* *Common dwarf Cistus.* July and August. Calcareous or gravelly high pastures.  
*Anemone Pulsatilla.* *Pasque-flower.* April and May. High calcareous pastures.  
*Thalictrum flavum.* *Common Meadow-Rue.* July. Moist meadows.  
*Ranunculus Ficaria.* *Pilewort, Figwort, or lesser Celandine.* April.  
*Ranunculus bulbosus.* *Bulbous Crowfoot.*  
*Ranunculus repens.* *Creeping Crowfoot.*  
*Ranunculus acris.* *Upright Meadow Crowfoot.*  
 These three plants fill good meadows with their flowers in the months of May, June and July. They are generally known and confounded under the names of *King-cup, Gold-knobs, Butter-cups, Butter-flowers, Crowfoot* and *Crowflower.* In Yorkshire *Gowlans.* They are of a hot and acrid nature, especially the last, and are not eaten in a green state by cattle. The notion of their giving butter a yellow tincture, is a vulgar error.  
*Caltha palustris.* *Marsh-Marigold.* May. Marshy pastures.  
*Ajuga reptans.* *Common Bugle.* May. Moist pastures.  
*Lamium album.* *White Archangel or Dead-nettle.* May through the summer.  
*Prunella vulgaris.* *Self-heal, Hook-heal, Sicklewort, Carpenter's Herb.* It is a notion, but without foundation, that this herb is good to heal flesh wounds. The same error obtains respecting Bugle, *Stachys palustris,* and other plants of this order.  
*Pedicularis palustris.* *Marsh Lousewort.* June and July. Marshy meadows.  
*Pedicularis sylvatica.* *Pasture Lousewort.* June and July.  
*Antirrhinum Linaria.* *Common Yellow Toadflax.* June and July.  
*Cardamine pratensis.* *Common Ladies-smock, or Cuckow-flower.* April and May. Wet meadows.  
*Geranium pratense.* *Crowfoot Cranebill.* June and July. Wet meadows.  
*Polygala vulgaris.* *Milkwort.* June and July. Dry pastures.  
*Spartium scoparium.* *Common Broom.* May and June. Sandy pastures.  
*Genista tinctoria.* *Dyer's Green-weed, Woodwaxen, Woodwesh or Yellows.* July and August. Dry pastures.  
*Genista pilosa.* *Hairy Green-weed.* May. Heaths and high sandy pastures.  
*Genista anglica.* *Needle furze or Green-weed, Petty Whin.* May and June. Wet spongy heaths.  
*Ulex europæus.* *Common Furze, Whin or Gorse.* May through the rest of the year. Sandy heaths.  
*Ononis arvensis.* *Rest-harrow, Rest-plough, Cammock, Hen Gorse, Rust-burn, (that is Rest-bourn.)* June to August. Barren pastures.  
*Anthyllis Vulneraria.* *Kidney-Vetch, Ladies-Finger.* June to August. Chalky and sandy pastures.  
*Lathyrus pratensis.* *Yellow Lathyrus, or Meadow Vetchling.* July and August.  
*Vicia Cracca.* *Tufted Vetch.* July and August.  
*Hippocrepis comosa.* *Tufted Horse-shoe Vetch.* May to August. Chalky pastures.  
*Hedysarum Onobrychis.* *Saint-scin.* June and July. Chalky hilly pastures; in which this most useful plant is not uncommon.  
*Astragalus hypoglottis.* *Purple mountain Milk Vetch.* June and July. High chalky and sandy pastures.  
*Trifolium ochroleucum.* *Sulphur-coloured Trefoil.* June and July. Dry, chalky and gravelly pastures.  
*Trifolium fragiferum.* *Strawberry-beaded Trefoil.* July and August. Moist pastures.  
*Lotus corniculatus.* *Common Bird's-foot Trefoil, Cheesecake Grass, Yorkshire.* June to August. Common in pastures and on heaths.  
 There is a great variety of these leguminous plants in most pastures, upon which cattle feed willingly. Most of the above, far from being noxious, form a wholesome mixture with grass for the food both of kine and sheep: they cannot therefore be considered properly as weeds, unless they predominate over the  
 20 D  
 grass



grafs above measure. Among some of them, as the Clovers, Saintfoin, and Lucerne, which are commonly sown under the name of Artificial Grasses, the Grasses properly so called would be considered as weeds.

*Leontodon Taraxacum.* *Common Dandelion.* April to July.

*Hedypnois hispida*, or *Leontodon hispidum.* *Rough Dandelion.* In July. Chiefly in calcareous pastures.

*Hedypnois autumnalis*, or *Leontodon autumnale.* *Autumnal or Dandelion Hawkweed.*

*Hieracium Pilosella.* *Mouse-ear Hawkweed or Yellow Devil's-bit.* May to August. Very common in dry pastures.

*Hypochaeris radicata.* *Long-rooted Hawkweed.* June to August. Common.

Some of the above Syngenesious plants are confounded in many places under the name of *Golds* or *Gowls*, from their bright golden-coloured flowers. In Norfolk, according to Mr. Marshall, they are called *Dindles*, which may perhaps be a corruption of *Dandelion*. *Cichorium Intybus.* *Wild Succory.* Common, chiefly by way-sides, among grass. July and August. An improved variety is lately much cultivated, under the name *Chicory*, from the French.

*Carduus heterophyllus.* *Melancholy Thistle.* Moistish high pastures. July and August.

*Carduus pratensis.* *Meadow Thistle.* June.

*Carduus acaulis.* *Dwarf Thistle*, or *small purple Carline Thistle.* July and August. Chiefly in a gravelly or calcareous soil. It spreads, close to the ground, occupies much room, and pricks the mouths of the sheep.

*Gnaphalium dioicum.* *Mountain Cudweed.* June and July. High dry pastures.

*Tussilago Farfara.* *Colt's-foot, Fole-foot, Horse-hoof, or Bull-foot.* Called *Clote* in Norfolk, according to Mr. Marshall. March and April. In a wet calcareous soil.

*Tussilago Petasites.* *Common Butter-bur, or Pestilent-wort.* April. Moist meadows.

*Senecio Jacobæa.* *Common Ragwort, Ragweed, Staggerwort, Stanerwort, St. James's-wort, Seggrum or Seagrum:* in Norfolk *Canker-weed*, according to Mr. Marshall. Nothing eats this large strong weed, which is common in good pastures. It flowers in July, before which it should be pulled up by hand after rain.

*Inula Helenium.* *Elecampane.* July and August. Not common.

*Inula dysenterica.* *Common Fleabane.* August. In moist places.

*Inula pulicaria.* *Small Fleabane.* Meadows and sandy heaths that are wet in winter. September.

*Bellis perennis.* *Common Daisy*, in Yorkshire *Bairn-worts.* It flowers during the greater part of the year. No cattle seem to eat this plant, which occupies so large a share of our pastures.

*Chrysanthemum Leucanthemum.* *Great Daisy, Ox-eye or Maudlin-wort.* May and June.

*Anthemis nobilis.* *Sweet Chamomile.* On dry heaths.

*Achillea Millefolium.* *Common Yarrow or Milfoil.* June to August. A large creeping weed, lately recommended for cultivation.

*Centaurea nigra.* *Common, black, or lesser Knapweed, or Knobweed, Matfellow, black Matfellow, Cockheads, or Bulweed.* June to August. A hard pernicious weed, but too common.

*Orchis pyramidalis.* *Pyramidal Orchis.* July. Dry pastures, especially in chalk.

*Orchis Morio.* *Meadow Orchis.* May and June. Moist pastures.

*Orchis mascula.* *Early purple Orchis.* April and May.

*Orchis latifolia.* *Marsh Orchis.* May and June. Wet meadows.

*Orchis maculata.* *Spotted Palmate Orchis.* June and July.

*Satyrion viride.* *Frog Satyrion.* June and July.

*Ophrys ovata.* *Common Twayblade.* Chiefly among bushes. June.

*Ophrys spiralis.* *Ladies Traces.* August and September. Chalk and gravel.

Other species of this singular and elegant tribe of plants are found among grass, as Fly, Bee, and Spider Ophrys or Orchis, &c. But they are scarcely common enough to be reputed weeds.

*Carex muricata.* *Great Prickly Carex.* *Sedge or Segs* is the general name for these plants.

*Carex pallescens.* *Pale Carex.*

*Carex præcox.* *Vernal Carex.* Dry pastures.

*Carex pilulifera.* *Round-headed Carex.* Heaths.

*Carex panicea.* *Pink-leaved Carex.* Moist pastures.

*Carex acuta.* *Slender-spiked Carex.* Wet meadows.

*Carex hirta.* *Hairy Carex.* Wet meadows. *Share-grass.* Marshall.

The species of *Carex* are very numerous, and grow chiefly in fens and marshes; the above however and some others abound in the fen pastures and wet meadows. They are much harder than the Grasses, with which they are mowed to fodder cows in winter. Destroyed by draining.

*Urtica dioica.* *Great Stinging Nettle.* Sometimes creeps out of hedges into the body of the pastures.

*Poterium Sanguisorba.* *Common Burnet.* July. High calcareous pastures. Cultivated.

*Ophioglossum vulgatum.* *Common Adder's tongue.* May. Wet meadows.

*Pteris aquilina.* *Common Female Fern or Brakes.* Dry sandy land. Spreading its roots deep and wide.

Mosses of various sorts, on old pastures. These may be checked by draining, and by being well dressed with coal ashes, &c. If they cannot thus be reclaimed, they must be ploughed up, and kept under tillage for some years.

By the above list it appears, that by far the greater number of annual weeds infest arable lands, and that in grass the perennials chiefly flourish. The reason is obvious: in the former, the roots of perennials are continually disturbed and cut up by ploughing and other operations of agriculture; and the seeds of annuals find a ready entrance into land, where the parts are constantly undergoing a separation: in the latter, the perennials are often made to spread by cutting or eating down the stems; and the seeds of annuals are not easily received into the closely compacted turf.

Mr. Marshall has some Weeds which are not in the above lists.

#### Corn Weeds.

*Artemisia vulgaris.* *Mugwort.* August. Hedges.

*Urtica dioica.* *Great Stinging Nettle.* Placed above among Pasture weeds.

*Rumex obtusifolius.* *Broad-leaved Dock.* This also is among the Pasture weeds.

*Polygonum Persicaria.* *Spotted Arsmart.* July and August. Common in ditches and marshes.—*Polygonum lapathifolium*, or *pale-flowered Arsmart*, called also *Smart-weed* and *Willow-weed*, is common on dunghills.—*Polygonum Hydropiper* or *biting Arsmart*, is frequent in ditches.

*Raiunculus repens.* *Creeping Crowfoot.* Among Pasture weeds.

*Achillea Millefolium.* *Common Yarrow or Milfoil.* Among Pasture weeds.

*Agrostis vulgaris.* *Fine Bent-grass.*

*Holcus avenaceus* or *Avena elatior.* *Tall Oat-grass.*

*Daucus carota.* *Wild Carrot.* Among Pasture weeds.

*Heracleum Sphondylium.* *Cow Parsnep.* The same.

*Carduus acanthoides.* *Curled or welshed Thistle.*

*Antirrhinum Linaria.* *Yellow Toadflax.* See Pasture weeds.

*Euphrasia* or *Bartsia Odontites.* *Red eye-bright.* See the same.

*Prunella vulgaris.* *Self-heal.* The same.

*Galium verum.* *Yellow Bedstraw.* The same.

*Galium Mollugo.* *Great Hedge-Bedstraw.* Hedges.

*Malva rotundifolia.* *Dwarf Mallow.*

*Vicia Cracca.* *Tufted Vetch.* See Pasture weeds.

*Convolvulus sepium.* *Great or hedge Bindweed.*

*Conium maculatum.* *Hemlock.* Hedges.

*Ballota nigra.* *Stinking Horehound.* Hedges.

*Erysimum Alliaria.* *Garlick-Cress, Jack by the hedge, or Sauce alone.*

*Arundo phragmites.* *Common Reed.*

Pasture



*Pasture Weeds.*

*Betonica officinalis.* Wood Betony. Among bushes.  
*Aira cæspitosa.* Turfy Hair-grass, or Hassock-Grass.  
 In Yorkshire Bull's-forehead.  
*Cineraria palustris.* Marsh Fleabane. Ditches and marshes.  
*Achillea Ptarmica.* Sneeze-wort or Goose-tongue. Chiefly in hedges and among bushes.  
*Equisetum palustre.* Marsh Horse-tail, or Joint-grass.  
*Angelica sylvestris.* Wild or water Angelica. Watery places and by rivulets.  
*Myosotis scorpioides.* Mouse-ear Scorpion-grass. See Arable weeds.  
*Carduus arvensis.* Common Thistle. See Arable weeds.  
*Carduus lanceolatus.* Spear Thistle. See the same.

*Bushes or Shrubs in Pastures.*

*Cratægus Oxyacantha.* Hawthorn or White-thorn.  
*Prunus spinosa.* Sloe or Black-thorn.  
*Rosa arvensis.* Field Briar.  
*Rubus fruticosus.* Common Bramble.  
*Ulex europæus.* Furze, Whins or Gorse.  
*Ononis arvensis.* Rest-harrow, Hen-gorse or fin.  
*Genista tinctoria.* Dyer's-weed, or Yellows.

Most of the above are found in hedges or among bushes, but occasionally steal into the field or pasture. More of the same sort might have been added; but perhaps some readers may think there are already too many.

Fitzherbert, the father of English Husbandry, mentions the following Weeds:

Thistles.  
 Kedlocks. *Sinapis arvensis.*  
 Dockes.  
 Cockle.  
 Drake.  
 Darnolde; Darnell. *Lolium temulentum.*  
 Gouldes. *Chrysanthemum segetum.*  
 Haudoddes.  
 Dogfenell.  
 Mathes. See *Anthemis Cotula.*  
 Ter or Terre. Fumitory or Fumiterry. *Fumus terræ.*  
*Fumaria.*  
 Dee Nettyls. *Lamium album.*  
 Dodder. *Cuscuta.*

*Weeds mentioned by Tusser.*

Mayweed.  
 Thistle.  
 Fitch, Vetch or Tare.  
 Brake. *Pteris aquilina.*  
 Cockle.  
 Boddle. See *Chrysanthemum segetum* and *Centaurea Cyanus.*  
 Mustard.  
 Hemlock.  
 Burr.  
 Tine or Tine Tare.  
 Mallow.  
 Nettle.  
 Titters or Tine.

*Weeds mentioned by Tull.*

Crow-needles. *Scandix Pecten-Veneris.*  
 Red-weed.  
 Echium.  
 Couch-grass.  
 Colt's-foot.  
 Melilot.  
 Fern.  
 Charlock.

For the descriptions of weeds, and the methods of extirpating the most noxious, see the several articles in the course of this work.

There are two ways of extirpating weeds from arable lands: by fallowing and by weeding.

By fallowing is meant repeated ploughings, harrowings, &c. between the crops. The continuance of a fallow, and the number of ploughings requisite, depend on the season, and on the number and nature of the weeds to be destroyed. If the spring season be found insufficient, take the summer, and even the autumn,

the winter, and the ensuing spring, rather than crop an under-worked fallow. One stirring towards the close is frequently more valuable than two or three ploughings at the outset. To begin a fallow without continuing it until its intention be fully accomplished, is throwing away labour unprofitably.

By weeding is meant destroying or checking weeds whilst the crop is growing; whether the operation be performed with the hoe, the spade or spud, the hook; or the hand. Next to the plough and harrow, the hoe is the most destructive to seed weeds; but the hand ought to give the finish to weeding: the later this is done, provided the crop be not materially injured by treading, the greater will be its effect. The close of this operation is similar to that of the fallow. One additional weeding is given at a small expense; and without it perhaps, those which preceded were of little benefit. One weed left to spread its seeds this year may be the cause of an hundred the next.

The common perennial Way-Thistle or Corn Thistle, increases almost without bounds both by seeds and roots. Neither fallowing alone, nor weeding alone, will prevent its mischief: their joint efforts are necessary to keep it within bounds: to work its total extirpation from a soil it affects, is scarcely possible. See *Serratula arvensis.*

Observe of this and other succulent weeds, that when the seeds are impregnated, they will ripen after the plants are cut down or torn up by the roots; they should therefore either be cut down as soon as they begin to flower, or else be raked into heaps and burnt.

Quick-grass increases in arable lands entirely by roots, which in a loose soil will diffuse themselves to an unlimited distance. Every joint requires only air and openness of soil to fit it for vegetation. To destroy it, break up the soil, so as to give it the greatest surface. Then endeavour to destroy the young suckers whilst they are yet in a delicate tender state, before they have had time to establish themselves, or to send out fresh roots. In destroying the first crop of suckers, a second exposure of roots takes place, and to render the exposure as ample as possible, the greatest quantity of surface should still be preserved. Hence it follows that the plough is the fittest implement for the destruction of Quick.

The common practice of harrowing out live roots, and burning them or carrying them off, is a waste of labour, and an impoverishment of the soil.

To attempt to destroy it with the hoe, or any other implement of weeding, implies ignorance or folly in the extreme. See *Triticum repens.*

Docks. See *Rumex.*

Cleavers, Goose-grass, or Hairough. *Galium Aparine*, is in some districts considered as one of the worst weeds which wheat can be infested with; the seeds being very difficult to separate from wheat, and when ground with it, being hurtful to the flour.

This is an annual plant, with a very feeble root, and may easily be destroyed. When it is thick on the ground, and by climbing has gained the ascendancy of the corn, it may be dragged out with iron-toothed rakes with good effect and quick dispatch. In vacancies, and whilst the corn is low, a small hoe may be used; but in general it is best to draw it with the hand. The seeds lie long in the soil without losing their vegetative quality.

Spear Thistle and other biennial weeds may be destroyed with the spade or spud, and with the small hoe, taking off the crown of the root within the surface of the ground. See *Carduus lanceolatus.*

Creeping Crowfoot, Creeping Bent-grass, Silver-weed, and other perennial creeping weeds, form a class of troublesome enemies to corn land. The first and last send out runners like the strawberry: the second sends out rootlets from the joints of the stem, which being feeble, falls to the ground as its length is extended and the weight of its top is increased. The parent roots are fibrous and easily destroyed.

If these weeds are taken in time, they are readily extirpated by weeding, but when once they have bound themselves to the surface with innumerable ligatures, fallowing is the only means of destruction. The harrow may be used in the first stages of the fallow, provided



vided no other root-weeds are to be at the same time destroyed. Skimming the surface with the plough, him, horse-hoe, or paring-spade, is more effectual against these weeds than deep ploughing<sup>r</sup>.

**WEIGELIA.** (So named by Thunberg in honour of Christ. Ebreufr. Weigel, author of Flora Pomerano-Rugica, &c. Béról. 1769. 8°.)

Lin. gen. Schreb. n. 280. Thunb. nov. gen. 5. fl. jap. 6. Juss. 421.

Class. 5. 1. Pentandria Monogynia.

#### GENERIC CHARACTER.

**CAL.** Perianth five-leaved: segments awl-shaped, erect, equal.

**COR.** one-petalled, funnel-formed: tube villose internally, length of the calyx: border bell-shaped, half-five-cleft: segments ovate, obtuse, from erect spreading.

**STAM.** Filaments five, inserted into the tube, filiform, erect, almost the length of the corolla. Anthers erect, linear, bifid at the base, obtuse at the tip.

**PIST.** Germ four-cornered, truncate, smooth, superior. Style from the base of the germ, filiform, a little longer than the corolla. Stigma peltate, flat.

**PER.**

SEED naked?

#### ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. funnel-form. Style from the base of the germ. Stigma peltate. Seed one.

#### SPECIES.

1. *Weigelia japonica.*

Lin. spec. ed. Willd. 1. 836. Thunb. jap. 90. t. 16. alt. holm. 137. t. 5. Linn. trans. 2. 331.

Sima utfugi et Nippon utfugi. Kämpf. amoen. 5. 855. Leaves sessile ovate-lanceolate.

2. *Weigelia corceensis.*

Lin. spec. ed. Willd. 1. 836. Thunb. in Linn. trans. 2. 331.

Korei utfugi. Kämpf. amoen. 5. 855. ic. select. t. 45. Leaves petioled obovate.

#### DESCRIPTIONS, &c.

1. Stem shrubby: branches opposite, smooth, round, ash-coloured. Leaves an inch long, without any petioles. Flowers on the branches and at the axils: pedicels three, one-flowered, bracted. Corolla purple. Native of Japan.

2. Branches decussated, smooth, ash-coloured, from erect patulous. Leaves serrate, acuminate, a hand in length. Petioles embracing, about an inch long. Native of Japan<sup>s</sup>.

**WEINMANNIA.** (So named in honour of Joh. Wilh. Weinmann, apothecary at Ratisbon, author of Phytanthozoonographia, 1735. Browne first named it Windmannia, which Linneus altered to the true name.)

Lin. gen. n. 493. Reich. n. 535. Schreb. n. 674. Juss. 309. Windmannia Brown. 212.

Class. 8. 2. Octandria Digynia.

Nat. Order of Saxifrage Juss.

#### GENERIC CHARACTER.

**CAL.** Perianth four-leaved: leaflets ovate, patulous.

**COR.** Petals four, equal, bigger than the calyx.

**STAM.** Filaments eight, erect, short. Anthers roundish.

**PIST.** Germ roundish. Styles two, length of the stamens. Stigmas acute.

**PER.** Capsule ovate, two-celled, two-beaked.

**SEEDS** about eight, roundish.

#### ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. four-petalled. Caps. two-celled, two-beaked.

#### SPECIES.

1. *Weinmannia glabra.*

Lin. syst. 375. Willd. 2. 436. suppl. 228. Lamarck illustr. gen. t. 313. f. 1. Swartz obs. 151.

W. pinnata. Lin. spec. 515. Reich. 2. 202.

Leaves pinnate, leaflets obovate crenate even.

2. *Weinmannia hirta.*

Lin. spec. ed. Willd. 2. 437. Swartz prodr. 63. descr. 2. 691. Brown. jam. 212.

<sup>r</sup> Marshall, Yorkshire, 1. 361—376.

<sup>s</sup> Thunberg.

Leaves pinnate, leaflets ovate serrate-crenate, beneath and on the racemes hirsute.

3. *Weinmannia tomentosa.*

Lin. syst. 376. Willd. 2. 437. suppl. 227.

Leaves pinnate, leaflets ovate quite entire tomentose underneath, stipules caducous.

4. *Weinmannia trifoliata.*

Lin. syst. 376. Willd. 2. 438. suppl. 227. Lamarck illustr. gen. t. 313. f. 2. Thunb. prodr. 77.

Leaves ternate, leaflets elliptic-lanceolate serrate very smooth, panicles compound.

5. *Weinmannia racemosa.*

Lin. syst. 376. Willd. 2. 438. suppl. 227. Forst. prodr. n. 173.

Leaves simple obovate-elliptic obtuse toothed, racemes smooth.

6. *Weinmannia parviflora.*

Lin. spec. ed. Willd. 2. 438. Forst. prodr. n. 174.

Leaves simple oblong acuminate toothed, racemes rough-haired terminating panicled.

#### DESCRIPTIONS, &c.

1. This is a small tree with opposite branches, the last of which are subpubescent. Leaves opposite, unequally pinnate; the common petiole winged, with subovate joints: leaflets eleven or thirteen, small, naked, blunt, opposite, sessile, narrower on the inner side towards the base, having three or four serratures on each side. Stipules ovate, the size of the leaves, deciduous, solitary between the pairs of the petioles. Racemes terminating, solitary, peduncled, longer than the leaves, erect, simple. Flowers numerous, white, the same size as Tiniarella. Pedicels one-flowered, several from each point of the peduncle. Calyx-leaves oblong, white. Petals lanceolate three times as long as the calyx. Germ ovate, two-grooved. Styles white, filiform. Stigmas headed<sup>r</sup>.—Swartz remarks, that it varies from the stature of a shrub to that of a tree forty feet in height. Native of Jamaica. Browne's plant is not this, but the next species.

2. This differs from the preceding in the pubescence of most of the parts; in having the joints of the common petiole subcordate, not obovate; the capsules oblong and short, not roundish, and longer beaked<sup>s</sup>. Native of Jamaica, on the top of the blue mountains in the southern parts of the island; also in Montserrat. Browne says it rises by a weakly slender stem, and shoots frequently to the height of six or seven feet; that the branches are few, slender, and opposite, as well as the ribs, which are always beautifully winged between the leaves, and that the flowers rise in loose bunches at the extremities of the branches.

3. This is a very branching leafy tree with a brownish bark. Leaves opposite, unequally pinnate. Common petiole winged, with obovate joints. Leaflets eleven or thirteen, small, thickish, regular, very downy beneath. Stipules one on each side, bigger than the leaflets, deciduous. Racemes towards the top very close, like spikes, on very short pedicels. Nectary bell-shaped, surrounding the stamens, quite entire, membranaceous. Found in New Granada by Mutis.

4. A very smooth shrub, not differing much in appearance from the Pteleas. Leaves opposite. Panicles axillary. Native of the Cape of Good Hope<sup>x</sup>.

5. Branches and branchlets smooth. Leaves opposite, petioled, smooth on both sides, bluntly toothed as in Populus monilifera. Racemes very long, axillary, solitary or in pairs, terminating. Native of New Zealand.

6. Branches round, smooth; branchlets pubescent. Leaves opposite, on short petioles, smooth on both sides, with remote sharp teeth. Racemes three to six at the ends of the branches in panicles. It differs from the preceding in the form of the leaves, the pubescence of the racemes and branchlets, and in having the flowers four times smaller. Native of the island of Otaheite<sup>r</sup>. **WEISSIA.** (From Frid. Guil. Weis, author of Plantae cryptogamicæ Floræ Gottingensis, 1778. 8°. There are several others of the same name.)

<sup>r</sup> Lin. f. st.

<sup>s</sup> Swartz.

<sup>x</sup> Linn. sup. 1.

<sup>y</sup> Willdenow.



A genus of Moss. *Ebrb. beytr.* 1. 179.—*Orthotrichum*.  
*Hedw. musc.* 2. 96. *Bryum* Linn.—*Schreb. gen. n.*  
1648.

WEISSIA *Hedw.* See *Grimmia*. *Schreb. gen. n.* 1642.  
WELD. See *Refeda*.

WESTRINGIA. (So named by J. E. Smith, M. D.  
in honour of John Peter Westring, author of a Dissertation  
on the Lichen tribe, and their uses in dyeing, printed in  
the Transactions of the Stockholm Academy for 1794).  
Smith monogr. in Tracts of Nat. Hist. 1798.  
Class. 14. 1. Didynamia Gymnospermia.  
Nat. Order of *Verticillatæ*. *Labiata* Juss.

## GENERIC CHARACTER.

CAL. one-leafed, permanent, tubular bell-shaped, with  
five sides, and five prominent angles, without furrows  
or streaks, divided about half way into five equal, erect,  
lanceolate, beardless segments.

COR. one-petalled, ringent, twice as long as the calyx,  
reversed: tube length of the calyx, with a hairy orifice:  
border four-lobed: upper-lip a little longer, erect, clo-  
ven half way down: lower-lip in three deep equal seg-  
ments, divaricating, and of a linear oblong form.

STAM. Filaments four, about half as long as the border,  
spreading: two lower shorter, and most frequently  
abortive. Anthers roundish, two-lobed, incumbent.

PIST. Germ four-lobed. Style filiform, length of the  
stamens. Stigma cloven, small.

PER. none.

SEEDS four, naked, obovate.

## ESSENTIAL CHARACTER.

Cal. half-five-cleft, five-sided. Cor. reversed, with  
four segments, the longest erect, cloven. Stam. dis-  
tant; the two shorter or lowest abortive.

## SPECIES.

1. *Westringia rosmariniformis*.

*Smith monogr.* 282. t. 3.

*Cunila fruticosa*. *Solandri. Willd. spec.* 1. 122.

*C. frutescens*. *Donn cat. cant.* 5.

## DESCRIPTION, &amp;c.

This is a shrub very much branched: the branches  
either opposite or four together, square, silky, leafy.  
Leaves in fours, on very short silky footstalks, spread-  
ing, linear-lanceolate, entire, revolute, rather pointed;  
of a bright shining green above, and almost naked;  
clothed with white silky down beneath. Stipules none.  
Flowers from the upper part of the branches, axillary,  
solitary, on short flower-stalks. At the base of the  
calyx a pair of linear short silky bractes. Calyx silky,  
its segments naked with revolute margins. Corolla  
white, with purple spots about the orifice.

The leaves are slightly bitter, not aromatic; the  
flowers not inelegant, but without smell.

Native of New South Wales, near Port Jackson,  
and has flowered several times in the English Green-  
houses<sup>2</sup>.

WHEAT. See *Triticum*.

——, Cow. See *Melampyrum*.

——, Indian. See *Zea*.

WHIN. See *Ulex*.

——, Petty. See *Genista*.

WHITE BEAM TREE. See *Cratægus Aria*.

WHITE HELLEBORE. See *Veratrum*.

WHITE HOREHOUND. See *Marrubium*.

WHITE LEAF TREE. See *Cratægus Aria*.

WHITE THORN. See *Cratægus Oxyacantha*.

WHITLOW-GRASS. See *Draba* and *Saxifraga tridacty-*  
*lites*.

WHORTLE-BERRY. See *Vaccinium*.

WIDOW-WAIL. See *Cneorum*.

WILD BASIL. See *Clinopodium*.

WILD BUGLOSS. See *Lycopsis*.

WILD CUMIN. See *Lagocchia*.

WILD GERMANDER. See *Veronica*.

WILD LIQUORICE. See *Abrus*.

WILD PLANTAIN. See *Heliconia*.

WILD ROCKET. See *Brassica muralis*.

WILD ROSEMARY. See *Andromeda polifolia*.

WILD SERVICE. See *Cratægus torminalis*.

<sup>2</sup> Smith.

WILD TANSY. See *Potentilla Anserina*.

WILLIAM, SWEET. See *Dianthus*.

WILLICHIA. (So named by Mutis, in honour of Christ.  
Lud. Willich, physician at Nordheim, author of Obser-  
vationes botanicæ. Gott. 1747. 4°.—Observationes de  
plantis quibusdam, Gott. 1762, 8°.—Illustrationes  
quædam botanicæ, ibid. 1766. 8°.—Circa plantas quas-  
dam singulares aliqua notata, in nov. act. nat. cur. 4.—  
These Treatises are in Reichardi Sylloge. Died 1776.)  
*Lin. gen. Reich. n.* 54. *Schreb. n.* 67. *mant.* 553.  
*Juss.* 418.

Class. 3. 1. Triandria Monogynia.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, four-cleft, permanent: segments  
ovate, acute, spreading.

COR. one-petalled, wheel-shaped, twice as long as the  
calyx: tube scarcely any: border four-cleft, flat; seg-  
ments roundish, convex.

STAM. Filaments three, inserted into the divisions of the  
border, except the lowest, and shorter than it. Anthers  
roundish, erect, two-celled.

PIST. Germ superior, roundish, compressed. Style fili-  
form, length of the stamens, declined at the lowest di-  
vision of the border. Stigma blunt.

PER. Capsule roundish, compressed with a sharp edge,  
two-celled, two-valved: partition opposite.

SEEDS many, roundish, minute. Receptacle globular of  
two hemispheres.

## ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. four-cleft. Caps. two-celled,  
many-seeded.

## SPECIES.

1. *Willichia repens*.

*Lin. syst.* 82. *Reich. 1.* 94. *Willd. 1* 189. *mant.*  
558.

## DESCRIPTION, &amp;c.

1. Root annual, fibrous. Stem creeping, filiform,  
branched, herbaceous, hirsute, about two feet high.  
Leaves alternate, petioled, somewhat remote, orbicular,  
subpeltate, crenate, an inch long, hirsute, reddish be-  
neath. Petioles very long, hirsute, thick. Peduncles  
axillary, in pairs, one-flowered, filiform, hirsute, length  
of the petioles. Flowers small, rose-coloured, with an  
hirsute calyx. Found in Mexico by Mutis<sup>2</sup>.

WILLOW. See *Salix*.

WILLOW-HERB. See *Lythrum*.

WILLUGHBEIA. (So named in memory of Francis Wil-  
lughby, Esq. F. R. S. the friend and pupil of Ray. Author  
of Ornithologia 1676, and Historia Piscium 1678; pub-  
lished by Ray with additions, after Willughby's death,  
which happened in 1672, when he was only 37 years of  
age.)

*Lin. gen. Schreb. n.* 417. *Ambelania Aubl. t.* 104:

*Pacouria. Aubl. t.* 105. *Juss.* 148.

Class. 5. 1. Pentandria Monogynia.

Nat. Order of *Contorta*. *Apocineæ* Juss.

## GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, acute, fleshy, very  
small.

COR. one-petalled, salver-shaped: tube wider at the base,  
cylindrical: border five-parted, flat: segments oblique,  
acute, more gibbous on one side, waved, imbricate at  
the base.

STAM. Filaments five, very short, inserted into the tube  
above the base. Anthers sagittate.

PIST. Germ roundish, superior. Style four-cornered.  
Stigma thick, ovate-headed, striated, two-cusped,  
placed on a flat ring.

PER. Berry ovate, one or two-celled.

SEEDS numerous, angular, nestling in pulp, or fastened to  
the partition.

## ESSENTIAL CHARACTER.

Contorted. Cor. salver-shaped. Stigma headed. Fruit  
a one or two-celled berry or pumpkin.

## SPECIES.

1. *Willughbeia acida*.

*Lin. spec. ed. Willd. 1.* 1231.

<sup>2</sup> Linn. mant.



*Ambelania acida.* Aubl. guian. 1. 266. t. 104.

*Stem erect, flowers axillary, fruit two-celled.*

2. *Willughbeia scandens.*

*Lin. spec. ed. Willd. 1. 1231.*

*Pacouria guianensis.* Aubl. guian. 1. 269. t. 105.

*Stem climbing, racemes tendril-shaped, fruit one-celled.*

DESCRIPTIONS, &c.

1. This is a tree seven or eight feet in height, and seven or eight inches in diameter, with a gray bark and a white loose wood; it spreads at top into many straight, knotted branches. Leaves opposite, ovate, oblong, smooth, quite entire, waved, on short half-embracing petioles. Flowers in a subsessile corymb of three or four flowers, with a little scale at the base of the peduncle and of each flower. The whole plant abounds in a milky juice. The fruit macerated in water has a pleasant acid flavour. Native of Cayenne and Guiana, in woods, flowering in september.

2. This is a shrub with many spreading knotty branches, spreading over neighbouring trees. Leaves ovate-acute, smooth, quite entire, waved, opposite, on short embracing petioles. Flowers in axillary racemes, appearing in may. It abounds, like the other, in a viscid milky juice. Native of Guiana<sup>b</sup>.

WIND FLOWER. See *Anemone*.

WINDMANNIA. See *Weinmannia*.

WINTERA. (So named by Murray from Captain William Winter, who brought the bark of this tree from the straits of Magellan in 1579.)

*Lin. gen. Schreb. n. 929. Drimys. Forst. gen. 42.*

*nov. act. upf. 3. 181. Juss. 280.*

Class. 13. 4. Polyandria Tetragynia.

Nat. Order of *Magnoliæ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, entire, gaping, inferior.

COR. Petals six, ovate, spreading.

STAM. Filaments numerous, cylindric, thicker at the tip, short. Anthers oval, twin, the cells cohering at the very tip only, and fastened to the tip of the filaments.

PIST. Germs four, obovate. Styles none. Stigmas flattened.

PER. Berries four, obovate, subpedicelled, four-seeded.

SEEDS four, ovate, subtriquetrous.

OBS. *Drimys granadensis* has twelve petals, eight germs and berries, each two-seeded.

ESSENTIAL CHARACTER.

Cal. three-lobed. Pet. six or twelve. Germs club-shaped. Styles none. Berries four or eight, obovate.

SPECIES.

1. *Wintera aromatica.*

*Lin. syst. ed. 14. 507. Willd. spec. 2. 1239. Forst. comm. goett. 9. 34. t. 7.*

*Drymis Winteri.* *Lin. suppl. 269. Forst. gen. n. 42. act. upf. 3. 181. Medic. obs. 5. 41. t. 1. Miller fasc.*

*Periclymenum rectum foliis laurinis, cortice aromatico, acri.* Sloane in *Aët. angl.* 1693. n. 204. p. 922. t. 1. *Peduncles axillary aggregate subtriflorous flowers four-pistilled.*

2. *Wintera granadensis.*

*Lin. syst. ed. 14. 507. Willd. spec. 2. 1239.*

*Drymis granadensis.* *Lin. suppl. 269.*

*Peduncles axillary three-flowered elongated, flowers eight-pistilled.*

3. *Winteria axillaris.*

*Willd. spec. 2. 1239. Forst. prodr. n. 229.*

*Drymis axillaris.* *Lin. suppl. 270. Forst. gen. n. 42. act. upf. 3. 182.*

*Peduncles axillary beaped one-flowered, flowers four-pistilled.*

DESCRIPTIONS, &c.

1. This is an evergreen tree, higher and larger than an Apple Tree, spreading very much both in root and branches. Leaves of a light green, an inch and half long, and an inch broad in the middle, decreasing to both ends, but terminating bluntly: footstalks half an

<sup>b</sup> Aublet.

inch in length. Flowers axillary, two, three or more together, on peduncles a quarter of an inch long, somewhat like those of the Honeysuckle, five-petalled, milk white, and smelling like Jasmine. Berries two, three, or more, on the same common footstalk, of a light green colour with some black spots, containing several black aromatic seeds, somewhat like the stones in grapes.

Captain Winter who went out with Sir Francis Drake, when he went round the world, at his return brought the bark of this tree with him from the straits of Magellan. He had found it to be very helpful to his ship's crew, both instead of other spices with their meat, and as a medicine very powerful against the scurvy. Clusius, from the Captain's name, called it *Cortex Winteranus*, and the tree *Magellanica aromatica arbor*. The writer of the journal of the Dutch ships that went to the straits of Magellan about 1599, called it *Lauro similis arbor, licet procerior, cortice Piperis modo acri et mordenti*. And Sebald de Weert, who was there, says, that both leaves and bark were used with their meat and muscles, to correct them in so cold a climate. Caspar Bauhin called it *Laurifolia Magellanica cortice acri*: and Jonston, *Arbor laurifolia Magellanica*.

Mr. George Handyside brought home with him a specimen of the leaves and flowers, and of the seed, (whence the figure in the Philosophical Transactions was drawn.) He used the leaves, with other herbs, in fomentations, with very good success: he also gave the bark inwardly, boiling half a dram of it with some carminative seeds, and giving it to those of his crew who were much afflicted with the scurvy. It usually sweated them, and they were very much relieved. He likewise administered the same medicine to many of the crew who were very ill by eating of the Sea Lion; and they were much relieved by it, although they had lost most of their skin, which peeled off in large pieces<sup>c</sup>.

John Bauhin seems to be the first who confounded this bark with that of *Canella alba*. Professor Murray, in the fourteenth edition of *Systema Vegetabilium*, was the first who made a distinct genus of *Canella*, and thus corrected the mistake of Linneus, who had combined the two genera, under the name of *Laurus Winterana*; though he afterwards made the *Canella* a separate genus, under the name of *Winterania*<sup>d</sup>.

Forster named Winter's bark *Drimys*, from the greek *δριμύς*, on account of its acrid pungent taste, and it stands under this name in the supplement of the younger Linneus. But Forster (in *Comm. Gott.*) afterwards corrected himself, and called it *Wintera*; and this name has been adopted by Murray and Willdenow. See *Canella alba*.

2. Branches longer than in the preceding. Leaves oblong, beneath more glaucous so as to be almost white; they are also longer. Peduncles one, two or three, filiform, elongated, yet shorter than the leaves, trifid above the middle. Pedicels one-flowered. Calyx as in the preceding. Petals as in that, but twelve, more oblong, whence the flowers are larger; the inner petals are smaller than the outer ones. Stamens as in the preceding. Germs eight, seldom varying from that number. Berries as many as there are pistils. Seeds about two, shining. The flavour of the bark the same as in the preceding, of which perhaps it is only a variety owing to the heat of the climate. Found in New Granada by Mutis.

3. The flavour of the whole plant, and especially of the bark, is very acrid and pungent. It flowers in november, and is nearly allied to *Michelia*. Native of New Zealand<sup>e</sup>. Forster remarks, that it is singular that the younger Linneus should have assigned one pistil only to the flower of this plant.

WINTER ACONITE. See *Helleborus*.

WINTERANIA. See *Canella*.

WINTER BERRY. See *Prinos*.

WINTER CHERRY. See *Physalis*.

WINTER CRESS. See *Erysimum*.

WINTER GREEN. See *Pyrola*.

<sup>c</sup> Philos. trans.

<sup>d</sup> Woodville, 2. 319.

<sup>e</sup> Linn. suppl.



WITCH HAZEL. See *Ulmus*.

WITHERINGIA. (So named by *Monf. L'Heritier*, in honour of *William Withering*, M. D. F. R. S. &c. Author of an Arrangement of British Plants, &c.)

*Lin. gen. Schreb. n. 1725. p. 791. L'Herit. fert.*

33. t. 1. *Juss. 450.*

Class. 4. 1. Tetrandria Monogynia.

Nat. Order of *Luridæ. Solanææ* *Juss.*

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, very short, indistinctly four-toothed, permanent.

COR. one-petalled: tube subglobular: border four-parted; segments lanceolate, acute, recurved. Nectary four submarginate excavations in the tube of the corolla.

STAM. Filaments four, erect, roundish, fastened below to the tube of the corolla, and villose. Anthers ovate, converging, opening at the sides.

PIST. Germ superior, ovate. Style filiform, a little longer than the stamens. Stigma he add.

PER. Berry two-celled.

SEEDS numerous, inserted into a two-parted receptacle.

#### ESSENTIAL CHARACTER.

Cor. subcampanulate, with four bumps in the tube.

Cal. very small, indistinctly four-toothed. Per. two-celled.

#### SPECIES.

1. *Witheringia solanacea.*

*Willd. spec. 1. 622. L'Herit. fert. 1. 33. t. 1. Ait. kew. 1. 149.*

#### DESCRIPTION, &c.

Stem herbaceous, scarcely a foot high, round, but cornered with the decurrent sides of the petioles, of a dirty red colour, and somewhat villose. Leaves alternate, in pairs, ovate-oblong, acute, quite entire, somewhat hairy, a hand in length. Petioles scarcely an inch long, scored above with two channels, red. Umbels many-flowered, axillary, sessile. Peduncles round, smooth, half an inch long. Corolla pale yellow: tube somewhat pitcher-shaped, bluntly four-cornered with four protuberances, a line and half in diameter; segments of the border trilinear. Filaments whitish, smooth without, hirsute within. Native of South America. Cultivated before 1742, by Robert James Lord Petre. It flowers most part of the year<sup>f</sup>.

WITSENIA. (*Nicholas Witsen*, author of Descriptions of shells found in the East Indies; and of Observations in New Holland: both in *Philosophical Transactions*, vol. 17 and 20.)

*Lin. gen. Schreb. n. 83. Thunb. nov. gen. 33. Juss. 59.*

Class. 3. 1. Triandria Monogynia.

Nat. Order of *Ensatæ. Irides* *Juss.*

#### GENERIC CHARACTER.

CAL. none.

COR. one-petalled, tubular: tube cylindrical, widening gradually: border six-parted, from upright spreading; segments oblong, obtuse.

STAM. Filaments three, inserted into the tube above, short. Anthers oblong, upright.

PIST. Germ superior. Style filiform, upright but drooping at the tip, longer than the corolla. Stigma emarginate.

PER.

SEED.

#### ESSENTIAL CHARACTER.

Cor. one-petalled, cylindrical, six-parted. Stigma emarginate. Caps. superior.

#### SPECIES.

1. *Witsenia maura.*

*Lin. syst. 83. Willd. 1. 247. Thunb. prodr. 7. nov. gen. 2. 34. cum. ic.*

*Antholyza Maura. Lin. mant. 175.*

#### DESCRIPTION, &c.

Stem two feet high, ancipital, covered with sheaths of leaves. Leaves ensiform, alternate, approximating, striated, narrow, the upper ones longer than the stem,

<sup>f</sup> Hort. kew.

with imbricate sheaths. Spike composed of alternate imbricate spikelets. Spathelets loose, scarious, subbiflorous, lanceolate. Corolla funnel-form, of the same figure with *Gladiolus Meriana*, the tube or neck altogether black; the border six-parted, equal, yellow; the three other segments tomentose on the outside. Stamens erect, white. Style with a single very slightly trifid stigma. Native of the Cape of Good Hope, flowering in may<sup>g</sup>.

Root tuberous. Stem somewhat woody, single or branched, covered at top with flat leaves sheathing at the edge, imbricate in a double fan-like row: gems terminating or axillary also, sessile subbiflorous compressed, with seven or eight imbricate distich scales, the two inner ones longer bifid: each flower having a short spathe concealed within the inmost gem<sup>h</sup>.

WOAD. See *Isatis*.

--- Wild. See *Refeda*.

WOLF'S-BANE. See *Aconitum*.]

WOODS and groves are the greatest ornaments to a country seat, and every seat is greatly defective without them; Wood and water being absolutely necessary to render a place agreeable and pleasant. Where there are Woods already grown to a large size, so situated as to be taken into the garden or park, or so nearly adjoining, as that an easy communication may be made from the garden to the Wood; they may be so contrived by cutting winding walks through them, as to render them the most delightful and pleasant parts of a seat (especially in the heat of summer), when those walks afford a goodly shade from the scorching heat of the sun.

Where persons have the convenience of grown Woods near their habitation, so as that there may be an easy communication from one to the other; there will be little occasion for wildernesses in the garden; since the natural Woods may be so contrived as to render them much pleasanter than any new plantation can possibly arrive to within the compass of twenty years, where the trees make the greatest progress in their growth; and in such places where their growth is slow, there cannot be expected shade equal to the grown Woods, in double that number of years; but there is not only the pleasure of enjoying a present shade from these Woods, but also a great expense saved in the planting of wildernesses; which, if they are large, and the trees to be purchased, will amount to no small sum. If the Wood is so situated as that the garden may be contrived between the house and that, then the walk into the Wood should be made as near to the house as possible that there may not be too much open space to walk through in order to get into the shade; if the Wood is of small extent, then there will be a necessity for twisting the walks pretty much, so as to make as much walking as the compass of ground will admit; but there should be care taken not to bring the turns so near each other, as that the two walks may be exposed to each other, for want of a sufficient thickness of Wood between; but where the Wood is large, the twists of the walks should not approach nearer to each other than fifty or sixty feet; in very large Woods, they should be at a greater distance; because when the under Wood is cut down, which will be every tenth or twelfth year, according to its growth, then the walks will be quite open, until the under Wood grows up again, unless a border of shrubs, intermixed with some evergreens, is planted by the sides of the walks, which is what I would recommend, as this will greatly add to the pleasure of these walks.

These Wood walks should not be less than eight or nine feet broad in small Woods; but in large ones fifteen feet will not be too much; and on each side of the walks the border of shrubs and evergreens may be nine or ten feet broad; which may be so managed, as to shut out the view from one part of the walk to the other, at those times when the under Wood is cut down, at which times there will be an absolute occasion for such plantations; and at all times they will afford great pleasure, by adding to the variety, as also by their fragrant odour.

<sup>g</sup> Linn. mant.

<sup>h</sup> Jussieu.



The former method which was practised in cutting these walks through Woods, was to have them as straight as possible, so that there was much trouble to make fights through the Woods, for direction how to cut them; but where this was practised, every tree which stood in the line, good and bad, was cut down, and many times boggy or bad ground was taken into the walks; so that an expense of draining and levelling was necessary to render them proper for walking on; besides this, there were many other inconveniencies attending these straight cuts through Woods, as, first, by letting in a great draught of air, which in windy weather renders the walks unpleasant; and these cuts will also appear at a great distance from the Woods, which will have a very bad effect; therefore the modern practice of twisting the walks through Woods, is to be preferred. In the cutting these walks, there should be particular care taken to lead them over the smoothest and soundest part of the ground, as also to avoid cutting down the good trees; so that whenever these stand in the way, it will be better to lead the walk on one side, than to have the tree stand in the middle; for although some persons may contend for the beauty of such trees which are left standing in walks, yet it must be allowed, that unless the walk is made much broader in those places than in the others, the trees will occasion obstructions to the walkers, especially when two or three persons are walking together; so that it will be much better to have the walks entirely clear from trees; and where any large-spreading trees stand near the walk, to cut away the small Wood, so as to make an opening round the trees, where there may be some seats placed, for persons to rest under the shade. The turns made in these walks should be as easy and natural as possible; nor should there be too many of them, for that will render the walking through them disagreeable; therefore the great skill in making these walks, is to make the turns so easy as not to appear like a work of art, and yet not to extend them straight to so great length, as that persons who may be walking at a great distance, may be exposed to the sight of each other; both these extremes should be avoided as much as possible, since they are equally disagreeable to persons of true taste. When a Wood is properly managed in this way, and a few places properly left like an open grove, where there are some large trees so situated as to form them, there can be no greater ornament to a fine seat than such a Wood.

We shall now treat of the culture of Woods for profit to the possessor, and for the public benefit of the nation. The great destruction of the Woods and forests which has been of late years made in this country, should alarm every person who wishes well to it; since there is nothing which seems more fatally to threaten a weakening, if not a dissolution, of the strength of this once famous and flourishing nation, than the notorious decay of its timber; and as this devastation has spread through every part of the country, so unless some expedient be seriously and speedily resolved on, to put a stop to this destruction of the timber, and also for the future increase of it, one of the most glorious bulwarks of this nation will, in a few years, be wanting to it.

And as there are small hopes of this being remedied by those intrusted with the care of the public Woods: therefore, unless private persons can be prevailed on to improve their estates, by encouraging the growth of timber, it is greatly to be feared, that in an age there will be a want of it for the supply of the navy.

It has been often urged, by persons whose judgment in other affairs might be depended on, that the great plantations, which for several years past, have been carried on in several parts of this kingdom, will be of public benefit, by the propagation of timber; but in this they are greatly mistaken; for in most of the plantations which have been made for years past, there has been little regard had to the propagation of timber; present shade and shelter have been principally considered; and in order to obtain these soon, great numbers of trees have been taken out of Woods, hedge rows, &c. which, if they had remained in their first

situation, might in time have afforded good timber; but by being transplanted large, are absolutely rendered unfit for any use but fuel; so that the great quantity of plantations which have been made, I fear, will rather prejudice than be of use, to the improvement of timber; nor is there any other method of increasing the useful timber of this country, than by sowing the seeds in the places where they are to remain; or in such situations, where there are plenty of Oaks in the neighbourhood, if the ground is properly fenced, to keep out cattle and vermin, the Acorns which drop from those trees will soon produce plenty of young trees; which, if properly taken care of, will soon grow to Woods.

The two most substantial timbers of this country are the Oak and Chestnut, though the latter has been of late years almost entirely destroyed in England, so that there are scarce any remains of trees of size in the Woods at present. But as I have already treated largely of the method of propagating both these trees for profit, under their respective titles, I shall not repeat it here. Next to these the Elm is esteemed as a profitable timber; but of these there are few cultivated in Woods, especially in the south part of England, where they chiefly grow in hedge rows, or plantations near houses; but in the north-west part of England, there are numbers of very large trees of the Witch-Elm growing in parks, and some in Woods, as if that tree was a native of this country, which has been much doubted; though as this tree propagates itself by seeds, it may be deemed an indigenous plant in England.

The Beech is another tree common in the Woods, especially upon the chalky hills of Buckinghamshire, Kent, Suffex, and Hampshire, where there are some very large Woods, entirely of this sort; some of which have been of long standing, as appears by the age of the trees; but whether this tree is a native of this country, has been a point often disputed.

The Ash is a very profitable tree, and of quick growth; so that in less than an age, the trees will arrive to a large size from the seeds; therefore a person may hope to reap the profits of his labour, who sows the seeds; but this is not a beautiful tree to stand near a habitation, being late in the spring in putting out its leaves, and the first that sheds them in autumn; nor is it a friendly tree to whatever grows near it, the roots drawing away all the nourishment of the ground, whereby the trees or plants which grow near are deprived of it; so that where the Ash-tree grows in hedge rows, the hedge rows in a few years are entirely destroyed; and if they are in pasture grounds, and the cows browse on them, the butter made with their milk will be bad; for which reason the Ash should be sown separate in lands which are inclosed, where cattle are not permitted to come, and at a distance from the habitation.

Upon sandy or rocky soils the Scotch Pine will thrive exceedingly, and turn to great advantage to the planter, provided the plants are planted young, and treated in the manner directed in the article *Pinus*, to which the reader is desired to turn, to avoid repetition. There are also several aquatic trees, which are very profitable to those who have low marshy lands, where the harder kinds of timber will not thrive; these are the Poplars of several sorts, the Willow, Alder, &c. but as these, and all the other kinds of trees have been fully treated of, both as to their propagation and uses, and also an account of the different soils in which each will thrive best, under their respective titles, the reader is referred to them for farther information; and I shall next treat of the general management of Woods, of whatever kinds of trees they are composed.

Where there are young Woods, great care must be taken of the fences; for if cattle should get in among the trees, especially while they are young, they will in a short time do infinite damage to them, by browsing on the branches, or barking the trees; so that during the first twenty years of their growth, they should be secured from them, and also from hares and rabbits, otherwise in severe frost, or when the ground is covered with snow, whereby they are deprived of other food,



they get into the Woods, and eat off the bark from the young trees, and gnaw all the branches within their reach; so that in a few days, where there are plenty of these animals, there may be such destruction made among the young trees, as cannot be retrieved, but by cutting them down to the ground, which will be a loss of several years: therefore those persons who have the care of young Woods, should be very diligent in frosty weather, in looking over the trees, and stopping the holes in the fences, to keep out all vermin.

Another care to be taken of young Woods, is the thinning the trees from time to time, as they increase in their growth; but in doing this, there must be great caution used; for it should be gradually performed so as not to open the trees too much, to let in the cold air among them, which will greatly retard their growth; nor should the trees be left so close, as to draw each other up like May-poles, but rather observe a medium in this work, cutting down a few each year according as there may be necessity for it, being careful not to permit those to stand, which may spoil the growth of the neighbouring trees, always observing to leave those trees which are the most promising.

The young trees in these Woods should not be lopped or pruned, for the more they are cut, the less they will increase in bulk; every branch which is cut off, will rob the tree of its nourishment, in proportion to the size of the branch; therefore the hatchet should not be suffered to come into young Woods, unless in the hands of skilful persons.

Where persons have more regard to the future welfare of the timber than their immediate profit, the under Wood should be grubbed up as the trees advance, that the roots may have the whole benefit of the soil, and their stems enjoy the free air; without which, their stems are generally covered with Moss, and their growth greatly stunted; as may be observed in all such Woods, where there is any quantity of underwood remaining; in which places it is rarely found, that the trees do ever grow to a large size; therefore where large timber is desired, the trees must have room to extend their roots and branches, without which it cannot be expected; but from a covetous temper, many people let their underwood remain as long as it will live; for as the timber increases, the underwood will be gradually decaying, by the shade and drip of the large trees; so that by this method the timber suffers more in a few years, than the value of the underwood; therefore by endeavouring to have both, neither of them can be so good, as where they are separately preserved.

If persons who have estates would be careful to nurse up trees in their hedge rows, it would in time become a fortune to their successors, as hereby the timber growing in the hedges may be worth more than the freehold of the estate, which has often been the case with estates from which their possessors have cut down timber for fortunes for their younger children; the frequency of this should encourage persons to be a little more attentive to the growth and preservation of young Woods, since the expence and trouble is not great, and the future profit very certain; besides, the pleasure of seeing trees of a man's own sowing make yearly advances, must be very great to those who have any relish for country amusements.

There are several persons who plant copses for cutting every ten or twelve years, according to their growth. These are usually planted in autumn, either with stools or young plants, which are drawn out of the Woods; the latter should always be preferred to the former. These copses are commonly planted with several sorts of trees, as Oak, Beech, Chestnut, Ash, Birch, Willow, &c. but the Ash and Chestnut are the most profitable, where they grow kindly, because the poles are very valuable; these also are good for hoops, so that there is no danger of having sale for these copse Woods when they are fit for cutting; but where the copses are intended to remain, there should be no standard-trees left for timber; because as the heads of the trees spread, and overtop the under Wood, it will cause that to decay; and where the standards are left

upon the stumps of the copse Wood, they will never grow to a large size, nor will the timber be so valuable as that produced immediately from a young root; and whoever will make the experiment, will be convinced, that it is more for the advantage of both to keep them in distinct Woods.

But where persons plant copses upon land free from trees, it will be the better method to sow the seeds, especially if Chestnut, Oak or Beech, are the trees intended; for although it is a prevailing opinion with the generality of persons, that by planting they save time, yet I am sure of the contrary; for if the seedling plants are kept clear from weeds, they will in eight or ten years out-grow those which are planted, and these unmoved copses will continue much longer in vigour than the other; so that for either timber or copse Wood, the best method is to prepare the ground well, and secure the fences, and sow the seeds, which is so far from losing, that in twenty years it will be found to gain time, which is what every planter wishes to do.

The usual time of felling timber is from november to february, at which time the sap in the trees is hardened; for when the sap is flowing in the trees, if they are cut down, the worm will take the timber, and cause it to decay very soon; therefore if the durability of the timber is considered, the trees should always be cut in the winter months; but as the bark of the Oak is so valuable for tanning leather, there has been a law passed, to oblige persons to cut these trees during the spring season, when the bark will readily peel off; by which the timber is rendered unfit for building either ships or houses, as it will be very subject to cast, rift, or twist, and the worm will soon take it; therefore it would be more for the public benefit, if a law were enacted to oblige every person to strip off the bark of such trees as are designed to be cut down in the spring, leaving the trees with their branches standing till the following winter, which will be found to answer both purposes well.

*[Directions for planting Woods by Mr. Boutcher.]*

Where the soil is loose and sandy, the trees must be planted in holes: all other soils must be fallowed and pulverized by frequent plowings and harrowings; grounds of a middling quality after grass, will require a summer and winter's labour at least, an obstinate clay not less than two. The common nurse for the better kinds of forest trees in exposed situations is the Scotch Fir: the different kinds of Poplars, and the great Maple or Sycomore, are very fit for this purpose, as they are of quicker growth than Firs, and may be planted of large sizes on the poorest lands with safety. The best season for planting light grounds, is as soon as possible after the beginning of october; for the moist and heavy, february and march.

Let every quarter of your Wood be bounded by a row of Poplars at two or two and a half feet asunder; in the heaviest and wettest places, let them be of the Lombardy sort; in thinner and lighter, of the white. These should be either rooted, or cuttings four or five feet high. If the whole ground is to be planted, without being divided by ridings or walks, having first gone round it, let lines of Poplars running from south to north be planted at one hundred, or in very exposed situations at eighty feet asunder.

In order most effectually to promote the growth of the more valuable trees, every second line may be of Sycomores; not next the Poplars, but among the trees intended for a longer continuance.

The distance of the trees in the Wood, at a medium, ought to be five feet every way; for plants may be too much crowded or drawn, as well as too much exposed.

Having planted half your intended Wood with Sycomores, in rows ten feet asunder and five in the row; proceed to plant, in the most generous deep but dry soils the Walnut, with English, Scotch and Cornish Elms; in the moist and heavy, the Dutch Elm; in coarse and stony the Chestnut and Ash; in light and sandy the Larch and Beech; and in clays of all qualities, though swampy and mossy, the Oak. If a little orna-



ment and variety is wished, a small mixture of the hardy American trees may be added.

Where the ground is various, and the trees thus adapted to the different soils; the groups of different trees in the several quarters will appear far more cheerful and picturesque than one uniform Wood of the same kind.

In mountainous rocky situations Firs are the greatest improvement, planted not above three years old, when after two years growth Oaks and other trees may be interspersed wherever the land will receive them.

Some advise that the best manner of raising Woods is by sowing the seeds on the spot. But of this I cannot approve, because, first, it is a very tedious practice, allowing it to succeed, which on many occasions it will not. 2. Because the ground must be as well prepared and kept as clear of weeds as in the nursery; the land as regularly dug about the plants, and in all respects as well cultivated as these. 3. It is a small proportion of the seeds sown that can remain in the Wood to make trees, and these are generally much injured from the others standing close together about them. 4. The expense is much greater in the end, than at once making a handsome finished plantation. I am therefore against raising a Wood after this manner, except with the Walnut, Chestnut, evergreen Oak, and a few of the other nut-bearing trees, that do not easily remove, or grow freely after it.

Others argue for planting seedlings two years old, as the most hardy, and likely to succeed in cold barren soils; but such having a downright tap-root, with few small roots, or fibres, being young and tender from a warm seed-bed, and immediately exposed to a bleak situation and a cold soil, cannot be likely to thrive so well as plants that have been inured gradually to the inclemency of the seasons, and coarser fare. Having then planted your nursing trees, and rejected both the sowing of seeds and planting of seedlings, let your plants be four or five years old: such will be able to get the better of all weeds, except the large-growing sorts. When these plants have stood four years, take away every second Sycomore, and in two years more, the remainder, with every second tree of the other kinds, which will leave the whole plantation at ten feet asunder. The trees which are taken away may be planted on the farms in hedge-rows, &c.

In eighteen or twenty years three-fourths more of the remaining trees, and all the Poplars must be taken away, which reduces them to twenty feet asunder.

It has been an almost universally received opinion that trees ought to be raised in the nursery on a poorer soil than that to which they are afterwards to be transplanted. On the contrary it is necessary to promote their vigorous growth at first, in order to their becoming stately and handsome; nor can this be effected by any other means than being early nursed in a generous soil; for if they are barely supported in meagre ground, they will never after become strong, when removed to that which is rich. From their harsh and unfriendly food they get bad roots, are hide-bound, and have weak crooked branches. But though trees should be raised on good land, yet it must be such as is naturally so, not what has been forced and pampered with dung.

*Dr. Hunter, of York, has made the following observations on raising Woods from seed.*

In Scotland and some of our northern counties, the practice of raising Woods in waste lands, by sowing acorns, chestnuts, beechmast, fir-seeds, ash-keys, &c. is much recommended. The expense attending it is trifling, when compared with that of planting. Charles Turner, Esq. of Kirkleatham, in the county of York, has within these few years sown upwards of four hundred acres of waste and moor land, with the various seeds of forest trees. In the neighbourhood of coal and lead mines, and iron forges, such Woods will become highly profitable at an early period. Mr. Turner's estate at Kildale may serve as an example to such gentlemen as wish to bring their weak, rocky and moor lands into the most profitable cultivation. Here the turf was taken up with a paring spade, the earth was

stirred, the seeds were put in and covered. In some places seedling Firs, Larches, and Oaks were set instead of seeds. Such work should be performed early in the spring; and in lands that swell after frosts, the turf should be removed and the soil stirred the autumn before. Moor earth, being very loose, should be well stirred, the plants put in very early, and care taken to press the earth well to their roots.

When a large tract of land is designed for Wood, especially if it be of an indifferent quality, it may be thus managed; plough it in October or November, and in the following spring plough and harrow so as effectually to destroy the turf. Sow it with turnip-seed about the third week in June; hoe the crop well, and if possible let it be fed off with sheep. If another crop of turneps be taken the succeeding year, the land will be in excellent condition for receiving the seeds of Forest-trees. Some sow them with oats, and others take a crop of spring rie with acorns. Certain it is that trees raised thus from seed will make better timber, and come sooner to maturity, than when they are drawn from a nursery.

As much depends on keeping the seedling plants clean, drill sowing is much preferable to broad-cast, because they may thus be horse-hoed at a small expense.

*Such as plant on a great scale, will find much instruction in the account of the plantations made on the Duke of Portland's estates in Nottingham Forest, by Mr. Speechly, his grace's gardener.*

The ground is a continuation of hills and dales; the soil chiefly gravel on the former, and sand in the latter. The Woods are planted on the hills.

When the part intended to be planted is fixed upon, some well-situated valley is chosen as near the centre as may be, for a nursery. Here a piece of ground of a proper size is fenced so as to keep out all noxious animals, a carriage road is left through the middle, with boarded gates at each end. The rest of the ground is trenched about twenty inches deep, which may be done for three pounds ten shillings or four pounds an acre: this work is best done in spring, when the planting season is over. If after trenching, two or three chaldrons of lime be laid on an acre, the land will produce a crop of cabbages or turneps, which being eaten off by sheep, will make the land in fine order, and it will require nothing more than a common digging.

If an Oak Wood is intended to be raised, draw drills a foot from each other, after every fifth row leaving a space of two feet for the alleys. In these sow the acorns so thick as nearly to touch each other. When the tops of the rows meet, take away one row on each side the middlemost, which leaves the remaining three rows the same distance apart as the breadth of the alleys. In taking them up do not injure the roots. When the tops meet again, take up every other row, leaving the rest four feet asunder, till they arrive to the height of about five feet, which is as large as they should ever be planted. In taking up these, dig a trench at the end of each row full two feet deep; then undermine the plants and let them fall into the trench with their roots entire, much of their future success depending on their being well taken up.

Go over the nurseries every winter to shorten the strong side shoots, and to take off one of all such as have double heads.

The ground intended for Woods should be fenced at least a year before it is wanted; and got into order for a crop of turneps; two chaldrons of lime should be laid on an acre, which will bind the land and make it fall heavy, if it is so light as to be liable to be blown from the roots of the young trees. Part of the turneps should be eaten off early in the autumn, forward planting generally succeeding the best.

This being done, plough the ground with a double-furrow trenching plough to the depth of twelve or thirteen inches; which will be of great service to the plants, and save much trouble in making the holes.

The planting season being arrived, as soon as the plants are taken up, dig a trench at least fifteen inches deep, and set the young trees in it with their tops aslant, covering



covering their roots as you go along, and almost half way up the stem, with the earth that comes out of a second trench, which fill in like manner, and so on, till you have about a load in a heap. In light soil this trouble is but little, and the plants are always secure from the roots drying or freezing. A low-wheeled waggon will carry them from the heaps to the pruners, who should have a portable shed to work under; which is also convenient to shelter the other men in stormy weather. Cut off all the branches close to the stem to about half the height of the plant, shortening the rest of the top to a conical form in proportion to the size of the plant: in pruning the roots only cut off the extreme parts that have been bruised by taking up, or such as have been damaged by accident; planting with as much root as can be had.

As soon as they are pruned, let them be taken to the planters by the carriers, who are generally a set of boys, with some of the worst of the labourers. The planters go in pairs, one making the holes, the other setting and treading the plants fast, which work they commonly do by turns. In making the holes throw out all the bad soil that comes from the bottom; if the planting be on the side of a hill, throw this on the lower side of the hole, so as to form a kind of basin, in order to stop the rains. Make the holes sufficiently large, throw a few spadefuls of the top soil into the hole, setting the plant with its top rather inclining to the west; then fill up the hole with the best top soil, taking care that it closes well with the roots. When the hole is well filled up, let one of the planters tread and fasten the tree firmly with his foot, while his partner proceeds to make the next hole. This fastening is much to be attended to, for if the tree once becomes loose, the motion occasioned by the wind will destroy the fibres as fast as they are produced: and it is to guard against this, that so much of the top is taken off.

Three or four hundred Birches of a large size may be planted on an acre, with nearly the same number of the first sized Oaks; and here and there a Beech, Larch, Spanish Chestnut, &c. besides patches of Hollies, Laurels, Yews, Junipers, &c. on the outsides of the Woods, intermixed with Tulip-trees and other rare trees, and Cedars of Lebanon at good distances: and within, other patches of Beech, Larch and Spanish Chestnut; altogether producing a good effect on unequal ground by a diversity of tints and shades. After this a quantity of smaller sized Oaks may be planted; and lastly a considerable number of small Birches; which may be removed to succeeding plantations after five or six years. Thus upwards of two thousand plants of different kinds of trees are set upon an acre of land in an irregular manner.

After the whole planting is finished, sow acorns all over the plantation, except in the patches, in short drills of about a foot in length; these probably at last will make the best trees.

The planting should, if possible, be finished by the end of february.

Towards the end of april, when the ground is moist, go over the whole, and fasten all such trees as are become loose. In june cut off all tall-growing weeds with the hoe; but in very light lands, the sooner the ground is covered with grass the better. On some lands it is certainly better to plant in rows, and to keep the ground clean hoed; but in light sands, the soil by this method will frequently be carried by the winds into the vallies, and the plant will be apt to miscarry in a dry season. Nay it is no bad way on such lands to sow furze, as soon as the planting is done<sup>1</sup>.

Cut down the tall-growing weeds two or three times the first summer, and once the next. The winter after planting, fill up the places with fresh plants where they have miscarried: after which there is little to be done till the fourth or fifth year; by which time the small-sized Birch, and seedling Oaks will be grown to a proper size for transplanting: too many must not be taken away in one season, but by proper management there will be a supply of plants for at least half a dozen years to come.

<sup>1</sup> This is recommended by Evelyn, chap. 2.

About the time that the smaller Birches want thinning, the large ones will require to have their lower branches taken off, to keep them from injuring the Oaks: and this is the first profit of the plantations, the Birch-twigs being readily bought up by the broom-makers. Continue this pruning till the Birches are grown large enough for fencing rails, then cut them down.

By this time the Oaks will be grown to the height of twelve or fourteen feet, and will draw up very fast. They must then be thinned from time to time, and their dead branches cut off: but the thinning must be done with caution, and they may be left very close for the first fifty years. In twenty-eight years the Oaks will be twenty-five or twenty-six feet in height, and in girth eighteen inches: in fifty years they will be sixty feet in height and upwards, and above three feet in girth: from their closeness, these trees will be fifty feet in the bole.

The Earl of Fife's plantations were begun about the year 1757. They consist of about seven thousand acres of bleak and barren moor in the counties of Aberdeen, Banff, and Moray. He began first with inclosing his park at Duffhouse in the county of Banff, where there was not a tree, and it was generally believed that no Wood could thrive so near the sea coast: he has however now every kind of forest trees in it, from thirty years old, in a most thriving state.

In planting his barren moors, where there are stones, he incloses with a stone wall five feet high, coped with two turfs, which costs about fifteen shillings every scotch chain of twenty-four ells; and where there are no stones, he incloses with a fence of turf, five feet high, four feet wide at the foundation, and twenty two inches at top, at four shillings the scotch chain. He finds these to answer as well as the stone, there being many of them above twenty years old, as good as at first.

He plants in every acre about one thousand two hundred trees. He used to plant above three thousand, but by experience he finds it better not to plant so thick, making them up, if necessary, the third year. The greatest number of the trees are Scotch Firs, raised by himself, or purchased at tenpence the thousand, planted from the seed-bed at three years old. He only considers these as nurseries to his other trees, and regularly cuts them out, when they have done their duty, and are profitable for firing, or useful in agriculture. He plants every other species of forest trees intermixed with the firs.

He orders different pieces of the moor to be trenched where the soil is best, and most sheltered, a little lime and dung to be laid on, and seeds of trees to be sown there for a nursery. He also plants in beds, year-old trees of different kinds, taken from his other nurseries; and after they have been there three years, disperses them all over his plantations: this he finds very beneficial, as they are raised in the same soil.

When he is filling up the plantation, the Firs are then, for the first time, cut down; or they are transplanted, being raised with balls of earth, when the moor is wet with rain, which is very easily done, and they are carried to inclosures of ten or twelve acres, where from a desire of forward woods, he plants trees more advanced. — They are planted in pits about forty feet distance, seldom or ever fail, and answer a second time as nurseries.

A small allowance to a few labourers serves to guard the inclosures against injury from cattle; and if the fences are properly executed, they require very little repair.

The most regular attention must be had to weeding the plantation, the value and prosperity of the Wood depending upon this being done at all ages, in the most exact manner. In order to facilitate this, roads are made through all the plantations, according to the situation, but never in a straight line, so as to draw violent winds: these roads make agreeable rides through fine Woods, formerly a bleak moor, and answer both for filling up vacant spaces, and carrying away the weeds.

He begins to plant in october, and continues till april: if the weather is frosty and not fit for planting, all the people are employed in weeding.

Weedings of Ash, Oak, Elm, and Beech, from twenty to thirty years growth, are worth there from



from seven shillings to ten shillings a tree. The number of trees to be left, should entirely depend on their not touching each other, so as to bruise the branches.

With proper management the weedings may not only pay the expense for thirty years, but more than any yearly rent; and the timber then standing, will be of great value, increasing every year, and so much gained: but all this depends on judgment in weeding, and not over pruning, so as not to have too many trees standing with amputated limbs.

Every kind of tree thrives in the moors, when sheltered by Scotch Firs: where there are hollow or loamy sandy places, Oak, Beech, Ash, Elm and Larch mixed may be planted, without the Firs being so thick as on harder ground. The Firs afford both shelter and moisture, advancing the other trees greatly, only they must not be allowed to overtop them, so as to keep them from air: they are also the best nurses, because where they are pruned they never put out another branch; and when cut down, the roots die, and do not rob the ground by any farther growth.

A mixture of trees is best in any soil, and when any fail, they can be filled up with trees that are found to thrive best. The Larch and Silver Fir, planted about three years old, thrive better than any tree, and grow to a great size. Where ground is unequal, the hills may be covered with Larch, the hollows with Silver Firs, and the flat with different mixed trees.

Plantations should be thinned, whenever the branches touch. The principal object is early weeding (thinning). Many persons, instead of this, prune their trees; but this I think ruinous, as the vigor of trees depends on the limbs.

In plantations about twenty years old, it may be necessary sometimes to grub the roots of trees that are too near; but if they are regularly thinned, this will not be often required, as the large trees, with vigorous branches, will keep the underwood down.

Planting all kinds of trees, that are intended to stand, is better than sowing them: for trees from seeds sown never grow so well as when they are properly mixed, and planted in soils which they thrive best in.

When ground is better than in the moors, and the extent not so great, it should first be ploughed, and then a kind of fallow given it with the break-harrow, to destroy the couch, and make it as clean as possible. A little lime is of great service. When the ground is in good order, plant it with such trees as you choose from four to six feet high, at eight or ten feet distance. The whole must be hoed three or four times a year, during six or seven years. In that time, such trees as can be spared may be removed to other plantations, where they are sheltered; and in about seven years the plantations will shade the ground, and prevent the couch from doing any injury. You will then have only to transplant or cut where the trees are so thick as to interfere.

Trees planted among furze or broom receive no injury from them, but, if they thrive, soon get the better of them, particularly Firs. Wet places should always have drains to carry off the water; for although moist ground may be good for some trees, yet stagnated water always injures; and the couch, rushes, &c. where water is not conveyed away, are destructive.

Nothing is more dangerous than improper pruning of trees that are intended to stand for timber. No Fir-tree should ever be pruned, unless to cut off the branches near the ground: all other trees should be pruned with a friendly hand; and only the branches taken away that rival the growth of the trunk; in general, these branches are near the ground.

Autumn is to be preferred to the spring for sowing, but so as that the frosts may be over before the plants appear above ground. The earth is the best preserver of seeds; every seed which has a bark, is best preserved in that: others may be kept in bags or boxes, always taking care not to exclude them too much from air.

Cattle should not be permitted to pasture in plantations, so long as the branches of the timber trees are within reach, or any advantage is to be got from the underwood<sup>k</sup>.

<sup>k</sup> Young's Annals, 9. 107. and 10. 529.

Mr. Marshall is copious upon the article Woodlands<sup>l</sup>. For the purpose of raising timber for ship-building, where crookedness is required, he recommends open Woods. He might have added that hedge-row timber will also answer that purpose: and though crooked timber is wanted for knees, yet much clean straight stuff is required for beams, plank, &c. Where straightness and length of stem, and cleanness of grain are wanting, close Woods or Groves are more eligible; and where stub-wood is the principal object, coppices unincumbered with trees, are most adviseable.

Mr. Marshall reconciles the dispute about sowing or planting, in order to raise Woods in the following manner. Where the strength of the land lies in the substratum, whilst the surface soil is ungenial, by all means sow, that the roots may strike deep: but on the contrary, when the top soil is good, and the bottom of an opposite quality, plant, or else sow and tap the young plants as they stand, to check their downward tendency, and strengthen their horizontal roots. How far this theory may answer in practice I know not, but I must own that I have a predilection for sowing, or setting the acorn itself, in order to raise good large timber for ship-building and other great purposes. In forests, the bushes and fern may be made use of successfully for rearing trees from the falling acorns and mast; or nature may be assisted by inserting acorns among the bushes in proper places.

As to the comparative expense of sowing and planting, Mr. Marshall observes that two things are to be considered: the actual expense of labour and other contingent matters, and the loss of time in the land occupied. With respect to the former, sowing is beyond comparison the cheapest method; but in regard to the latter, planting may seem to have a preference; for the seed-bed is small compared with the ground to be planted, and whilst that is rearing the seedling plants, this continues to be applied to the purposes of husbandry. However if we consider the check which plants in general receive in transplantation, and if the void spaces of an infant Wood may, for several years after sowing, be still cultivated to advantage, the preference is evidently on the side of sowing.

As to the arrangement of the wood plants, against steep hangs, where the plough cannot conveniently be used, the seeds may be sown at random, or if plants be put in, the quincunx manner will be preferable to any: but in more level situations the drill method is the most eligible, for the sake of keeping the infant Wood clean at the least expense.

Where a considerable tract is intended to be converted into Woodland, the whole quantity of land should be ascertained, and divided into annual sowings, to be regulated by the uses to which the underwood is to be put, in order to produce a regular succession of annual falls. These must be fenced, not only against cattle and sheep, but hares and rabbits. The sort of fence must be determined by the materials which the country affords.

If the soil be stiff, it should receive a whole year's fallow, as for wheat; if light, a crop of turneps may be taken: at all events, it must be made perfectly clean, particularly from perennial root-weeds, before the tree-seeds are sown. If the situation be moist, the soil should be gathered into wide lands, not high, but sufficiently round to prevent surface water from lodging upon them.

October and november are the fittest months for the autumnal, and march for the spring sowing: but attention should be paid to the season, and the state of the soil.

The land being in fine order, and the season favourable, the whole surface should be sown with corn or pulse adapted to the season; as wheat or rye in autumn, beans or oats in spring. The quantity of seed should be less than what is commonly sown for a crop, in order to give a free admission of air.

The tree-seeds must then immediately be sown in lines or drills across the lands: acorns and nuts should be dibbled in, whilst keys and berries should be scattered in drills, as garden peas are usually sown.

<sup>l</sup> Planting, vol. 1. 120. ed. 2. 1796.



The distance between the rows may be a quarter of a statute rod, that is four feet one inch and half. Stakes being driven at the ends of these, a line is stretched to dibble or draw the drills by. If the plot be extensive, glades for the purpose of roads, should be left at convenient distances.

The species of underwood must be determined by the consumption or demand. The most proper tree for these open Woods is the Oak. The usual space allowed to timber trees among underwood is thirty feet; two rods or thirty-three feet will not be found too great a distance.

The Oak and Hazel rising the first year will be visible at harvest; but Ash keys lying two and sometimes three years, their drills must have some mark to distinguish them, to prevent their being disturbed in ploughing the intervals. If beans be the crop, a few oats may be scattered among the keys for this purpose, or the contrary.

The crop should be reaped, not mown, and carried off with all convenient care.

The second year's crop may be potatoes, cabbages or turneps, according to the soil. Or, if the first was corn, this may be beans, and the contrary.

The tree-drills must be kept perfectly clean by weeding and hand-hoeing.

In the spring of the third year, look over the drills of Oak and Hazel, and fill up vacancies from the parts where plants are superfluous: deferring those of the Ash to the fourth year.

If seedlings be wanting for laying into hedges, and filling up corners, or if they should be saleable in the country, the superfluous ones may be drawn out in the spring of the third and fourth year, and transplanted into some vacant ground.

The first cutting should be timed by the plants themselves. Whenever the rows of Oaks intended for timber, are in danger of being drawn up too much, the whole must be cut down to within a hand-breadth of the ground, except the Oaks intended for stands, which should now be set out at their proper distances, as near in a quincunx order as the best plants will allow.

The young stands will require to be more or less pruned: the lower side shoots must be taken off, and their heads reduced, so as to prevent them from being top-heavy. But if the first fall is made in due time, their heads will want little pruning. In transplanting, the roots have fresh fibres to make; but here they are fully prepared to send up the necessary supplies, and the more top there is to promote the ascent, the quicker progress the plants will be enabled to make.

The first fall therefore must by no means be deferred until the plants be drawn up too slender to bear a well-sized top; for they will then be apt to stoop under the weight of their own leaves, and to be bowed to the ground by a shower of snow.

The second fall should be timed according to the ware which the country calls for: only the timber trees must not be injured by being crowded by the underwood: rather than this should be the case, the coppice wood must be felled, even though it should not have reached its most profitable state.

After the second and every succeeding fall of underwood, the timber stands should be gone over, their leaders kept single, and their heads set up, until the stems have reached the height of fifteen or twenty feet; when their heads should be permitted to spread, and take their own natural form.

In raising a Wood against a hang too steep to be cultivated with the common plough, after the wood-seeds are sown; but which may be fallowed and brought into proper tilth by the turn-wrest plough: the planter has his choice, to sow, to put in seedlings, or transplanted trees. In the first, the expense of cleaning by hand will fall heavy; and in the last, the labour of the nursery will not be less burdensome. The middle path therefore is most adviseable.

The seedling plants may remain until the third year in the seed-bed; by which time they will have acquired sufficient strength to struggle with the lower order of weeds. They may be set irregularly or in drills: and acorns may be dibbled in among them to insure success.

If the hang is so very steep or so strong, that even the turn-wrest plough cannot be used, seedling plants, and acorns or other tree-seeds may be put in, without any previous preparation, except that of clearing away bushes, and burning off the weeds and rough grass. In this case, the number of plants, and the quantity of acorns, should be greater than when the ground has been prepared by a fallow.

In the southern counties, Mr. Marshall says, he has seen the Oak rise fortuitously, or with little assistance of the woodman, to timber of the first quality. In the midland counties, he has examined Oak Woods of different ages, which were propagated by sowing acorns with arable crops, or by setting them in the turf of grass land, and leaving the young plants to nature; and this with good success. In the Highlands of Scotland, he has observed mountainous districts covered with planted trees of various ages and species; and this too with a success, which, seeing the inaccurate manner in which they are frequently put in, and the neglect they afterwards experience, is almost incredible. Nevertheless he still remains an advocate for the practice of treating young Woods as nursery grounds; because by keeping the soil in a state of tilth, and free from weeds, much time is gained in their early growth, and a strong vigorous habit is given to the youthful plants; and because a favourable opportunity is thus obtained for removing supernumerary plants for sale, or for other plots of planting, or for filling up vacancies in parts too thinly stocked.

In planting Woods without underwood, which Mr. Marshall calls Timber Groves, not only the Oak, but any other trees adapted to the soil may be introduced, as the Chestnut, the Walnut, the Ash, the Elm, the Beech, the Cherry, the Larch; and of aquatics, the Poplars, the Willow and the Alder.

The Elm, Chestnut, Walnut and Cherry require a good soil and mild situation; the aquatics of course will be confined to moist low grounds; the Beech and Larch will thrive in bleak barren places; whilst the Oak and Ash can accommodate themselves to almost any soil or situation; though they seldom rise to profit on bleak and barren sites.

The Scotch Fir is properly a mountain tree, and ought only to be planted on bleak and barren heights, and even there the Larch is found to outbrave it. In better soils and milder situations, the wood is worth little, and it is unfit to be associated with other timber trees: it should therefore only be introduced in ornamental scenery, or as a nurse for more valuable timber.

Mr. Lambert, in his elaborate and splendid work on the genus Pinus, says, it is surprizing that this species is not more cultivated in waste grounds, as the few planted on Bagshot and Hounslow heaths, &c. succeed so well. Mr. Davis, in the same book, affirms that the Scotch Fir raised in England is equal to the foreign in weight and durability, but is seldom so fine in the grain, and has a greater quantity of sap owing to its rapid growth, occasioned either by the superior strength of the land, or by being planted at greater distances, or both. But the quality is sufficiently similar to ascertain that they are the same species. A foot square of this wood, english growth, and moderately dry, will weigh fifty-one; and a foot of Oak not much more than sixty-one. A tree one hundred years old may measure four loads, or two hundred feet, and is fairly worth fifteen pounds. Land planted with Scotch Firs eight feet and a quarter apart, or six hundred and forty to an acre, will pay ten per cent compound interest, supposing very poor land at three shillings an acre, worth about four pounds in fee, and the planting to cost six pounds more. In twenty-eight years ten pounds at compound interest will be forty pounds, and in that period the trees, at only two and sixpence each, will be worth eighty pounds.

Spruce Firs, according to Mr. Davis are perhaps next in value to Scotch Fir, and what is remarkable; those grown in England are superior to any imported. Not being hurt by knots, it is the better for rapid growth, and the deal is the handsomer. It does not grow well in exposed situations, but loses its side branches,



branches, becomes mossy, and dies: if planted too close, it never rises to any size. Mr. Miller says they should be set eighteen or twenty feet asunder. Nothing can be more pleasing to the eye than fine lofty Spruce Firs, feathered down to the ground, scattered over a carpet of grass cropped close by sheep; as may be seen in some parts of Switzerland.

The Silver Fir, the most beautiful in external appearance of all the genus, either young or old, grows much faster than either of the above. At one hundred years old it is frequently above one hundred feet high, twelve or thirteen feet round, and contains at least six loads of timber, worth about fifteen pounds. The Wood is more open than the Spruce, and therefore should be used in large scantlings, where its strength and toughness render it a valuable wood, particularly for beams; only great care must be taken that the ends are dry and accessible to air. I have experienced what Miller says to be true, that the young shoots are often killed by spring frosts.

The Weymouth Pine is still lighter and more open in the grain. Its principal use is for masts of ships, for which its toughness makes it proper. It will, in strong land well sheltered, get to four or five loads in one hundred years, worth eight or ten pounds. In America this tree attains two hundred feet in height. It does best here in sheltered crevices and recesses of mountains.

Mr. Davis remarks, that it is a mistake to suppose that Fir trees should be cut in summer, because the sap is then afloat; whereas they should always be cut when the sap is stagnant, namely in winter. Fir cut in summer will become full of mushrooms in twelve months after.

Mr. Davis does not seem to have been fully aware of the value of Larch, which is now generally acknowledged. See our article PINUS LARIX.

The Oak, Ash, coarse-leaved Elm, Beech, Chestnut, Walnut and Cherry, may be raised in drills, in the manner already prescribed, except in the method of training. The Pines being of a hazardous nature, when in their infant state, it is adviseable to raise them in seed-beds, and set them out as seedling plants. The fine-leaved Elm must be raised from layers, and the aquatics from sets or cuttings.

When Grove-timber is raised by sowing in drills; if seedling plants be wanted, the rows may be thinned the third and fourth years, until the remaining plants stand from twelve to eighteen inches apart. This done, nothing will be requisite, until some kind of ware can be cut out, as edders, hoops, stakes, &c.

In this stage of growth, the rows should be gone over every winter, and all the underling plants cut out, within the ground, if practicable, which will in general kill the roots, and save the expense of grubbing. If the remaining plants are not already too much crowded, those which yet struggle for the light ought to be left, to assist in drawing up, with greater certainty, those which have gained the ascendancy.

This conduct should be observed, from the time of the first cutting, until the trees are set out, at distances best suited to their respective natures, and according to the accidental tendency which they happened to take in rising.

The thinning of a timber Grove should be directed by the strength of the plants, and the uniformity of the canopy, taken jointly. The woodman's eye ought therefore to be directed towards the tops, rather than to the roots of his trees.

If the Grove be thinned too fast, its upward growth will be checked, and the length of the stem curtailed: if on the other hand the thinning be neglected, or be performed too leisurely, the plants will be rendered too slender, and thereby become liable to lash each other with every blast of wind. This evil is called whipping of tops, and many fine Groves have been very materially injured by it. Whenever two trees are seen to be engaged in this conflict, one of them should be taken down without loss of time.

If the thinning be conducted with judgement, little pruning will be necessary; some however will be found requisite: strong master plants are liable to throw out side branches, to the annoyance of their neighbours:

they should be taken off in time, and all dead branches removed, especially those of the Pine tribe; otherwise the heart of the timber will be rendered coarse, knotty, and of a bad quality. The leaders should also have due attention paid to them; particularly if a group of foul-headed plants happen to fall together; for in this case, if nature be not assisted, a timber tree will, in the end, be wanted.

This method of training holds good, whether the Grove be raised from seeds, or from seedling or other plants: and whether these be arranged in drills, or set promiscuously; provided the body of the Grove be formed of one sort of timber tree.

With regard to miscellaneous Groves, so many evil effects arise from injudicious mixtures of timber trees, that it seems best to condemn them at once. It may be said, however, that by associating trees of different natures, the soil will be made the most of; that the Ash, for instance, will thrive after the Oak, and the Oak after the Ash, in a more profitable manner than either would, if propagated repeatedly upon the same spot.

This leads to an improvement in the method of raising a Grove of Oaks; and the same method is applicable to any other species of tree. Instead of sowing every drill with acorns, let every second drill be sown with the seeds of some other tree, Ash for instance: its seeds are easily procured, and as underwood, no tree is applicable to so many useful purposes.

In this case, the method of training is nearly the same as that already described, except that the Ash must be made subservient to the Oak: if the former should rise too fast, it must be cut down to the stub, as underwood; if ashen stands be left to draw up the young Oaks, they must be lopt, or taken down, the moment they aspire to a superiority, or give the neighbouring plants an improper tendency.

When the Oaks have acquired a sufficient length of stem, and have made good their canopy, the assistance of the Ashes will be no longer wanted; nor will they be any longer valuable as underwood; they ought therefore to be entirely removed: and if their roots be grubbed up, the Oaks will receive at once a fresh supply of air and pasturage.

In bleak situations a quicker growing and better feathered plant than the Ash, affords more valuable protection: the Scotch Fir, kept under due subjection, is eligible in this case. Furze is sometimes made use of for this purpose; but the broom is better, as being less offensive, and at the same time more efficacious. Its seeds are readily procured; its growth is rapid; it will brave the bleakest aspect; and the natural softness of its foliage renders it inoffensive to work among.

There is one circumstance observable in raising Oaks from seed: that it should not be attempted when acorns are not abundant, because it will then be difficult to preserve them from vermin. In a plentiful year, when every Wood and hedge-row is strewn with acorns, those which are lodged in the soil are less liable to their ravages. The greater quantity also there is sown, the less will be the hazard: and for a similar reason it may be prudent to sow the margins of the field thicker than the area, where fewer enemies may be expected.

In raising a COPPICE, the first business is to set out the plants of proper distances, where they are too thick, and to fill up the vacant spaces with the super-numerary plants.

Something may also be afterwards done by judicious thinning. Where the demand of the country calls for the larger articles of coppice ware, many stakes, binding-rods, &c. may be cut out, with advantage to the free-shooting plants, left to grow up, to supply the markets of the district; which will ever determine the species of coppice wood.

The Kentish coppices, particularly about Maidstone, being raised for the purpose of hop-poles, are chiefly of Ash and Chestnut. They are generally cultivated in rows; the intervals, to keep them free from weeds and the soil mellow, are thickly covered with hop-binds, which when they are sufficiently tender, are dug under as manure. Furze, broom or rough bushes might be used for the same purpose.



The decrease of Wood in this island has lately excited a considerable alarm, from the fear especially that there will soon be a great scarcity of large Oak timber for naval purposes.

Britain, like every other country capable of producing trees, is described in the earliest account of it, to have been covered with wood: and even when domestic book was compiled, the woods were so numerous and extensive, as to be valued, not by the quantity of timber, but by the number of swine which the acorns and mast could maintain.

Four hundred years after this, in the time of king Edward the fourth, an eminent writer says, that England was even then an overgrown country<sup>n</sup>.

The first attack made upon forest trees, of any material consequence, was in the twenty-seventh year of the reign of king Henry the eighth, when that monarch seized upon the church lands. But this did not bring with it any pernicious consequences, the whole kingdom being then stocked with all kinds of timber trees, especially the Oak<sup>o</sup>.

From the time of Henry the eighth, the consumption of Oak timber was continually increasing, not only in consequence of the extension of commerce, and of great additions to the royal navy, but because it was made more use of in building houses.

Holinshed, who lived in the reign of queen Elizabeth, says, that in times past, men were contented to dwell in houses builded of Sallow, Willow, &c. so that the use of Oak was, in a manner, dedicated wholly unto churches, religious houses, princes' palaces, navigation, &c. but now nothing but Oak is any where regarded.

After this, in the reign of king James the first, it appears that there was great store of timber, more than proportioned to the demand. For on a survey of the royal forests, &c. in 1608, we find that a great part of what was then intended to be sold, remained a considerable time undisposed of<sup>p</sup>.

During the civil war in the time of king Charles the first, and all the time of the interregnum, the royal Forests, as well as the Woods of the nobility and gentry, suffered much, so that many extensive forests had, in a few years, hardly any memorial left of their existence but their names. From that period to the present there is reason to apprehend, that the persons appointed to the superintendence of the royal forests and chases have not always strictly attended to their charge. But if they had, the various rights claimed by numerous persons upon them, have made it next to impossible that there should be a proper succession of good large timber fit for naval purposes. This loss would not have operated so severely, had the principal nobility and gentry been as solicitous to plant with judgement, as to cut down their Woods. This reflection indeed should be made with some limitation: the publication of Mr. Evelyn's *Silva* in 1664, raised a great spirit of planting, and in his dedication to king Charles the second in 1678, that gentleman observes, that he needs not acquaint the king, how many millions of timber trees have been planted in his dominions, at the instigation, and by the sole direction of that work. The government at that time, alarmed by the devastation which had been committed during the civil war, gave great attention to the increase and preservation of timber in the royal forests, particularly the forest of Dean; and as it is generally allowed that Oak trees, to grow to a size fit for the navy, require from eighty to a hundred and fifty years, according to the quality of the soil, it is probable that the vast quantities of great timber consumed by our navy, during the present reign, were in great part the produce of these plantations, or private property in many parts of England, as well as in the royal forests. Unfortunately the spirit and attention which then prevailed did not continue; and that source being now nearly exhausted, the quantity of timber required for the supply of our navy will not be easily be found in this country<sup>q</sup>.

Several thousand acres indeed of waste land have,

<sup>n</sup> Eleventh report of commissioners, 1792.      <sup>o</sup> Hunter in Evelyn's Report.  
<sup>p</sup> Report.      <sup>q</sup> Hunter and Report, p. 9.

within thirty or forty years been planted for the benefit of the rising generation. The Society of Arts, &c. established in 1753. have greatly contributed, by their honorary and pecuniary rewards, to restore the spirit for planting. The republication of Mr. Evelyn's *Silva*, in a splendid manner by Dr. Hunter, has doubtless contributed to that desirable end.

The following sketch from the eleventh report of the commissioners appointed to inquire into the state and condition of the woods, forests, &c. of the crown, published in 1792 from the Transactions of the Society instituted at London, for the Encouragement of Arts, Manufactures and Commerce; and from the reports or general view of the several counties of Great Britain, drawn up for the consideration of the Board of Agriculture from 1793 to 1797, will give some idea of the state of our Woods and timber, both present and in expectation, at the end of the eighteenth century.

By the answers to questions sent by the commissioners of the land revenue to the chairmen of the general quarter sessions of the several counties in England and Wales, it appears, that the quantity of large Oak timber fit for the use of the navy is every where diminished within memory, and very much so in many places, both in Woods and hedge-rows: that much more land has been grubbed and converted to tillage, than has been newly planted; that few of the plantations which have been lately made are of Oak, or likely to become of any use to the navy; but of Larch, Fir, and mixt trees, preferred for their quick growth, or planted rather for ornament than use; that on waste and commonable lands there is little timber of any value, and that where there is any, great depredations and waste are committed on them.

It will be a pleasure to record the names of many patriotic persons, both among the nobility and gentry, who have strenuously exerted themselves to remedy in some degree the increasing scarcity of timber.

#### BEDFORDSHIRE.

There are many Woods, chiefly of Oak, mixed with underwood in this county, but of no very great extent; there is however a sufficient supply of timber for the common wants of the neighbourhood, deal being now so generally used in building; but underwood becomes rather scarce: perhaps as there have been so many inclosures lately, in twenty years they may supply in some measure that deficiency. There seems to be a prejudice against planting trees in the hedge-rows of new inclosures. I have planted many, and some thousands of various trees, as belts, and in corners for shelters. The duke of Bedford and lord Offory have many fine trees; but I do not know of any considerable plantations in this county; where indeed almost all the land is well adapted either to corn or pasture. The earl of Upper Offory has planted sixty acres of sandy heath with Oaks, Chestnut, Beech, Hornbeam, Birch, Sycamore, Larch, Spruce, Ash, Poplar, Alder, and Willow. Francis Moore, Esq. planted two acres at Aspley Guise with Firs, and twenty acres at Wavendon in Bucks, which see. Large plantations of Firs, &c. have been made about Sandy.

#### BERKSHIRE.

The Woods in this county have not yet been so far cleared in the distant parts, but that there is still timber to supply domestic wants. Edward Loveden Loveden, Esq. made a plantation of sixty-three thousand Ash trees, on upwards of seven acres, at Buscot, near Faringdon.

#### BUCKINGHAMSHIRE.

From Marlow to Fingest, and through that space which is bounded by the road from London to Oxford S. and by the Thames N. one sixth part of the land is covered with Beech Woods; which require but little attention, as the old trees shed a sufficient quantity of seed to keep the Wood constantly full of young plants.

In the parish of Wycombe, there are seven hundred acres of common Beech woodland. William Lee Antonie, Esq. has very considerable Beech Woods in

Little



Little Marlow, Medmenham, &c. on the banks of the Thames. In the parish of Amerham are Woods of fine Beech; and in the beautiful park of William Drake, Esq. there is a variety of thriving timber. These are all chiefly on chalk, and land not very fit for the plough.

The heaths in the parishes of Wavendon and Brickhill, which formerly were covered with short heath, were inclosed and planted with Scotch Firs and other timber trees by colonel Moore of Egginton. They are now in a thriving state, and have made these barren tracts of greater value than any of the farming land in the same neighbourhood. They are in the possession of the Duke of Bedford, who has cut rides through them.

Waddon Chase, containing twenty-two thousand acres, is divided into several Coppices, which are shut up for nine years and then laid open for twelve. The produce, under these circumstances, cannot be estimated at above three shillings an acre; but if it were inclosed, and the underwood preserved and encouraged, it would yield a profit of sixteen shillings an acre, besides providing a valuable supply of Oak and other timber; large sticks of which have been sold from this Chase for ten pounds each: but from the custom of the deer and commoners cattle being suffered to depasture thereon without limit, the young timber is totally destroyed, and the underwood much damaged.

## CAMBRIDGESHIRE.

The quantity of timber growing in this county is small, except in the parishes adjoining to Essex and Suffolk on the south-east, and to Hertfordshire and Bedfordshire on the south-west.

In one parish three thousand trees were bought in 1791 for the dock-yards, and no likelihood of any supply for them. And in many Woods great timber trees have been cut down to encourage the growth of underwood, both on account of the increased price and quick return. Few inclosures of commons have taken place, but if they should, so little encouragement is given for raising Oak timber, that there is little probability of much being planted. Lately many parishes have been inclosed, and some plantations of mixed trees have been made near Cambridge.

## CHESTER.

Timber diminished, but perhaps less in Woods than in other places. The improvement of roads and canals has occasioned much timber to be carried to the dock-yards; but this county is not destitute of it in any parts where timber thrives well. The consumption of Oak timber for building, &c. is diminished, principally on account of the large importation of Deal timber at Liverpool, which is carried to most parts of this county, at a small expense, by canals. There are few underwoods. Oak is still much planted, and often with other trees, which are frequently cut out to make room for the Oaks. There is abundance of Oak in the hedge-rows, particularly on the Lancashire side, to a degree which is frequently detrimental to the farms. Some gentlemen of large property have paid great attention to planting, and have considerable plantations of young thriving timber upon their estates, but quick-growing or ornamental trees have been chiefly planted, and the Oak has been too much neglected.

Delamere Forest is a large tract of land entirely bare of Wood, and apparently not very favourable to the growth of it. Nicholas Ashton, however, of Woolton hall, near Liverpool, in 1795 planted 133 acres of waste moor land adjoining to the forest, with 487,040 trees, of which 16,200 were Oaks; 4,800 Ash; 18,060 Beech; 7,200 Elm; 242,600 Scotch Fir; 181,200 Larch; 600 Alder; 15,000 Sycamore; and 1,200 Willow.

## CORNWALL.

Hedges in general do not abound with timber in this county; the growth of it any where is very partial, and

\* View of Bucks. 1794. p. 41.

† Idem, ibid.

\* Eleventh report, app. No 11.

† Report p. 25.

the county by no means abounds with timber fit for naval uses. What plantations have been made are for the ornament of gentlemen's seats. There are few commonable Woods, and what there are belong to the dutchy of Cornwall. Coppices that sold forty years ago from 5l. to 10l. the acre, now bring from 12l. to 18l.

At Treveho, Mr. Praed has taken much pains to raise plantations, where they are exposed both to S. W. and N. winds. He plants the Pinafter, which though not a valuable Wood, nor of a beautiful form, he has found to stand the sea air surprisingly. He places it on the highest parts, and very thick in the outer rows of his plantations; and within he plants Oak, Ash, Elm, Plane, &c. He sometimes also makes large groves entirely of Pinafter, and when they are grown to the height of twelve or fifteen feet, he cuts down the inner ones, and plants forest trees of large growth. He has found that sowing the seed of the Pinafter in spring does not answer; he therefore sows them in June, when the cones naturally drop their seeds.

Sir John St. Aubyn has also planted ninety-three acres with a great variety of Forest trees at Clowance, where there is also a great quantity of fine old trees, planted by his father and grandfather, who introduced the beautiful eastern Plane into the county, and which is here of a very large size. Sir John has also planted the Pinafter at St. Michael's mount, and it flourishes well, although exposed in winter even to the spray of the sea. At Godolphin there is a very ancient plantation near the house, and indeed there are others in so many places, that it is obvious it is not owing either to soil or climate, that there are so few trees in Cornwall.

## CUMBERLAND.

This county is far from being well wooded. The banks of the river Caldew have the largest proportion of old Oak timber. It does not seem to be suffered to attain a sufficient age for the purposes of ship-building. A Wood near West Ward was felling (in 1794) of more than two hundred acres, that was little more than thirty years old; the whole was cut away, without leaving any to stand.

Lately many plantations have been made near gentlemen's seats, which show, by their vigorous growth, how well adapted the greatest part of this county is for the production of Wood. Lord Muncafter's extensive and thriving plantations near Ravenglass, show that the country along the coast need not be naked. Mr. Thomas Gaitskill, of Little Braithwait, planted in 1791, on fifteen acres, 43,300 Larches.

## DERBYSHIRE.

Large Oak timber greatly diminished, and not much now left, either in Woods or hedge-rows, the grubbing of which is common. In the few Woods which remain, called Spring Woods, the fall is from eighteen to twenty years growth; upon every acre are then left a certain number of trees sixty, forty and twenty years old, a proportion of which is cut every fall. But the prevalent idea is, that it answers better to cut down the young Wood for country uses, than to let it grow into timber. Though a very large quantity of Deal is brought in by canals, scarcely any Oak timber is supposed to be carried out; partly owing to the scarcity of it, partly to the demand, in preference to deal, in that part of the county where limestone is the only material for building. The price of Oak timber has doubled within forty years, owing to the decrease of Woods, and the alteration in the mode of farming, from sheep-walks to dairy and tillage, which require large expensive buildings, in which Oak only, and some of a large scantling, must be used; any other Wood but that decaying quickly, on account of the porous damp quality of the limestone.

Little or no land is newly planted, except for ornament. Much Oak was formerly growing in almost every parish, where there are large fields called still the

\* Report, p. 60.

† Report, p. 200. 8vo. edit.



Wood. The county hall at Derby was built with sixty-three large Oaks from Foston Woods, where there now remains only the appearance of a Wood having once grown there. Beech, Elm, Ash, Sycamore, Larch, and different sorts of Firs and Pines are now chiefly planted, and are preferred to Oak, from their quick growth. There are extensive commons, but no timber on them: and those in the northern parts, which include the greatest part, are improper for Oak<sup>2</sup>.

## DEVONSHIRE.

Woods diminished. Much Oak in the hedges, and might be more if care were taken to mark the saplings before the hedge-wood is felled, and tenants were restrained from lopping maiden trees. Very little Coppice Wood; but the young saplings are generally left at the first fall, and cut down at the second. The improvement of roads has brought timber dealers into the more inland parts, and by that means large supplies have been sent to the dock-yards; but they will not be able to continue the supply. Many woodlands have been converted to tillage; but no plantations of any extent have been newly made. The commons are very extensive, but there is no timber on them. Many of them, if inclosed, would produce good timber<sup>1</sup>.

Dartmoor, though denominated a Forest, has little or no Wood. The only natural one is Wistman's Wood near Crockern Torr, the seat of the parliament of the Stannaries. It consists of huge decayed stumps of trees amidst loose rocks of granite: on their decayed tops thorns, brambles, &c. are shooting forth, forming altogether a most grotesque appearance.

Mr. Justice Buller planted about forty thousand trees, Larch and Firs intermixed with other trees, but they have almost wholly perished<sup>1</sup>.

## DORSETSHIRE.

Though this county is extremely barren in timber and wood, there are many spots appropriated to the growth of underwood. The soil is chiefly cold and wet, and the underwood, cut at ten or twelve years growth, produces five or six pound an acre for faggots. As to Oak timber, there is some about lord Digby's at Sherburne castle, lord Ilchester's at Milbury, on that part of the vale of Blackmoor in Mr. Sturt's possession about Bethcombe, and in a few other spots; but even there the quantity is trifling, as a national consideration. Many noblemen and gentlemen have made plantations about their places of residence, with great taste and judgment, among which Mr. Portman's bank at Blandford is a most beautiful object. The earl of Dorchester's at Milton, and Mr. Frampton's at Morton, are both considerable. If large tracts on the tops of the highest hills and poorest lands, were inclosed and protected from game, and either sown with a mixture of seeds of different forest trees, or planted with seedlings, not above two years old, they would in a few years become beautiful to the eye, and profitable to the owner. But most attempts of this kind have been upon too small a scale, and no sooner have the westerly winds from the coast attacked them, than they become miserable and unthrifty: they have also been planted from nurseries, and of too large a size. The soil on the tops of the hills is well adapted to Beech, and Oak would not fail to grow, provided there was a sufficient mixture of Firs to shelter them in their infancy<sup>2</sup>.

## DURHAM.

In this county, the banks of the rivers and brooks, in some places, particularly in the neighbourhood of Durham, are fringed with Wood of considerable growth and value; but the rest of the country is for the most part naked. In an act of parliament obtained in 1773, for inclosing upwards of 18,000 acres of waste land in the parish of Lanchester, there was a clause to entitle the copyholders and lessees under the bishop of Durham to dispose of the woods, underwoods and trees growing or to be planted on their allotments. In consequence of

this clause, some thousands of acres have been covered with trees, which are thriving wonderfully on ground incapable of any other improvement. Thomas White, Esq. of West Retford, in Nottinghamshire, purchased 227 A. 3 R. 24 P. for 2601; besides 300 acres, part of the said common; both freehold and tithe free<sup>4</sup>; and has planted in 1787; 50,000 Oaks, 35 acres with Ash, 100,000 Scotch Firs, 15,000 Spruce Firs, 3000 Silver Firs, 13,000 Larches, two acres two roods with the occidental Plane, 10,400 Lombardy Poplars, 37,230 Alders, on thirty-one acres four perches; in 1784, 7000 Norfolk Willows<sup>5</sup>. Mr. White's example has been followed by many others, whose young Woods promise equal success.

The great demand of small-sized Wood for the collieries, induces the early felling of timber; and it is too general a practice to cut down all that will turn to profit, leaving the roots to shoot afresh. Much Oak has been carried to Stockton, Sunderland and Newcastle, for building the ships used at these ports. Fir timber, imported there, is chiefly used in building houses. No great quantity of woodland has been converted to tillage. Many gentlemen have made extensive plantations, in which a considerable quantity of Oak has been planted. It is too much the practice to plant Ash in new hedges; but Oak seems well suited to the soil, as it grows very well in all parts<sup>6</sup>.

## ESSEX.

The Woodlands are extensive; and would supply a vast quantity of well-grown straight timber, could the proprietors be induced to suffer the trees to stand till they arrive at their full size; but the very distant prospect of seeing young trees become fit for the dock-yards, the late high price of bark, and the injury they are to the underwood, which is felled every twelve, fourteen or sixteen years, together with the increase of rent, preclude all hopes of keeping up a stock of timber, and even seem to threaten the destruction of most of the Woods, which are yearly lessened to convert the lands into farms<sup>7</sup>.

The land in Birdbrook parish is particularly favourable to the growth of Oak; there are several fine standards in the pastures, one of which, at five feet from the ground, measures eleven feet nine inches in circumference. In Baythorne Hall garden is a clump of Alders, the largest of which, at five feet from the ground, is seven feet four inches in circumference, and has from thirty to thirty-five feet in height of clear timber.

Hatfield Broad-Oak, or Takely Forest, is about one-half (500 acres) covered with Wood, among which, with much other valuable timber, is an Oak, that measures at five feet from the ground, fourteen feet in circumference, and is thought will cut to timber at ninety feet from the ground. The clear rich lands of Woodside green, and every other part of the Forest, which is not usefully employed in the growth of timber, might be materially improved, either by cultivation, or for encouraging the growth of Oak.

The great Forests of Epping and Henhault are an intolerable nuisance to the farmers, on account of the depredations, committed on their crops, by the deer; and being so near the metropolis are the nursery and resort of the profligate. There is little timber in these Forests, and the dodders and underwood are of small value in comparison to what they would be if this tract of country was inclosed. Mr. Vancouver guesses that there may be 10,000 acres in these Forests not producing or being favourable to the growth of Oak or other valuable timber, at present estimated to produce 5 s. 8 d. per acre, which by inclosure might be easily increased to 20 s. On that part of the Forest, within the parish of Epping, consisting of 527 acres, the lord of the manor has, by grants from the crown, the exclusive right of all timber, underwood and bushes. The land is well adapted in general to the growth of Wood, particularly Oak, which by the judicious management of the present possessor, is in a very flourishing state.

<sup>1</sup> Eleventh Report, app. n. 11.

<sup>2</sup> Idem, ibid.

<sup>3</sup> County Report.

<sup>4</sup> County Report, p. 32.

<sup>5</sup> County Report.

<sup>6</sup> Eleventh Report, app. n. 11.

<sup>7</sup> Transf. Arts.

<sup>8</sup> Grigg's County Report.



In Stisted are numerous Woods, though gradually lessened; when well attended to, the underwood produces, for hop-poles, at twelve or fourteen years growth, from 7s. to 10s. an acre per annum, and in some places 14s. The timber in them is in general a prejudice. It is far from growing large, forty feet, a well-grown old tree, top and bark included, the buyer falling, sells at 2s. a foot.

At Widdington the Woods are small, but well attended to: they are cut at twelve years growth, and worth at the stub about 8l. an acre: they consist of Ash, Sallow, Hornbeam, Hazel and Thorn.

The neighbourhood of Boreham is plentifully wooded. The Woods are cut at fifteen, sixteen and seventeen years growth, and are more or less valuable, according to the quantity of hop-poles they produce, that being the chief article worth attention, as fire-wood is cheap: for which reason considerable portions of woodland are cleared annually, and brought under the plough.

At Dunmow the proportion of woodland is scarcely a fifteenth part of the whole. The underwood is usually felled at fourteen or fifteen years growth, and the annual rent is from 10s. to 14s. or 15s. an acre<sup>h</sup>.

Lewis Majendie, Esq. of Castle Hedingham, planted there in 1786, 5,300 Oaks; in 1790, 1,900 Ashes; again in 1793, 1,900 Ashes on seven acres nine perches; in 1792 and 1793, 29,700 Spanish Chestnuts, on ten acres three roods and five perches<sup>i</sup>.

Richard Muilman Trench Chiswell, Esq. planted at Debden-hall 10,579 Elms, and 11,000 Lombardy Poplars.

#### GLOUCESTERSHIRE.

Woodlands, chiefly Beech, decrease very much, and have doubled the price within twenty years. Plantations are much to be wished for, not only for future supply, but because bleak situations are very much improved by the shelter they afford.

Coppices are much wanted. They are chiefly composed of Ash; the produce is fetched from a great distance for coopers, &c. and has risen greatly in price. The chief woodlands are in the parishes of Chedworth, Withington and Dowdeswell; smaller patches in Guiting and one or two neighbouring parishes: they are cut at about eighteen years growth, and produce from 30l. to 60l. per acre. There are some modern Coppices in the parishes of Wick and Slaughter, which produce from 25l. to 60l. per acre. Alder Coppices are cut at twelve years growth, and are worth from 15l. to 25l. per acre<sup>k</sup>.

The trees planted in new inclosures, more than make amends for the old fences that have been grubbed. Very little woodland has been converted to tillage, and still less planted. No plantations of Oak have been made lately, except in the forest of Dean: and these have been broken into by lawless persons in many places. Perquisites of office, extremely lucrative to surveyors and keepers, are by no means advantageous to his majesty's rights.

On the Cotswold hills are considerable tracts of cover, belonging principally to lord Chedworth, lord Bathurst, and the bishop of Worcester; but very little timber in them fit for the navy, and no water-carriage near except lord Bathurst's, whose Woods are chiefly Beech<sup>l</sup>.

#### HAMPSHIRE.

Many parts of this county are well wooded, but there are immense tracts of open heath capable of improvement by cultivation or planting. On the north side towards Berkshire the land is deep, and produces considerable quantities of Oak and Elm; in many places the Oak has been transplanted, yet is arrived to fine timber. Towards Rumsey the country is interspersed with Woods and hedge-row timber. Between that and Ringwood is a considerable part of the New Forest.

This Forest now extends from Godshill N. W. to the sea S. E. about twenty miles; and from Hardley E. to Ringwood W. about fifteen miles. It contains about 92,365 acres, of which 24,797 are private property, 625 copyhold of the manor of Lyndhurst, 1,004 acres lease-

hold under the crown, 902 encroachments, 1,193 held by master-keepers and groom-keepers attached to their respective lodges, and the remaining 63,844 acres are the Woods and waste lands of the forest.

The interests of all the inferior officers so clash with that of the Forest, that it is in vain to expect either a preservation of the timber now growing, or an increase from new plantations, whilst the present system remains, of their emoluments being derived from deer, sale of browse wood, rabbits, and swine. All these concur in the destruction of young timber, and unless some means are taken to prevent these and other abuses, in a few years there will be no timber worth mentioning left upon the Forest.

It appears from actual surveys how much the timber has decreased, and what the Forest was formerly capable of producing.

|                               | No. of trees. | No. of loads. | Total loads. |
|-------------------------------|---------------|---------------|--------------|
| 1608. Timber fit for the navy | 123,927       | 197,405       | 315,477      |
| Dotard and decayed trees      | -             | 118,072       |              |
| 1707. Timber fit for the navy | 12,476        | 19,873        | 19,873       |
| Dotard trees not stated.      |               |               |              |
| 1764. Timber fit for the navy | 19,836        | 33,662        | 40,497       |
| Defective Oaks                | 1,743         | 3,835         |              |
| 1783. Timber fit for the navy | 12,447        | 19,827        | 20,830       |
| Defective Oaks                | 596           | 1,003         |              |

From other accounts it appears that the navy has been supplied with about 885 loads of Oak timber yearly, for the last twenty years.

The crown has a right, by an act of William III. to keep 6000 acres constantly inclosed, for the growth of timber.

Alice Holt and Woolmer Forest is situated in the east part of the county, on the borders of Surry and Suffex. It contains about 15,493 acres, about 6,799 of which are private property. On 2,744 acres of crown lands in Alice Holt, according to a late valuation, there is growing about 60,000 pounds worth of timber. Upon Woolmer there is no timber worth mentioning. In 1608 there was a survey of the timber, when there were found growing in the forest 1,301 Oak trees fit for the navy, and 23,934 loads of defective trees: and from a survey in 1783 it appears that there remained only about 15,142 loads, including defective trees; and those generally of one age, namely from 100 to 120 years growth; and that there are scarcely any to succeed them.

The forest of Bere is in the S. E. part of the county, on the north side of Portsdown, and within eight miles of Portsmouth. It contains about sixteen thousand acres, of which one third is inclosed, and the rest is open forest land; the soil is good, and proper for the growth of Oak timber.

There was a survey in 1608, and another in 1783, from which it appears that the timber in the latter was only a twenty-eighth part of what was growing at the former.

In the Isle of Wight timber was formerly plentiful, but the proprietors have had so good a market for it at Portsmouth and other dock-yards, that little now remains. No young trees have been planted to supply the place of the old ones, so that in a few years the island will be entirely robbed of its timber.

Parkhurst or Carisbrook Forest, lying in the centre of the island, is the property of the crown. It contains thirty thousand acres, and has long been without a tree of any value. The soil is in many places extremely good: several large spots are to be found on which the Oak would thrive well, and none are so bad as to preclude the hope of the Larch and Scotch Fir succeeding on them<sup>m</sup>.

The quantity of timber has been greatly diminished within the last forty years: before which there was enough to build fifty sail of the line, without going into the New Forest. But now by the amazing consumption in his majesty's dock-yards, by the great demands for East India ships, by the general practice of grubbing up hedge-rows, and by not encouraging the growth of young saplings, it is so diminished, that it would be difficult to find a frame for a seventy-four gun ship, and as to a first, second, or third rate, there is no such timber left, except in the New Forest, and very little.

<sup>m</sup> County Report.

there;

<sup>h</sup> Vancouver's County Report.

<sup>k</sup> County Report.

<sup>l</sup> Trans. Arts.

<sup>i</sup> Eleventh Report, app. n. 11.



there: What plantations have been made are of Fir more than Oak<sup>n</sup>.

## HEREFORDSHIRE.

The river and brooks may be traced by the Wood on their banks. There is much valuable timber, most of it in hedge-rows; but this is greatly injured by lopping. Coppice Wood is kept under a regular system: the softer Woods are cut from twelve to fourteen years, and the Oak from eighteen to twenty years growth. One standard is left to each forty-nine square yards; these are maiden trees, and left clear of incumbrance<sup>\*</sup>.

In the eleventh report of the commissioners of the land revenue (app. n. 11.) it is said that large Oak timber is diminished very much indeed; that the growth of Oak in hedge-rows is not much encouraged, that the trees are much stripped and lopped by the farmers, and that the principal timber for the navy now remaining is in Woods; that saplings are left some of which are cut at the second fall, and others left for timber; that a very considerable supply of timber has been sent to the dock-yards within the last twenty years (since 1772), and that parts of the county are so stripped that even common building timber is scarce, so that brick and stone is now employed instead of studs; whereas forty years ago timber was a mere drug. The value of underwood is much increased since the introduction of hops; and a much larger quantity of land is converted into tillage than has been planted. No plantations indeed of any extent have been made. Variety of trees have been planted for ornament, but few of them are likely to be of service to the navy. The county in general is very much inclosed. Commons of any extent are on the hills, on which no doubt trees would grow well.

Many thousand Oaks have been planted by the trustees of Guy's Hospital, on their estates.

## HERTFORDSHIRE.

The quantity of Oak timber fit for the navy is greatly decreased in this county. Few Woods have any large timber in them: what there are of large size are chiefly in hedge-rows, and many of these have been grubbed up to increase the land in tillage. In Woods that are in the hands of occupiers few saplings are left; but if in owners hands, a proper succession of timber may be found. It is however mostly consumed within the county for barn-floors, paling, railing, posts, gates, &c. and many Woods have been stocked or grubbed up. In Woods lately planted, Firs and Poplars have been preferred to Oak and Elm, on account of their quick growth. There are few commons, and on them little or no timber. On newly inclosed fields little attention has been paid to raising Wood. Several thousand acres of land in this county would answer better if planted with Oak, Ash, Elm or Beech, than in tillage<sup>p</sup>.

John Hunter, Esq. of Gubbins, in the parish of North Mims, planted 40,000 Oaks on twenty-seven acres, in the year 1799<sup>q</sup>.

## HUNTINGDONSHIRE.

Oak timber is not much raised in this county, and there is very little fit for the navy; being usually cut down when it begins to be most valuable for that purpose. Underwood is not carefully selected and planted. Both that and timber might frequently be planted with good success on land of very low quality for tillage<sup>r</sup>. Much however has been cut down, and very little planted in its stead.

## KENT.

The chief of the woodlands of East Kent are dispersed between the great road from Rochester to Dover, and the chalk-hill that runs from Folkestone by Charing to Detling. These Woods furnish the country with firewood, tillers for husbandry uses, and the dock-yards with timber; but the most material part of their produce, is the immense quantity of hop-poles.

<sup>n</sup> Eleventh Report.      <sup>o</sup> County Report.  
<sup>p</sup> Eleventh Report, app. n. 11.    <sup>q</sup> Transf. Arts.    <sup>r</sup> County Report.

The Weald was in ancient times an immense forest, but is now for the most part cleared and converted to tillage and pastures. There are however some woodlands in their original state.

On a survey of the Woods through the whole county, it appears that there are about 13,290 acres, of which 1000 are waste lands on Burham downs, free from november to march. Of the remainder, 400 acres in Stalisfield belong to the Hon. Mr. Watson, and have been improved by planting Ash, Chestnuts and Willow; 350 acres in Newenden belong to Sir Edward Knatchbull; 140 acres in Bickner and Hucking are the property of Mr. Chambers; 300 acres in Newington and Milton, 180 in Thurnham, 400 in Rainham and Newington, belong to the Earl of Aylesford; 350 in Thurnham and Stockbury, 200 in Detling and Thurnham, 500 in Chatham, 300 in Aylesford and Boxley, 50 in Boxley, belong to Mr. Best; 200 acres in Stockbury belong to Messrs. Head and Roper; 180 acres in Detling, and 300 acres in Chatham, belong to Mr. Foote; 200 acres in Aylesford and Boxley belong to Messrs. Read, Seager and others; 1000 acres in St. Margaret's belong to the wardens of Rochester bridge; 500 acres in Shawstead and Gillingham belong to the dean and chapter of Rochester; 1,500 acres in Langley, Leeds, Sutton, &c. are the property of Mrs. Bouverie, Sir John Filmer, and others; 500 acres in Peckham and Mereworth, belong to Mrs. Bouverie, Sir William Twisden and lord le Despencer; 600 acres in Peckham and Ofham belong to lord Le Despencer and William Geary, Esq; 160 acres in Maidstone belong to lord Romney, and 300 acres in Barming and Ayleford belong to lord Romney and Messrs. Amhersts; 80 acres in Yaldon and Hunton belong to Mr. John Miller; 600 acres in Foston and East Malling belong to C. Milner, Esq. and the Hon. Mr. Pusey; and 3000 acres in Goudhurst, Cranbrook, Ticehurst, &c. belong to Mr. Cartier and others. These Woods produce some timber, hop-poles, cord-wood, fencing poles, stakes, ethers, hurdles, bavins for bakers and burning lime.

The Oaks are all cut in the faying season, for the bark of all sizes. The fencing-poles are either used whole, or cut into gates for sheep. The hop-poles are sorted into three, four or five sorts, and sold by the hundred. The faggots or bavins are made into lengths of five feet, the best for bakers and housekeepers, and on the hills they make inferior sorts, called kiln-brush for burning lime. Stakes and ethers are cut out before the faggots are made. In the neighbourhood of Chatham they cut some small bundles of brush and cord-wood, for the use of shipping and the metropolis<sup>\*</sup>.

Mr. David Day, of Frindsbury, planted sixteen acres with Ash; and afterwards seven acres and nine perches with 63,000 plants more.

Henry Godfrey Fausslet, Esq. of Lower Hardress, planted eight acres with 7,712 Ash trees, in 1790.

Mr. Joseph Mace, of Ashford in Biddenden, planted 3000 Chestnut trees on six acres seventeen perches.

William Pattenson, Esq. of Ibornden in Biddenden, in 1785 planted a quarter of an acre; and in 1789 seven acres and a half, containing about 13,500 plants, of the red or upland Willow. There are several other plantations of it in that neighbourhood.

## LANCASHIRE.

Towards the middle of the county there are some good Woods; there is also a considerable quantity grown in hedge-rows; but as sunshine is generally preferred to shade, timber wood seems on the decline. In the northern part there are many acres of coppices, which are cut down every fifteen years, and burned into charcoal. There are many excellent plantations about gentlemen's seats, well attended to, and in a thriving state. Towards the coast it is with great difficulty that Woods of any kind can be raised; yet near the shore at Fornsby hall, the Rev. Mr. Fornsby, has planted several acres with forest trees, which are in a flourishing state. They were originally planted when very small, in holes, four inches below the surface, and

<sup>\*</sup> County Report, 8vo edit. 1796.



were sheltered from the winds by fods raised round them, till they had taken firm root. A mixture of sea-flutch, rich earth and moss was put beneath their roots. The Scotch Fir, Sycamore, Platanus or Plane, and the Ash, seem most congenial to the soil, which is sandy, and are least injured by the inclemency of the climate.

The Alder is in great demand for poles to hang cotton yarn on to dry, and for the bark which sells to the dyers at nearly one penny per pound. Alders planted on the side of the duke of Bridgewater's canal, to secure the banks, where the soil is of a loose texture, have not only answered that purpose, but have proved a profitable plantation: they may be cut down every fourth or fifth year<sup>1</sup>.

Fewer Oaks have been planted of late years than other trees. Inclosures have not increased the growth of timber<sup>2</sup>.

Charles Gibson, Esq. Quermore Park near Lancaster, planted in 1798 and 1799, 7,500 Oaks, 1000 Ashes, 6,500 Beeches, 5000 Birches, 500 Chestnuts, 500 Horse-Chestnuts, 8000 Elms, 2000 Scotch Firs, 2000 Spruce Firs, 7,500 Larches, 2000 mountain Ashes, 7000 Sycamores.

Thomas Rawlinson, Esq. at Yealand, planted in 1791 and 1792, 18,910 Oaks, 20,170 Ashes, 2,300 Beeches, 3,940 Birches, and 705 weeping Birches, 3,900 Elms, 3,650 Scotch Firs, 2,010 Spruce Firs, 2,900 Larches, 2,310 Sycamores, 300 Huntingdon Willows; in all 62,190 trees.

The Rev. Thomas Dunham Whitaker, at Holme in Whalley, planted in 1790 and 1791, 64,135 Larches<sup>3</sup>.

#### LEICESTERSHIRE.

There is very little timber in this county except in the hedge-rows. Burbach Wood contains about sixty acres, with many thousands of young thriving Oaks. Aston Flamville Wood, about the same size, has some fine young Oaks and small Ash. These, and the Woods near Beaumanor, are the principal.

At Cleybrook and all that part of the county, there is much timber in the hedge-rows; but on the Melton-Mowbray side there is very little. They have a few coppices which are cut at about twenty years growth.

Charnwood Forest contains 15 or 16,000 acres. The hills might probably be planted to advantage, although they are bare of soil and full of rocks; since the Woods near Beaumanor, on the edge of the forest, are found to thrive very well<sup>4</sup>.

#### LINCOLNSHIRE.

The Woods in the south part of this county produce Oak, Ash and Poplar.

Sir Cecil Wray's plantations, made between 1760 and 1794, consist of 260 acres; principally Scotch Firs. At the beginning he also planted Oaks, Ashes, Beeches, Elms, Silver Firs, Spruce Firs and Larch. The Larch, Oak, Ash and Beech made no little progress during the first three years, and the Scotch Fir got on so well, that for the ensuing ten years he planted scarcely any other sort. The Silver Fir grew very well, but it is said will be short-lived. The Spruce Fir also grows well and large. Having reason to think better of Larches, he recommenced planting them fifteen or sixteen years ago; and now has about fifty-three acres of them growing completely well, and from the value of the Wood, promise to pay twice as well, at least, as the Scotch Firs.

About Norton-place Mr. Harrison has formed a large range of beautiful plantations, which surround and break his lawn, except where it opens to the wolds. In twenty-two years these have flourished so rapidly that he has cut Larch of a considerable size, and has inclosed eight hundred acres from the thinnings.

But of all the planters in the county, lord Yarborough takes the lead: for ten years past he has planted 100 acres yearly, and is continuing it; but designs soon to lessen it, the lands he had assigned for that purpose being nearly covered.

<sup>1</sup> County Report, 8vo. ed. 1795. p. 84.

<sup>2</sup> Eleventh Report, app. n. 11.

<sup>3</sup> Transf. arts.

<sup>4</sup> County Report, qu. 1794.

Sir Joseph Banks's Woods have been very carefully managed since 1727, in a rotation of twenty-three years. Full-grown Oak-timber is taken out in the proportion of one-fourth, in Woods of the best quality, and of one-fifth upon inferior land. Willow, Sallow, Alder, Hazel and other brush are cut clean. Full-grown Ash, Elm, &c. are cut, leaving a proportion of the best for the next crop; that is, such as will pay for a second growth of twenty-three years. Very little of the Oak has five growths, or 115 years; in general it has four growths, or ninety-two years. The produce of an acre on an average is 45l. for timber, bark, poles and brush. The Woods cover 805 acres.

The duke of Ancafter has four or five hundred acres of woodland, which he cuts at eighteen years growth. The marquis of Exeter has very extensive Woods about Bourne, &c.

Sir Cecil Wray has made some valuable observations, derived from extensive experience.—He would always plant each sort of tree by itself; at least he would never plant Scotch Firs intermixed with others, as nurseries; for from their spreading branches, they soon become bad neighbours. They may be of service however on the outside of plantations, as a shelter where they are exposed.—He would never plant a tree older than two year seedlings.—He would never put more than 2000 trees on an acre, and he thinks 1,200 fully sufficient.—He would always trim off the side branches, when they are so small as to be cut with a knife; in which case the wound will grow over.—Scotch Firs are valuable as growing fast, as affording Wood of many uses in country work, as supplying the poor with fuel from the cones and rotten branches, as keeping deer and sheep in winter, particularly in snows, with the green boughs, and as firewood, fencings, &c. &c.<sup>5</sup>

#### MIDDLESEX.

The Woods and Coppices in this county have been decreasing for ages, and will probably in time be annihilated. There are however still a few acres so occupied on the north slopes of Hampstead and Highgate hills; about 100 acres on the east side of Finchley common; and about 2000 acres on the N. W. side of Rislip, together with about 3,000 acres, the remains of Enfield chase. Rather more than half this quantity is Wood pretty well stocked with thriving young Oaks; the rest is coppice<sup>6</sup>.

#### MONMOUTHSHIRE.

This county is well wooded, and there are many coppice Woods, which are cut from eleven to fourteen years growth. Much fine Oak timber is growing upon Tredegar and other estates<sup>7</sup>. The Woods, coppices, and plantations of Persfield are well known.

Benjamin Waddington, Esq. of Lanover house near Abergavenny, since 1799 planted twelve acres with Larches and other trees, and intends planting near fifty acres more with Larches.

From the eleventh report of the Commissioners of the Land Revenue it appears, that timber is decreased, that hedge-rows are commonly grubbed up, that greater quantities of timber have been felled than the county will be able to supply, that it is the practice to fell them for the sake of the underwood, and that plantations lately made, have been of such trees as are not fit for naval purposes.

#### NORFOLK.

This is not a woodland county. Foxley Wood, belonging to Sir John Lombe, Bart. which is 309 acres, is perhaps the largest. There are other considerable Woods in Ashwell Thorpe, Hetherfet, Ketteringham, Hethel, Bunwell, Hempnall and Shottisham, of 800 or 1000 acres in the whole, besides several other smaller Woods in other parts.

Modern plantations for ornament have kept pace with most other counties. Great bodies of Firs, intermixed with a less number of forest trees, have been

<sup>5</sup> County Report, 8vo. ed. 1799.

<sup>6</sup> County Report, 8vo. ed. 1798.

<sup>7</sup> County Report.



planted in parks and home grounds; but pits, corners, and screens or belts have been little attended to.

Mr. Marham of Stratton ranks first in priority. He might sell some of the trees which he planted with his own hand for six or seven pounds each; and he has a Chestnut, which he set a nut, and afterwards transplanted into a poor sandy soil, which runs timber fifty-eight feet, and squares upwards of twenty-two inches at the butt, so that it must at least have eighty cubical feet of timber.

Mr. Berney of Bracon ranks next as a planter in point of date, having paid great attention to planting upwards of fifty years. In 1757 he had a silver medal for a large plantation of Oaks. His Chestnuts are very fine, many of them fourteen or fifteen inches girth, and his Larch as much: he has put the latter to almost all purposes of building, and to many cabinet uses. He entertains the highest opinion of Larch Wood, and recommends it to be felled as all Firs should be, in July or August. But this is probably an erroneous practice.

Among modern planters, in point of quantity Mr. Coke ranks foremost. He has planted 480 acres, in which two-thirds of the plants are intended to be thinned out and cut down for underwood, so as to leave Oak, Chestnut and Beech only as timber. His intention is to continue planting fifty acres every year, till he has completely environed 3000 acres, which is to compose his park and demesne farm.

Mr. Windham of Felbrigg is also a considerable planter. His plantations are designed to ornament and belt round his park, and to extend his great woodland scene nearer the sea, towards which, at two miles distance, it forms a grand bulwark. Most of them have been raised from seed. One was sown with Acorns, Chestnut and Beech-mast, seventeen years since: it has been already twice thinned for hurdle Wood: the trees are mostly thirty feet high, at regular distances of twelve feet, with a valuable underwood at four feet distance.

A belt sixty-six yards wide and nine miles round, incloses the estate of Mr. Galway of Tofts near Thetford. It was planted by Mr. Nelson with a variety of trees, at six feet apart between 1770 and 1778.

Lord Petre's park, in the midst of a barren dreary country, forms an agreeable shady retreat, covered with a pleasant verdure, and richly ornamented with forest trees of large dimensions: his Lordship is now considerably extending his plantations, to the open parts which lie on the outside of his estate.

Sir William Jerningham's plantations at Costesey, four miles from Norwich, are large and flourishing, and have been made with much judgment and taste.

The plantations upon the estate of Miss Norris, at Witton, are made quite in the face of the German ocean. Having been planted very thick they have so flourished, without any old trees to shelter them, that in the course of twenty-two years they have changed a considerable tract of naked land into an impervious woodland scene, in one of the most cold and exposed situations in the kingdom.

John Morfe, Esq. of Sprowston, set twenty-five acres with acorns, in October 1788 and March 1789.

George Nelthorpe, Esq. planted 35,000 Alders on twelve acres, at Linford, in 1794.

James Denton, Esq. of Feltwell, set thirty-eight acres with acorns, in 1794.

Lord Viscount Townshend planted 469 acres at Rainham, chiefly with Scotch Firs.

#### NORTHAMPTONSHIRE.

There are several very extensive tracts of woodland in this county, consisting of forests, chases, and purlieu Woods. The most considerable forest is that of Rockingham, in the northern part, beginning near Wansford, and extending near twenty miles towards the centre of the county. Whittlebury and Salcey are two other extensive forests, lying towards the S. The chases are those of Geddington and Yardly; the former in the neighbourhood of Rockingham forest and the latter in that of Salcey forest. The purlieu Woods are both extensive and numerous, particularly towards the

lower parts of the county, and upon the borders of Rockingham forest. Besides these, there are several small tracts of woodland, very advantageously and ornamentally situated, in many other parts of the county.

The underwood in the forests and chases consists principally of black and white Thorn, Ash, Sallow, Maple, and some Hazle. It is generally cut at from twelve to eighteen years growth. The proprietors are empowered to fence in each part as soon as it is cut, for four years from deer, and for seven years from the commoner's cattle. The depredations of these and of the people occasion this underwood to be worth only about four pounds an acre on an average. It is sold standing, and the purchasers cut and carry it at their own expense. It is mostly used for hurdles or firewood.

A fall of Oak timber is generally made in that part where the underwood is cut. This consists either of the most unimproving trees, or such as are of a large size. These are generally bought by contractors for the navy. But if no speedy and effectual means are taken for the better preservation and management of the forests, in order to procure a regular succession of Oak timber, the navy will, in a short time, be deprived of this valuable resource.

Purlieu Woods are such as are situated in the vicinity of the forest, and once formed a part of it; they have been disforested by grants from the crown, and are now private property, not subject to the laws and regulations of the forest.

The average price of the underwood, from eleven to fourteen years growth, is about 6l. the statute acre, but it is sometimes sold so high as 8l.

The Oak timber in these and in private Woods seldom attains to so large a growth as in the forests and chases, it is therefore principally bought by carpenters, wheelwrights, &c. for country uses.

Geddington chase is supposed to contain about 1,400 acres, of which perhaps 1,200 are woodland, the remainder consists of lawns, ridings and vistas. The whole is the joint property of the duke of Buccleugh and earl Beaulieu, subject to a commonage of the adjoining townships from May-day to Martinmas. It is divided into eighteen parts, in one of which the underwood and timber are cut every year. These parts are fenced as in the forest. Although there is still a valuable stock of Oak timber in this chase, principally of a large size; yet the ravages committed by deer and cattle prevent the smallest possibility of obtaining a regular succession of Oak timber, and even cause a daily diminution in the growth of underwood. If the system now practised of cutting down all such timber trees as appear mature and in an unthriving state be long pursued, in a few years there will not be a single Oak tree left large enough for the use of the navy.

The quantity of Oak timber cut down within the last thirty years has been very considerable, and such a proportion as the woodlands will not be able permanently to supply.

#### NORTHUMBERLAND.

Woods in this county are found mostly on the banks of rivers. Of old Oak timber from 80 to 140 years growth, the probable value may be about 60,000l. of which two-thirds only are proper for building ships of great burden.

The demand by the collieries and lead mines for small wood, has induced the proprietors on the Derwent, Tyne, &c. to cut the Oak, Ash and Elm at twenty-five or thirty years growth; Birch, Willow and Alder (Alder) sooner.

Plantations on an extensive scale are rising in every part of the county, and are almost in every instance doing well. The Larch rises pre-eminent above the rest. A fourth or fifth part of the trees planted is Oak; the rest are Scotch Firs, Larches and Ash.

The woodlands in the N. and W. parts were ordered to be burnt in the time of queen Elizabeth, because the Moss-troopers and other banditti secreted themselves in these Woods, and issuing from them committed great depredations on the neighbourhood.

<sup>c</sup> County Report, 8vo. 1796.

<sup>d</sup> Trans. Arts.

<sup>e</sup> County Report, 4to. 1794.

<sup>f</sup> County Report, 8vo. 1797.

<sup>g</sup> Eleventh Report, app. n. 11.

<sup>h</sup> Eleventh Report, app. n. 11.



## NOTTINGHAMSHIRE.

The forest of Sherwood, is from Nottingham to near Workfop about twenty-five miles in length, and from seven to nine miles in breadth. The principal remains of the ancient forest Woods are the Hays of Birkland and Bilhagh, being an open Wood of large old Oaks, most of them decaying or stag-headed, and without underwood, except some Birch in one part; it extends about three miles in length, and one mile and a half in breadth. By a survey taken in 1790, there were found 10,117 trees, valued at 17,147l. The land on which they grow is 1,487 acres, 2 roods, 37 perches. A part of this Wood has been taken by grant into Thoresby park.

Harlow Wood, Thieves Wood, and the scattered remains of Mansfield Woods are of small extent, and the timber is of inferior size.

In Clumber park are remains of two Woods of venerable Oaks. Since these have been inclosed the young trees are springing surprisingly from the acorns.

The spirit of planting has prevailed much in this county within forty years. The first plantations were chiefly of Firs; but it has been since found, that trees of all kinds, well planted and properly sheltered, succeed very well.

The duke of Newcastle's plantations within Clumber park amount to 1,848 acres: besides 190 acres in Martin Wood, 180 acres of Ash and 410 of Oak, &c. The duke of Portland's in Welbeck park, Carberton, &c. about 1000 acres. The Hon. R. Lumley Savile's 1,680 acres in Morton Grange and Little Morton, part Oak Woods, the rest Oaks, and planted with Ashes for hop-poles. A considerable part of the Oak plantations were planted with Firs and Larches by the late Sir George Savile, when the acorns were sown, about forty-four years ago. The larches now (1794) measure from thirty to fifty feet in length, and from twelve to forty-eight inches in girth. The Scotch Firs are from twenty to thirty feet long, and from twelve to thirty-two inches in girth.

Charles Pierrepont, Esq. now lord viscount Newark, has 981 acres in and about Thoresby park, the chief part planted with Oak, Ash, Beech, Spanish Chestnut, and Elm: 306 acres now (1794) in preparation for planting; and 381 acres, mostly coppice or spring Woods, cut every fifteen years, for hop-poles, hedge-wood, &c.

F. F. Foljambe, Esq. has 600 acres at Osberton. In Carlton, Charles Mellish, Esq. has 154 acres. Taylor White, and Woolaston White, Esqrs. have 107 acres 3 roods, and Mr. Joseph Cowlshaw 15 acres one rood; Taylor White, Esq. has also 28 acres 2 roods in Wallingwells.

The Duke of Norfolk, at and near Workfop Manor, has 781 acres of Woods and plantations. Jonathan Acklem, Esq. and others, have fifty acres in Mattersey Woods, in Wiserton twenty-five acres. Charles Mellish, Esq. has 1000 acres in Blyth, &c. chiefly Fir. Lord viscount Galway has 126 acres in Serlby and Farworth. Robert Sutton, Esq. has about 750 acres, about sixty of Fir, the rest Oak and Beech, in Scofton. Robert Ramsden, Esq. at Calton, in Lindrick, 148 acres of Oak, Chestnut and Ash, besides forty-eight acres of forest plantations. Right Hon. Fred. Montagu, thirty-four acres of Oak, Ash, Elm, &c. in Linby and Papplewick; besides forty acres in preparation. Sir Richard Sutton, at Farnsfield, has seventeen acres. In all about 10,000 acres, chiefly planted since the middle of the eighteenth century.

The Woods and plantations in the clay district north of Trent amount to 3,624 acres. And those in the limestone and coal district, to 916 acres<sup>1</sup>.

Of the immense plantations lately made, Fir, Birch, Poplar, Ash, and Elm are the principal trees, though the quantity of Oak is not inconsiderable, but bearing no proportion to the others. These plantations being yet young, a long time must elapse before they will be fit for public use<sup>k</sup>.

Lord viscount Newark continues his plantations at Thoresby, and in the winter of 1801, sowed twenty

acres with acorns; his plants average 60,000 to the acre. The marquis of Tichfield also sowed fifty acres with acorns in 1798 and 1799.

## OXFORDSHIRE.

The Beech Woods are confined to the Chiltern country, and consist of trees growing on their own stems, producing by the falling of the mast; very little being permitted to grow on the old stools, which are generally grubbed, and seedling trees planted in the loose earth. These Woods are drawn occasionally, and never felled at once, except for the purpose of converting land into tillage, which has been much in practice of late years. The Beech Wood is sold for poles or billet. It requires some judgment to thin these Woods so that the stock may not overhang the seedlings. The succession of young trees is much injured by admitting cattle or even sheep. There are some Oak and Ash trees dispersed among the beech; they seldom grow to any great bulk, and are not very numerous. In the vicinity of Staunton St. John are Woods of timber trees with underwood. The soil is a strong clay, well adapted to the growth of Oak. Many spots of Woodland of this description are dispersed about the country. Coppices do not abound; indeed there are few of any extent, except in the forest of Whichwood, and these have trees in them<sup>l</sup>.

The Eleventh Report to the Commissioners of Land Revenue states, that many Woods have been grubbed and converted into tillage, but not a single plantation of Oak in the county, except where gentlemen have planted for ornament, trees of quick growth having been generally preferred: and that this county does not produce more timber than is sufficient for its own consumption.

## RUTLANDSHIRE.

Oak timber not much raised, and little fit for the navy. The best is used for building, canals and navigations: the coarser for fences, gates, hurdles, &c. sold at Spalding and Peterborough fairs, and carried into the fen country.

Underwood is cut from twelve to sixteen years growth<sup>m</sup>.

No plantations of Oak or other trees of any consequence have been made<sup>n</sup>.

## SHROPSHIRE.

Navy timber greatly diminished, perhaps not one-fourth remaining of what there was thirty years past. Great quantities of timber have been taken down in consequence of farms having been enlarged. The joining of fields has prevailed much: and the occupiers of land frequently abuse hedge-row trees.

Coppices are generally fallen from twenty-one to twenty-five years in growth, and all the poles are barked. Kind-growing saplings are generally left, and if promising, at a second fall they are sometimes permitted to stand for timber. Coppices fallen at eighteen years growth are converted into cordwood for the forges and not barked. The consumption of underwood in forges and collieries is very considerable; and the price of land is too high for planting. The underwoods however are still of considerable extent, and if the young Oak plants were carefully preserved, future groves of Oak might still be raised. There are perhaps few counties of equal extent that have more abounded with fine Oak timber than this. Within about thirty years the supply for the navy and other uses has been very great, perhaps to the amount of 200,000l. But at present there are very few estates that could furnish timber for a seventy-four gun ship<sup>o</sup>.

The late Rev. J. R. Lloyd, of Aston near Oswestry, planted 65,440 Oaks; and in 1793 and 1794, 60,020 more. The same years he also planted 9,300 Scotch Firs.

## SOMERSETSHIRE.

This county is partially wooded, and on account of the demand from the collieries, the Wood is very irre-

<sup>1</sup> County Report, qu. 1794.    <sup>k</sup> Eleventh Report, app. n. 11.

<sup>l</sup> County Report, 4to. 1794.  
<sup>m</sup> Eleventh Report.

<sup>n</sup> County Report, 4to. 1794.  
<sup>o</sup> Idem.



gularly cut. Kingswood covers about 230 acres; the timber is chiefly Oak, but it does not get to any large size. The underwood is cut for wreaths or faggots. The valleys are in general richly laden with Elm, which acquires a good size in the hedge rows; but the method of lopping off the side branches, to what is here called a besom head, cannot be too much execrated. On the northern declivity of Mendip hills are some good coppice Woods. On the southern declivity are also some coppice Woods, but being exposed to the western breezes, these are not so productive. In the eastern part of the county there are some large and productive Woods, which being near the coal-works are very valuable. Many beautiful plantations are also interspersed, which are not only an ornament to the respective seats to which they belong, but are in themselves a fertile source of annual profit.

The ancient forest of Selwood, on the verge of which Frome stands, appears to have comprised a woody vale of about 20,000 acres, 18,000 of which are now converted into arable and pasture land; the remainder continues in a state of coppice Wood. The timber is chiefly Oak and Ash, which though not of large growth, are very good of their kinds, and sell well in the neighbourhood. The underwood is mostly Hazel, Ash, Alder, Withy and Birch; some of which sell as high as 16l. an acre.

This forest was disafforested about the seventh of Charles I. and divided into three portions, one whereof was allotted to the lords of manors, another to the commoners, and a third to the crown. The latter was sold to the adjoining landholders. No great quantity of woodland has been grubbed within the last forty years; but much new ground has been planted, particularly on the hills belonging to the marquis of Bath, Mr. Beckford, and Sir Richard Hoare.

These woodlands are in general in a state of coppice wood, with timber chiefly Oak; but the soil, particularly in the vallies, being of a strong yellow clay, is so cold and retentive, that the Oak trees, though springing up spontaneously in great abundance, get mostly and dead-topped, and few of them come to a large size: yet from the neighbourhood of good inland markets, the profit from woodland is nearly double that of the adjoining land in arable or pasture; and the profit arising from the new-planted hills, particularly the sandy parts, has been, in many instances, near ten per cent on the original expense of planting and fencing<sup>p</sup>.

#### STAFFORDSHIRE.

This county still continues well stocked with timber, notwithstanding the immense quantity that has been lately cut down. The best-timbered estate is that of Lord Bagot near Abbot's-Bromley. The Woods extend over many hundred acres, and almost wholly consist of Oak, a very large quantity of which is now quite mature, and some even decaying. Many carry timber to the length of sixty or seventy feet: and in the park are many hundreds of very extraordinary bulk, containing from 200 to 400 feet of timber each. Several might be picked out worth 60 guineas a piece, and some even more. Some of these trees are mentioned by Dr. Plott as full-grown timber in 1686. It is said that one hundred thousand pounds have been offered for these Woods. The succession Woods and young plantations are very considerable and still continuing. These are made sometimes by sowing acorns with wheat after summer fallow: sometimes by setting out young plants, in which case, at the end of one or two years, they are cut off at the surface, the second shoot thriving much better than the first, which was checked by transplanting. After a Wood has been cut down, sometimes it is replanted by striking in with a pick-axe acorns and other seeds of forest trees or underwood. All these methods have been attended with success.

The second-timbered estate is Chillington, the property of Thomas Giffard, Esq. Timber to the amount of 30,000l. has been sold within twenty years, and that remaining is thought to be worth at least an equal sum. The succession Woods and young plantations

are very extensive, and of luxuriant growth. In these Oak has been particularly attended to, but there is also a variety of other timber trees extremely promising in growth.

Upon the pleasure grounds and estates of lord Dudley, at and near Himley, are large quantities of well-grown timber, and very extensive Woods and coppices of Oak.

The timber and plantations at Teddesley park, Sir Edward Littleton's, are very considerable. Manstey Wood is extensive: beside which there are many other coppices, dingles and clumps of full grown Oak, Ash, and other timber. The spring coppices and young plantations, cover at least 100 acres; and in them Oak has been an object of particular attention. These plantations are generally upon poor cold land; a gravelly marl or clay bottom, on which Oak succeeds well; and being of no great value for corn or pasture, is very properly applied to the growth of timber and underwood.

Wrottesley estate, the property of Sir John Wrottesly, Bart. contains some considerable Woods of well-grown timber: also extensive plantations of more modern growth.

An Enville, lord Stamford's, the Woods and plantations are very extensive, and well-stocked with timber trees and underwood, among which Oak predominates. The Woods of Upper Areley are very large, and well stocked with Oak of various ages. Hagley park, close to the borders of this county, contains great quantities of exceeding fine timber, of a first rate quality. The parish of Harbourne is well wooded. The Bishop's Woods, near Eccleshall, are said to contain 1,300 acres: a certain portion of them is cut down every year. Madely Woods, near Newcastle, are well stocked with Oaks; they were formerly a park.

The plantations at Fisherwick, lord Donegal's, are of little more than twenty years growth, (in 1796) but very promising.

Sandwell park and estate, the earl of Dartmouth's, is well stocked with all kinds of timber, particularly Oak. The Potteshall estate, Sir Robert Pigot's, still contains large quantities of mature timber, although considerable quantities have been cut lately.

Broughton pleasure-grounds, Sir Thomas Broughton's, abounds with plantations, clumps, and shady spreading trees, particularly sycamores. There is a promising coppice of Oak on the other side of the road.

Hilton park, belonging to Mr. Vernon, contains plenty of flourishing Oaks. In the pleasure grounds are some very fine well-grown Oaks and a great variety of other timber trees. The rides and plantations are very extensive, and bear evidence of the planter's vigilant attention. Many Larches and Firs of his own planting contain twenty feet or more of timber.

Burntwood, near Ashley common, belonging to Mr. Meynell, is very extensive, and well stocked with young Oak.

The estates of Mr. Gough, at Perry Bar, Oldfallings, near Bushbury, and Walton Grange, near Gnosshall are all well timbered. Perry park and neighbourhood has much ripe timber, and considerable young plantations of every stage of growth. Oldfallings estate and neighbourhood is plentifully stocked with well-grown Oak and other timber, and Walton Grange has an excellent Oak coppice, of considerable extent. Bentley estate, Mr. Anson's, near Walsall, is extremely full of Oak, both in coppices and hedge-rows. At Great Sugnall, near Stafford, Mr. Turton's, are some small neat plantations, among which Oak has not been forgotten. Considerable Woods and plantations grow on the Shutborough estate, Mr. Anson's, as well as on that of Sir William Wolfeley; and also upon Mr. Curzon's; near Rudgeley. The estate of Mr. Fowler, at Pendeford, is well wooded, in hedge-rows, young plantations, single trees, and clumps of very fine well-grown Oak; it has also a very promising coppice of Oak. Other smaller estates are well stocked with timber, particularly that of Mr. Fleeming, at the Wergs, near Tettenhall, where are some Oaks worth thirty guineas each. Upon the whole, the county is well timbered, and has now in it succession growths sufficient for the supply of a great length of time.



Plantations have been made to a great extent, and with uncommon success, on the steep moorland hills, particularly those of Dillorn, Kingsley, and Oakamoor; the Dillorn Woods alone form a chain of three or four miles in length, and consist of tall straight Oaks and Ashes, in general so well filled up with underwood, as to be cut in falls at seven years growth, for rods and staves used for crates in the pottery. John Holliday, Esq. has proved experimentally the great advantage of planting barren impracticable precipices, large tracts of which still remain in the north of Staffordshire, not worth 1s. an acre.

This gentleman, in 1789, planted 10,000 Oaks on twenty-nine acres nearly; 94,000 Beech; a few Cypress, white and hemlock Spruce Firs and Ilexes; 7,900 Larches; some Lombardy and black Italian Poplars, and weeping Willows.

John Sneyde, Esq. of Belmont, planted 30,000 Oaks between 1784 and 1786; and 27 acres, 2 roods, 18 perches with mixed trees: 6000 Ashes, 14,300 Beeches, 8000 Chestnuts, 4,262 Elms, 44,100 Scotch Firs, 5,500 Spruce Firs; 700 Ilexes; 13,000 Larches; 5,500 Sycamores; besides Cræægus Aria, Horse Chestnut, Lime, Plane both oriental and occidental; Lombardy Poplar and Mountain Ash, in small quantities. Also 11,000 Larches in 1794 and 1795.

James Beech, Esq. of Shaw, near Cheadle, in 1798 and 1799, planted 11,000 Oaks, 9000 Ashes, 18,000 Beeches, 1,800 Elms, 3000 Larches, 17,000 Mountain Ashes, and 9000 Sycamores.

Henry Vernon, Esq. of Hilton park, near Wolverhampton beforementioned, planted 11,600 Oaks in 1798 and 1799, and thirty acres with other trees; in 1797 and 1798, 6240 Silver Firs<sup>a</sup>.

Yet notwithstanding the above account of considerable old Woods and new plantations, it is stated in the Eleventh Report of the Commissioners of Land Revenue, that more Wood has been cleared than planted, that the plantations which have been made are of trees not fit for the navy, and that there is but little commonable Wood except in the forest of Needwood, and great part of that has been cut down lately.

## SUFFOLK.

The strong loams of this county formerly contained considerable quantities of large Oak; these, as in every other part of the kingdom, have been much lessened, and the succession bears no proportion to the growth that preceded it. Improved cultivation is the cause: rough pastures, overrun with thorns and briars, and broad hedge-rows, were nurseries of timber; as land became valuable, these have been cleared: with this obvious improvement, timber has of course declined; a circumstance not to be regretted, since corn and grass are products much more valuable.

Underwoods are not generally productive in this county. The profit of them is less than that of adjoining lands under other products.

In most instances, planting has been performed more with a view to ornament than profit: how far they may be made to unite, is a subject worthy of attention<sup>b</sup>.

In one of the returns to the Commissioners of the Land Revenue, it is said that timber is decreased in Woods and hedge-rows, *as it ought to be*; that much timber, and the improvement of arable land, are incompatible; and that Suffolk, being a highly improved county, timber has most profitably decreased, the improvements being ten times the value of the timber. The chairman of the quarter sessions at Bury returns, that the scarcity of timber ought never to be regretted, for it is a certain proof of national improvement, and for royal navies, countries yet barbarous are the only proper nurseries. All this is true to a certain degree. Land that can be used profitably for corn or grass ought not in general to be planted; and hedge-rows should not be encumbered with trees; but yet there are in all counties spots better applied to this purpose than any other; odd corners at least, and belts for shelter, may be introduced almost every where, even in the best cultivated counties. Every county ought to furnish its own

<sup>a</sup> County Report, 8vo. 1796. and Transf. Arts.

<sup>b</sup> County Report, 8vo. 1797.

coppice Wood, and timber for all rural purposes. Naval timber should be the object of the royal forests. I cannot think it expedient to depend wholly upon importation for this necessary article.

The chairman at the quarter sessions at Beccles returns, that the western side of that division has had much timber on it, but that at present it is in a very decreasing state; that some large plantations have been made, in some of which much young Oak is growing; but that the planting bears no proportion to the decrease.

Samuel Kilderbee, Esq. planted ten acres with Oak in 1793; and seventeen acres and a half at Badingham and Glemham in 1795 and 1796.

Job Hanmer, Esq. planted 8,100 Oaks at Holbrook-hall near Sudbury, in 1792 and 1793.

William Wollaston, Esq. of Great Finborough, planted twenty acres with Ash<sup>c</sup>.

## SURREY.

This county abounds in wastes and commons, to the amount, as is said, of 96,000 acres, all of which, that are not fit for agricultural purposes, might be planted for coppice Wood and timber. Norwood, near London, contains about 600 acres, 250 acres of which is an inclosed coppice Wood, full of Oak; but the trees are not suffered to grow up to any size. The remainder of Norwood is forest, consisting of straggling Oak pollards. Dulwich college has the property of most of the inclosed Woods.

Farnham and Crooksbury heaths contain 3,700 acres of deep sandy soil. The valuable plantations of Firs on these heaths prove to what a profitable purpose they may be applied. Twelve acres were planted 1776 with Scotch Firs four years old. In 1788 they were thinned out. The number at present (1794) standing, are 18,531, valued at 573l.

Between Godstone and Westerham is Stafford Wood, 150 acres, part of which consists of Oak, Beech, and Birch underwood, with some timber of a large size: several Oaks were cut down a few years ago containing two loads of timber in each tree. Mr. Eden, the late lord of the manor, planted a great number of trees, which have been destroyed for want of being protected from cattle<sup>d</sup>.

## SUSSEX.

This county has always been celebrated for the growth of its timber, principally Oak. It overspreads the Weald in every direction. Large quantities of Beech are raised upon the chalk hills. The great demand for bark, has occasioned large falls of Oak; and the more easy communication with the sea-ports has occasioned greater supplies to be sent to the dock-yards than the country will be able to supply in future. The quantity now standing, of a size fit for the royal navy, compared to what it has been within half a century, is inconsiderable; and as there is no regular succession in reserve, the supply must annually grow less.

The export coast-wise from one port in this county, from 1763 to 1767, was only 4,769 loads of timber, and 454 tons of bark; from 1788 to 1792, 19,884 loads of timber, and 2,646 tons of bark. A load of timber is fifty cubical feet.

So early as the reign of Edward VI. thirty-seven hoys, laden with timber, went out of Rye harbour in one tide, and not one english mariner among them. The whole country round was a forest; inasmuch that in 1591 a man was ordered to depart the town of Rye, he being a husbandman, and the place not fit for one of his profession. Even now, in some parts of the county, the inclosures are very small for the benefit of the timber, and round each is a thick Wood several rods wide.

The underwood is usually cut from thirteen to seventeen years growth, for hop-poles, faggots, and cordwood for charcoal. Young Oaks that grow scrubby are felled at thirty or thirty-five years, for posts, rails and repairs.

In a Wood well planted with timber, underwood never comes to any size; and more loss is sustained by

<sup>c</sup> Transf. Arts.

<sup>d</sup> County Report, 4to. 1794.



this, than gain is made by the growing timber. There are seldom any *fellows* or saplings remaining; a good succession therefore of young Oak seldom follows a fall of old timber. Some prefer timber from stubs to the growth from seed; the succeeding shoot springing up three feet the first year, and very fine timber, of two loads to a tree, having been cut from stubs<sup>a</sup>.

Earl Winterton planted in Shillinglee park 14,269 Oaks, and 2,613 Lombardy Poplars.

#### WARWICKSHIRE.

There are large Woods and much timber in this county, particularly in what was formerly the forest of Arden. The underwood is cut down every ten or twelve years, and converted into stails, faggots, brooms, hoops, &c. and wattled hurdles. The white poles, which are twenty-four years growth, are converted into rails, ladders, hoops, and various other articles by cloggers, brush-makers, turners, &c. The price of these Woods is from 3l. to 8l. an acre, according to the quantity of white poles and Oak timber. Those Woods which grow Oak well, answer best by being gradually converted into groves, by setting up Oaks either from maiden plants or stubs, and by previously dibbling in acorns where wanted<sup>a</sup>.

#### WESTMORELAND.

At Whinfield Forest, and at Lowther-hall, the seat of the Earl of Lonsdale, are very extensive plantations, where many of the trees have grown to an uncommon size. Several of the Oaks at Lowther-hall have been valued at 60l. a piece. There are many smaller plantations through the county, where the Wood springs with a degree of vigour hardly to be expected in such bleak and exposed situations.

On the division of Kendal common, part of a very high and rocky hill not capable of any other improvement, Scotch Fir, Larch, Oak, Ash, and other trees were planted, and they are all very thriving. The banks of the lakes are adorned with very beautiful coppices.

The bishop of Landaff has planted, on some high ground near Ambleside, above 100 acres with Oak, Elm, Ash, Beech, Sycamore, Scotch Fir and Larch. He is doubtful whether the climate be not too cold for any of them except the two last<sup>a</sup>.

In 1788 he planted 3,200 Oaks; 20,000 Ashes on eleven acres, 2,000 Beeches, 2,000 Elms, 48,500 Larches, 650 Carolina Poplars, and 2000 Sycamores.

I. C. Curwen, Esq. set 500 bushels of acorns, and planted above 50,000 Oaks on 200 acres bordering on Winander Mere, in 1795 and 1800. In October 1800 and April 1801 he also planted 271,420 Oaks, 229,476 Larches, 240,800 Ashes, 23,600 Scotch Firs, 8,120 Beeches, 21,540 Birches, 10,000 Alders, and 10,000 Elms, in all 814,956.

Dr. H. Ainslie of Dover-street, London, planted on high ground between the lakes of Winander Mere and Coniston, from 1789 to 1802, 91,800 Larches, 33,650 Scotch Firs, 11,200 Oaks, 3000 Ashes, 1400 Elms, 700 Beeches, 100 Spruce Firs, and 100 Silver Firs<sup>a</sup>.

#### WILTSHIRE.

This county was once well wooded. The introduction of pit-coal has very much lessened the consumption of Wood for fuel, and this slackened the attention to the preservation of Wood. In many parts of the outskirts there are large and valuable Woods, but in frequent instances much injured by being subject to common rights. The uses of underwood being many, as for hurdles and hedging, spars for thatching, wheel-rights and carpenters work, sheep-cribs and implements in husbandry, &c. the preservation of it is become an object of consequence, especially since the late great advance in the price of coals.

Oak, Ash, and Elm are natural to the county. The cold soils on the west side are favourable to Oak; the

lands of the south part to Ash, and the gravelly vallies and deep loams of various parts, to Elm; and although many parts appear to be bare of timber, yet there are so many others where the soil is peculiarly adapted to its growth, that the produce of the county is fully equal to its consumption.

A great spirit of planting has for some years past been diffused through every part of the county. There are few parts of the kingdom where timber trees, particularly Elms in hedge-rows are better preserved, or less damage done by trimming up the side branches; than in the county of Wilts<sup>a</sup>.

The marquis of Bath at Longleat has planted from 50,000 to 100,000 trees yearly for twenty years: chiefly heath land at the foot of the Wiltshire downs near Warminster.

#### WORCESTERSHIRE.

The extensive Woods and Forests of this county, so very considerable in early times, have almost disappeared. Feckenham forest has sunk entirely under the continued demands of the salt-works at Droitwich. The Woods of Hagley and Uffmore are still of considerable extent, and some idea of the former abundance may be formed still, on those parts which border on Herefordshire. Through a considerable part small tracts of woodlands are frequent, and they furnish timber, chiefly Oak and Ash, with some Beech, of excellent quality. The hedge-rows are every where crowded with Elm, and though the present custom of lopping and pollarding must certainly injure their growth, they often produce timber of considerable dimensions. Elm is considered as the principal growth, there is however in many parts as fine Oak and Ash as the kingdom produces. The principal uses to which underwood is applied are hop-poles and the making of charcoal for the iron-works<sup>b</sup>.

#### YORKSHIRE.

##### *East Riding.*

There are few spring Woods in this riding. Timber trees, except those which are within view of a house, or for ornament, are cut as best suits the fancy of the owner. Many new plantations, as well as those of longer standing, are exceedingly injured for want of draining<sup>c</sup>.

There is very little Oak timber fit for the navy; a small quantity in North Holderness, and some good in Ouse and Derwent Wapentake.

Many new inclosures have been made in the last thirty years, but Ash has been more commonly planted than Oak in the hedge-rows.

In Ouse, on Derwent Wapentake, many Oak hedge-rows have been grubbed up, and but few planted, many however still remain. In the rest of the Riding there are scarcely any.

Very extensive plantations are yearly making, but they are chiefly of Larch, Ash, Beech and Fir; some Oak, but generally upon soils too thin for the growth of large Oak timber<sup>d</sup>.

##### *North Riding.*

Woods comparatively small, when the extent of this Riding is considered.

|  | Acres. |
|--|--------|
| The coast - - - - -                      | 3,000  |
| Cleveland - - - - -                      | 1,500  |
| Vale of York, with the Howardian hills - | 11,000 |
| Ryedale, with the east and west Marshes  | 6,000  |
| Eastern Moorlands - - - - -              | 3,000  |
| Western Moorlands - - - - -              | 1,000  |
|  | <hr/>  |
|  | 25,500 |

There is besides a considerable quantity of timber in the hedge-rows, particularly in the vale of York, the Howardian hills, and Ryedale; though far less than heretofore. The spontaneous produce of the woodlands is principally Oak, Ash, and Broad-leaved or Witch Elm: the produce of the mountains much

<sup>a</sup> County Report, 4<sup>o</sup>. 1793.

<sup>x</sup> County Report, 4<sup>o</sup>. 1794.

<sup>y</sup> County Report, 8<sup>o</sup>. 1797.

<sup>z</sup> Trans. Arts.

<sup>a</sup> County Report, 4<sup>to</sup>. 1794.

<sup>b</sup> County Report, 4<sup>to</sup>. 1794.

<sup>c</sup> County Report, 4<sup>to</sup>. 1794.

<sup>d</sup> Eleventh Report, app. n. 11.



Birch and Alder. Few large timber trees are now to be found, except on the estates of C. S. Duncombe, Esq. and Lord Carlisle.

Planting has been little attended to. The late Sir Charles Turner made some extensive plantations on the Eastern Moorlands, near Kildale; but as he died soon after, they were not properly attended to. One very large tract is entirely destroyed; of what is left however there is enough to show that trees will thrive upon the highest, most exposed and barren of the moors: the kinds chiefly planted are Scotch Fir, Spruce and Larch, with some Oaks and a few Beech.

The late Francis Cholmeley, Esq. and his son Francis Cholmeley, Esq. of Bransby, have made some considerable plantations, chiefly of Larches and Firs, upon the sides of the hills, and other barren parts of their estates. They were begun about thirty-eight years since, and have been annually increased from that time: some of the first-planted Larches have been cut down and measure from forty to fifty-five feet in length, and from three to four feet four inches in girth. Larch being so valuable, thriving so well, and being of such quick growth, that is intended chiefly to be planted in future<sup>e</sup>.

Thomas Richardson of Handale Abbey, Esq. planted between October 1789 and April 1791, forty acres with mixed timber trees, Oak, Ash, Elm, Beech, Sycamore, Alder, Larch, Spruce and Scotch Fir, White Dutch and Black Carolina Poplar; in number 121,413.

The Rev. William Smith planted at Flaxton, in 1796 and 1797, 1615 Oaks, 200 Ashes, 300 Beeches, 1200 Birches, 50 Chestnuts, 100 Horse Chestnuts, 200 Wych Elms, 1200 Scotch Firs, 200 Spruce Firs, 3,800 Larches on eleven acres, 100 Alders, 200 Poplars, and 200 Sycamores.

John Hutton, Esq. of Marske near Richmond, between the first of October 1799, and the first of April 1801, planted five acres, with 4,236 Oaks, 3,059 Larches, 2,607 Spruce Firs, 3,341 Ashes, 575 Beeches, and 424 Poplars and Birches. Also fourteen acres, with 5,400 Oaks, 7,300 Larches, 5,700 Scotch Firs, 4,500 Spruce Firs, 5,200 Beeches, 3,500 Sycamores, 4,500 Elms, 5,300 Ashes, 1,600 Birches, 2000 Alders, 2000 Mountain Ashes, and 800 Silver Firs<sup>f</sup>.

#### *West Riding.*

Much Oak and Ash Wood are grown in this riding, and it meets with a ready market at the shipping and manufacturing towns: much is also used at the mines and collieries. The Duke of Norfolk has above 1,500 acres of woodland in the parish of Sheffield. Mr. Beaumont of Bretton-hall possesses a great deal of valuable timber. At Kirkstall Abbey, about three miles from Leeds, is much Oak Wood<sup>g</sup>.

John Scolefield Firth, Esq. at Kipping near Bradford, on eight acres two roods, planted 1900 Chestnuts, besides setting 1400 Nuts.

Richard Slater Milnes, Esq. of Foyston near Ferrybridge, planted in 1788 and 1789, 225 acres, with 20,000 English Elms and other trees, among which were 200,000 Larches, from two to four years old, 2000 on an acre.

The Rev. Charles Hope of Derby, planted in the chapelry of Bradfield, between 1785 and 1792 on ten acres 41,000 and on thirty-two acres about 168,000 mixed trees, Oak, Beech, Chestnut, Sycamore, Broad-leaved Elm, Larch, Scotch Fir, and Ash<sup>h</sup>.

#### WALES.

##### *North Wales.*

##### *Anglesey.*

Although this island was famous for its Woods, it is now a received opinion that trees will not grow upon it, except on the banks of the Menai, where there are fine plantations. There are however many small spots in the neighbourhood of gentlemen's seats, which by being planted thick and properly protected are in a very promising condition.

<sup>e</sup> County Report, 8vo. 1800.

<sup>f</sup> County Report, 8vo. 1795.

<sup>g</sup> Transf. arts.

<sup>h</sup> Transf. arts.

##### *Caernarvonshire.*

This county, once incumbered with Woods, is now left naked and bare; except around gentlemen's seats scarcely a tree is to be seen, and those are not very numerous. They are all situated near the coast, and yet plantations thrive very well. There is no county in North Wales so deficient in Woods as this and Anglesey. The old forests have been cut down, and their places have not been supplied with new plantations.

##### *Denbighshire.*

This county is pretty well wooded with old plantations. Mr. Middleton of Chirk-Castle has planted more trees than any gentleman in the county. The number of acres is about 700, besides old Woods.

##### *Flintshire.*

This county is finely interspersed with Woods, and every gentleman's seat is surrounded with plantations. The Woods are in general old, and very few young plantations are to be seen.

##### *Merionethshire.*

This county, although better wooded than Caernarvonshire, is yet in many places very bare of trees. Oak is the principal timber raised, and the woodlands are frequently very little attended to.

##### *Montgomeryshire.*

In the numerous and extensive rich vales with which this county abounds, there are many old plantations of Oak, which some of the proprietors are cutting down, without supplying their places. Others have not altogether overlooked the rearing of young plantations. These grow very well, consist of different kinds of trees, and are in general better protected from the depredations of cattle than in many of the Welsh counties<sup>i</sup>.

On account of the improvement of roads, much more timber has been felled in this and the other counties of North Wales, than they can permanently supply<sup>k</sup>.

#### SOUTH WALES.

##### *Brecknockshire.*

Woodlands of all other things do the most discredit to the district of the hundred of Falgarth and the vale of Usk; being kept under no system, nor having the smallest attention paid to their preservation. Nothing more would be requisite to encourage the growth of young timber, than to inclose any spot of land, and the Oak and Ash will rise of their own accord. The former of these is preferable to the English.

The hundred of Builth is tolerably well wooded, notwithstanding the great quantity that has lately been felled. In defiance of all difficulties, some young plants escape the general destruction made by the browsing of cattle; and every spot into which the plough, the cattle or the water has not found admission, is covered with some kind of Wood, except the high hills<sup>l</sup>.

In this county are coppices of Oak of considerable extent, which if strictly preserved (according to the letter of the acts of 35 Hen. 8. c. 7. and 13 Eliz. c. 25.) would furnish more than sufficient Oak timber for domestic uses, and some to spare for the use of the navy, for which there is very little at present<sup>m</sup>.

##### *Cardiganhire.*

The county has little Wood, and that little is yearly lessening, and what is left is much neglected.

Thomas Johnes, Esq. has made very considerable plantations about his beautiful seat at Hafod. In 1797 and 1798 he planted 10,000 Oaks; in 1798 and 1799, 165,000 Oaks, besides setting acorns; 25,000 Ashes; 880,000 larches; 50,000 Alders, with Elm, Beech, Birch, Ash, and Mountain Ash, in all 250,000.—The total amount of trees planted between 1795 and 1801,

<sup>i</sup> County Report, 4to. 1794.

<sup>k</sup> Eleventh Report, app. n. 11.

<sup>l</sup> County Report, 4to. 1794.

<sup>m</sup> Eleventh Report, app. n. 11. p. 133.



2,065,000, of which 1,200,000 are Larches; besides fifty-five acres sown or planted with Oaks<sup>a</sup>.

#### *Caermarthenshire.*

The prodigious havock that has been made of late years among the Woods is truly alarming. From being a well-wooded county, it is now become the reverse. The vast quantities of timber which every part produced till lately, seems to have begot in the proprietors an indifference as to the protection of their Woods.

Forest trees of all sorts thrive well, particularly on the slopes of hills sheltered from the S. W. wind, and in the vales; of which the extensive and valuable Woods about the seats of Lord Dynevor, Mr. Vaughan, of Golden Grove, &c. afford undeniable proof.

#### *Glamorganshire.*

The plantations in this county are numerous, and managed in a way that does credit to the respective proprietors. John Morris, Esq. of Clafemont, is one of the first improvers. He has been a planter above twenty-five years, in which period he has planted above 500,000 trees, principally Beech, Oak and Ash; many Sycamores, Firs, Larches and Birches, besides Spanish Chestnuts, Plane, Elm, and Lombardy Poplars. He has raised nearly all his trees from seed; when they are about three feet high, he plants them out at a yard distance; and when they nearly touch each other, they are taken out to make other plantations: so that every young Wood is a nursery. The trees are examined annually, and such as are not thriving are hoed round like turneps. When the soil is very adhesive a crop of potatoes is introduced. All stagnated water is carefully drained off. Open to the sea breezes, he finds Sycamore and Elm particularly proper. This gentleman's regular course of planting is about 10,000 trees annually.

#### *Pembrokeshire.*

Woods are rather scarce, particularly towards the western coast. The interior part is better wooded; the growth is for the most part slow, but the Oak is remarkably full of heart. The most considerable wooded estate is Slibech, lying on the eastern branch of Milford Haven.

Lord Milford and Mr. Barlow have a considerable quantity of timber trees yet remaining upon their estates, which, with a few surviving groves about Slibech, form the bulk of the present stock of timber below the mountains. Some groves in Dyffryn-Gwein, belonging to Mr. Langhorn of Orlandon and others; Penkelly Woods, belonging to Mr. Lloyd of Bronwidd, and Pfynonne Woods belonging to colonel Colby, are the most extensive on the mountains. There is hardly any estate in the interior and eastern parts without some plantations. The stock however upon the whole is so reduced, that there is much reason to apprehend a few years more will bring the farmer to the necessity of importing Wood for the ordinary purposes of husbandry.

The Eleventh Report of the Commissioners of the Land Revenue sets forth, that every body cuts down, and no one plants, or encourages the growth of Oak timber in any shape in this county. That there have been no commons divided, except Narberth mountain, which was formerly a forest of Oak, but not within memory. It is now all enclosed and not one Oak planted.

#### *Radnorshire.*

The soil of this county is remarkably well adapted to the growth of Oak: even in the upper district, there are some remarkable instances of its partiality to the soil. Some hundred acres of common hills are at present covered with timber, without any inclosures: they are mostly on the side of hills, steep banks, or rocks, where the trees were in some measure protected from the browsing of cattle, during their tender age.

Not the smallest care is taken of the woodlands by the land-owners in general, but they are abandoned to

the merciless axe of the tenants and cottagers. The whole county was probably one immense forest; and were it left to itself one century, would all be covered with timber again, chiefly Oak and Ash. The Larch and the different species of Fir and Pine thrive uncommonly well here<sup>o</sup>.

#### SCOTLAND.

##### *Aberdeenshire, Banffshire, and Moray.*

The earl of Fife planted about 7000 acres of bleak and inhospitable moors, with rising and flourishing trees, between 1757 and 1787.

He began first with inclosing his park at Duff House, in the county of Banff; this park is about fourteen miles round, and had not a tree, nor was it believed that any Wood could thrive so near the coast. Now however there is every kind of forest tree in a most thriving state.

His great plantations from 1769 to 1787, were near Innes House in the county of Moray. Between february 1784 and march 31st, 1787, 549 acres and a half were planted with 676,566 forest trees of all sorts, of which 266,600 were common Firs, 65,160 Oaks, 64,306 Beeches, 50,000 Larches, 100,000 Birches, 29,500 Mountain Ashes, and 22,000 Chestnuts. Besides these inclosures there are 4746 ells of hedge and belt: and about 60,000 Firs, and 100,000 Oaks, Birch, Ash, Larch, &c. planted since 1784, in Aberdeen and Banff.

Between 1769 and 1774, 604 acres and a half about Innes, &c. were planted with 1,836,500 forest trees, of which 1,660,000 were common Firs: besides 23,750 ells of dyke.

Between 1775 and 1778, seventy-eight acres about Innes were planted with 335,500 forest trees, of which 295,000 were common Firs.

Between 1779 and 1783, 1781 acres and a half about Innes were planted with 2,216,385 forest trees, of which 1,476,820 were common Firs, 98,313 Larches, and the same number of Oaks, Birches, Mountain Ashes and Beeches.

The whole number of trees planted in these eighteen years 4,323,386, of which 3,758,420 were common or Scotch Firs, and 296,973 Oaks.

In 1795 and 1796 a large plantation was made at Rothemay in Banffshire. Total 47,376, of all sorts of forests trees; besides flowering shrubs and transplanted trees, of which a vast number about the house, water-side, and through all the old Woods.

In his lordship's Fir Woods in the forest of Marr, Aberdeenshire, which are all natural, there are trees that measure eighteen feet.

Between 1797 and 1801, were planted in Duff House Park, and in inclosures and clumps on the sides of the turnpike road, amounting to sixty acres, besides the belts on the sides of the new road, 18,800 Larches, 3000 Ashes, 4900 Oaks, 4900 Alders, 4000 Beeches, 4900 Birches, 2200 Poplars, and 5000 Elms.

The belts on the sides of the new road, with different clumps amounting to forty acres, were planted, the greater part of them in 1802, and were to be finished in 1803. There had been planted 20,000 Larches, 5000 Firs, 3000 Ashes, 2000 Elms, 20 Horse Chestnuts, 300 Sycamores, 5000 Oaks, 200 Birches, 200 Alders; in all, 85,500 trees, on 100 acres.

Planted at Delgaty Castle since 1799, 114 acres with 172,400 trees, of which 62,600 are Larches, 45,400 are Firs, 13,100 are Oaks, and 38,000 Birches.

On the estates in the parishes of Rothemay, Keith and Grange, since the year 1797, have been planted 347,800 Larches, 72,100 Oaks, 70,400 Elms, 73,490 Beeches, 205,600 Firs, 90,000 Birches, 71,600 Ashes, 20,260 Alders, 12,000 Sycamores, 26,850 Poplars, 6000 Spruce Firs, 3,020 Laburnums, 9,080 Mountain Ashes and 30 of lord Fife's Mountain Ash, 7050 Norwich Maples, 20,000 Chestnuts, 1000 Limes, 11,000 Roans, 500 Pinasters, and 8200 Willows of different sorts.

There have likewise been planted nearly 2000 Ash, Elm, Sycamore, Mountain Ash and Oak, from four to

<sup>a</sup> Transf. Arts.

<sup>o</sup> County Reports, 4to. 1794.



five feet high, along the side of a natural Wood that borders on the highway.

In addition to the plantation on the hill of Inchorfie, including the belts on the side of the road leading to Rothemay, four acres and a half with 2500 Larch, 1000 Beech, Birch, and Fir, 100 Mountain Ash and Poplar, and 200 Elm. Total 673½ acres, and 4,063,880 trees.

Marr Lodge in the county of Aberdeen, 300 acres inclosed, and 2000 Larches planted among the Wood naturally produced. This inclosure is now full of thriving Firs, Birch, Poplars, and Mountain Ash. Many of the trees in the old Woods are six feet in diameter.

In building a bridge over the Dee, though the seaport of Aberdeen is not above six miles distant, yet the directors of the work were so conscious of the superiority of the Wood in the forest of Marr to foreign Wood, that they had it brought by land carriage above 100 miles, though the roads were in many places very bad.

In the county of Moray, since 1797, were planted twenty-seven acres, with 41,130 trees.

The earl of Fife has planted altogether between 11,000 and 12,000 acres.

The above account is extracted from the 6th, 15th, and 21st volumes of the Transactions of the Society of Arts, &c. where may be found many important observations derived from the extensive experience of this truly patriotic nobleman.

The Earl of Breadalbane has also been a great planter in Scotland.

The earl of Moray, at Darnway in the county of Elgin, has planted 236,000 Oaks; 175,000 mixed trees, Ash, Beech, Elm, Sycamore, Chestnut, Spruce, Fir and Larch. Between the years 1767 and 1781, 7,876,000 Scotch Firs.

George Ross, Esq. of Cromarty, planted 90,000 Oaks, 42,000 Ashes, 13,000 Beeches, 4000 Chestnuts, 31,200 Elms, 3,005,000 Scotch Firs, 1,900 Larches, 2,100 Sycamores.

Great plantations have been made at Cullen house in the county of Banff, and at Monymusk in Aberdeenshire.

The earl of Dundonald has planted much in the moors behind Culrofs and on the Knock of Crieff in Perthshire.

There are vast Fir Woods in Rannock, besides others in Strathspey and elsewhere in the north of Scotland.

From Dunkeld to the castle of Blair, twenty miles, the prospect is diversified by views of extensive Woods and plantations. From Logierait to Taymouth, and even to Killin, the extent of planting is very considerable, especially about the Earl of Breadalbane's castle, and on both sides of Loch-Tay, sixteen miles. From the house of Auchtertyre, by Lawers and Comrie, to the source of the Earn, a variety of trees has been planted, and a great extent of waste land covered. At Gartmore, at Callander, &c. the ingenuity of art has conspired with the beauties of nature to ornament the country with Wood.

#### *Argyleshire.*

Great part of this county was once covered with Wood: even so late as the commencement of the eighteenth century, the Woods were held to be of little value. Some time after that however they were brought into greater estimation, by means of two English companies who set up iron forges. Woods vary in value from 5s. to 20s. an acre annually: they are cut at the end of nineteen or twenty years, leaving such a number of Oak standards as the parties agree to spare: they are then inclosed for six or seven years, and after that thrown open to cattle. The extent of ground occupied by natural Woods may be about 30,000 acres, but this bears so small a proportion to the whole county, that many large tracts of it appear naked.

Of plantations there are not many, nor any of great extent except the duke of Argyle's, which may be ranked among the greatest in the kingdom. About his Grace's seat at Inverary, above a million of trees have been planted, occupying many square miles. Some of his plantations are in the direct face of the sea breezes, and in the most exposed situations, yet all thriving.

There are Oaks in them from eight to ten feet in circumference, Ashes and Planes from nine to twelve, Beeches, Elms, and Chestnuts from twelve to fourteen, and all in a growing state. The smaller and later plantations in every part of the county are equally thriving, where the size of them is not too diminutive. At Inverneil, Firs of twenty years old measure three feet in circumference; and at Gartnagrenach some of thirty-five years old, planted in a natural Wood, measure from five to six, though standing on barren rocks. The soil, climate, and situation of this county are remarkably well adapted to planting and raising timber; the soil being generally dry, the climate warm and moist, the situation almost every where commodious for water carriage, and the surface so uneven that every part of it abounds with shelter. If trees be planted thick enough and in large masses, there is hardly any situation in the county so untoward as to prevent their growing. The grounds planted by the duke of Argyle, being mostly a barren heath, were not worth above 50l. a year, forty years ago. A million of trees, at 2s. 6d. each, would amount to 125,000l.<sup>p</sup>

#### *Clydesdale.*

There are scarcely any spontaneous coppices above the uppermost fall of the river; but some of the principal landholders, of late, have done much to adorn the country with planting. In the early part of the 18th century, except a few trees about some of the houses, this part of the country was quite naked. There are now about 1800 acres planted, three-fourths of which at least has been done in the last twenty years. The trees of various kinds, but the Scotch Pine and the Larch are the most prevalent. From the top of the falls downward, coppices arise every where, consisting of Oak, Ash, Birch, Elm, Alder, Holly, Gean, or Wild Cherry, Sallow, Hazel, &c. Of these there are 760 acres in the lower part of the upper ward, besides 580 acres of planted Wood, making the whole in this tract 3140 acres. In the middle ward there are 1350 acres of coppice, and 2850 acres of planted Wood. There are few coppices and little planted Wood in the under ward. Hedgerows and narrow stripes surround the small inclosures and give the country a clothed appearance, but probably the square contents do not exceed 700 acres. This makes the whole of the Woods 7,990 acres; but there is reason to believe that there are now considerably above 8000 acres.

The coppice Woods are sometimes cut in twenty-five or twenty-six years, but are more frequently allowed to grow thirty years. An acre is sold at from 20l. to 30l.<sup>q</sup>

#### *Dumfries-shire.*

There are many extensive, beautiful and valuable natural Woods in this county, especially in the Nithsdale district, and also many large and delightful plantations around the seats of the noblemen and gentlemen. Much attention is paid to the preservation and rearing of the Woods by the proprietors in general. The low and sheltered situation of this county, especially the Nithsdale district, which is completely screened from the sea blast by the Galloway hills, is remarkably favourable to the growth of trees.

Many of the natural Woods have been cut within the last thirty years. In general the stools were completely fenced, the blank spaces filled up with young plants, and the Woods weeded (thinned) at the proper seasons. In the last twenty-four years many extensive and beautiful plantations have been made.<sup>r</sup>

#### *County of Fife.*

There are some patches of natural Wood in Fife, but they are few and inconsiderable. The Wood growing round the mansion-houses of proprietors is most aged and valuable, consisting of Ash, Elm, Beech, Fir, Lime, and some Oak. Those plantations belonging to the earls of Crawford and Leven are the largest.

<sup>p</sup> County Report, 8vo. 1798. <sup>q</sup> County Report, 8vo. 1798.  
<sup>r</sup> County Report, 4to. 1794.



Several, less extensive, have been raised in different parts, particularly on the north side by the proprietor of Rankeiler, and Mr. Gourley of Craigrothric; and on the south, on the estates of General Wemyss, Sir James Sinclair Erskine, and Mr. Ferguson of Raith. These are now in an advanced state.

Several tracts of barren ground, and divided commons, have been lately planted: but as the trees are yet in an infant state, they make little appearance: they consist of Oak, Scotch Fir, Larch, Beech, Birch, Ash, &c. Larch is in highest repute, as it agrees with almost any soil; the Wood is very valuable, and its growth rapid\*.

#### *East Lothian.*

Along the coast there is hardly any thing that deserves the name of planting: but the vale of Tyne, within these fifty years, has become somewhat better clothed with Wood. In the higher district of the county, adjoining to the hills of Lammermoor, there is still more planted Wood, the oldest of which, upon the Tweddale estate, consisting principally of Oak, is supposed to have been planted during the usurpation of Cromwell. There are also some Woods upon that estate, which tradition says were planted about the time of the revolution, consisting of Oaks, Beech, Elm, Ash, and Scotch Fir.

The Beech seems no where in Scotland to be of an older date than the revolution, but it thrives wonderfully.

Upon the estate of General Fletcher of Salton, and of Mr. Brown of Coalston, and some others in that district, there are copse-woods composed of the dwarf or Scotch Oak, the Hazel, Birch, and other indigenous trees, which evidently seem to be a remnant of that species of copse which we are told in early times covered the greater part of the south of Scotland. The only Wood, properly speaking, to be found in the lower part of this county, is at Tynninghame, which was begun to be planted about the beginning of the 18th century by Thomas, the sixth earl of Haddington; and it grows down to the sea beach, upon a light sandy soil.

The Larch has been planted in this county within these last thirty years, and is more rapid in its growth than any tree we have except the Huntingdon Willow. But the climate of the low part of this county is in general too dry for trees, and they do not grow well, unless the bottom is low, and has a tendency to moisture†.

#### *Mid-Lothian.*

There may be perhaps about 5000 acres occupied by natural Wood and plantations; the former only on the banks of a few rivulets, the latter round every gentleman's seat in the county. Oak in many places is very flourishing: Elm and Ash never fail to thrive, and as well as Oak find a ready sale. Beech and Plane (Sycamore) are most luxuriant, but not much valued as timber. The Scotch Fir is much cultivated, but neither grows large, nor is the Wood much esteemed. The Larch succeeds best of the Fir kind, next the Silver Fir; but the Spruce Fir soon becomes stunted, and worth even less than the Scotch Fir. Forest trees planted in hedgerows come to no good. A thin belt of four or five rows will not stand the climate; there should be twenty rows at the least‡.

#### *Perthshire.*

The Highlands of Scotland, was at one period under-wood, but it was gradually banished into the steep declivities of glens, or among rocks, &c. deemed incapable of cultivation. About the beginning of the 18th century Woods began again to claim some attention. For fifty or sixty years back, the possessors of some estates in this county thought of repairing the devastation which had formerly been permitted or encouraged on the growing timber. Within these last thirty years plantations have increased rapidly both in size and number. In the Stormont, in Athol, in Breadalbane, in Stratherne, in Strathallan, in the Carre of Gowrie,

in the vicinity of Culroofs, in Monteath, in almost every corner of the county, there are thriving plantations, which consist of a variety of forest trees, adapted to the nature of the soil, which do honour to the spirit and judgment of the owners. In former times a few favourite trees might be seen about the residence of a great man, some of which may have stood for centuries, and become venerable by their years, but the scale has become greatly enlarged in this part of the empire, beyond all example at any period or in any age.

The Scotch Fir is the most common in these plantations. The Larch has many years ago been introduced into this county. There are Larches at the castle of Blair, Athol, and Dunkeld, planted fifty years ago, which measure full eight feet in circumference, at five feet from the ground, and others of as luxuriant growth at Taymouth. But the largest in this county are at Monzie, which measure five feet in diameter. At Blair Drummond, Gleneagles, Rossie, &c. are trees of a great size.

Natural Fir Woods are very frequent in the north of Scotland, but are rare in this county. The family of Struan Robertson however has time immemorial drawn a considerable revenue from the Fir-wood on that estate, which grows naturally on the side of Loch Rannoch. These Woods cover 2566 acres, and form the most extensive forest in one continued tract, which is to be found in this county. His detached Woods of Oak, Birch and Alder cover 3869 Acres.

There was a considerable tract of natural Fir several years ago near Tyndrom on the estate of Breadalbane, but at this time there remain only a few gleanings. Natural Firs are growing in one of the parks of Finlarig on the same estate, and in some other parts of the county; but all these are on a smaller scale.

There are more Oak Woods and of greater value in this county than in all the rest of Scotland. Oak coppices are cut once in twenty-four or twenty-six years. A few trees of the most promising appearance are left at proper distances, from one cutting to another, and sometimes for three or four cuttings. The barbarous custom of throwing them open to cattle at the expiration of five, six, or seven years is still continued.

Some thousands of acres which had been planted with Scotch Firs, upon supposition of their being incapable of cultivation, have lately been cleared, and let at a progressive rent, in some cases amounting to 20s. the acre. Betwixt Coupar and Perth, a tract of thirteen miles, the plantations on 2000 acres, on both sides of the public road, have been grubbed up; and the operation is still going on, both there and in other places\*.

#### *Roxburghshire.*

The natural Wood in this county is at least 608 acres, and the number planted is nearly 4682; besides hedgerows, straggling trees, and tufts around villages and farm houses. In several places, particularly at Ancrum, a number of trees were felled of a large size about thirty years ago; and there are now on that estate several trees from ten to thirteen feet in circumference. Many trees equally large still remain, in different parts, untouched by the axe or the weather. From poverty of soil or injudicious management, several hundred acres, planted some time ago, chiefly with Scotch Firs, have totally failed; and nearly as many, lately planted, do not promise well. Of the trees commonly cultivated, the Beech, the Plane (Sycamore) and the Lime, are the most luxuriant and beautiful; the Ash and Scotch Fir are the most profitable. A number of Larches are coming forward in different places. Fir produced in the county has been tried with success for joists and spars. Towards the beginning of the 18th century, Sir William Bennet, Sir — Elliot of Stobs, Mr. Douglas of Cavers, Mr. Elliot of Wells, and Mr. Bennet of Chesters, made large plantations of Firs, from which their descendants have reaped great advantage. These are now mostly cut down; but others, planted only a few years after them, are now (1798) on sale at Wells and Stewartfield; and there is

\* County Report, 8vo. 1800.

† County Report, 4<sup>o</sup> 1794.

‡ County Report, 8vo. 1795.

\* County Report, 8vo. 1799.



every appearance of twenty or thirty acres being equally ready every year for half a century. Much land has been lately planted, and in a manner which bids fairer for success than any that was formerly followed.

*Selkirkshire.*

The greatest part of the Wood in this county consists of Scotch Firs, the largest half of which was planted twenty-five years ago.

Several hundred acres however are occupied by other trees more valuable though of slower growth, as Oaks, Ashes, Elms, and Planes, (Sycamores); many of which have been lately planted, though not a few are of a great age and a large size.

From this very imperfect account it will be seen that Scotland is by no means so destitute of trees as has been represented by some prejudiced persons; and that a great spirit of planting has arisen in some parts which would do honour to England. The Earl of Fife has not only planted to a very considerable extent; but he has bestowed his own personal attention upon his fine plantations; and has even secured them to posterity, that they may not be immaturely destroyed, but felled when the trees may be of most advantage to the proprietor and the public.

Upon the whole it appears that a spirit of planting has arisen towards the end of the 18th century in several parts of the country, which will furnish a supply for all rural uses. As to timber for the navy, little is to be expected from these plantations, both because the proportion of Oak is small in most of them, and it is very improbable that many of the trees will be suffered to arrive at an age and size adapted to this purpose. Naval timber must either be raised in the Royal Forests, or be procured by great encouragement held forth to private persons. Some idea may be formed of the prodigious quantity of Oak timber that is consumed by the navy, when we consider that a seventy-four gun ship swallows up 3000 loads of fifty cubical feet each; consequently it takes 2000 large well-grown trees, of nearly two tons or forty feet each; that is the produce of fifty acres.

*Price of Timber, Bark, Coppice Wood, &c.*

Price of Oak in 1608, 10s. the load.

———— 1664, 13s. 4d. the ton in general.

———— 15s. the ton for the navy.

———— 1663 } Straight and compass timber

———— 1665 } for the navy, 2l. to 2l. 15s. 6d. the load.

Knee timber, 2l. 15s. to 3l. 2s. 6d.

———— 1756 Straight and compass timber 3l. to 4l. 5s.

Which has continued ever since.

Price of Bark, time of James I. 2s. the cart load.

———— now 50s. to 3l. the coppice load, weighing from 7 to 11 cwt.

*Increase of the price of Oak Timber in 1792, within the last forty years.*

Bedfordshire, increased about 3d.

Cambridgeshire, increased 20 per cent.

Cornwall, increased about one-third.

Derbyshire, near double.

Essex, increased from 1s. 3d. to 1s. 8d.

Hampshire increased from 30s. to 3l. a load for carpenters.

Hertfordshire increased from 45s. to 65s. or 75s. a load for carpenters, who buy by round cube measure, and sell by square cube measure at 3s. gaining 120 per cent.

Kent, increased one-third.

Lancashire, double.

Lincolnshire, increased 8d. for carpenters, large timber more.

Nottinghamshire, } increased at least one-third.

Oxfordshire, }

Rutlandshire, increased one-third or something less.

Shropshire, increased one-third.

Suffolk, accounts various; increased 100 per cent, or one-sixth.

Suffex, increased one-third; 100 per cent in twelve years.

<sup>y</sup> County Report, 8vo. 1798. <sup>z</sup> Marshall's Planting, 1, 111. ed. 2.

Warwickshire, little difference.

Worcestershire, increased at least one-third.

Yorkshire, accounts various—more than double—not much increased—increased one-fourth, or nearly one-half.

Montgomeryshire, doubled.

Brecon, increased 50 per cent.—or 20s. to 40s. the ton.

Caermarthenshire, increased more than three times.

Pembrokeshire, increased at least one-third, perhaps one-half.

Radnorshire, increased at least 50 per cent.

Mid-Lothian, increased 40 per cent within ten years.

*Price of Timber, &c. at the end of the 18th century, from the Surveys of Counties addressed to the Board of Agriculture, and other authentic documents.*

Bedfordshire. See Huntingdonshire.

Berkshire. Large Oak, Ash and Elm 1s. 6d. a foot; Beech and Sycamore. 1s. Oak bark 6l. to 10l.

Cambridgeshire. Oak bark rated at 25 per cent. on the value of the timber.

Devonshire. Oak 40s. a ton for carpenters use, 50s. to 3l. for coopers.

Coppice Wood (1794) 15l. an acre, at twenty years growth.

Cordwood 10s. a cord (4, 4 and 8) or 6d. the hundred weight.

Dorsetshire. Oak 1s. 6d. a foot, or 3l. 10s. a load of forty feet, including tops and bark. Elm and Ash 9d.

Essex. Oak 2s. a foot, top and bark included, the buyer felling.

Coppice Woods (Ash, Sallow, Hornbeam, Hazel, and Thorn) worth 8l. an acre at the stub.

Gloucestershire. Cordwood 10s. 6d. or 11s.

Some Coppices sold in 1792 at 15l. an acre.

Bark 5l. 10s.

Oak 1s. 3d. a foot.

Herefordshire. Coppice Wood from 12l. to 22l. an acre, from twelve to fourteen years growth.

Hertfordshire. Oak 3l. 10s. a load, worth at the yards 5l. 10s.

A good plant of thriving underwood may be averaged at 20s. an acre annually.

Huntingdonshire.—It is customary in this county and its neighbourhood to sell Oak timber before it is felled. The value is from 20d. to 2s. 6d. a foot, according to its quality, at the same time taking into account the heads, which are included in the above prices: the purchaser pays for felling; so that the average price may be about 2s. 3d. a foot, including the heads.

The customary mode of felling Oak bark, is by so much money in the pound, according to the value of the timber. The average price is about 8s. in the pound.

The value of Elm timber is 14d. per foot; and if very good as high as 16d. But this price does not include the heads.

Ordinary Ash is sold at 15d. a foot; but if it is fit for the cooper's use, it is worth 20d.

The method of felling underwood is general throughout this and the adjoining counties. It is felled into dozens (meaning twelve square poles) and sold on an average for about 12s. a dozen or 1s. per pole. Some dozens are estimated as high as 20s.; inferior ones at 10s. and some as low as 6s.

Kent. Underwoods cut from ten to fourteen and eighteen years growth from 5l. to 15l. an acre, hop-poles the chief article. Winter kiln bavins 6s. a hundred; summer ditto 8s. or 9s.; household ditto 12s. or 14s. all six feet long and two round. Bushes from 7s. to 10s. a load of fifty bundles. Beech 7d. or 8d. a foot for fellies, for axle-trees 10d. Cordwood 12s. to 16s. (14. 3. 3½.)

<sup>a</sup> Eleventh Report of the Commissioners of the Land Revenue, app. n. 6.

Lincolnshire.



Lincolnshire. Oak for fencing, &c. 1s. 6d. for building nearly double. Ash and Poplar 1s. Scotch Fir 8d.

Norfolk. Oak in 1782, 3 guineas to 3l. 15s. a ton. Top-wood 7s. to 12s. each load. Timber in the rough 15d. to 20d. Ash standing, 40s. to 50s. a ton; or 9d. to 1s. a foot.

Northamptonshire. Oak 1s. 4d. to 2s. 6d. a foot. Ash 10d. to 1s. 6d. Elm 9d. to 1s. 4d. Poplar 6d. to 1s. Bark 7s. to 12s. in the pound of the value of the tree.

Underwood (eleven to fourteen years growth) 6l. an acre.

Northumberland. Oak 2s. to 3s. the foot. Ash and Elm 1s. to 2s.

Oak bark 9l. a ton, in 1793.

Rutlandshire. Best Oak 2s. 6d. the foot.

Underwood, 3l. to 6l. an acre.

Shropshire. Bark 20s. a ton.

Somersetshire. Oak timber from 50s. to 3l. 16s. a ton.

Ash from 45s. to 3l.

Underwood, at eighteen or twenty years, 16l. an acre.

Suffex. Good Oak 6l. a load.

Beech 3l. 6s. 8d.

Ash 3l. 15s.

Elm 2l. 10s.

Bark in 1792, 19l. in 1793. 14l.

Warwickshire. Oak 3 guineas to 3l. 10s. a ton.

— bark 25s. to 40s. a ton.

Underwood 3l. to 8l. an acre.

Westmoreland. Coppice Wood (sixteen years growth) 10l. to 15l. an acre—if Oak, 20 guineas, 6l. for charcoal, and 15l. for bark.

Wiltshire. Oak 1s. to 1s. 6d.

Ash 9d. to 1s. 6d.

Elm 9d. to 1s. a foot, in the rough.

Yorkshire. East Riding. Good Oak 2s. to 2s. 6d. common 1s. to 1s. 6d.

Good Ash 1s. to 1s. 6d. common 8d. to 1s.

North Riding. Oak 3l. a ton, or 1s. 6d. a foot delivered in the yard—for the carpenter 1s. 4d.

Ash 1s. to 1s. 6d.

Chopt bark 10s. 6d. a quarter.

#### Scotland.

Clydesdale. Coppice Woods, at twenty-five, twenty-six or thirty years growth, 20l. to 30l. an acre.

Fir - - - - - 9d.

Oak - - - - - 1s. 8d. to 2s. 0d.

Ash - - - - - 1s. 6d. to 2s. 0d.

Elm - - - - - 2 0

Sycamore - - - - - 2 0

Beech - - - - - 1s. to 1 6

Sallow fit for mill-timber 2 6

Lime - - - - - 1 4

Poplar, mostly white - - - 1 4

Birch - - - - - 1 0

Holly for veneering, very rare 5 0

Gean tree - - - - - 1 6

Pear and Apple - - - - - 1 6

Roxburghshire. Oak, Ash, and Elm 1s. 8d.

to - - - - - 2 0

Beech and Plane (Sycamore)

10d. to 1 2

Fir - - - - - 7d. to 1 0

Red Saugh or Sallow 1s. 6d. or 1 8

#### The annual growth of Trees, and size of Timber at different ages.

The growth of trees varies much according to the age, soil, and other circumstances. Some estimate however may be made of it, by comparing a great number of accounts. Such as could be readily obtained are set down.

Mr. Barker has given a series of observations on this subject in the Philosophical Transactions, vol. 78. for 1788.

#### Oaks.

|     | Girth.<br>Inches. |      | Girth.<br>Inches. | Rate.<br>Inches. |   | Girth.<br>Inches. | Rate.<br>Inches. |
|-----|-------------------|------|-------------------|------------------|---|-------------------|------------------|
| 1.  | —                 | —    | 1772              | 19               | — | 1787              | 41               |
| 2.  | 1758              | 13   | 1772              | 33               | 1 | 1787              | 55½              |
| 3.  | 1758              | 18½  | 1772              | 40½              | 1 | 1787              | 58               |
| 4.  | —                 | —    | —                 | —                | — | 1787              | 156½             |
| 5.  | 1758              | 41   | 1772              | 56               | 1 | 1787              | 77½              |
| 6.  | 1744              | 20   | 1765              | 45               | 1 | 1787              | 74½              |
| 7.  | 1758              | 18   | 1772              | 36               | 1 | 1787              | 54               |
| 8.  | 1758              | 76   | 1772              | 93½              | 1 | 1787              | 109½             |
| 9.  | 1751              | 124  | 1772              | 147              | 1 | 1787              | 164½             |
| 10. | 1744              | 23½  | 1765              | 49               | 1 | 1787              | 74               |
| 11. | 1744              | 69½  | 1772              | 99               | 1 | 1787              | 115              |
| 12. | 1744              | 14   | 1765              | 43               | 1 | 1787              | 60               |
| 13. | 1747              | 82   | 1765              | 99½              | 1 | 1787              | 120½             |
| 14. | 1744              | 21   | 1765              | 45               | 1 | 1787              | 64               |
| 15. | 1762              | 106½ | 1772              | 117              | 1 | 1787              | 130              |
| 16. | 1751              | 117  | 1770              | 132              | 0 | 1787              | 149½             |
| 17. | 1751              | 114  | 1770              | 131½             | 0 | 1787              | 145              |
| 18. | 1751              | 84½  | 1772              | 101              | 0 | 1787              | 109              |
| 19. | 1744              | 41   | 1765              | 58½              | 0 | 1787              | 69               |

#### Ash.

|     |      |     |      |     |   |      |      |
|-----|------|-----|------|-----|---|------|------|
| 20. | —    | —   | 1772 | 71  | — | 1787 | 106  |
| 21. | 1745 | 23½ | 1765 | 67  | 2 | 1787 | 111  |
| 22. | 1744 | 22  | 1765 | 55½ | 1 | 1787 | 92   |
| 23. | 1744 | 32  | 1765 | 61  | 1 | 1787 | 94½  |
| 24. | 1744 | 66  | 1765 | 91½ | 1 | 1787 | 114  |
| 25. | 1751 | 20  | 1772 | 45  | 1 | 1782 | 58½  |
| 26. | 1765 | 55  | 1772 | 64  | 1 | 1787 | 75½  |
| 27. | 1747 | 77  | 1765 | 97  | 1 | 1787 | 116½ |
| 28. | —    | —   | 1772 | 67½ | — | 1787 | 82   |
| 29. | 1744 | 56  | 1765 | 77½ | 1 | —    | —    |
| 30. | 1755 | 51½ | 1772 | 67  | 0 | 1787 | 80   |
| 31. | —    | —   | 1765 | 74  | — | 1781 | 89   |
| 32. | 1751 | 45½ | 1772 | 67  | 1 | 1787 | 77   |
| 33. | 1744 | 17½ | 1765 | 34  | 0 | 1787 | 52   |
| 34. | 1744 | 17  | 1765 | 36½ | 0 | 1787 | 52½  |
| 35. | 1744 | 20  | 1772 | 40  | 0 | —    | —    |
| 36. | 1745 | 13½ | 1772 | 31½ | 0 | 1787 | 41   |

#### Elms.

|     |      |    |      |    |   |      |    |
|-----|------|----|------|----|---|------|----|
| 37. | 1755 | 0  | 1772 | 42 | 2 | 1787 | 77 |
| 38. | 1744 | 28 | 1765 | 60 | 1 | 1787 | 96 |
| 39. | 1744 | 37 | 1758 | 50 | 0 | 1781 | 72 |
| 40. | 1744 | 46 | 1758 | 58 | 0 | —    | —  |
| 41. | 1744 | 48 | 1758 | 59 | 0 | —    | —  |

Except the two first Ash trees, Mr. Barker remarks, that he finds the growth of Oak and Ash to be nearly the same. The common growth of both is about an inch in girth in a year; some thriving ones will grow an inch and half: in general the thriving ones were measured.

Great trees grow more timber in a year than small ones; for if the annual growth be an inch, a coat of one-sixth of an inch is laid on all round, and the timber added to the body every year in its length multiplied into the thickness of the coat, and into the girth, and therefore the thicker the tree is, the more timber is added. The body of No. 9. was nine feet long, the girth under the bark above thirteen feet, the thickness of the coat one-sixth of an inch, or  $\frac{1}{72}$  of a foot: then  $9 \times 13 \times \frac{1}{72}$  is one foot and six-tenths of timber added in a year to the body, beside the increase on all the branches, and it had a very great head; one limb squared twenty inches, and is itself equal to a moderate tree.

The hedge in which No. 4. grew was planted in 1665, probably the tree is not older than that year; it has therefore increased in girth about 1. 3 inch every year since it was set.

The Oak No. 5, seems to have sowed itself: Mr. Barker did not know of it till about the year 1740, when the hedge being cut, the tree was found, and might be then twenty years old or more.

The two Ash trees No. 20 and 21, grew much faster than any of the rest, but were neither of them handsome growing trees. No. 20 had several seams where the bark parted from the Wood, and were likely to be dead sides. No. 21 was about as thick as a walking-stick in 1730. It did not grow round and smooth, had no dead side, but several deep furrows in it; so that these two trees seemed to grow faster than they could grow well.



In 1733 No. 23 was about as thick as a pitch-fork shaft.

The Elm No. 37 was planted with the quick in January 1756, and cut down to the ground as that was. It is a kind of Witch Elm, which grow faster than the upright ones, and with great round heads. No. 38 was so far like a Witch Elm, that at ten feet high it parted into a great head, but it grew much straighter and handsomer than that kind of tree generally does.

Planted trees at a distance from the hedge seem not to grow so large as sown trees in the hedge; whether from the check the trees receive in transplanting, or that the trees not in hedges are more rubbed by the cattle; perhaps both causes concur when the trees are transplanted large; but trees set in quicks, when very small, do not seem to be hurt by it. Some Oaks were set with the quick, and a row of acorns was some years after sown against it; but in between forty and fifty years they have not overtaken the planted ones in size; the sown seem however to be taller trees than the planted.

It is a general opinion, says the bishop of Landaff, in this, and I believe in other countries, that it is more profitable to fell Oak Wood at fifty or sixty years growth, than to let it stand for navy timber to eighty or one hundred. According to the price which is now paid by the Navy-board or the East India Company, the opinion seems founded in truth.

If profit be considered, a tree ought to be cut down and sold, when the annual increase in value by its growth, is less than the annual interest of the money it would sell for. This being admitted, we have only to inquire into the annual increase in the value of Oaks of different ages.

In the Philosophical Transactions for 1759 there are some useful tables respecting the growth of trees by Mr. Marshall: from these the two following inferences may be drawn. 1. That it is highly profitable to let young thriving Oaks, which are not worth above 30s. a tree, continue standing. 2. That it is not profitable to let Oaks of eighty or one hundred years growth, continue standing.

Three Oaks marked in the tables No. 8, 11, 12, in April 1743, before they began to shoot, contained eleven and one half feet of Wood, and were altogether worth, at eighteen pence a foot, bark included, 17s. 3d.

The same trees, sixteen years afterwards contained thirty-four and one-half feet, and were worth 2l. 11s. 9d. Now if 17s. 3d. had been improved at the rate of seven per cent. at compound interest for sixteen years, it would not have amounted to 2l. 11s. 9d.; and of consequence the proprietor, by letting such Oaks stand, improves his property in as high a degree, as if he put out this money to interest at near seven and a half per cent.

Three Oaks, No. 2, 3, 5, in 1743 contained 102½ feet of timber, and were worth 7l. 10s. 9d. The same trees sixteen years afterwards, contained 132½ feet, and were worth 9l. 18s. 6d. Now the value of the trees in 1743, improved at the low rate of interest of two per cent. would, in sixteen years, amount to a sum exceeding 9l. 18s. 6d. The proprietor, then, by letting such trees stand, does not improve his property at the rate of 2l. per cent.

The Oak, No. 1, in the third table, was worth 1l. 2s. 6d. in 1757, it gained in one year one foot, or 1s. 6d. in value; if it had been worth 30s. and had gained one foot, there would have been no profit in letting it stand, as the interest of 30s. at five per cent. would have produced 1s. 6d. in the year. It is for this reason that 30s. is fixed upon as the value of trees which should be cut down. It must not be supposed however that great precision can attend this observation, since particular soils, or the greater or less thriving condition of the Wood, may render it useful to cut down trees before they are worth 30s. or to let them stand a while longer. It ought to be remarked also, that large trees sell for more per foot than small ones do, yet the usual increase of price is not a compensation to the proprietor for letting his timber stand to a great age. This may be made out from the following experiment: on the 27th of October, 1792, was measured, at six feet from the ground, the circumference of a very fine Oak of eighty-two years growth, and found

to be 107 inches; on the same day of the month, in 1793, it measured 108 inches. There is not one Oak in fifty, at the age of this, which gains an inch in circumference in one year. The length of the bole of this tree was about eighteen feet; it contained about eighty-four feet of timber, and was worth, at 3s. a foot, twelve guineas. It gained in one year very little more than a foot and a half of timber, or 4s. 6d. in value; but the interest of twelve guineas at four per cent. amounts in one year, to above twice the value of the increase, even of this tree, which is a singularly thriving one.

I have been more particular, says the learned bishop, on this subject, from a public consideration. Many men are alarmed lest our posterity should experience a scarcity of Oak timber for the use of the navy; and various means of increasing its quantity have been recommended with great judgment. In addition to these means, the making a much greater than the ordinary increase of price on timber of a large scantling, might be not improperly submitted to the consideration of those who are concerned in the business. If the Navy-board would give 8l. or 9l. a load for timber trees containing one hundred cubit feet or upwards, instead of 4l. or 5l., every man in the kingdom would have a reasonable motive for letting his timber stand till it became of a size fit for the use of the navy; whereas, according to the present price, it is every man's interest to cut it down sooner<sup>b</sup>.

In a fall of Oak timber in lord Bagot's Woods, Mr. Marshall counted the rings of one which was round at the butt. The number about 200; but the last forty or fifty years growth were so thin, that he could not count them with certainty, though with sufficient accuracy to ground the following calculations.

The girth of this tree, in the girthing place, was nine feet, the diameter of which is somewhat more than thirty-four inches. The estimated growth in this part is thirty inches diameter, during the first 150 years, and four inches (two inches thick) in the last fifty years. The length of the stem twenty-two feet. The contents of the whole 110 feet of timber. The contents of the first 150 year growths eighty-five feet; leaving twenty-five feet for the growth of the last fifty years. Therefore although the increase of diameter has been comparatively small during the last fifty years, the increase of timber has been nearly as great as in the first stages. But supposing this tree had been taken down at 150 years old, it would, at 2s. a foot, have produced 8l. 10s.: the interest of which would have amounted, in the course of fifty years, to more than 20l.; beside the use of the land, during that time. Whereas the tree, at that rate, is now worth only 11l.

These calculations and inferences are not intended to excite a spirit of felling timber prematurely, but to ascertain the proper age of felling; it being worse in point of economy to suffer timber to stand too long, than to cut it down before it has attained its full growth.

The proper ages of felling appear to be—for Poplar from thirty to fifty years old; for Elm and Ash from fifty to a hundred, and for Oak from one hundred to two hundred. Very much however depends on situation, as well as on the soil and subsoil in which the trees are rooted. On dry absorbent soils, the Oak and Elm at least are observed to go off much sooner, than on such as are cool and retentive<sup>c</sup>.

Three remarkably thriving Elms, thirty years old: two of them more than two feet diameter at the butt; and measure at four feet high more than eighteen inches. Not bigger than eight more left standing; measure forty-four feet including bark: above forty feet of saleable timber, worth 1s. a foot

|                                    |   |        |
|------------------------------------|---|--------|
| 2                                  | 0 | 0      |
| 16 fencing-posts and rails, at 4d. | - | 0 5 4  |
| 9 feet of cordwood, at 10s.        | - | 0 11 4 |
| 40 spray faggots - - - - -         | - | 0 3 4  |
| <hr/>                              |   |        |
| £. 3 0 0                           |   |        |

Some hedge-row Elms 110 years old, were from two and a half to three feet in diameter. Some of these evidently overgrown, though in a well-soiled cool situ-

<sup>b</sup> Agric. survey of Westmoreland, p. 254. 8vo. edit.  
<sup>c</sup> Midland Counties, 2. 357 to 363.



ation. Elms therefore can seldom stand, with economy, more than 100 years<sup>d</sup>.

Elm grows with uncommon luxuriance in the vale of Gloucester. Its progress is quickest on the lighter warmer lands; but here the trees soonest decay, and the timber is of the least value. In clay its growth is less rapid, but the timber is of a much better quality: the colour of iron; and in some instances almost as hard. The Bristol ship-builders have a supply of keel-pieces from this quarter<sup>e</sup>.

The rings in a full-grown Ash, measuring twenty-one inches in diameter, were ninety. Of the first and last ten years the growth had been slow. In the intermediate years, the different thicknesses of the rings, in different years, were striking.

The number of rings in another Ash, eighteen inches in diameter, were, very distinctly, 112. These Ashes, on a cool retentive subsoil, were full grown, and many of them overgrown, at 100 years old. It is not solidity, but toughness, which is wanted in Ash Timber, and toughness is a quality of youthful growing trees. It is probable therefore that Ash, for the uses of husbandry, should not stand 100 years. The Ashes in this wood (Statfold) were in general from forty to fifty feet in the stem.

It is a good practice to fill up the vacancy of an oak wood with Ash; their upward growth being more rapid than that of the oak, and their superiority of value consisting in a straightness and length of stem<sup>f</sup>.

In a common Poplar that had fifty rings, the diameter at the butt was two feet three inches, at ten feet high twenty-four inches. In the last ten years its increase had not been more than three inches in diameter, or an inch and half in the width of the rings. It had therefore grown ten inches and a half in the first forty years; or a quarter of an inch each year. This tree was beginning to rot at the heart; in the lower part of the stem, about an inch and half in diameter was entirely decayed; it had therefore stood too long, though to appearance it was a healthy thriving tree. Even supposing it to have fallen perfectly sound, the increase for the last ten years was inadequate to its encumbrance, and the interest of its value at forty years old; at which age it would have paid well for planting and land-room. The soil a rich loam: the situation moist<sup>g</sup>.

*Observations on the growth of Trees, by E. Harries, Esq. of Hanwood, Shrewsbury.*

#### HORTON WOOD.

*Taken at five feet from the ground.*

|         | May 26, 1784. |    |     |      | May 25, 1785. |    |     |      | Increase. |     |      |
|---------|---------------|----|-----|------|---------------|----|-----|------|-----------|-----|------|
| No.     |               | f. | in. | qrs. |               | f. | in. | qrs. |           | in. | qrs. |
| 1. Oak  | —             | 3  | 8   | 2    | —             | 3  | 9   | 2    | —         | 1   | 0    |
| 2. Do.  | —             | 3  | 5   | 0    | —             | 3  | 5   | 2    | —         | 0   | 2    |
| 4. Do.  | —             | 3  | 7   | 1    | —             | 3  | 8   | 1    | —         | 1   | 0    |
| 5. Do.  | —             | 3  | 9   | 0    | —             | 3  | 9   | 3    | —         | 0   | 3    |
| 6. Do.  | —             | 4  | 8   | 2    | —             | 4  | 9   | 3    | —         | 1   | 1    |
| 7. Do.  | —             | 4  | 5   | 0    | —             | 4  | 5   | 2    | —         | 0   | 2    |
| 8. Do.  | —             | 6  | 1   | 0    | —             | 6  | 2   | 0    | —         | 1   | 0    |
| 9. Do.  | —             | 4  | 1   | 3    | —             | 4  | 3   | 0    | —         | 1   | 1    |
| 10. Do. | —             | 4  | 4   | 1    | —             | 4  | 5   | 0    | —         | 0   | 3    |
| 11. Ash | —             | 3  | 8   | 2    | —             | 3  | 9   | 0    | —         | 0   | 2    |

<sup>d</sup> Midland Counties, 2. 318, 392. <sup>e</sup> Marshall's Gloucestershire, 1. 42. <sup>f</sup> Marshall's Midl. Counties, 2. 317, 392. <sup>g</sup> Id. ibid. 2. 321.

#### HEATH WOOD.

|              | May 26, 1784. |     |      | May 24, 1785. |     |      | Increase. |      |
|--------------|---------------|-----|------|---------------|-----|------|-----------|------|
| No.          | f.            | in. | qrs. | f.            | in. | qrs. | in.       | qrs. |
| 1. Oak       | 3             | 7   | 3    | 3             | 8   | 1    | 0         | 2    |
| 2. Do.       | 4             | 7   | 2    | 4             | 7   | 3    | 0         | 1    |
| 4. Do.       | 4             | 9   | 1    | 4             | 9   | 3    | 0         | 2    |
| 5. Do.       | 5             | 6   | 3    | 5             | 7   | 0    | 0         | 1    |
| 7. Do.       | 5             | 11  | 0    | 5             | 11  | 3    | 0         | 3    |
| 8. Do.       | 5             | 11  | 0    | 5             | 11  | 3    | 0         | 3    |
| 1. Poplar    | 4             | 8   | 0    | 4             | 9   | 1    | 1         | 1    |
| 2. Do.       | 4             | 9   | 3    | 4             | 11  | 2    | 1         | 3    |
| 3. Do.       | 4             | 8   | 2    | 4             | 10  | 3    | 2         | 1    |
| Witch Elm    | 5             | 4   | 0    | 5             | 5   | 3    | 1         | 3    |
| Worcest. Do. | 1             | 9   | 0    | 1             | 11  | 0    | 2         | 0    |

#### MOOLE GROVE.

|        |   |   |    |   |   |   |    |   |   |   |   |
|--------|---|---|----|---|---|---|----|---|---|---|---|
| 1. Oak | — | 3 | 10 | 3 | — | 3 | 11 | 2 | — | 0 | 3 |
| 2. Do. | — | 3 | 1  | 2 | — | 3 | 2  | 2 | — | 1 | 0 |
| 3. Do. | — | 4 | 3  | 3 | — | 4 | 4  | 2 | — | 0 | 3 |
| 4. Do. | — | 3 | 2  | 2 | — | 3 | 3  | 0 | — | 0 | 2 |
| 5. Do. | — | 4 | 1  | 1 | — | 4 | 2  | 0 | — | 0 | 3 |
| 7. Do. | — | 4 | 3  | 2 | — | 4 | 4  | 2 | — | 1 | 0 |

Horton Wood is in a flat situation, the soil shallow, with a clay bottom; but very proper for the growth of oaks. It is a large wood, of about seventy years standing; the trees tall and straight, but in general not sufficiently furnished with side branches, without which a tree seldom comes to any considerable girth. If oaks are permitted to stand near together, longer than is necessary to set them in a fair way for attaining height, they will not push out those arms furnished with leaves which are so essential to form a fine trunk. From twelve to fifteen yards is as near as they ought to remain, after the last thinning.

The generality of the oaks have gained from half an inch to an inch in girth. An inch gains a pretty fair profit.

Heath Wood is an indifferent soil, sloping to the north. It is six acres, and eighty years growth.

Moole Grove is a sound good soil, sixty years growth<sup>h</sup>.

Mr. Harries afterwards informs us, that he measured some of the trees the year following (1786) and from the prodigious quantities of insects, which almost eat away the leaves of the oaks, and the uncommon drought of the summer till August, he found that the oaks in Heath Wood had not gained, upon an average, more than a third of an inch in circumference. In another grove of oaks, that nearly escaped the ravages of insects, he found the increase an inch upon an average. A tree four feet round, that has timber twenty feet in length, gains thus a foot of timber, worth 1s. a foot at least, and pays 5l. per cent for standing. His Poplars gained near two inches, and the two Elms as much.

Mr. Harries experienced the Larch to be of the quickest growth, and the most valuable wood of the resinous trees. But unless there is good room for the lower branches, the trees will not arrive at any considerable size. And this, he says, should be observed in the early stage of all trees of a pyramidal form. They may perhaps stand for timber at the distance of about seven yards. The Scotch Fir may be planted between them, which may be thinned out when the branches obstruct the Larch. He measured several Larches that had been planted about thirty years, from four to five feet six inches round, at five feet from the ground; and speaks of one, which in twenty years was six feet in circumference<sup>i</sup>.

<sup>h</sup> Young's Annals, 3. 426.

<sup>i</sup> Idem. 6. 84.



The following TABLE of the growth of several sorts of Trees, in 5 years, is by ARTHUR YOUNG, Esq.

| No.                               | Apr. 26, 1779.    | Apr. 26, 1780.    | Apr. 26, 1781.    | Apr. 26, 1783.    | Apr. 26, 1785.   |
|-----------------------------------|-------------------|-------------------|-------------------|-------------------|------------------|
|                                   | f. in.            | f. in.            | f. in.            | f. in.            | f. in.           |
| 1. Beech 60 years                 | 4 $7\frac{7}{8}$  | 4 $8\frac{1}{2}$  | 4 $8\frac{1}{2}$  | 4 10              | 4 11             |
| 2. Oak 150 years                  | 9 $0\frac{1}{2}$  | 9 $1\frac{1}{4}$  | 9 $2\frac{1}{2}$  | 9 6               | 9 8              |
| 3. Ash 100 years                  | 8 8               | 8 9               | 8 10              | 8 $11\frac{1}{2}$ | 9 1              |
| 4. Ash 30 years                   | 4 $9\frac{5}{8}$  | 4 10              | 4 11              | 5 0               | 5 2              |
| 5. Ash 12 years                   | 2 $2\frac{2}{8}$  | 2 3               | 2 4               | 2 $6\frac{1}{2}$  |                  |
| 6. Ash 4 years                    | 0 $1\frac{1}{2}$  | 0 $2\frac{1}{2}$  | 0 $2\frac{7}{8}$  | 0 6               | 0 $8\frac{1}{2}$ |
| Do. height                        | 6 1               | 7 8               | 8 6               | 11 8              | 15 6             |
| 7. Ash 8 years                    | 0 11              | 1 0               | 1 1               | 1 5               |                  |
| 8. Elm 14 years                   | 1 $1\frac{7}{8}$  | 1 $3\frac{1}{2}$  | 1 5               | 1 8               | 1 11             |
| 9. Lime 14 years                  | 1 $7\frac{3}{8}$  | 1 $9\frac{1}{4}$  | 1 $10\frac{1}{2}$ | 2 2               | 2 5              |
| 10. Spruce Fir 16 years           | 1 $8\frac{2}{8}$  | 1 $10\frac{1}{8}$ | 1 $11\frac{1}{2}$ | 2 $3\frac{1}{2}$  |                  |
| 11. Silver Fir 16 years           | 1 $7\frac{6}{8}$  | 1 $9\frac{1}{4}$  | 1 10              | 2 1               | 2 5              |
| 12. Scotch Fir 16 years           | 1 $11\frac{1}{2}$ | 2 1               | 2 4               | 2 $8\frac{1}{2}$  | 3 $0\frac{1}{2}$ |
| 13. Larch 16 years                | 1 7               | 1 $8\frac{1}{2}$  | 1 9               | 2 0               | 2 3              |
| 14. Beech 200 years               | 0 0               | 0 0               | 12 0              | 12 4              | 12 5             |
| 15. Weymouth Pine 10 years        | 0 $7\frac{7}{8}$  | 0 $9\frac{3}{4}$  | 1 0               | 1 $3\frac{3}{4}$  | 1 $7\frac{1}{2}$ |
| 16. Oak 200 years                 | 9 $6\frac{6}{8}$  | 9 10              | 10 0              | 10 2              | 10 2             |
| 17. Oak 6 years, height           | 6 6               | 8 8               | 10 0              | 10 9              | 17 6*            |
| 18. Oak 3 years, height           | 3 0               | 3 1               | 3 6               | 5 0               | 7 3              |
| 19. Lombardy Poplar, height       | 6 4               | 9 3               | 11 0              |                   |                  |
| 20. Larch planted 2 years, height | 3 3               | 5 2               | 7 0               | 12 9              | 19 6†            |
| 21. Spruce Fir, height            | 0 0               | 3 3               | 4 5               | 8 8               | 13 0             |
| 22. Do. - - height                | 0 0               | 2 9               | 4 2               | 8 0               | 11 0             |
| 23. Scotch Fir, height            | 0 0               | 2 0               | 3 10              | 7 3               |                  |

\* Circumference 8 inches.

† Circumference 10 inches.

The circumference in the above table was taken at five feet from the ground. It appears that the old trees grew very differently in different years; and that 1783 and 1784 were favourable to their increase. The Larches, among all the trees which have been planted, amounting to near 400,000, have upon the whole succeeded much the best; have outgrown all the firs; and have done equally well in whatever soil they have been tried.

The Ash No. 6. growing in good garden loam not dunged, six feet one inch high, and one inch and a half in circumference, april 26, 1779, was on may 21, seven feet eight inches high; and on june 21, seven feet ten inches. July 16 it was the same. The great growth of it therefore was in may, when it grew one foot seven inches; whereas in june it increased only two inches, and in the following month not at all. That it grew only in the spring, appears from the height taken april 26, 1780.

The Oak No. 17, six feet six inches in height, april 26, 1779, on may 21, was seven feet one inch; june 21, seven feet two inches; july 16, eight feet five inches. Hence the Oak has two periods of growth, the spring and midsummer; the latter much the most considerable<sup>k</sup>.

Mr. Young measured several trees in Marquis Townshend's extensive plantations about Rainham: as an Oak near the house, of great age, that measured in january 1785 twelve feet eight inches and an half in circumference, at five feet from the ground, and holding its size very high, being large for sixty feet. There are not less than eight loads of timber in it. The trunk seems to increase, though the top and branches are decayed; for Marquis Townshend, several years ago, put a bench round it, which was quite clear of the tree, and they now join. Eight years after, Mr. Young measured it again, and found it to have increased three inches.

A beautiful Ash, called Lady Townshend's, not far from the Oak, was in 1785, ten feet one inch in circumference at five feet from the ground; straight as an arrow, and about thirty-five feet to the first fork. Eight years after it measured ten feet seven inches.

Larch of sixteen years growth, in the twelve-acre plantation, fifteen inches and a half in circumference, and fifteen to twenty feet high. In another plantation of twenty-one years growth, two feet three inches in circumference.—In one of twenty years, spruce

fir three feet, oak two feet, larch two feet eight inches, and another of the same age, four feet. The first large larch on the right hand entering the plantation called Drozier's belt from the house, two feet eleven inches. These measures were taken in 1785.

In the plantation by the bench oak, a beech one foot eleven inches; an oak one foot ten inches, another one foot six inches, a third two feet two inches and a half.

Three oriental Planes together, one seven feet, a second eight feet one inch; another alone nine feet eight inches; a Sycamore by the iron gate, ten feet at four feet six inches above the ground, there being a knot at five feet. These measures taken in 1793<sup>l</sup>.

*Measurements taken by MARQUIS TOWNSHEND in 1785, in some of his own plantations.*

|                  |   |   |   |   |      |
|------------------|---|---|---|---|------|
| 1764. Larch      | - | - | - | - | 4 0  |
| Ditto            | - | - | - | - | 3 3  |
| Spruce Fir       | - | - | - | - | 2 0  |
| Beech            | - | - | - | - | 2 6  |
| Spanish Oak      | - | - | - | - | 1 11 |
| Oak              | - | - | - | - | 2 6  |
| Chestnut         | - | - | - | - | 1 10 |
| 1766. Spruce Fir | - | - | - | - | 2 10 |
| Larch            | - | - | - | - | 2 10 |
| 1767. Sycamore   | - | - | - | - | 2 4  |
| 1765. Oak        | - | - | - | - | 1 6  |
| sown. Beech      | - | - | - | - | 1 4  |
| Ash              | - | - | - | - | 1 5  |

All taken at five feet above the ground<sup>m</sup>.

*Measurements taken by JOSHUA GRIGBY, Esq. in 1785. Age some 22 years, the rest 18 years.*

*Planted at 4 years old.*

|               | at the ground. | at 6 feet. | height.               |
|---------------|----------------|------------|-----------------------|
|               | in.            | in.        | f. f.                 |
| Larch         | 56 to 58       | 34 to 40   | 37 to 40              |
| Spruce Fir    | 40             | 25 to 30   | 30 to 35              |
| Silver Fir    | 40 to 49       | 26 to 32   | 30 to 35              |
| Weymouth Pine | 40 to 44       | 26 to 31   | 30 to 35 <sup>n</sup> |

In the plantations made by the enlightened and respectable author of the Silva, about the year 1775, some Scotch Firs were felled, girding two feet a length of thirty feet; and there were then remaining Scotch and Weymouth Pines, Larches, and Spruce

<sup>k</sup> Annals 3. 429.

<sup>l</sup> Annals, 5, 135, & 19. 464.

<sup>m</sup> Idem. 5. 141.

<sup>n</sup> Idem. 4. 301.



Firs, containing in each tree, upwards of two loads of timber. The Spruce Firs produced as good white deal as any imported from Norway, Christiana, or Gottenburgh. The best floor in Sir Frederick Evelyn's house, is laid with his own Scotch Fir. What Firs have been sold at Wootton Place have fetched nine-pence a foot. The plantations at Payne's hill having been thinned, chiefly of unthrifty or unhandsome trees, they metted at ten feet a tree, and sold at six-pence a foot. The age of these was about forty years; those at Sir Frederick Evelyn's 100 or 120. The value per acre at Payne's Hill cannot be estimated in general at more than five shillings.

In the same parish of Cobham, and in the same kind of soil, Thomas Ruggles, Esq. by whom the above account is given, inclosed seven acres in the year 1779; he ploughed it once in the summer, and having destroyed the heath and furze, planted two acres of it in november with Scotch Pine and Larch; the plants were furnished by a neighbouring nurseryman, who warranted 1200 trees on an acre alive at the end of two years: the rest he filled up with the same kind of trees from his own nursery, except about an acre in the middle, which was planted with birch only. Two acres remained unplanted till 1783, by which time the land was again completely covered with heath and weeds. Shallow holes were then opened, and the trees planted in them, without any other preparation. Of those planted by contract about half died, and were replaced by the nurseryman; of his own not a score: the former were six year old plants, two removes from the seed-bed; the latter four years old, one remove from the seed-bed. Some of the larches in this plantation are now (1785) fifteen feet high or more; the Scotch Pines about twelve or thirteen feet. These are the most even plants; and some of the larches are mossy. In other plantations, which are a few years older, Weymouth Pines and some Spruce Firs are mixed; but the Larch and Scotch Pine are much the most thrifty plants. The same gentleman, who has paid an exemplary attention to planting, and various departments of agriculture, in the year 1762, planted several acres with the Scotch Pine, four years old, one remove from the seed-bed, on an estate of his at Finchingfield, in Essex: they were set about seven feet asunder, in holes dug sufficiently large, to admit the roots without turning or cramping them. Scarce a tree failed, and many of them are now (1785) in girth near the ground three feet four inches; at six feet high about two feet seven inches; and about twenty-five feet in height: the value of the ground about 12s. an acre; the soil a stiff clayey loam.

Lord Bathurst's plantations, celebrated by Pope, are very extensive. Including beech woods, bought, but not planted by him, they exceed 1000 acres, are five miles in extent, and make a noble figure when viewed a considerable way in the road to Gloucester. The revenue is supposed to be about 20s. an acre. The finest trees are the Elms near the house. Two planted very early after Lord Bathurst had purchased the place, were at five feet high, one seven feet eleven inches in circumference; the other seven feet three inches; they were from thirty to forty feet high before they branched. Larger than these have been cut down. The wych and Dutch Elm have thriven very badly; but the small-leaved English, greatly. Oak will not do on this rocky soil. He planted Ash in no great quantities; but many Firs and Beech. Mr. Young measured a Spruce Fir, known to be planted by Lord Bathurst's own hands, not more than forty or fifty years ago, it was four feet seven inches in circumference at five feet high, and very lofty<sup>p</sup>. This was in 1786.

August 18, 1786, Mr. Young measured, in Mr. Fonnereau's park at Ipswich, a Spanish Chestnut, near the house, on the hill by some walnut trees, seventeen feet eleven inches at five feet from the ground. Another higher up, by a row of limes, fourteen feet, seven inches and a half. An Oak by the park pale near the

<sup>p</sup> Annals, 5. 180.

<sup>p</sup> Idem. 6. 134.

road, eleven feet one inch and a half. A Beech by the road in the middle of the park, that has lost one great arm, sixteen feet nine inches and a half: at two feet high, eighteen feet and a half. The Oak, by the pond near the house, seventeen feet three inches.

At Helmingham, the Earl of Dyfart's: the largest Oak near the house, twenty feet ten inches and a half: at three feet high it is twenty-three feet ten inches. It holds nearly to the former size for about thirty feet, and after that branches into three vast arms. There cannot be less than sixteen loads of timber in this venerable tree, which is decaying in its top. Near it is another, which measures at four feet and a half (for the trunk swells at five) fifteen feet five inches. A most beautiful, straight and thriving one in the thorn walk, thirteen feet. It holds its size for about twenty feet as straight as an arrow; in which length only it contains near five loads of timber: the whole height between thirty and forty feet.

A pollard Elm measures seventeen feet two inches and a half, the body about fifteen feet high. Nothing can be more beautiful than the head, which spreads a thick foliage, almost impenetrable to a sun-beam, over a circle of thirty-four feet diameter.

An Ash further, by a good Oak, nine feet six inches and a half, and about thirty-five feet high.

August 19. An Oak belonging to John Plampin, Esq. at Chadacre, ten feet three inches and a half: it has therefore increased an inch and half since June 1785. The rook Ash that stands near it, five feet six inches and a half, forty feet high, and very straight. An Oak in the fore-meadow on the hill, seven feet eleven inches.

Two fine Oaks, at Auberries, belonging to Robert Andrews, Esq.: one in 1785 was nine feet five inches, measured August 4, 1786, it was nine feet five inches and a half. The other, which in 1785 was nine feet eleven inches, in 1786 was nine feet eleven inches and three quarters.

A young tall Elm, in the grove leading to the bath, was four feet eight inches and a half in 1785, and four feet nine inches and a half in 1786. A young Ash by the bath house in 1785 was four feet one inch, in 1786, four feet two inches<sup>q</sup>.

*Measure of Trees at Cavenham, by THOMAS LE BLANC, Esquire.*

July 1785. July 1786. July 1787.

| No.                  | f. in.             | f. in.             | f. in.            |
|----------------------|--------------------|--------------------|-------------------|
| 1. Oak               | 0 10 $\frac{1}{2}$ | 0 11 $\frac{1}{2}$ | 1 0 $\frac{1}{2}$ |
| 2. Larch             | 1 0 $\frac{1}{2}$  | 1 3                | 1 4               |
| 3. Scotch Fir        | 1 3 $\frac{1}{2}$  | 1 5 $\frac{1}{2}$  | 1 7 $\frac{3}{4}$ |
| 4. Spruce Fir        | 0 5 $\frac{3}{4}$  | 0 6 $\frac{1}{2}$  | 0 7 $\frac{3}{4}$ |
| 5. Spanish Chestnut  | 0 7 $\frac{1}{4}$  | 0 7 $\frac{1}{2}$  | 0 8               |
| 6. Elm               | 2 7 $\frac{1}{2}$  | 2 9                | 2 11              |
| 7. Pinaster          | 2 3 $\frac{1}{2}$  | 2 4 $\frac{1}{2}$  | 2 7 $\frac{1}{2}$ |
| 8. Larch             | 1 5 $\frac{1}{4}$  | 1 6                | 1 7               |
| 9. Weymouth Pine     | 0 5                | 0 6                | 0 7 $\frac{3}{4}$ |
| 10. Acacia           | 1 2 $\frac{3}{4}$  | 1 5 $\frac{3}{4}$  | 1 6 $\frac{1}{2}$ |
| 11. Beech            | 0 6 $\frac{1}{4}$  | 0 6 $\frac{1}{2}$  | 0 7 $\frac{1}{4}$ |
| 12. Occidental Plane | 0 6 $\frac{1}{2}$  | 0 7 $\frac{1}{4}$  | 0 8 $\frac{1}{4}$ |
| 13. Lombardy Poplar  | 1 8                | 2 0                | 2 3 $\frac{3}{4}$ |
| 14. Black Poplar     | 1 2 $\frac{1}{4}$  | 1 4 $\frac{1}{2}$  | 1 5 $\frac{3}{4}$ |
| 15. Willow           | 2 9 $\frac{1}{2}$  | 3 2                | 3 3               |
| 16. Silver Fir       | 0 7 $\frac{3}{4}$  | 0 8 $\frac{3}{4}$  | 0 9 $\frac{3}{4}$ |
| 17. Lime             | 1 8 $\frac{1}{2}$  | 1 10 $\frac{3}{4}$ | 2 0 <sup>r</sup>  |

*Measure of Trees belonging to the EARL of FIFE, near Duff-house in Scotland.*

At 18 or 19 years growth. Girt at 2 feet above the ground.

|       | Height. | Girt.  |
|-------|---------|--------|
|       | f.      | f. in. |
| Firs  | 31      | 2 3    |
| Larch | 30      | 4 10   |
| Oak   | 21      | 1 11   |
| Birch | 22      | 2 5    |

<sup>q</sup> Annals, 6. 220.

<sup>r</sup> Idem. 8. 109.



# W U L

|              | Height. | Girt.  |
|--------------|---------|--------|
|              | f.      | f. in. |
| Mountain Ash | 24      | 2 9    |
| Alder        | 26      | 2 5    |
| Elm          | 27      | 3 2    |
| Ash          | 27      | 2 10   |
| Willow       | 26      | 3 4    |
| Sycamore     | 23      | 2 4    |
| Chestnut     | 18      | 2 5    |
| Silver Fir   | 27      | 2 4    |
| Beech        | 20      | 2 1    |

## At 25 years Growth.

| Length of trunk. | Height.  | Girt.  | Soil.                 |
|------------------|----------|--------|-----------------------|
| f.               |          | f. in. |                       |
| Oaks — 12        | 25 to 30 | 2 9½   | Loam and clay bottom. |
| Elms — 18        | 30 to 35 | 5 4    | Light black earth.    |
| Ash — 20         | 35 to 40 | 3 9    | Heavy wet ground.     |
| Beech — 14       | 30 to 35 | 3 0    | Dry sandy soil.       |
| Larch — —        | 46       | 6 3    | Good heavy loam.      |
| Silver Fir — —   | 44½      | 6 8    | Ditto.                |

## At 30 years Growth.

|                      | f. | in. |
|----------------------|----|-----|
| Larch and Silver Fir | 6  | 8   |

## Girt at 3 feet high.

Larches at Blair Athol and Dunkeld, and at Taymouth, planted fifty years ago, full eight feet in circumference, at five feet high.

Scotch Firs planted in 1696, from two to three feet in diameter, in a century; whereas the best Christiana deal of the same age is seldom above a foot in diameter. These old Firs fell from 1s. 6d. to 1s. 9d. a foot; and those of thirty years old yield 1s. a foot.

Larches planted by Mr. Johnes of Hafod in Wales, in 1796, then eighteen inches to two feet in height; in 1802 were from ten to thirteen feet high. The medium growth there is from twenty inches to two feet in a year.

Some of my young Spruce Firs and Larches have shot this season, 1805, from twenty-seven to thirty-one inches and near three feet.

From trunks of old trees cut down in 1777, in Adventure Bay, Captain Bligh saw shoots, in 1788, about twenty-five feet high, and 14 inches in circumference. Mr. Nelson saw a tree thirty-three feet and a half in girt: and many of the forest trees there are full 150 feet in height.

Many of the facts registered above, may assist in forming a judgment of the comparative growth of timber trees.

WOODBINE. See *Lonicera*.

WOODROOF. See *Asperula*.

WOOD SAGE. See *Teucrium*.

WOOD SORREL. See *Oxalis*.

WOOD-WAXEN. See *Genista*.

WOODY-NIGHTSHADE. See *Solanum*.

WORM-GRASS. See *Spigelia*.

WORM-SEED. See *Artemisia* and *Erysimum*.

WORMWOOD. See *Artemisia*.

WOUNDWORT. See *Stachys*.

WULFENIA. (So named by Jacquin, from the Rev. Francis Xavier Wulfen, author of *Plantæ Rariores Carinthiæ*, in *Jacquin's Miscellanea*.)

*Lin. gen. Schreb. n. 34. Jacqu. misc. 2. 62. t. 8. f. 1. Smith in Linn. trans. 6. 96.*

Class. 2. 1. Diandria Monogynia.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-parted: leaflets linear-subulate, equal, erect, permanent.

COR. one-petalled, ringent, tube subglobular-gibbous at the base: border two-lipped; upper lip shorter, entire, somewhat arched, acute; lower longer, bent down, trifid, bearded at the aperture.

STAM. *Filaments* two, filiform, converging arch-wise, concealed under the upper lip, shorter than the corolla. *Anthers* roundish.

# W U R

PIST. *Germ* oblong, compressed. *Style* filiform, very long. *Stigma* capitate, umbilicate.

PER. *Capsule* oval, obtuse, compressed at the top, grooved on each side, two-celled, four-valved.

SEEDS numerous, round.

## ESSENTIAL CHARACTER.

COR. tubular, ringent, with the upper lip short, entire, the lower three-parted, with the aperture bearded. *Cal.* five-parted. *Caps.* two-celled, four-valved.

## SPECIES.

1. *Wulfenia carinthiaca*.

*Lin. syst. 65. spec. ed. Willd. 1. 78. Jacqu. misc.*

*2. 62. t. 8. f. 1. ic. rar. 1. t. 2. Reiner et Hobenwarth it. bot. 1. 73. t. 1.*

*Pæderota Wulfenia. Lamarck encycl. t. 13. f. 2.*

## DESCRIPTION, &c.

This is a stemless plant, nearly allied to the *Pæderotas*. Root perennial. Leaves radical, obovate, obtuse, grossly crenate, smooth. Scape round, somewhat hairy, much higher than the leaves. Flowers peduncled, supported by a lanceolate bracte, all directed the same way, blue. Native of Carinthia, on the highest Alps, in a very fat soil.—Dr. Smith adds *Pæderota Buonarota* and *Ageria* to this genus.

WURMBEA. (So named by Thunberg, in honour of Fredrik Baron van Wurmb, secretary to the Batavian society.)

*Lin. gen. Schreb. n. 617. Thunb. nov. gen. 18.*

Class. 6. 3. Hexandria Trigynia.

Nat. Order of *Coronariæ*. *Junci* Juss.

## GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, six-cornered, half-six-cleft: segments lanceolate, acute, erect or spreading.

COR. none.

STAM. *Filaments* six, filiform, erect. *Anthers* roundish.

PIST. *Germ* three-sided, grooved, smooth, superior. *Styles* three, three-sided, awl-shaped, length of the stamens. *Stigmas* obtuse.

PER. *Capsule* oblong, three-sided, three-grooved, three-celled, three-parted from the middle.

SEEDS numerous, round.

## ESSENTIAL CHARACTER.

CAL. none. COR. six-parted, with a hexangular tube. *Filaments* inserted into the throat.

## SPECIES.

1. *Wurmbea pumila*.

*Lin. spec. ed. Willd. 2. 265.*

*W. capensis a. Thunb. diff. nov. gen. 1. 19. f. γ.*

*Lin. syst. 348.*

*Spike three or four-flowered, tube length of the border.*

2. *Wurmbea campanulata*.

*Lin. spec. ed. Willd. 2. 265.*

*W. capensis γ. Thunb. diff. 1. 19. f. β.*

*Wurmbea Lamarck illustr. gen. t. 270. f. 1.*

3. *Melanthium spicatum*. *Burm. cap. 11. Houttuyn pfl.*

*syst. 11. 503. t. 85. f. 2.*

*Spike many-flowered, length of the leaves, tube length of the border bell-shaped.*

3. *Wurmbea longiflora*.

*Lin. spec. ed. Willd. 2. 266.*

*W. capensis δ. Thunb. diff. 1. 19. f. α.*

*Wurmbea Lamarck illustr. gen. t. 270. f. 2.*

*Melanthium monopetalum. Lin. suppl. 231. Diet. nostr. n. 10.*

*M. Wurmbeum. Thunb. prodr. 67.*

*Spike many-flowered, longer than the leaves, tube twice as long as the border.*

## DESCRIPTIONS, &c.

1. Plant an inch high. Spike scarcely longer than the leaves. In sandy grounds near the Cape of Good Hope.

2. A finger's length or more. Leaves as in all the species, three lanceolate cowed ventricose at the base, but narrower than in the following species, and the same

\* Willdenow.

length



# X A N

with the spike, which is beset with numerous flowers. On sandy hills near the Cape of Good Hope.

3. Leaves much wider than in the preceding species. Spike more flexuose at the base, with numerous flowers more distant. Tube of the corolla long and narrow. Native of the Cape of Good Hope, near Groene Kloof, and elsewhere.

Thunberg after having constituted this genus, sunk it in the *Melanthium*: but the corolla being one-petalled and having a tube; these are sufficient marks of distinction in the Liliaceous tribe. The varieties indicated by Thunberg, are really distinct species.

# X.

**XANTHE.** (So named from the yellow juice which it contains.)

Lin. gen. ed. Schreb. n. 1561. Quapoya. Aubl. t. 343. 344. Juss. 256.

Class. 22. 14. Dioecia Syngenesia.

## GENERIC CHARACTER.

\* Male.

CAL. Perianth one-leaved, five or six-parted: segments small, imbricate, roundish, concave, acute: at the base two small opposite scales.

COR. Petals five or six, roundish, bigger than the calyx, spreading.

STAM. Filament one, columnar, erect. Anthers five or six, two-lobed, connate in a scutiform head, peltate, concave in the centre, full of glue, they open beneath.

\* Female.

CAL. as in the Male, permanent.

COR. as in the Male.

STAM. Filament none. Anthers five, prismatic, erect, barren.

PIST. Germ roundish, five or six-freaked, superior. Style none. Stigmas five or six, roundish, thick, emarginate, placed on the germ.

PER. Capsule globular, small, five or six-grooved, five or six-celled, five or six-valved, opening at the grooves: partitions membranaceous, adhering to the receptacle of the seeds.

SEEDS very many, oblong, involved in pulp, fastened in single rows to a columnar five or six-angled receptacle.

## ESSENTIAL CHARACTER.

Flowers dioecious. CAL. five-six-parted, permanent. COR. five-six-petalled.

Males with one FILAMENT, bearing five ANTHERS, collected into a shield-shaped HEAD.

Females with five barren ANTHERS. CAPSULE globose, crowned with the STIGMA, five-friated, five-valved.

SEEDS very many, involved in the pulp.

## SPECIES.

1. Xanthe Quapoya. Aubl. Guian. p. 398.
2. Xanthe Panari. Aubl. Guian. p. 901.

## DESCRIPTIONS, &c.

1. A shrub with cylindric, knotty, spreading, pendent branches, leaves entire, sessile, fleshy, smooth, oval, pointed, opposite, and disposed crossways, flowers yellow, produced in small heaps from the tips of the branches: native of Guiana, flowering in november. Native name Quapoy.
2. This differs from the former in having less fleshy and smaller leaves, and flowers more closely disposed on the common footstalk: the fruit also is larger and more oblong. Native name Pana-Panari.

**XANTHIUM.** (From *ξανθος*, yellow. A decoction of it being of a yellow colour.)

Lin. gen. n. 1056. Reich. n. 1152. Schreb. n. 1426. Tournef. t. 252. Juss. 191. Gartn. t. 164.

\* Willdenow.

# X A N

Class. 21. 5. Monoecia Pentandria.

Nat. Order of *Compositæ Nucamentaceæ*.

*Corymbifera* Juss.

## GENERIC CHARACTER.

\* Male flowers compound.

CAL. Perianth Common of many florets, many-leaved, imbricate with slender scales, length of the florets, equal.

COR. Compound uniform, tubular, equal, digested in a hemisphere.

Proper one-petalled, tubular, funnel-shaped, erect, five-cleft.

STAM. Filaments five in a tubular cylinder. Anthers erect, parallel, distinct.

REC. Common scarcely any, separating the florets by chaffs.

\* Female Flowers below the males, on the same plant, doubled.

CAL. Involucre two-flowered, two-leaved: leaflets opposite, three-lobed, (lobes acute, the middle one more produced,) fenced by hooked prickles, covering on every side and fastened to the germ: the little segments loose.

COR. none.

PIST. Germ oval, hispid. Styles two equal, capillary. Stigmas simple.

PER. Drupe dry, ovate-oblong, covered all over with hooked prickles, bifid at the top.

SEED. Nut two-celled.

OBS. The fruit of *Xanthium* is not easily understood till that of *Ambrosia* is well known.

## ESSENTIAL CHARACTER.

MALE. Cal. common imbricate. Cor. one-petalled, five-cleft, funnel-form. Recept. chaffy.

FEM. Cal. involucre two-leaved, two-flowered: Cor. none. Drupe dry, muricated, two-cleft. Nucleus two-celled.

## SPECIES.

1. *Xanthium strumarium.* Small Burdock.

Lin. spec. 1400. Reich. 4. 137. hort. cliff. 443. upf. 284. fl. suec. n. 864. fl. zeyl. n. 569. mat. med. 201. Gartn. fruct. 2. 418. Hudf. angl. 418. Wither. arr. ed. 3. 283. Smith brit. 1017. Hull 211. Fl. dan. t. 970. Dalib. par. 290. Hall. helv. n. 1621. Scop. carn. n. 1177. Pollich pal. n. 902. Villars dauph. 3. 38. Allion. pedem. n. 521. Desfont. atlant. 2. 343. Lour. cochinch. 563. ed. Willd. 689. Regnault bot.

*Xanthium Fuchf. hist. 579. Dod. pempt. 39. Blackw. t. 444.*

X. s. *Lappa minor.* Baub. hist. 3. 572. Matth. 1024. ed. valgr. 2. 545. Raii hist. 165. syn. 140. Petiv. brit. t. 1. f. 12.

*Bardana minor.* Ger. 664. 2. emac. 809. 2.

X. s. *Bardana minor.* Park. theat. 1223. 4.

*Lappa minor.* Tabern. ic. 773.—s. *Xanthium Diofcoridis.* Baub. pin. 198.

Stem unarmed, leaves cordate three-nerved at the base.

2. *Xanthium orientale.*

Lin. spec. 1400. syst. 852. Reich. 4. 137. dec. 33. t. 17. Lepich. it. 1. 240. Gartn. fruct. 2. 418. Thunb. jap. 267.

X. *canadense.* Mill. dict. n. 2.

X. *elatus majus americanum,* fructu spinulis aduncis munito. Mor. hist. 3. 604. f. 15. t. 2. f. 2.

X. *majus canadense.* Herm. lugdb. 635.

*Lappa canadensis* minori congener sed procerior. Hort. reg. par. Raii hist. 165.

Stem unarmed, leaves cruciform-ovate subtrilobate.

3. *Xanthium echinatum.*

Lin. syst. 852. Murr. in comm. gott. 1784. cum ic. Stem unarmed, fruit oval prickly, prickles hooked clustered echinate at the base.]

4. *Xanthium spinosum.*

Lin. spec. 1400. Reich. 4. 138. hort. cliff. 443. upf. 283. Gartn. fruct. 2. 419. Kniph. cent. 2. 100. Allion. pedun. n. 522.

X. *spinosum atriplicis folio.* Mor. hist. 3. 604. f. 15. t. 2. f. 3.

X. *lusitanicum spinosum.* Pluk. plyt. t. 239. f. 1. Herm.



*Herm. par. t. 246. Magn. hort. 208. cum ic. Volk. norib. t. 149.*

*Spines ternate, leaves three-lobed.*

[5. *Xanthium fruticosum.*

*Lin. syst. 852. suppl. 418. L'Herit. stirp. 2. t. 91. Ambrosia arborefcens. Mill. dict. n. 5. and Dict. nostr. Leaves pinnatifid, segments gashed, stem shrubby.]*

#### DESCRIPTIONS, &c.

1. Stalk round, with many black spots, rising in good ground two feet high, and sending out a few side branches. Leaves on slender foot-stalks, near four inches long, heart-shaped, but some of the largest cut into three acute lobes, they are irregularly indented on their edges, end in acute points, and are of a pale green on their under side, but of a dark green on their upper. Peduncles axillary. Flowers in loose spikes, herbaceous, collected into roundish heads.

[Root annual, fibrous. Leaves alternate, on long petioles, ferrate, pubescent, rugged. Racemes leafy, few-flowered. Males in a branched bunch, terminating the stem and branches; anthers separate, not united as in the class Syngenesia. Female flowers immediately beneath, in the bosoms of the upper leaves. Fruits elliptic, pubescent, muricated all over with rigid hooked bristles.

The female calyx is changed into an involucre to the seed; it is coriaceous, oblong, within divided by a longitudinal partition, ending at top in two horns, which at first are straight, but afterwards curved inwards and hooked, gaping in the inner side by a longitudinal cleft, but not splitting. Seeds in each cell one, ovate-oblong, attenuated at both ends, striated, convex on one side, flat on the other, dark brown.

The leaves are bitter and astringent. A decoction of the whole plant affords a showy yellow colour; but it is better if only the flowers are used. Horses and goats eat it. Cows, sheep, and swine refuse it.

Native of Europe, of Africa about Algiers, of China and Cochinchina, in fields and hedges common. Mr. Miller says he received the seeds from India. In England it was found by Merret in a bog beyond Peckham; Ray says he found it once in the road from Portsmouth to London, about three miles from the former. Tho. Willisel and Mr. Newton both observed it about Dulwich;] where Mr. Miller says he once saw it in the road near the College, but that of late years it has not been seen in the few places where it was formerly remarked.

2. The stalks of this are much thicker, and rise higher than those of the first; the leaves are not hollowed at their base, nor are they divided so deeply on their sides; they are unequally indented on their edges, and have three strong longitudinal veins. The flowers are produced in shorter looser spikes. The fruit is much larger, and armed with stronger spines.

[It is very like that of the preceding species, but almost twice as big, ferruginous not pale straw-colour, and somewhat tomentose about the base of the beaks and spines; not smooth all over, as that is. Seed of a long elliptic form, striated, brown.

The whole plant is more rugged. Leaves ovate, wedge-shaped at the base, indistinctly three-lobed, or five-lobed. Fruit three times as big and longer, with two distant hooked beaks. The male flowers have recurved chaffs twice as long as the floret. There are linear bractes to the fruits, either single or in pairs.

Native of China, Japan, Ceylon and Siberia. Linneus doubts whether the American plant be the same with this. Cultivated 1713, by Bp. Compton. It is annual, as the first is, but flowers later, namely in August.

3. Stem a foot and half high; rough with closely pressed bristles: branches very short, alternate: leaves a palm or more in length; rough, tooth-ferrated, with unequal serratures, somewhat obtuse, three-nerved, subcordate, and subtrilobate: footstalks the length of the leaves, and spreading; rough, and purplish. Male flowers collected into a sessile head

\* Smith brit. and Woodw. Mss.

† Withering.

2 Gartner.

3 Hort. kew.

\* Gartner.

2 Linn. spec.

of the size of a large pea: Female axillary sessile, remote from the males. Native of North America.

4. The stalks of this rise near three feet high, and send out many branches the whole length. Leaves oblong, indented on their edges, ending in acute points, from two to three inches long, and three quarters of an inch broad, dark green on their upper side, but hoary on their under, on very short foot-stalks. The flowers come out from the side of the branches, two or three at each place; one of them is female, and is succeeded by an oblong-ovate fruit, armed with slender sharp erect spines. The stalks and branches are armed with long stiff triple thorns on every side.

[The three-forked spines, according to Linneus, are stipules, one of which becomes a fruit. This is ovate-cylindrical, terminated by a simple awl-shaped straight cartilaginous smooth beak. Prickles distant, horizontal, brittle-shaped, rigid, with little hooks at the tip. Seeds oblong, semicylindrical, blackish.

Native of Portugal and the South of France.] Mr. Miller says Portugal and Spain. It flowers in July and August; and in warm seasons the seeds ripen in autumn. [Cultivated 1713 by Bp. Compton.]

Mr. Miller has another species, (n. 4.) which he says grows naturally in China, whence he has often received the seeds. The plants are like those of the first sort, but grow larger and branch more. The flowers are produced in loose spikes at the top of the stalks. The fruit is like that, but the spines are slender, single and straight. This flowers about the same time with the *spinifolium*, but unless the autumn proves warm, the seeds will not ripen in England. [It is probably a variety of the first sort.

5. Stem the height of a man, perennial but scarcely woody, erect, roundish, obscure, somewhat hairy: branches axillary or lateral, short. Leaves alternate, even or slightly wrinkled, petioled, pubescent underneath. The floral leaves and first leaves of the branches lanceolate, undivided, quite entire. Common leaves oblong, pinnatifid: segments five, oblong, acuminate, subsinuate or grossly subserrate. Petioles commonly simple, pubescent: on the larger leaves with membranaceous margins running down from the leaf. Male spike terminating. Native of Peru. Cultivated in 1759, by Mr. Miller: for whose description see *Ambrosia arborefcens*.

#### PROPAGATION AND CULTURE.

All these plants, except the last, are annual. The first will come up from the seeds which fall in autumn, and requires no other care but to thin the plants, and keep them clear from weeds. The second sort will do the same when the autumn is favourable: but it often happens with us that the seeds do not ripen.

The fourth sort will also in some years perfect seeds on self-sown plants, but as they sometimes fail, the sure way is to raise the plants on a gentle hot-bed, and to plant them out on a warm border in a lean soil: for when they are planted in rich ground, they will not produce flowers till late in autumn, and the seeds will not ripen.

[For the culture of the fifth sort, see *Ambrosia arborefcens*.

**XANTHORHIZA.** (From *ξανθος*, yellow, and *ρίζα* a root.)

*Lin. gen. Schreb. 1581. Marsh. arbusc. 167.*

*Zanthorhiza. L'Herit. stirp. t. 38. Juss. 234.*

Class. 5. 7. Pentandria Polygynia.

Nat. Order of *Ranunculaceae* Juss.

#### GENERIC CHARACTER.

CAL. none, unless the corolla be so called.

COR. Petals five, ovate, acute, spreading.

Nectaries five, truncate-two-lobed, spreading, inserted into the receptacle, alternate with the petals and shorter than them.

STAM. Filaments five to ten, awl-shaped, very short. Anthers roundish.

PIST. Germs several (seven-eleven) oblong. Styles awl-shaped, curved inwards. Stigmas acute.

\* Murr. in comm. gott.

† Linn. suppl.

2 Gartner.

3 Hort. kew.

4 Hort. kew.



# X A N

PER. Capsules as many, inflated, ovate-oblong, compressed, bluntish, obliquely acuminate with the style, one-celled, bivalved, opening at the top.  
SEEDS solitary, oblong, compressed, small.  
OBS. Six petals are sometimes observed. The first flowers are barren. Marshall.

## ESSENTIAL CHARACTER.

Cal. none. Petals five. Nees. five, pedicelled. Caps. five, one-seeded.

## SPECIES.

### 1. Xanthorhiza apiifolia.

Lin. spec. ed. Willd. 1. 1568. L'Herit. stirp. 1. 79. t. 38. Ait. kew. 1. 399. Willd. arb. 414.

X. simplicissima. Marsh. arbut. 168.

Frutex Petroselinifolia virginianus Banisteri.

Pluk. phyt. t. 270. f. 4. (excl. aliis synonym.)

## DESCRIPTION, &c.

This is a low shrub, about three feet in height. The root is woody, branched, yellow without, saffron-coloured within, and puts forth runners. Stems from the root numerous, almost simple, erect. Branches alternate, round, marked with rings, ash-coloured, with the inner bark yellow. Leaves alternate, unequally pinnate, two-paired, spreading, five or six inches long including the petiole, leaflets opposite, sessile, (the end one mostly petioled and bigger,) lanceolate, acute, gashed, smooth, bright green, of the same colour on both sides, spreading, an inch and half long, and an inch wide. (Willdenow says they are ovate-wedgeform and gash-toothed, the end one three-lobed and gashed.) Petioles round, flat above, widened at the base and embracing. Raceme proceeding from a terminating gem, composed of alternate racemelets; first erect, but afterwards nodding, pubescent, bracted, blood-red, from one to six inches long. Racemelets composed of three-flowered or two-flowered peduncles. Flowers pedicelled, erect, dark or dusky purple: in the terminating one the number of stamens seems to exceed that of the germs, and the contrary in the lateral ones: the terminating flower is commonly barren, and perhaps is a male hermaphrodite.

Native of North America. It flowers from February to April: and was introduced about 1766 by Mr. John Bush<sup>b</sup>. Bartram first observed it in Georgia. Mr. Marshall says it grows naturally in Carolina, and that from the yellowness of its roots, it is highly probable it might be employed to good purpose in dyeing.]

XANTHOXYLUM. (From *ξανθος*, yellow, and *ξύλον* wood.)

Lin. gen. n. 1109. Reich. n. 1213. Schreb. n. 1512. Colden. Gartn. t. 68. Lamarck encycl. 2. p. 38. Fagara. Dubam. arb. 1. 229. t. 97. Juss. 374.

Class. twenty-two five. Dioecia Pentandria.

Nat. Order of Hederaceae. Terebinthaceae Juss.

## GENERIC CHARACTER.

### \* Male.

CAL. Perianth five-parted: leaflets oval, erect, coloured.

COR. none.

STAM. Filaments commonly five, awl-shaped, erect, longer than the calyx. Anthers twin, roundish, grooved.

### \* Female.

CAL. as in the male.

COR. none.

PIST. Germs two to five, roundish, ending in Styles which are solitary, awl-shaped, longer than the calyx. Stigma obtuse.

PER. Capsules two to five, pedicelled, one-celled, two-valved, opening inwards.

SEEDS solitary, roundish, smooth, hanging by a thread.

OBS. Cal five-cleft, coloured, very small. Pet. five, ovate.

Stam. five, length of petals. Germ twin, roundish.

Styles two, very small: stigmas acute. Gron. virg. 47.

Walt. carol. 243.—Cal. four, five or six-parted. Stam.

four-six. Style one. Stigmas three or two-four. Murr.

<sup>a</sup> L'Heritier.

<sup>b</sup> Hort. kew.

# X A N

Moench. Flowers hermaphrodite. Moench.—Bot. in Xanth. Clava Herculis. Schreb.

## ESSENTIAL CHARACTER.

Cal. five-parted. Cor. none.

FEM. Pist. five. Caps. five, one-seeded.

## SPECIES.

### 1. Xanthoxylum Clava Herculis. Tooth-ach Tree.

Lin. spec. 1455. Juss. 884. Reich. 4. 247. hort. cliff. 487. amoen. 3. 16. Brown jam. 189. Pluk. phyt. t. 328. f. 6. Du Roi barbecc. 2. 509. Catesb. car. 1. t. 26.

### β. X. americanum. Mill. dict. n. 2.

Fagara fraxini folio. Dubam. arb. 1. 229. t. 97.

X. fraxinifolium. Marsh. arbut. 167.

## DESCRIPTION, &c.

1. This rises to the height of fifteen or sixteen feet. Stem woody, about a foot thick, covered with a whitish rough bark, and armed with short thick spines, growing to a large size as the trunk increases in bulk, so as to become protuberances terminating in spines. Leaves in pairs, or without order, composed of three, four or five pairs of lanceolate leaflets placed opposite, and terminated by an odd one; they are of a deep green on their upper side, and of a yellowish green beneath, a little serrate, and on short foot-stalks. At the end of the branches come forth the peduncles, branching out and forming a loose panicle. Leaflets of the calyx small, white. Anthers reddish. In the female flowers five styles fastened to the side of the germ. Capsule roundish four-cornered, containing one roundish, hard, shining seed. It is sometimes called Pellitory-tree.

Mr. Miller regards this as different from the prickly yellow Wood, or yellow Hercules of Jamaica, which is one of their largest timber trees, with the leaves twice as big, the leaflets almost three inches long, and an inch and half broad, sitting close to the foot-stalk; and the leaves are equally pinnate. The capsules have five cells, each containing one black, shining, hard seed.

[Browne says it is frequent in most parts of Jamaica, growing to a very considerable size; rising frequently to the height of twenty or thirty feet, and branching pretty much towards the top: that it is looked upon by many as a dye-wood, but is generally used in buildings, and esteemed a good timber tree.—He describes it as having a five-parted calyx, but so small as to be scarcely observable; the corolla cut almost to the base into five spreading oblong-ovate snail-shaped segments, five stamens, style scarcely any, stigmas five, capsule five-lobed, divided beyond the middle, with one distinct cell to each lobe.

Murray remarks, that in the Gottingen garden all the flowers are hermaphrodite, heaped alternately at the sides of the branches, on short peduncles; calyx inferior, commonly five-parted, but sometimes four or six-parted; corolla none; stamens divaricating, five, seldom four or six; style one, short; stigmas globular-ovate, three, sometimes two or four: the fruit did not ripen.]

β. Mr. Miller distinguishes two species, the first growing in South Carolina, the second in Pennsylvania and Maryland. That has been described above: this he says has a woody stem, which rises ten or twelve feet high, sending out many branches towards the top, having a purplish bark, and armed with short thick spines standing by pairs. Leaves unequally pinnate, with four or five pairs of oblong-ovate leaflets, sitting close to the midrib, which is armed on the under-side with some small spines: the leaflets are of a deep green above, and of a pale green beneath: they have a biting taste. The bark of the tree is used to cure the tooth-ach, whence its name. The flowers grow in loose panicles like the other, and are succeeded by fruit with five cells, each including one hard shining seed.

[Mr. Marshall, in his American Grove, thus describes it. It rises with a pretty strong stem to the height of ten or twelve feet, dividing into many branches covered with a purplish bark, and armed



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at each bud with two strong sharp spines. The leaves are composed of four or five pairs of leaflets, terminated by an odd one; they are entire, of an oblong-ovate shape, opposite and fitting close to the common foot-stalk, which has a few spines underneath. The flowers are produced along the branches upon short collected foot-stalks: the females are each succeeded for the most part by five distinct oval capsules, joined by short footstalks to the common receptacle, and spreading above; each containing one roundish smooth seed. This grows naturally in Pennsylvania and Maryland.

There is said to be another species, or perhaps variety, in South Carolina, differing in having the leaflets lanceolate, serrate, and petioled. The bark and capsules are of a hot acrid taste, and are used for easing the tooth-ach: a tincture of them is also much commended for the cure of the rheumatism.

It was cultivated by Mr. Miller some years before 1740.]

## PROPAGATION AND CULTURE.

These plants are generally propagated by seeds, but as they never ripen in this country, they must be procured from those places where they naturally grow, or the plants must be propagated by layers. When the seeds arrive in England, they should be sown in pots filled with light earth as soon as possible, for they do not grow the first year; and when they are kept out of the ground till spring, they frequently lie two years in the ground before the plants appear; therefore the pots should be plunged into the ground up to their rims, in an east-aspected border, where they may remain during the summer; this will prevent the earth in the pots from drying too fast, which it is very apt to do when the pots are set upon the ground in the sun. The only care to be taken of the seeds is, to keep the pots constantly clean from weeds, and in very dry weather to refresh them now and then with water. In autumn the pots should be placed under a common hot-bed frame, where they may be screened from frost, or else plunged into the ground in a warm border, and covered with tan to keep out the frost, and the following spring they should be plunged into a hot-bed, which will bring up the plants. When these appear, they must be frequently, but sparingly watered, and kept clean from weeds; and, as the summer advances, those of the second sort should be gradually inured to bear the open air, into which they should be removed in June, placing them in a sheltered situation, where they may remain till autumn, when they must be placed in a hot-bed frame to shelter them in winter. The spring following, before the plants begin to shoot, they should be carefully taken up, and each planted into a separate small pot; these may be plunged into a gentle hot-bed, which will forward them greatly in putting out new roots. The after care must be to shelter them for a year or two in winter, until the plants have gotten strength; then in the spring, after the danger of frost is over, some of them may be turned out of the pots, and planted in the full ground in a warm sheltered situation, where the second sort will thrive very well, and resist the cold; but the first is not so hardy, so these may be planted against a south wall, where they will thrive very well. Some of the plants of this sort had been planted in the open air, in the Chelsea Garden, some years past, where they had thriven and endured the cold without any covering, but the severe winter in 1740 destroyed them all. These plants may be increased by cutting off some of their strong roots, preserving their fibres to them, and these planted in pots filled with light earth, plunging them into a moderate hot-bed, will cause them to push out roots and become plants; but these will not thrive so well, nor grow near so large as those which are raised from seeds.

[*Xanthoxylum trifoliatum*. See *Panax*.

*XERANTHEMOIDES*. See *Xeranthemum*.]

*XERANTHEMUM*. (From *ξηρος* dry, and *ανθος* a flower.)

*Lin. gen. n.* 947. *Reich. n.* 1027. *Schreb. n.* 1283. *Tournef. t.* 284. *Dill. gen.* 8. *Vaill. act. gall.*

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1718. p. 184. *Juss.* 179. *Gærtn. t.* 165. *Xeranthemoides*. *Dill. elth.* 322. *Argyroceme*. *Gærtn. t.* 167.

*Class.* 19. 2. *Syngenesia Polygamia Superflua*.

*Nat. Order of Compositæ Discoideæ. Corymbiferae Juss.*

## GENERIC CHARACTER.

*CAL.* Common imbricate: scales lanceolate; the inmost longer than the disk, membranaceous, shining, forming a coloured ray, and crowning the compound flower.

*COR.* Compound, unequal: Corollets hermaphrodite numerous, tubular in the disk. Females fewer, tubular in the circumference.

*Proper* of the Hermaphrodites funnel-form, much shorter than the calyx: border five-cleft, spreading.

*Females* tubular, length of the hermaphrodite, five-cleft, less regular.

*STAM.* in the Hermaphrodites Filaments five, very short. Anther cylindrical, tubular, almost the length of the corollet.

*PIST.* in the Hermaphrodite Germ short. Style filiform, longer than the stamens. Stigma bifid. In the Females Germ as in the hermaphrodites. Style filiform, length of the hermaphrodites. Stigma simple, club-shaped.

*PER.* none. Calyx scarcely changed.

*SEEDS* in the Hermaphrodites oblong, crowned with a five-cleft, acute Calycle.

In the Females similar to the Hermaphrodites.

*REC.* flattish, chaffy.

*OBS.* In *Xeranthemum* of *Tournefort*, the crown of the seed is five-cleft and simple: the Receptacle chaffy.

## ESSENTIAL CHARACTER.

*Cal.* imbricate, rayed, with the ray coloured. Down bristle-shaped. Recept. chaffy.

## SPECIES.

\* Receptacle chaffy. Down five-bristled.

1. *Xeranthemum annuum*. Annual *Xeranthemum* or Immortal Flower.

*Lin. spec.* 1201. *synt.* 749. *Reich.* 3. 762. *Willd.* 3. 1901. *hort. cliff.* 400. *Gærtn. fruct.* 2. 399. *Hall. herb. n.* 122. *Scop. carn. n.* 1096. *Jacqu. vind.* 150. *austr.* 4. 46. *t.* 388. *Gouan monsp.* 436. *Villars dauph.* 3. 264. *Allion. pedem. n.* 645. *Pallas it.* 3. 590. *Kniph. cent.* 4. 100. *Mill. illustr.* *Mill. fig. t.* 279.

*X. oleæ folio*, capitulis simplicibus incanis non foetens flore majore violaceo. *Mor. hist.* 3. 43. *f.* 6. *t.* 21. *f.* 2.

*Jacea oleæ folio*, capitulis simplicibus. *Baub. pin.* 272.

*Parmica austriaca*. *Clus. hist.* 2. 11.

β. *Jacea incana cyani capitulis*. *Baub. pin.* 272.

*Calyx-scales obtuse scariose*, the interior ones of the ray lanceolate obtuse spreading.

2. *Xeranthemum inapertum*.

*Lin. spec. ed. Willd.* 3. 1902.

*X. annuum* β. *Lin. spec.* 1201. *Reich.* 3. 763. *Hall. herb. ed.* 1. 709. *t.* 23.

*X. oleæ folio*, capitulis simplicibus, incanum foetens, flore purpurascens minore. *Mor. hist.* 3. 43. *f.* 6. *t.* 12. *f.* 1.

*Jacea oleæ folio*, minore flore. *Baub. pin.* 272.

*Calyx-scales acute membranaceous at the edge*, the interior ones of the ray lanceolate acute converging.

3. *Xeranthemum orientale*.

*Lin. spec. ed. Willd.* 3. 1902.

*X. annuum* γ. *Lin. spec.* 1201. *Reich.* 3. 763.

*X. orientale fructu maximo*. *Tournef. cor.* 38.

*Jacea oleæ folio*, capitulis compactis. *Baub. pin.* 272.

*Calyx-scales roundish scariose*, the interior ones of the ray ovate acuminate erect, chaffs of the seed-down ovate awned longer than the calyx.

\*\* Receptacle naked. Down hairy.

[4. *Xeranthemum vestitum*. Upright *Xeranthemum*.

*Lin. spec.* 1201. *synt.* 750. *Reich.* 3. 763. *Burm. afr.* 177. *t.* 66. *f.* 1. *Raii suppl.* 182. *Pet. gaz.* *t.* 1. *f.* 9.

*Elichrysum vestitum*. *Willd. spec.* 3. 1903.

*Gnaphalium vestitum*. *Thunb. prodr.* 148.



- Chrysocome f. *Argyrocome africana ericoides*, flore albo. *Seb. thes.* 2. 45. t. 43. f. 5.
- β. *Gnaphalium ferrugineum*. *Schrad. & Wendl. fert. hannov.* 7. t. 23.
- Shrubby erect, leaves sessile lanceolate-linear woolly-tomentose sharpish, the floral ones appendicled with a membrane at the tip, branches one-flowered.
5. *Xeranthemum spirale*. Spiral leaved *Xeranthemum*. *Andrews repof. bot.* 4. t. 262.
- Elichrysum spirale*. *Willd. spec.* 3. 1903.
- Shrubby erect, leaves sessile lanceolate tomentose keeled beneath and spirally imbricate, branches one-flowered.]
6. *Xeranthemum speciosissimum*. Showy *Xeranthemum*. *Lin. spec.* 1202. *yst.* 750. *Reich.* 3. 764. *Berg. cap.* 270. *Burm. afr.* 178. t. 66. f. 2. *Thunb. prodr.* 153.
- Elichrysum speciosissimum*. *Willd. spec.* 3. 1904.
- Boerb. lugdb.* 1. 121. *Breyn. ic.* 27. t. 16. f. 1. *Raii suppl.* 182. n. 13.
- Chrysocome* f. *Argyrocome gnaphaloides africana*, amplissimis floribus. *Seb. thes.* 2. 45. t. 43. f. 6.
- Shrubby erect, leaves sessile lanceolate-obovate acute three-nerved woolly-tomentose, branches one-flowered.
- [7. *Xeranthemum fulgidum*. Great yellow-flowered *Xeranthemum*. *Lin. syst.* 751. *suppl.* 365. *Jacqu. ic. rar.* 1. t. 173. *Ait. kew.* 3. 180. *Thunb. prodr.* 153.
- Elichrysum fulgidum*. *Willd. spec.* 3. 1904.
- Gnaphalium aureum*. *Houtt. nat. hist.* 10. 590. t. 67. f. 3.
- Suffruticose erect, leaves embracing ovate-lanceolate pubescent beneath tomentose at the edge, branches subtriflorous.
8. *Xeranthemum proliferum*. *Lin. spec.* 1202. *yst.* 750. *Reich.* 3. 764. *mant.* 467. *Berg. cap.* 272. *Thunb. prodr.* 152.
- Elichrysum proliferum*. *Willd. spec.* 3. 1905. *Seb. mus.* 2. t. 89. f. 8. *Breyn. ic.* 28. t. 17. f. 1.
- Carduus xeranthemoides*. *Raii suppl.* 199.
- Shrubby branched diffused proliferous, leaves roundish-ovate smooth convex closely imbricate, flowers sessile.
9. *Xeranthemum imbricatum*. *Lin. syst.* 750. *Reich.* 3. 764. *amoen.* 6. *afr.* 60. *Thunb. prodr.* 153. *Pet. gaz.* t. 5. f. 10.
- X. variegatum*. *Berg. cap.* 271.
- Elichrysum imbricatum*. *Willd. spec.* 3. 1905. *Breyn. prodr.* t. 18. f. 1.
- Shrubby branched, leaves oblong-lanceolate silky imbricate, branches one flowered, peduncles scaly.
10. *Xeranthemum canescens*. *Lin. spec.* 1202. *yst.* 750. *Reich.* 3. 765. *amoen.* 6. *afr.* 20. *Thunb. prodr.* 153. *Burm. afr.* 183. t. 68. f. 1.
- Elichrysum canescens*. *Willd. spec.* 3. 1906.
- Shrubby erect, leaves oblong obtuse imbricate, branches one-flowered, calyx-scales ovate.
11. *Xeranthemum bellidioides*. *Forst. prodr.* n. 293.
- Elichrysum bellidioides*. *Willd. spec.* 3. 1911.
- Herbaceous, leaves ovate embracing snowy-tomentose beneath, branches one-flowered, peduncles naked.
- \*\*\* Receptacle naked. Down feathered.
12. *Xeranthemum argenteum*. *Thunb. prodr.* 152.
- Elichrysum argenteum*. *Willd. spec.* 3. 1906.
- Shrubby erect, leaves oblong silky recurved.
13. *Xeranthemum recurvatum*. *Lin. syst.* 751. *suppl.* 366. *Thunb. prodr.* 152.
- Shrubby erect, leaves lanceolate tomentose ciliate recurved, branches one-flowered.]
14. *Xeranthemum retortum*. Trailing *Xeranthemum*. *Lin. spec.* 1202. *Reich.* 3. 765. *hort. cliff.* 400. *Thunb. prodr.* 153. *Lour. cochinch.* 498. *ed. Willd.* 609.
- Elichrysum retortum*. *Willd. spec.* 3. 1905.
- Argyrocome retorta*. *Gertn. fruct.* 2. 410. t. 167.
- Xeranthemoides procumbens polii folio*. *Dill. elth.* 433. t. 322. f. 415.
- Shrubby branched decumbent, leaves lanceolate silky somewhat recurved, branchlets one-flowered, peduncles scaly.
- [15. *Xeranthemum stoloniferum*.

- Lin. syst.* 751. *suppl.* 366. *Thunb. prodr.* 152.
- Elichrysum stoloniferum*. *Willd. spec.* 3. 1907.
- Herbaceous creeping, leaves lanceolate silky recurved-spreading, branches one-flowered.
16. *Xeranthemum radicans*. *Thunb. prodr.* 153.
- Elichrysum radicans*. *Willd. spec.* 3. 1907.
- Herbaceous creeping, leaves ovate obtuse silky reflexed.
17. *Xeranthemum frigidum*. *Billard. ic. syr.* 9. t. 4.
- Elichrysum frigidum*. *Willd. spec.* 3. 1908.
- Herbaceous branched procumbent, leaves imbricate in four rows oblong blunt hoary, branches one-flowered, flowers sessile.
18. *Xeranthemum spinosum*. *Lin. spec.* 1203. *Reich.* 3. 765. *Thunb. prodr.* 153. *Burm. afr.* 182. t. 67. f. 3. *Breyn. prodr.* 2. 105.
- Elichrysum spinosum*. *Willd. spec.* 3. 1908.
- Shrubby erect, leaves lanceolate obtuse tomentose, branchlets one-flowered, calyx scales mucronate-spiny.]
19. *Xeranthemum sesamoides*. *Lin. spec.* 1203. *yst.* 750. *Reich.* 3. 765. *Berg. cap.* 273. *Thunb. prodr.* 152. *Burm. afr.* 181. t. 67. f. 2.
- Elichrysum sesamoides*. *Willd. spec.* 3. 1908.
- β. *X. sesamoides*, &c. *Pluk. amalth.* 213. t. 449. f. 5. *Raii suppl.* 239.
- Chrysocome* f. *Argyrocome africana ericoides*, capitis bonae spei. *Seb. thes.* 2. t. 43. f. 5.
- Elichrysum afr. lanuginosum*, &c. *Breyn. ic.* 27. t. 16. f. 2.
- Shrubby erect, leaves acerose linear keeled smooth pressed close, branches one flowered, flowers sessile.
20. *Xeranthemum fasciculatum*. *Andrews repof. bot.* 4. t. 242.
- X. squamosum*. *Thunb. prodr.* 152?
- Elichrysum fasciculatum*. *Willd. spec.* 3. 1909.
- β. *X. fasciculati varietas flore albo*. *Andr. repof. bot.* 4. t. 279.
- Shrubby erect, leaves acerose linear subcylindrical tomentose above, lower spreading, upper pressed close, branches one-flowered, peduncles scaly.
21. *Xeranthemum virgatum*. *Lin. syst.* 750. *Reich.* 3. 766. *mant.* 284. *Berg. cap.* 275. *Thunb. prodr.* 153.
- Elichrysum virgatum*. *Willd. spec.* 3. 1910. *Breyn. prodr.* 3. t. 16. f. 3.
- Shrubby erect, leaves lanceolate tomentose remote spreading, branches one-flowered, flowers peduncled.
22. *Xeranthemum striatum*. *Thunb. prodr.* 152.
- Elichrysum striatum*. *Willd. spec.* 3. 1910.
- Leaves linear nerved villose, stem erect.
23. *Xeranthemum lancifolium*. *Thunb. prodr.* 152.
- Elichrysum lancifolium*. *Willd. spec.* 3. 1910.
- Leaves lanceolate acute silvery, peduncles scaly.
24. *Xeranthemum Stæhelina*. *Lin. syst.* 750. *Reich.* 3. 766. *Thunb. prodr.* 153.
- Elichrysum Stæhelina*. *Willd. spec.* 3. 1910.
- Shrubby erect, leaves oblong-lanceolate attenuated at the base silky, peduncles naked one-flowered terminating.
25. *Xeranthemum variegatum*. *Lin. syst.* 750. *Reich.* 3. 766. *Thunb. prodr.* 153. *Raii suppl.* 181. n. 5.
- Elichrysum variegatum*. *Willd. spec.* 3. 1911.
- Shrubby erect branched, leaves oblong tomentose imbricate, branches one-flowered, flowers nodding.
26. *Xeranthemum paniculatum*. *Lin. spec.* 1203. *yst.* 751. *Reich.* 3. 767. *Thunb. prodr.* 152. *Burm. afr.* 180. t. 67. f. 1.
- Elichrysum paniculatum*. *Willd. spec.* 3. 1911.
- Shrubby erect, leaves linear-lanceolate silky, corymb simple terminating.
27. *Xeranthemum chinense*. *Lour. cochinch.* 498. *ed. Willd.* 608.
- Stem herbaceous quite simple, leaves lanceolate serrate.]

## DESCRIPTIONS, &amp;c.

1. Root annual. Stalk two feet high, slender, stiff and branching, covered with a white down, and channelled



nelled the whole length. Leaves lanceolate, an inch and half long, and one third of an inch broad in the middle, hoary, sessile, spreading, alternate, distant. Upper part of the flowering branches naked, one-flowered. Calyx silvery: that and the corolla dry, and retaining their beauty a long time.

[Chaffs of the receptacle linear-acuminate, rigid, a little longer than the belly of the calyx. Seeds in the female flowers none, or if any effete, and then the germ is linear-oblong, striated, smooth, compressed, bald, permanent, crowned also by the permanent corollet. In the androgynous flowers the seeds are oblong, acuminate downwards, compressed in shape of a rhomb or lens, having whitish villose hairs pressed close scattered over them, brownish ash-coloured, downy. Seed-down scariose, white, five-leaved: leaflets lanceolate or triangular, acuminate bristle-shaped, scarcely longer than half the seed<sup>g</sup>.]

It varies with white and purple, double and single flowers. In its natural state the flowers are single: the double flowers have been obtained by culture. Where the seeds are carefully saved separate, these varieties are generally constant.

[Native of the South of Europe; flowering in July and August. It was cultivated in the Oxford Botanic Garden in 1658<sup>h</sup>.

2. The stalks of this do not rise more than a foot high, and do not branch so much as the preceding. The leaves are narrower, and the whole plant is very hoary. The flowers are not half so large; but the scales of the calyx are very neat and silvery.

[Linneus, who considers these and the next species as one; thus distinguishes the two first as varieties. The first is a robust erect plant, with more and smaller seeds, a scariose calyx, entire chaffs, and a polypetalous ray. The second is a narrower weak plant, with six or seven larger seeds, the calyx-scales membranaceous only at the edge, the chaffs jagged, and about six petals in the ray. The first, he says, is native chiefly of Austria; the second of Italy, Switzerland and the South of France.]

3. This rises about the same height as the first sort. The leaves are narrower, and placed closer on the stalks to the top. The flowers are much less, of a paler purple colour, and have a cylindrical calyx. The seeds are very large, and seldom more than three or four in a head.

Flowers as big as those of the first species or bigger. Seed-down many-leaved, chaffy. Chaffs scariose shining white ovate long-awned longer than the calyx<sup>i</sup>.

Found in Armenia by Tournefort.

These are both annual as well as the first; and are the only species that agree perfectly with the character of *Xeranthemum*, as given by Linnæus. Gärtner therefore has divided the genus into three, and refers all the species of *Xeranthemum*, *Gnaphalium*, and *Filago*, which have not florets distinct in sex, the seed-down neither feathered nor pencilled, the receptacle neither villose nor chaffy, to the genus *Elichrysium*. Linneus's *Xeranthema* and *Gnaphalia* to which he attributes a feathered seed-down, having a naked smooth receptacle, androgynous and female florets mixed, and the calyx as in *Xeranthemum*, Gärtner names *Argyrocome*. Dillenius had called it *Xeranthemoides*.

Willdenow ranges all the following species under *Elichrysium*. They have a naked receptacle, and a hairy or feathered seed-down: whereas the true *Xeranthema* have a chaffy receptacle, and a setaceous-chaffy seed-down.

4. The whole plant is covered with a very thick nap, whence its trivial name. It is very distinct by having the floral leaves furnished with a lanceolate membrane at the end.

5. Differs only in having the calyx-scales brownish at the tip.

Native of the Cape of Good Hope. Introduced in 1774 by Mr. Francis Maffon<sup>l</sup>.

5. This differs from the preceding in having lanceo-

late keeled leaves, the floral ones not appendicled, and spirally imbricate, the flowers large white and splendid; with the calyx-scales red at the tip. Native of the Cape of Good Hope<sup>m</sup>.]

6. This rises with a shrubby stalk three or four feet high, dividing into four or five branches, the lower parts of which have thick-pointed leaves, about two inches long and an inch broad, hoary on their under side, and ranged without order. The upper part of the branches are naked, and terminated by one large yellow flower.

[The seed-down is feathered<sup>n</sup>. Native of the Cape of Good Hope.—Said in the Kew catalogue to be introduced by Mr. Maffon in 1787.

7. Stem the thickness of a finger, woolly, divided at the top into flowering branches. Leaves approximating, the length and breadth of a finger, erect and subimbricate, white and soft like some of the *Gnaphaliums*. Flowers like those of a *Xeranthemum* and sessile, with the herb of *Gnaphalium*. Calyxes the size of a walnut, with numerous deep yellow and very shining rays. Florets numerous and very small. Native of the Cape of Good Hope<sup>o</sup>. Introduced by Maffon in 1774.

8. Branches spreading, rigid. Leaves imbricate all round with leaflets, which one scarce knows whether to call leaves or branchlets. The flowers have a very shining blood-red ray. Native of the Cape of Good Hope<sup>p</sup>.

9. Calyxes shining, white, rufous on the outside in the middle. Seed-down red<sup>q</sup>.

Native of the Cape of Good Hope.

10. Calyxes shining, purple: the lowest somewhat testaceous. Seed-down white<sup>r</sup>. Native of the Cape of Good Hope.

11. Branches simple, two inches long, filiform. Leaves very small, smooth. Peduncles tomentose. Flower the size of *Bellium minutum*. Native of New Zealand<sup>s</sup>.

12. Leaves convolute, silvery. Native of the Cape of Good Hope<sup>t</sup>.

13. Stem shrubby with pubescent branches. Leaves alternate, stiffish, acute, channelled, with a close-pressed pubescence underneath. Calyxes solitary, blood-red, smooth, acuminate, white above. Disk yellow. Native of the Cape of Good Hope<sup>u</sup>.]

14. Stalks slender, woody, trailing to three or four feet in length. Leaves small, silvery, placed without order, sessile, reflexed. Flowers axillary, solitary, or two or three together, with a white ray.

[Stem a foot and half long, with many twisted diffused branches. Leaves oblong, sinuate-gashed, tomentose, hoary. Flowers yellow. Receptacle almost naked. Seed-down hairy<sup>v</sup>.—Dillenius says that it is feathered, as it certainly is.

Receptacle flat, wide, hollow-dotted smooth. Seeds oblong, roundish, smooth, pale: down snow-white, three times as long as the seed, with numerous rays, bristle-shaped at the base, toothletted, pencil-feathered at the tip<sup>w</sup>.

Native of the Cape of Good Hope, and Cochin-China. Cultivated in 1732, by James Sherard, M.D. of Eltham<sup>x</sup>.

15. The stem seems to be herbaceous and weak, and therefore it is procumbent and rooting. The branchlets up to the flower are clothed with small silky silvery leaves. The flowers are small and red. The seed-down is feathered. Native of the Cape of Good Hope<sup>y</sup>.

16. Stem decumbent rooting: Leaves silvery. Native of the Cape of Good Hope<sup>z</sup>.

17. Root woody perennial. Stems branched diffused procumbent herbaceous, with the branches a finger's length. Leaves extremely small, a line in length obtuse hoary imbricate in four rows. Flowers at the ends of the branches, solitary, sessile, the same size as in the *canescens*. Calyx snow-white, pubescent on the outside<sup>a</sup>.

<sup>m</sup> Willdenow.

<sup>n</sup> Linn. syst.

<sup>o</sup> Linn. suppl.

<sup>p</sup> Linn. mant.

<sup>q</sup> Linn. syst.

<sup>r</sup> Idem.

<sup>s</sup> Willdenow.

<sup>t</sup> Thunberg.

<sup>u</sup> Linn. suppl.

<sup>x</sup> Loureiro.

<sup>y</sup> Gärtner.

<sup>z</sup> Hort. kew.

<sup>a</sup> Linn. suppl.

<sup>b</sup> Thunberg.

<sup>c</sup> Willdenow.

<sup>g</sup> Gärtner.

<sup>h</sup> Hort. kew.

<sup>i</sup> Willdenow.

<sup>l</sup> Idem.

<sup>l</sup> Hort. kew.



Found by Billardiere on the highest parts of Mount Libanus; also in Corsica.

18. This is distinguished by its spiny head, which is compact and purple. Native of the Cape of Good Hope.]

19. Stem shrubby branching, rising three or four feet high. Branches slender, like those of Spanish Broom, but hoary. Leaves very small, resembling scales, sessile, narrow, hoary, ending in acute points. Each branch is terminated by one large silvery flower.

[The calyx in some is white, in others purple.<sup>d</sup> Native of the Cape of Good Hope.

20. Stem woolly-tomentose, white, branched. Leaves subcylindrical but flattened a little above, beneath convex and smooth, the lower ones an inch or an inch and half long, in bundles, the upper ones and those on the branches twice or thrice shorter, pressed close, alternate. Flowers the size of the preceding, on scaly peduncles. Calyx-scales lanceolate, acute, white or yellow. Native of the Cape of Good Hope.<sup>e</sup>

21. This differs chiefly from the sesamoides in having the calyx yellow. David van Royen informs us that the anthers are tailed. Native of the Cape of Good Hope.<sup>f</sup>

22. 23. Found at the Cape of Good Hope by Thunberg.

24. Stem woody, tender, panicie-branched. The whole plant white-tomentose. Peduncles long, terminating. Native of the Cape of Good Hope. Dav. van Royen.<sup>g</sup>

25. A foot high or more, with a stout thick stem, abundance of leaves from top to bottom in no regular order, divided into a few branches. Leaves narrow, sessile, very hoary, more than an inch in length, and one third of an inch in breadth. The stem and branches are terminated each by one large white flower; each scale of the calyx having a ferruginous spot at the top.<sup>h</sup> Native of the Cape of Good Hope.

26. Native of the Cape of Good Hope.

27. Stem round, erect, smooth, a foot and half high. Leaves smoothish, alternate, petioled. Flowers yellow, in a few-flowered terminating panicle. Inner calyx-scales reflexed at the end, longer than the florets. All the seeds crowned with a many-bristled down. Receptacle with deciduous chaffs. Native of China about Canton.<sup>i</sup>]

#### PROPAGATION AND CULTURE.

1, 2, 3. Sow the seeds in the spring or autumn on a border of light earth; but the latter season is preferable, for those plants which come up in autumn will flower sooner, the flowers will be more double and much larger than those which are sown in the spring, and from these good seeds may be always obtained, whereas the spring plants many times fail in cold years, and in hot dry seasons the plants do not grow to any size.

When the young plants are about two inches high, prick them out into another border under a warm wall, pale or hedge, at four or five inches distance; or into the borders of the flower garden. They will thus endure the cold of our ordinary winters extremely well, and in the spring will require no farther care but to keep them clear from the weeds. In June they will begin to flower, and at the beginning of July the flowers will be fit to gather for drying; but a few of the best and most double flowers should be suffered to remain for seed, which must be sown annually.

4, &c. The other sorts, being mostly shrubby, and not ripening their seeds in England, are propagated by cuttings, planted on a bed of light earth, during any of the summer months, and shaded from the sun. When they have gotten sufficient strength, take them carefully up, and plant them in separate pots filled with light earth, and place them in a shady situation till they have taken fresh root; and then remove them to a sheltered place, where they may have

<sup>d</sup> Linn. syst.

<sup>e</sup> Willdenow.

<sup>f</sup> Linn. mant.

<sup>g</sup> Linn. syst.

<sup>h</sup> Ray.

<sup>i</sup> Loureiro.

more sun, and there they may remain till autumn, when they must be removed into shelter, for they are too tender to live abroad through the winter in England, though they do not require any artificial warmth. They may be kept in a common hot-bed frame all winter, exposing them always to the open air in mild weather, but covering them in frost: and these plants will be stronger and flower better than those which are placed in the greenhouse, where they are apt to draw up weak, and not to flower; nor are the plants so handsome as those which are more exposed to the open air. In summer they should be placed abroad in a sheltered situation with other hardy exotic plants, and in dry weather they will require to be often watered, but in winter sparingly. As these plants are not of long duration here, and after four or five years become unsightly, young plants should be raised to succeed them.

XERANTHEMUM. See *Centaurea* and *Gnaphalium*.

XIMENIA. (So named by Plumier, in honour of the Reverend Father Francis Ximenes, a Spaniard, author of an account of the Animals and Plants of New Spain, 1615.

Lin. gen. n. 477. Reich. n. 517. Schreb. n. 651.

Plum. 21. Jacq. amer. 106. Juss. 259.

Class. 8. 1. Octandria Monogynia.

Nat. Order of *Aurantia* Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, four-cleft, acuminate, very small, permanent.

COR. Petals four, oblong, hairy within, below erected into a tube, above rolled back.

STAM. Filaments eight, erect, short. Anthers linear, erect, obtuse, length of the corolla.

PIST. Germ oblong. Style filiform, length of the stamens. Stigma obtuse.

PER. Drupe subovate.

SEED. Nut roundish.

#### ESSENTIAL CHARACTER.

Cal. four-cleft. Pet. four, hairy, rolled back. Drupe one-seeded.

#### SPECIES.

1. *Ximenia americana*.

Lin. spec. 497. Juss. 361. Reich. 2. 160. Willd. 2. 339. hort. cliff. 1193. Swartz obs. 149.

X. multiflora. Jacq. amer. 106. t. 177. f. 31. pict. 54. t. 107.

X. aculeata, flore villosa, fructu luteo. Plum. gen. 6. ic. 261. f. 1.

Heynaffoli spinosa. Aubl. guian. 1. 324. t. 125.

Leaves oblong, peduncles many-flowered.

[2. *Ximenia elliptica*.

Lin. spec. ed. Willd. 2. 339. Forst. prodr. n. 162.

Leaves elliptic-lanceolate, peduncles many-flowered.

3. *Ximenia inermis*.

Lin. spec. 497. Reich. 2. 160. Willd. 2. 339.

Brown. jam. 209.

Leaves ovate, peduncles one-flowered.]

#### DESCRIPTIONS, &c.

1. This rises with a woody stem twenty feet high, sending out several branches on every side, armed with thorns. Leaves lanceolate, standing round the branches without order. Flowers terminating. Corolla composed of one bell-shaped petal, cut almost to the bottom into three segments which are rolled back and are hairy; they are of a yellow colour within, and are succeeded by an oblong, oval, fleshy fruit, shaped like a Plum, and including a hard nut of the same form.

[It is a tree or shrub, with the trunk and branches smooth; the branchlets spiny, round, striated. Leaves in alternate clusters, two or three together, ovate (or ovate-oblong,) seldom emarginate, entire, nerved, smooth on both sides. Petioles roundish, flat above, smooth. Spines lateral, erect at the base of the petioles, longer than the petioles, thickish, awl-shaped. Peduncles axillary or from the tubercle of the petioles, shorter than them, bent down, round, from three to five-flowered; pedicels one-flowered.

Calyx



# X I P

Calyx four-cornered, four-toothed, very small, spreading. Petals four, lanceolate, converging at the base, reflexed, hairy within, pale, smooth on the outside. Filaments eight, shorter than the petals. Anthers concealed within the beard of the petals. Drupe the size of a small apple, roundish, yellow when ripe: containing a spherical nut with a white kernel in it<sup>k</sup>.

According to Jacquin, this tree is upright, and about fifteen feet high. Leaves emarginate, two inches long, three or four together from alternate tubercles, armed at the side with a strong spine, four lines in length: but these are sometimes wanting on a whole branch. Peduncles shorter than the leaves, two three or four from the same tubercle, racemed, and five-flowered or thereabouts. Flowers whitish, having a very sweet odour, somewhat like that of frankincense. Fruit yellow, shining, the size of a pigeon's egg, with a very thin rind, and little sweet subacid pulp, which is eaten by the savages and children. Nut smoothish, dirty white, inclosing a kernel shaped somewhat like a nutmeg, white and of a pleasant taste. Plumier figured the corollas as three-petalled<sup>l</sup>, and Mr. Miller adopted the error.

Native of the West Indies; about Carthagen, St. Domingo, Hispaniola, &c. flowering in july according to Swartz; in september and october as seen by Jacquin.

Cultivated in 1759, by Mr. Miller<sup>m</sup>.

2. This has no thorns. Native of New Caledonia<sup>n</sup>.

3. This is a very bushy tree, divided much towards the top, not above eight or nine feet in height. Trunk about four inches and a half in circumference. Leaves not above an inch in length, and disposed very thick upon the smaller branches. Native of Jamaica<sup>o</sup>.]

## PROPAGATION AND CULTURE.

These trees are propagated by seeds, which must be procured from the countries where they grow naturally; they should be sown in pots filled with light earth, and plunged into a good hot-bed of tanners bark. If the seeds are fresh, the plants will appear in six weeks or two months. When these are about three inches high, they must be each carefully transplanted into a separate small pot filled with light earth, and plunged into a good hot-bed of tanners bark, where they must be shaded from the sun till they have taken new root; then they must be treated in the same manner as other tender plants from the warm countries. During the first summer they may be kept in the tan-bed under frames, where they will thrive better than in the stove; but in autumn, when the nights grow cool, they should be removed into the stove, and plunged into the tan-bed; and in this they should always be kept, observing to shift them into larger pots when they require it; and in summer, when the season is warm, they should have a large share of free air admitted to them. With this management the plants will thrive well, but they cannot be expected to flower very soon in this country.

[XIPHIDIUM. (From *ξίφος*, a sword: from the shape of the leaves.)

Lin. gen. Schreb. n. 84. Loeßling. Aubl. guian.

33. t. 11. Juss. 59.

Class. 3. 1. Triandria Monogynia.

Nat. Order of *Ensatæ*. Irides Juss.

## GENERIC CHARACTER.

CAL. none.

COR. Petals six, of which the three outer are larger.

STAM. Filaments three, opposite to the inner petals. Anthers ovate.

PIST. Germ superior. Style filiform. Stigma simple, (three-cornered. Aubl.)

PER. Capsule at first fleshy, then dry, roundish, three-grooved, three-celled.

SEEDS numerous, roundish, (inserted into a globular receptacle.)

## ESSENTIAL CHARACTER.

Cor. six-petalled, equal. Caps. superior, three-celled, many-seeded.

\* Swartz. <sup>l</sup> Jacquin. <sup>m</sup> Hort. kew. <sup>n</sup> Forster.  
• Browne.

# X Y L

## SPECIES.

1. Xiphidium album.

Lin. spec. ed. Willd. 1. 248.

X. floribundum α. Swartz prodr. 17.

Xiphidium. Loeß. it. 239.

Leaves smooth, petals linear-lanceolate.

2. Xiphidium cæruleum.

Lin. spec. ed. Willd. 1. 248. Aubl. guian. 1. 33. t. 11.

X. floribundum β. Swartz prodr. 17.

Leaves hirsute, petals ovate.

## DESCRIPTIONS, &c.

1. Native of the West Indies.

2. A perennial plant: root jointed, fibrose: stem simple, cylindric, hairy, a foot or more in height: leaves alternate, remote, flat, striated, long, acute, serrulated: flowers paniculated, terminal: footstalk of each flower guarded at the base by a small scale. Native of Guiana, &c.

XIPHION or Xiphium. See Iris.

XYLOCARPUS. (From *ξύλον*, and *καρπος* a fruit. The fruit being hard, like wood.)

Lin. gen. Schreb. n. 646. Auct. D. D. Koenig. Naturf. 20. p. 2.

Class. 8. 1. Octandria Monogynia.

## GENERIC CHARACTER.

CAL. Perianth one-leaved; club-shaped, coriaceous, somewhat coloured, four-toothed: teeth rounded.

COR. Petals four, ovate-oblong, somewhat coriaceous, spreading very much, twice as long as the calyx. Nectary erect, ovate-inflated, somewhat fleshy: mouth eight-cleft.

STAM. Filaments the eight segments of the nectary, linear, obtuse, emarginate, shorter than the corolla. Anthers eight, fastened to the inner side of the filaments, linear-oblong, retuse, length of the stamens.

PIST. Germ ovate, smooth, somewhat wrinkled at the base. Style thick, very short. Stigma retuse, wide, margined: margin grooved; disk decussately grooved, perforated.

PER. Drupe large, juiceless, globular: rind thick, smooth on the outside, marked with four or five grooves, within woody, fibrous.

SEED. Nuts eight, ten or more, angular, unequal, difform; rind externally silky and soft, internally woody and fibrous: kernel somewhat woody, brittle: heart protuberant.

## ESSENTIAL CHARACTER.

Cal. four-toothed. Cor. four-petalled. Nect. eight-cleft. Filam. inserted into the nectary. Drupe juiceless, large, four or five-grooved. Nuts eight or ten, difform.

## SPECIES.

1. Xylocarpus Granatum.

Lin. spec. ed. Willd. 2. 328. Koenig Naturf. 20. p. 2.

Granatum littoreum. Rumph. amb. 3. 92. t. 61.

Cadul gaha. Cingalens.

Candalanga. Tamul.

## DESCRIPTION, &c.

This is a tree of various dimensions, commonly of a large size, but sometimes only a shrub. Trunk erect, covered with a cloven hard dusky-chestnut-coloured bark, and of a middling thickness. Frond oblong, sometimes subglobular opaque. Larger boughs scattered; smaller commonly opposite, covered with a dusky-ash-coloured bark, numerous. Leaves opposite, spreading, oblong-club-shaped, rounded, or sometimes oblong, acute, quite entire, scarcely convex on the upper surface, smooth, shining, dark green; on the lower surface veined, with the midrib more prominent stiffish, a little bigger than apple leaves. Petioles spreading, a little curved, roundish, somewhat wrinkled, chestnut-coloured, short. Racemes scattered on the branches, sometimes axillary, somewhat erect, ovate-oblong, small, shorter than the leaves, partial ones opposite, terminating ones commonly trichs-



trichotomous and spreading very much. Peduncles round, smooth, tough, coloured, red, naked. Peduncles shorter than the flower.

Native of the East Indies; in woods that grow in the ouze on the sea coast, among the Rhizophoras<sup>p</sup>.

XYLOMELUM. (From ξυλον wood, and μηλον an apple.)

Smith in Linn. Transf. 4. 214.

Class. 4. 1. Tetrandria Monogynia, prope Banksiam.

Nat. Order of Proteæ Juss.

#### ESSENTIAL CHARACTER.

Ament with a simple scale. Pet. four, stamiferous. Stigma club-shaped, obtuse.

#### DESCRIPTION, &c.

Habit altogether of *Brabeium*; but it has a wooden capsule, opening at the top on one side, and containing two winged seeds, not an almond-like drupe with one seed. Many of the flowers with a smaller stigma are abortive.

Native of Australasia.

This is one of twenty new genera, from the South Seas, the characters of which are given by Dr. Smith.

XYLON. See *Bombax* and *Gossypium*.

XYLOPHYLLA. (From ξυλον wood, and φυλλον a leaf.)

Lin. gen. Reich. n. 406. Schreb. n. 511. p. 826.

Swartz obs. 113. Gært. t. 108. Juss. 387.

Phyllanthus Brown. jam. 188.

Class. 5. 3. Pentandria Trigynia—Triandria Trigynia. f. Polygamia Monoecia. Swartz.

Nat. Order of Tricocæ. Euphorbiæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth five-parted, (six-parted. Gært.)

COR. none, (unless the calyx be so called.)

Nectary: six Glands at the base of the germ, or a rim surrounding the germ. Gært.

STAM. Filaments five very short (3 to 6 G.) Anthers shorter than the flower, biggish.

PIST. Germ roundish. Styles three, short. Stigmas jagged, (or bifid. Sw.)

PE. Capsule roundish, three-celled.

SEEDS two in each cell.

OBS. It should be referred to *Triandria Trigynia*; but most of the species are monoicous and polygamous. It differs from *Phyllanthus* only in having the flowers from the notches of the leaf.

#### ESSENTIAL CHARACTER.

Cal. five-parted, (six-parted, Sw.) coloured. Cor. none. Stigmas jagged. Caps. three-celled. Seeds two.

#### SPECIES.

1. *Xylophylla longifolia*. Long-leaved Sea-side Laurel. Lin. syst. 296. Reich. 1. 740. Willd. 1. 1500. mant. 221. Swartz obs. 112. Forst. prodr. n. 143.

*Xylophyllus ceramica*. Rumph. amb. 7. 19. t. 12. Leaves linear, branches four-cornered.

2. *Xylophylla latifolia*. Broad-leaved Sea-side Laurel. Lin. syst. 296. Reich. 1. 741. Willd. 1. 1500. mant. 251. Ait. kew. 1. 376. Swartz prodr. 28. obs. 113.

*Genesiphylla asplenifolia*. L'Herit. fert. angl. 29. t. 39.

*Phyllanthus* 1. Brown. jam. 188.

*Hemionitidi affinis*, &c. Pluk. phyt. t. 36. f. 7.

*Lonchitidis affinis*, &c. Sloan. cat. 16. hist. 80.

Leaves pinnate broad-lanceolate crenate, flowers peduncled hermaphrodite six-stamened and females mixed.

3. *Xylophylla arbuscula*. Lin. spec. ed. Willd. 1. 1500.

*Phyllanthus speciosa*. Jacqu. ic. rar. 3. 616. collect. 2. 360.

Leaves pinnate lanceolate acuminate subcrenate coriaceous, flowers peduncled three-stamened monoicous.

4. *Xylophylla falcata*. Sickle leaved Sea-side Laurel. Lin. spec. ed. Willd. 1. 1501. Swartz prodr. 28.

*Phyllanthus americana*, flores & singulis foliorum crenis

<sup>p</sup> Koenig in Willd. spec.

proferens. Comm. hort. 1. 199. t. 102. Seb. thes.

1. 21. t. 13. f. 2. Catesb. car. 2. t. 26.

*Ficifolia hemionitidi affinis*, &c. Pluk. phyt. t. 247. f. 4.

Leaves scattered linear-lanceolate, somewhat sickle-shaped crenate, flowers subsessile three-stamined monoicous.

5. *Xylophylla angustifolia*. Narrow-leaved Sea-side Laurel.

Lin. spec. ed. Willd. 1. 1501. Swartz. prodr. 28.

*X. falcata*. Ait. kew. 1. 376.

*Phyllanthus Epiphyllanthus*. Lin. spec. 1392. hort. cliff. 439. Brown. jam. 188. 2.

- β. *linearis*: with linear leaves marked with lines and white flowers. Swartz prodr. 28.

Leaves pinnate linear-lanceolate marked with lines crenate, flowers peduncled hermaphrodite.

6. *Xylophylla montana*.

Lin. spec. ed. Willd. 1. 1501. Swartz prodr. 28.

Leaves distich broad-lanceolate gasb-crenate, branches ancipital at the top, flowers sessile.

7. *Xylophylla ramiflora*.

Lin. spec. ed. Willd. 1. 1502. Ait. kew. 1. 376.

*Pharnaceum suffruticosum*. Pallas it. 3. app. 29. n. 70. t. E. f. 2.

Leaves elliptic, flowers axillary.

#### DESCRIPTIONS, &c.

1. Stem suffruticose, even. Branches quadrangular, alternate, stiff; the angles acute. Leaves linear, alternate (often two together,) stiff, even, somewhat keeled, longer than the interstices, alternately and very remotely serrate, with the serratures floriferous<sup>q</sup>.

Linneus depended upon Rumphius for this species, and never saw the flowers himself. Rumphius's description by no means agrees with the character of this genus<sup>r</sup>.

2. Stem shrubby, one or two feet high. Branches irregular, roundish-compressed. Leaves distich, alternate, scarcely petioled, crenate towards the end, smooth on both sides, stiffish. Flowers clustered, peduncled, polygamous, hermaphrodite and female mixed. Females always terminating, longer pedicelled. Calyx in both sorts six-parted, coloured, permanent. In the hermaphrodites six very short filaments, with roundish depressed anthers. Germ ovate. Style erect, longer than the stamens, three-parted, Stigmas reflexed, entire, obtuse, yellow. Capsule three-celled: cells two-valved, two-seeded. Seeds ovate, flat on one side. In the females, stigmas trifid and rudiments of stamens fastened to the germ. Germ, style and capsule as in the others.

Native of the West Indies, on maritime calcareous rocks. Linneus made out the character of the genus from this species as given by Browne<sup>s</sup>.

It was introduced here in 1783, by Matthew Wallen, Esq. and flowers from august to october<sup>t</sup>.

3. A most elegant, evergreen plant, with a woody stem, about three feet high, very simple, and upright, and about a finger's thickness: bark ash-coloured, marked with tubercles from the fallen leaves; leaves alternately spreading on the top of the plant; strong, smooth, footstalked, and pinnated with five or six leaflets, without an odd one; all lanceolate, serrulated, and coriaceous; the younger ones often purplish: from the notchings of the leaves proceed slender footstalks of half an inch in length, each bearing a single flower, which is small and of a pale sulphur-colour<sup>u</sup>.

4. This is a shrub of five or six feet height, with many upright stems growing from the root: leaves generally four or five inches long; with the edges widely notched; the notches being at about three quarters of an inch distance from each other: from each notch grows a small, monopetalous, red flower, succeeded by a small red berry. Native of the West-Indian Islands<sup>v</sup>.]

5. This tree grows fifteen or sixteen feet high. The leaves come out without any order, they are five or six inches long, smooth and thick; the flowers are produced upon the edges, but especially towards the upper part, where they are placed very closely; these,

<sup>q</sup> Linn. mant.

<sup>r</sup> Swartz obs.

<sup>s</sup> Idem.

<sup>t</sup> Hort. kew.

<sup>u</sup> Jacquin.

<sup>v</sup> Catesby.



together with the shining green colour of the leaves themselves, make a very beautiful appearance: the leaves continue green all the year. It grows naturally upon the rocks near the sea in the islands of the West Indies.

[In the Kew catalogue it is said to be a native of the Bahama islands, and to have been cultivated by Mr. Miller in 1739.] Mr. Miller himself says that there was formerly a plant of it at Hampton Court; and that he also saw one in the Amsterdam garden.

[6. Native of Jamaica.

7. Leaves elliptic quite entire petioled scattered. Flowers five or six peduncled axillary. Native of Siberia, among the rocks of the mountains Charabon and Tschir\*.

Introduced in 1783 by Mr. John Bell†.

#### PROPAGATION AND CULTURE.

All these, except the last, being natives of the East and West Indies, are tender and must be kept in the bark stove.]

Mr. Miller says of the fifth sort, that it must be placed in a moderate stove in winter, and that in summer it may be placed in the open air, in a warm sheltered situation. The roots strike so deep into the crevices of the rocks, as to render it almost impossible to transplant the plants; and the seeds will not grow, unless they are sown soon after they are ripe.

#### [XYLOPIA.

Lin. gen. n. 1027. Reich. n. 1116. Schreb. n. 946. Aubl. t. 601. Gartn. t. 69. Juss. 284. Xylopicum. Brown.

Class. 13. 7. Polyandria Polygynia.

Nat. Order of Coadunatae. Anonae Juss.

#### GENERIC CHARACTER.

CAL. Perianth three-leaved: leaflets ovate, concave, sharpish, deciduous.

COR. Petals six, sessile, linear-lanceolate, coriaceous; the three outer larger and thicker.

STAM. Filaments scarcely any. Anthers numerous, oblong, fastened to the receptacle at the base of the germs.

PIST. Germs from two to fifteen, very small, fastened to a three-cornered receptacle. Styles none. Stigma long, very slender.

PER. Capsules two to fifteen, pedicelled, four-cornered, compressed, coriaceous, one or two-celled, two-valved.

SEEDS solitary or two together, roundish, smooth, within a succulent hemispherical aril.

#### ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. six. Capsules one or two-seeded four-cornered two-valved. Seeds arilled.

#### SPECIES.

1. *Xylopi muricata*. Smaller or rough-fruited Bitter-wood.

Lin. spec. 1367. Juss. 826. Reich. 4. 66. Willd. 2. 1270.

Xylopicum. Brown. jam. 250. n. 1. t. 5. f. 2. Leaves lanceolate acuminate strigose beneath bearded at the tip, peduncles many-flowered, fruits muricate.

2. *Xylopi frutescens*. Shrubby Bitter-wood.

Lin. spec. ed. Willd. 2. 1270. Aubl. guian. 1. 602. t. 292. (excl. synonym.) Gartn. fruct. 1. 339.

Ibira. Pison. bras. 145.

Leaves lanceolate acuminate silky beneath smooth at the tip, peduncles one or many-flowered, fruits smooth.

3. *Xylopi glabra*. Larger or smooth-fruited Bitter-wood.

Lin. spec. 1367. Juss. 826. Reich. 4. 66. Willd. 2. 1270.

Xylopicum. Brown. jam. 251. n. 2.

Xylopicron. Pluk. phyt. t. 238. f. 4.

Leaves oblong-ovate smooth, peduncles one-flowered subgeminate, fruits smooth.

#### DESCRIPTIONS, &c.

1. This tree grows to the height of fifteen or sixteen feet. Native of Jamaica. Browne found it at the foot of the mountains in Sixteen-Mile-walk‡.

\* Willdenow.

† Hort. kew.

‡ Browne.

2. Very like the preceding, but the leaves are narrower, whitish and silky villose underneath, not strigose, smooth at the end not with a bundle of hairs; the fruit also is smooth; the peduncles are sometimes one-flowered, sometimes many-flowered. Native of Guiana and Brasil‡.

Capsules placed on the receptacle of the flower in a subglobular umbel, pedicelled, ovate, simple or twin, wrinkled, coriaceous, aromatic, two-celled, two-valved: partition membranaceous, thin, contrary to the valves. Seed one in each cell, oblong-elliptic, narrowing below into an umbilical dagger-point, plano-convex, black, shining. Aril incomplete, spongy-membranaceous, white, full of a very fragrant acrid oil, fastened closely to the umbilical point, often investing the lower half of the seed‡.

3. This tree grows to a considerable size, and will sometimes raise its branches to the height of fifty or sixty feet. The wood, bark and berries have an agreeable bitter taste, not unlike that of the orange seed. The wild pigeons feed much upon the latter, and owe that delicate bitterish flavour, so peculiar to them in the season, wholly to this part of their food. Fresh gathered from the tree they are agreeable to the palate and grateful to the stomach. The bark is also richly impregnated with this juice as well as the wood; and both yield a very agreeable bitter in the mouth while fresh: but that delicacy diminishes greatly after they are dried. The wood is easily wrought, and esteemed a good timber-wood, where it is not much exposed to the weather‡.

The bitter quality of this tree is communicated with great facility. A handful of the shavings immersed in water, and instantly taken out again, will render it of a very bitter taste. Sugar sent over in hogsheds made of this wood was so bitter that no person would purchase it. Bedsteads and presses made of it are proof against cockroaches and other insects. Carpenters who work the wood perceive a bitter taste in their mouths and throats. A decoction of it is said to be of service in cholics, and to create appetite‡. Native of Barbadoes and Jamaica. Browne says that he met with it in the mountains at the back of Bull-bay; and that it feeds at Mr. Anderson's mountains, near the Mine.

The common name of Bitter-wood, was translated into the Greek Xylopieron or Xylopicum, for a generic appellation, by Plukenet and Browne. Linneus shortened it into Xylopi, a name of no meaning.

XYLOPICUM. See *Xylopi*.

XYLOPYRUS. See *Rhamnus*.

XYLOSMA. (From ξύλον wood, and σμα a sweet smell.)

Lin. gen. Schreb. n. 1548. Forst. flor. 72. Myroxylon. Forst. gen. 63.

Class. 22. 12. Dioecia Polyandria.

\* Male.

CAL. Perianth four or five-parted: leaflets roundish, minute, spreading.

COR. none.

Nectary very small, annular, crenulate, surrounding the stamens.

STAM. Filaments numerous (20—50) capillary, twice as long as the calyx. Anthers roundish, small.

\* Female.

CAL. and COR. and NECT. as in the Males.

PIST. Germ ovate-globular. Style scarcely any, cylindrical. Stigma obtuse, flat, indistinctly trifid.

PER. Berry? dry, oblong, subbilocular.

SEEDS two, three-sided, convex on the back, flat on the sides. Partition incomplete in the bottom of the berry.

#### ESSENTIAL CHARACTER.

Cal. four or five-parted. Cor. none: but a small annular crenulate nectary surrounding the stamens.

MALE. Stam. twenty to fifty.

FEM. Style scarcely any. Stigma trifid. Berry dry, subbilocular. Seeds two, three-sided.

\* Willdenow.

‡ Gartner.

‡ Browne.

‡ Long, 819.



# X Y R

## SPECIES.

1. *Xylofina suaveolens*.  
*Forst. prodr. n. 380.*  
*Myroxylon suaveolens. Forst. gen. 126. t. 63. n. 1.*  
*Leaves ovate ferrate.*
2. *Xylofina orbiculatum*.  
*Forst prodr. n. 381.*  
*Myroxylon orbiculatum. Forst. gen. 126. t. 63. n. 2.*  
*Leaves roundish quite entire.*

The first of these is a native of the Society isles; the second of Savage island.

Forster first named this genus *Myroxylon*, because the natives use the wood to perfume the Coco-nut oil, with which they anoint their air: but he changed it afterwards, to avoid its being confounded with the tree which yields the Balsam of Peru, and which had before been named *Myroxylon*.

**XYLOSTEUM.** See *Lonicera*.

**XYRIS.** (*Ξυρίς* of *Dioscorides*, *Ξυρίς* of *Theophrastus*, *Xyris* of *Pliny*. Derivation unknown.)

*Lin. gen. n. 64. Reich. n. 70. Schreb. n. 89.*

*Gronov. Gertn. t. 15. Juss. 44.*

Class. 3. 1. Triandria Monogynia.

Nat. Order of *Ensatæ*. *Junci* Juss.

## GENERIC CHARACTER.

**CAL.** *Spike* roundish: *scales* roundish, concave, imbricate, separating the flowers. *Glume* two-valved, small: *valves* boat-shaped, compressed, bowed, acute, converging.

**COR.** *Petals* three, flat, spreading, large, crenate: *claws* narrow, length of the calyx.

**STAM.** *Filaments* three, filiform, shorter than the corolla. *Anthers* erect, oblong.

**PIST.** *Germ* superior, roundish. *Style* filiform. *Stigma* triple.

**PER.** *Capsule* roundish, one-celled, three-valved, opening by a cleft at the corners.

**SEEDS** numerous, very small, adhering to a raised rib in the middle of each valve.

## ESSENTIAL CHARACTER.

**COR.** three-petalled, equal, crenate. *Glumes* two-valved in a head. *Caps.* superior.

## SPECIES.

1. *Xyris indica*.  
*Lin. spec. 62. Reich. 1. 116. Willd. 1. 254.*  
*phytog. 1. 2. n. 6. Gron. virg. 11. Fl. zeyl.*  
*n. 35. Gertn. fruct. 1. 52. Vahl. symb. 3. 7.*  
*Pluk. phyt. t. 416. f. 4. Mor. hist. 3. 229. f.*  
*8. t. 9. f. 28.*  
*Katsjiletti-pullu. Rheed. mal. 9. 139. t. 71.*  
*Leaves ensiform sheathing the scape, head globular, scales roundish.*
2. *Xyris pauciflora*.  
*Willd. spec. 1. 255. phytog. 1. 2. n. 7. t. 1. f. 1.*  
*Leaves linear-subulate sheathing the scape, head oblong,*  
*scales ovate obtuse.*
3. *Xyris americana*.  
*Willd. spec. 1. 255. Vahl. symb. 3. 8. Aubl. guian.*  
*1. 40. t. 14.*  
*Jupicai Pison. bras. 238.*  
*Leaves three-sided linear-subulate distinct at the base,*  
*head oblong, scales lanceolate acute.*
4. *Xyris capensis*.  
*Willd. spec. 1. 255. Thunb. prodr. 12.*  
*Leaves linear very short, head ovate acute, scales obtuse.*

## DESCRIPTIONS, &c.

1. *Scapes* several, a foot high. *Leaves* sometimes almost the length of the scape or a little shorter. *Anthers* linear, emarginate, with a pencil at the base on each side\*. *Vahl* remarks, that he never observed the leaves to be so wide as they are represented in *Rheede's* figure.

*Capsule* obovate, three-cornered, opening at the corners, but cohering at top and bottom, and not separating into valves. *Seeds* ovate-globular, striated longitudinally, slightly pointed at both ends and these dark brown, in other parts rufescent or else pale with the streaks only rufescent†.

\* *Vahl.*

† *Gartner.*

# Y U C

*Vahl* describes a plant sent from the East Indies by *Koenig*, which differs from this in having narrower shorter leaves, a smooth ancipital scape, and three-toothed anthers. It agrees with the third species in leaves and scape, but differs in height. He suspects that the petals are not distinct, but cohere at bottom, not having been able to separate them in his specimens without tearing.

2. Native of Malabar.

3. *Leaves* linear, stiffish, shorter by half than the scape. *Scape* not striated, as in the first species, compressed above. *Scales* of the head oblong, concave, with a thinner membranaceous margin, emarginate at the tip with a somewhat callous brownish point in the middle, but never attenuated as in *Aublet's* figure, which is not a good one‡. Native of South America.

4. Native of the Cape of Good Hope, where it was found by *Thunberg*.

# Y.

**YAM.** See *Dioscorea*.

**YARROW.** See *Achillea*.

**YARUMA.** See *Cecropia*.

**YCOTLI.** See *Cerbera*.

**YELLOW RATTLE.** See *Rhinanthus*.

**YELLOW ROOT.** See *Hydrastis*.

**YELLOW SUCCORY.** See *Picris*.

**YELLOW-WEED.** See *Reseda*.

**YELLOW-WORT.** See *Chlora*.

**YERVAMORA.** See *Bosca*.]

**YEW TREE.** See *Taxus*.

**YUCCA.** (*The Indian name*.)

*Lin. gen. n. 429. Reich. n. 463. Schreb. n. 580.*

*p. 827. Gertn. t. 85. Juss. 49. Dill. gen. 5.*

*Cordylina Roy. lugdb. 22.*

Class. 6. 1. Hexandria Monogynia.

Nat. Order of *Coronariæ*. *Lilia* Juss.

## GENERIC CHARACTER.

**CAL.** none.

**COR.** bell-shaped, six-parted, cohering by the claws: *segments* ovate, very large, spreading.

**STAM.** *Filaments* six, very short, thicker above, reflexed. *Anthers* very small.

**PIST.** *Germ* oblong, bluntly three-sided, longer than the stamens. *Style* none. *Stigma* three-grooved, obtuse, with bifid segments, pervious.

**PER.** *Berry* oblong, obscurely six-cornered, fleshy, punched with a little hole between the stigmas, six-celled: *partitions* three thicker, and three thinner, and membranaceous diaphragms forming cells for each seed.

**SEEDS** flattish, incumbent, fastened to the inner angle of each cell.

## ESSENTIAL CHARACTER.

**COR.** bell-shaped, spreading. *Style* none. *Caps.* three-celled.

## SPECIES.

1. *Yucca gloriosa. Superb Adam's Needle.*  
*Lin. spec. 456. Reich. 2. 83. Willd. 2. 183. vir.*  
*cliff. 29. hort. cliff. 130. upf. 88. Kniph. cent. 1.*  
*n. 100.*  
*Y. foliis aloes. Baub. pin. 91.*  
*Y. indica fol. aloes. Barr. rar. 70. t. 1194.*  
*Yucca f. Jucca peruana. Ger. 1359. emac. 1543.*  
*Raii hist. 1201. Park. parad. 434. t. 435. f. 1.*  
*Y. nova gloriose elata & opinata planta. Lob. adv.*  
*2. 507.*  
*Leaves quite entire.*
2. *Yucca aloifolia. Aloe-leaved Adam's Needle.*  
*Lin. spec. 457. Reich. 2. 83. Willd. 2. 184. vir.*  
*cliff. 29. hort. cliff. 130. a.*

‡ *Vahl.*

**Y. arbo-**



- Y. arborescens*, fol. rigidioribus rectis ferratis. *Dill. elth.* 435. t. 323. f. 416.  
*Aloe yuccæ foliis*, caulescens. *Pluk. alm.* 19. t. 256. f. 4.  
*A. americana*, yuccæ foliis arborescens. *Comm. præl.* 64. t. 14.  
*Leaves crenulate striat.*  
 3. *Yucca draconis*. *Drooping-leaved Adam's Needle.*  
*Lin. spec.* 457. *Reich.* 2. 84. *Willd.* 2. 184. *hort. cliff.* 130. *β. upf.* 88. *Gærtn. fruct.* 2. 34.  
*Y. draconis folio ferrato reflexo.* *Dill. elth.* 437. t. 324. f. 417. *Comm. præl.* 42. 67. t. 16.  
*Draconi arbori affinis americana.* *Baub. pin.* 506.  
*Tacori folia Draconi arboris similia.* *Baub. hist.* 1. 405.  
*Leaves crenate nodding.*  
 4. *Yucca filamentosa*. *Thready Adam's Needle.*  
*Lin. spec.* 457. *Reich.* 2. 84. *Willd.* 2. 184. *Gron. virg.* 152. *Trew. Ebrēt.* t. 37.  
*Y. foliis filamentosis.* *Mor. hist.* 2. 419.  
*Y. virginiana*, fol. per marginem apprimè filatis.  
*Pluk. alm.* 396.  
*Leaves ferrate-thready.*

## DESCRIPTIONS, &amp;c.

1. This seldom rises with a stem above two feet and a half or three feet high, which has leaves almost to the ground. These are broad, stiff, and have the appearance of those of the Aloe, but are narrower; they are of a dark green colour, and end in a sharp black spine. It frequently produces its panicles of flowers from the centre of the leaves. The flower-stalk is three feet high, branching out on every side to a considerable distance, but the flowers are placed very sparsely on the stalk, which renders it less beautiful than the other sorts. The flowers are white within, but each petal is marked with a purple stripe on the outside: they are bell-shaped and hang downward. They appear in august and september, but are not succeeded by seeds in England.

Native of Virginia and other parts of North America.

[First cultivated in Europe by John Gerarde, who had it from the West Indies, "by a servant of a learned and skilful Apothecare of Excester, named Master Thomas Edwards".]

Parkinson adds, that Gerarde kept it to his death, but that it perished with him who got it from his widow, intending to send it to his country house. Gerarde sent it to Robin at Paris, and Vespasian the son of old Robin sent it to Master John de Franqueville, which plant was flourishing in Parkinson's garden, when he published his *Paradisus* in 1629<sup>1</sup>.

Johnson, the editor of Gerarde's herbal, says that he once saw it in flower in the garden of Mr. Wilmot at Bow, but never since, though it hath been kept for sundry years in many other gardens as with Mr. Parkinson and Mr. Tugby.]

2. This rises with a thick tough fleshy stalk, to the height of ten or twelve feet, having a head or tuft of the leaves at the top; these are narrower and stiffer than those of the former sort, and are of a lighter green colour; their edges are slightly ferrate, and their points end in sharp thorns. The flower-stalk rises in the centre of the leaves, and is from two to three feet long, branching out into a pyramidal form. The flowers grow close on the branches, and form a regular spike; they are of a bright purple colour on the outside, and white within, making a fine appearance. They appear at the same time with those of the former, but not so often; and whenever they appear the head decays, but one or two young heads come out from the side of the stalk below the old one.

[Native of South America. Cultivated 1696, in the Royal Garden at Hampton Court<sup>2</sup>.]

3. Stalks three or four feet high. Leaves narrow, dark green, hanging down, ferrate, and ending in acute spines.

[The plant which flowered in august 1729 at Ham-  
 burgh in the garden of Jo. Henr. de Sprekelsen, at

<sup>1</sup> Gerarde's herbal, p. 1359.

<sup>2</sup> Park, par. p. 434.

<sup>3</sup> Hort, kew.

twenty years of age, was eight feet high, and the flower-stem two feet and a half. The flowers pendulous, milk-white, with a strong unpleasant smell, about 150 in a thyrsus. Seed vessel three-celled. Seeds horny, wrinkled, blackish when ripe.

The plants cultivated in the Eltham garden in 1732 were about three feet high, and had longer, narrower, and more tender leaves than the second species, bending downwards from about the middle, shining, darker green, less concave, terminating in a longer slenderer spine, about an inch wide, and two feet or more in length<sup>1</sup>.

Gærtner describes the fruit as a fleshy oblong berry, contracted at the top, with a narrow aperture between the sessile stigmas, obscurely six-cornered, and six-celled: cuticle very thin, not separating: pulp firm of a dark dusky blood-red colour: three of the partitions thicker and three thinner; all longitudinal: between these are transverse, membranaceous, very thin, white diaphragms, forming partial cells for each of the seeds. Receptacle none, except the central angle of the cells, to which the seeds are fastened horizontally in a single longitudinal row. Seeds numerous, spherically triangular, flattish on both sides, dark but not shining.] Native of South Carolina: whence Mr. Miller says that he received the seeds by the title of Oil-seed.

4. The stalk and leaves are like those of the first sort, but the leaves are obtuse, and have no spines at their ends. The flower-stalk rises five or six feet high, and is generally covered with flowers most of its length. The flowers are larger and whiter than those of the other species, and sit close to the stalk. From the side of the leaves come out long threads which hang down.

[Morison observed three-sided, three-celled capsules, in the garden of George Crook at Waterstock, six miles from Oxford, in 1675: and adds that William Walker had possessed abundance of the plants for many years, in his suburban garden in the village of St. James, but that he never saw it flowering with him.]

Native of Virginia.

## PROPAGATION AND CULTURE.

All these plants are either propagated by seed, when obtained from abroad, or else from offsets or heads taken from the old plants, after the manner of Aloes.

When they are raised from seeds, they should be sown in pots filled with light fresh earth, and plunged into a moderate hot-bed, where the plants will come up in five or six weeks after; and when they are two or three inches high, they should be transplanted each into a separate small pot filled with light fresh earth, and plunged into a hot-bed, where the plants should have air and water in proportion to the warmth of the season, and the bed wherein they are placed.

In july they should be inured by degrees to bear the open air, into which they must be removed, to harden them before winter, placing them in a well sheltered situation, where they may remain until the beginning of october, when they must be removed into the green-house, where they may be ranged amongst the hardier sort of Aloes, and should be treated in the same manner as hath been already directed for them; to which the reader is desired to turn, for further instructions.

When these plants have acquired strength, those of the common sort, and also the threaded, may be afterwards turned out into a warm border, where they will endure the cold of our ordinary winters very well, but the other sorts must be kept in pots, that they may be sheltered in winter; and if they are treated in the same way as the large American Aloe, they will do very well.

The offsets taken from the old plants should be laid in a dry place, for a week or ten days before they are planted, that their wounds may heal, otherwise they will be subject to rot with moisture.

As the second and third sorts do not put out offsets so plentifully as the first and fourth, so in order to propagate them, the heads of the plants may be cut off in june; and after the wounded part is dry, the heads

<sup>1</sup> Dill. elth.



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may be planted, which will soon take root, provided the pots are plunged into a moderate hot-bed; and this cutting off the heads will occasion the stems to put out suckers, which they seldom do without until they flower; so that by this method, the plants may be obtained in plenty.

## Z.

[ZACINTHA. See *Lapsana*.  
ZADIRACH. See *Melia*.  
ZALCIA. See *Trianthema*.  
ZALUZIANSKIA. See *Marfilea*.  
ZAMIA.

*Lin. gen. Reich. n. 1286. Schreb. n. 1700. suppl. 68. Gært. t. 3. Juss. 16.*

Class. 25. 1. Appendix Palmæ. (Dioecia Polyandria.)  
Nat. Order of Palmæ. *Filices* Juss. &c.

### GENERIC CHARACTER.

#### \* Male.

CAL. Ament strobile-shaped, ovate, obtuse. Scales horizontal, peltate, obovate, very blunt, one-flowered, thickened at the top, permanent.

COR. none.

STAM. Filaments none. Anthers subglobular, clustered, accumulated in the lower surface of the scales, sessile, two-valved, opening above by a longitudinal cleft. Pollen farinaceous.

#### \* Female.

CAL. Ament strobile-shaped, larger, ovate, imbricate. Scales pedicelled, peltate, angular, finally distant, permanent.

COR. none.

PIST. Germs two, irregular, angular, inserted into the margin under the pelta of the scales, solitary on each side, nodding. Style none. Stigma obtuse, obscurely cloven at the side.

PER. Berries to each scale two, ovate, barked at the base, fleshy, one-celled.

SEED one in each berry, ovate.

OBS. Concerning the anthers and pollen consult *Jacquin coll. austr. 3. 264.* This and *Cycas* were referred, both by the elder and younger *Linneus* to the *Filices* S.

### ESSENTIAL CHARACTER.

MALE. Ament strobile-shaped, scales covered with pollen underneath.

FEM. Ament strobile-shaped, with scales at each margin. Berry solitary.

### SPECIES.

1. *Zamia furfuracea*. Broad-leaved *Zamia*.

*Lin. fil. Ait. kew. 3. 477.*

*Palma americana*, &c. *Pluk. phyt. t. 103. f. 2. and 309. f. 5. Herm. par. t. 210.*

*P. fructu clavato polypyreno. Mill. dict. n. 9.*

*Palmifolia femina. Trew. Ekret. 5. t. 26.*

[*Leaflets wedge-shaped straight very smooth from the middle to the tip serrate scurfy underneath, stipe spiny.*

2. *Zamia integrifolia*. Dwarf *Zamia*.

*Linn. fil. Ait. kew. 3. 478.*

*Z. pumila. Lin. spec. 1659. (excl. synonymis.)*

*Leaflets mostly quite entire bluntish awnless straight shining, stipe unarmed*

3. *Zamia debilis*. Long-leaved *Zamia*.

*Linn. fil. Ait. kew. 3. 478.*

*Palma prunifera humilis, &c. Comm. hort. 1. 111. t. 58.*

*Leaflets linear awnless serrulate at the tip from spreading recurved longer than the channelled rachis, stipe three-sided compressed unarmed.*

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4. *Zamia pungens*. Needle *Zamia*.

*Linn. fil. Ait. kew. 3. 478.*

*Palma sobolifera, &c. Till. pis. 129. t. 45.*

*Leaflets awl-shaped spreading strict rigid mucronate, the outer margin of the base rounded, stipe roundish unarmed.*

5. *Zamia Cycadis*. Narrow-leaved *Zamia*.

*Lin. syst. 926. suppl. 443. Ait. kew. 3. 478.*

*Z. caffra (villosa.) Gært. fruct. 1. 15.*

*Cycas caffra. Thunb. in nov. act. upf. 2. 283. t. 5.*

α. with one-spined leaves. Entire narrow-leaved *Zamia*.

β. with leaves two or three-spined at the end. Trifid narrow-leaved *Zamia*.

*Leaflets oblique linear-lanceolate awl-shaped hairy curved one two or three-spined at the tip, stipe unarmed.]*

### DESCRIPTIONS, &c.

1. Stem thick, seldom rising more than two feet high. The leaves come out round the upper part of the stem upon footstalks eighteen inches long; they are pinnate, the leaflets about five inches in length, and an inch and half in breadth in the middle, drawing to a point at both ends; they are stiff, smooth, and entire except a few small indentures at their points, are placed alternately, and are of a pale green colour; there are fourteen or fifteen of these leaflets ranged along the midrib. The fruit rises up from the side of the stem upon a short thick footstalk, standing upright, and shaped like a club, having many red seeds about the size of large pease, placed in separate cells round the central footstalk, to which they adhere. All the plants which have flowered in England had male flowers only.

It was discovered by Dr. Houstoun in the sands near Old Vera Cruz in America. The first time he saw it growing the plants were in full leaf, but on his return three months after, the fruit was ripe, and all the leaves were fallen off. He observed the same in the following season.

[It appears from *Plukenet*, that it was cultivated in 1691, in the Royal Garden at Hampton Court<sup>m</sup>.

2. The spadix is divided into florets after the manner of the fruit of the *Cypress*<sup>n</sup>.

Native of East Florida. Introduced in 1768 by John Ellis, Esq.<sup>o</sup>

3. Native of the West Indies. Introduced in 1777 by Messrs. Kennedy and Lee.

4. Native of the Cape of Good Hope. Introduced in 1775, by Mr. Francis Masson<sup>n</sup>.

5. Stem swelled out like a bulb above ground, tomentose, imbricate. Leaves pinnate, radical or on the bulb, very like those of *Cycas*, but not in a ring, nor with the lower pinnas spinescent. The male flowers as in *Cycas circinalis*, but the females are like the males, and under each scale there are two berries, as in the second species<sup>n</sup>.

The fruit is ovate-oblong, about a foot in length, peduncled. Scales peltate, on long petioles, the petiole widening outwards, three-sided: peltæ rhomboidal, acuminate both ways, suberosus-coriaceous, on the outside rugged, wrinkled, brown, within next the petiole marked on both sides with a round pale areâ, and augmented near the end with a lamella turned inwards. The two berries under each pelta ovate very obscurely three-cornered, fleshy, smooth, one-celled: cuticle thin, in the old fruit pale straw-coloured: pulp soft, fungous, moderately thick. Seed large, ovate-globular, inverted, having a knob at the end, pale<sup>n</sup>.

Native of the Cape of Good Hope. Introduced by Mr. Francis Masson in 1775<sup>n</sup>.

ZANNICHELLIA. (So named by *Micheli*, in honour of *Giov. Jeronymo Zannicbelli*, an Apothecary at Venice. Author of *Laboratorium Zannicellianum Chymicum*, 1701. 8vo.—*De Ferro ejulque nivis præparatione*, 1713. 8vo.—*De Myriophyllo pelagico*, 1714. 8vo.—*De Lithographia duorum montium Veronensium*, 1721. 8vo.—*De quodam Insecto aquatili*, 1727. 8vo.

<sup>m</sup> Hort. kew.

<sup>n</sup> Hort. kew.

<sup>n</sup> Linn. spec.

<sup>n</sup> Linn. suppl. <sup>n</sup> Gærtner.

<sup>o</sup> Hort. kew.

<sup>o</sup> Hort. kew.



# Z A N

—De Rufco, 1727. 8vo.—Opuscula Botanica, 1730.  
—Historia Plantarum Venetarum, 1735. *He travelled with Micheli along the shores of the Adriatic, and was particularly versed in marine plants and animals.*

Lin. gen. n. 1034. Reich. n. 1124. Schreb. n. 1391. Mich. t. 34. Gært. t. 19. Mill. illustr. 77. Juss. 19.

Algoides. Vaill. act. gall. 1719. t. 1. f. 1. Apogoneton. Pont. anth. Graminifolia. Dill. gen. 169.

Class. 21. 1. Monoecia Monandria.

Nat. Order of Inundatae. Naiades Juss.

## GENERIC CHARACTER.

### \* Male Flower.

CAL. none.

COR. none.

STAM. Filament one, simple, long, erect.

Anthers sagittate, (ovate) erect.

### \* Female next the male flower.

CAL. Perianth one-leaved, ventricose, three-toothed.

COR. none.

PIST. Germs four to eight, horned, converging. Styles as many, simple, spreading a little. Stigmas ovate, flat, spreading outwards.

PER. Capsules as many, subfalcate, from erect-spreading, beaked with a reclining style, tubercled at the back, crusty-coriaceous, compressed, one-celled, valveless.

SEEDS solitary, oblong, gibbous on one side.

### \* Male flowers solitary, scattered.

CAL. Perianth one-leaved, with the mouth oblique, sharp behind, quite entire.

## ESSENTIAL CHARACTER.

MALE. Cal. none. Cor. none.

FEM. Cal. one-leaved. Cor. none. Germs four or more. Seeds as many, pedicelled. Stigmas peltate.

## SPECIES.

1. Zannichellia palustris. Horned Pondweed.

Lin. spec. 1375. fyst. 838. Reich. 4. 88. fl. lapp. n. 321. succ. n. 824. hort. cliff. 437. Mich. gen. 71. t. 34. f. 1. Gært. fruct. 1. 77. Hudf. angl. 397. Wither. arr. ed. 3. 6. Smith brit. 955. Hull. 202. Relb. cant. ed. 2. n. Sibth. oxon. n. 5. Fl. dan. t. 67. Hall. belv. n. 1604. Pollich pal. n. 866. Villars dauph. 2. 5. Allion. pedem. n. 2108. Gron. virg. 143. Mill. illustr. t. 77.

Graminifolia. Dill. giff. app. 168.

Algoides vulgaris. Vaill. act. 1719. p. 15. t. 1. f. 1.

Potamogeton capillaceum, capitulis ad alas trifidis. Bauh. pin. 193. prodr. 101.

Potamogeton similis graminifolia ramosa, ad genicula polyceratos. Pluk. phyt. t. 102. f. 7.

Aponogeton aquaticum graminifolium, flaminibus singularibus. Raii syn. 135. Petiv. brit. t. 6. f. 2.

Potamogeton affinis graminifolia aquatica. Raii. bist. 190.

## DESCRIPTION, &c.

1. Root annual, fibrous, very slender. It has the habit of a Potamogeton, slender and much branched, the stem leafy and smooth. Leaves somewhat whorled, growing two, three, or four out of the same sheathing stipule, linear, quite entire, acute, grass-like. Bracte axillary, tubular, membranaceous. Flowers two together within each bracte, one male, the other female. Stamen at the base of the pedicel of the female flower, capillary, very long: anther yellow, four-celled. Female flower pedicelled, with a bell-shaped calyx, unequally toothed at the mouth. Germs four or five, pedicelled, oblong, compressed, for the most part toothed or corrugated on the outside. Styles short. Stigmas large, ovate, peltate, quite entire or scarcely repand at the edge, by no means toothed. Seeds of the same form with the germs: somewhat compressed, with a dentated ridge on each side, and an awl-shaped termination, giving them the appearance of a bird's claw. Gærtner says that the capsules are from four to eight, shaped as described in the generic character;

<sup>u</sup> Smith brit. and Woodw. Mss.

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with one seed in each, the shape and size of the cavity of the capsule, and pale-coloured.

Native of Europe and Virginia; flowering in June and July. Ditches and stagnant waters, near Pancras church; Bungay in Suffolk, Cherry-Hinton, &c. Cambridgeshire; between Headington and the Wick in Oxfordshire, &c.

Dr. Smith thinks that the plant figured by Micheli, t. 34. f. 2. may be a different species, not found, as far as he knows, in England.

In Withering this is referred to as our common fort; and a description by Dr. Stokes is referred to Micheli's f. 1.—Dr. Stokes observes, that the uncommon breadth of the summits (stigmas) is the most remarkable peculiarity of this plant; and whether they float upon the surface of the water, or are sunk beneath it, they are equally calculated to receive the pollen, from the anthers which stand above them.

ZANONIA. (So named by Linneus, in memory of Giacomo Zanoni, prefect of the botanic garden at Bologna. Author of Historia Plantarum. Bol. 1615. fol. Edited in latin by Monti, 1742. He died in 1682, aged 67.)

Lin. gen. n. 1117. Reich. n. 1222. Schreb. n. 1524. Juss. 397.

Class. 22. 5. Dioecia Pentandria.

Nat. Order of Cucurbitaceae Juss.

## GENERIC CHARACTER.

### \* Male.

CAL. Perianth three-leaved: leaflets ovate, spreading, shorter than the corolla.

COR. one-petalled, five-parted, spreading: segments acuminate, bent in, equal.

STAM. Filaments five, spreading, length of the calyx. Anthers simple.

### \* Female on a distinct plant.

CAL. Perianth as in the male, placed on the germ.

COR. as in the male.

PIST. Germ oblong, inferior. Styles three, spreading, conical, bent back, permanent. Stigmas bifid, curled.

PER. Berry long, very large, truncate, attenuated at the base, surrounded with a curled future towards the top, three-celled.

SEEDS two in each cell, oblong-round, flat in the centre of a lanceolate scale.

## ESSENTIAL CHARACTER.

CAL. three-leaved. Cor. five-parted.

FEM. Styles three. Berry three-celled, inferior. Seeds two in each cell.

## SPECIES.

1. Zanonía indica.

Lin. spec. 1457. Reich. 2. 252.

Penar-valli. Rheed. mal. 8. 31. t. 47, 48. fem. 31. t. 49. male.

Native of Malabar.

ZANONIA. See Commelina.

ZANTHORHIZA. See Xanthorhiza.

ZANTHOXYLUM. See Xanthoxylum.

ZAPOTA and ZAPOTILLA. See Achras.

ZATARHENDI. See Origanum aegyptiacum.]

ZEa (of Pliny: ζεία of Dioscorides. Derivation unknown.)

Lin. gen. n. 1042. Reich. n. 1133. Schreb. n. 1403. Juss. 33. Mays Tournef. t. 303—305. Gært. t. 1.

Class. 21. 3. Monoecia Triandria.

Nat. Order of Gramina. Gramineae Juss. Grasses.

## GENERIC CHARACTER.

### \* Male Flowers disposed in distinct loose spikes.

CAL. Glume two-flowered, two-valved: valves ovate-oblong, ventricose, awnless, acuminate; outer a little longer.

COR. Glume two-valved: valves oblong, awnless almost the length of the calyx; outer ventricose obtuse; inner two-toothed at the tip.

Nectary two-leaved: leaflets fleshy, wider above, truncate, grooved at the top, very short.

STAM. Filaments three, capillary. Anthers subprismatic, bifid, opening at the top.

### \* Females in a very close spike below the males, on the same plant, covered with leaves.

CAL. Glume one-flowered, two-valved, permanent: valves



valves roundish, thick, membranaceous at the edge, ciliate; outer thicker.

COR. *Glume* four-valved: valves unequal, membranaceous, hyaline, wide, short, permanent.

PIST. *Germ* very small. *Style* filiform, longest of all, pendulous. *Stigma* simple, pubescent towards the tip.

PER. none. *Common Receptacle* very large, long, five-cornered, marked with five rows of transverse excavations, in each of which two fruits are immersed, surrounded with their proper calyx and corolla.

SEEDS solitary, roundish, angular at the base, compressed, longer than the glumes, pedicelled.

Obs. *Of the four valves of the female corolla two seem to have a barren flower.*

#### ESSENTIAL CHARACTER.

MALES in distinct spikes. *Cal.* Glume two-flowered, awnless. *Cor.* Glume two-flowered, awnless.

FEM. *Cal.* Glume one-flowered, two-valved. *Cor.* Glume four-valved. *Style* one, filiform, pendulous. *Seeds* solitary, immersed in an oblong receptacle.

#### SPECIES.

1. *Zea Mays.* *Indian Corn* or *Maize*.

*Lin. spec.* 1378. *Reich.* 4. 97. *hort. cliff.* 437. *upf.* 281. *Villars dauph.* 2. 180. *Desfont. Atlant.* 2. 334. *Thunb. jap.* 37. *Lour. cochinch.* 550. *ed. Willd.* 672.

*Mays Zea.* *Gertn. fruct.* 1. 6.

*Triticum indicum.* *Bauh. hist. Raii hist.* 1249.

*Frumentum indicum Mays dictum.* *Bauh. pin.* 25. *theat.* 490—499. *Camer. epit.* 186.

*F. turcicum & indicum.* *Ger.* 75, 76. *f.* 1—8. *emac.* 81, 82. *t.* 1—6.

*F. turcicum.* *Dod. pempt.* 509. *Mor. hist. f.* 8. *t.* 13. *f.* 1, 2, 3.

*Turcicum frumentum.* *Fuchs. hist.* 826.

*Milium indicum maximum Mays dictum, f. Frumentum Indicum.* *Park.*

α. *Zea americana.* *Mill. dict. n.* 1.

*Mays granis aureis.* *Tournef. inst.* 531.

β. *Zea alba.* *Mill. dict. n.* 2.

*Mays granis albicantibus.* *Tournef. inst.* 531.

γ. *Zea vulgaris.* *Mill. dict. n.* 3.

*Mays spica aurea & alba.* *Tournef. inst.* 531.

#### DESCRIPTION, &c.

The first of these grows naturally in the islands of the West Indies; and has a very large strong stalk, rising the height of about ten or twelve feet. The leaves are long, broad, hang downward, and have a broad white midrib. The male flowers come out in branching spikes at the upper part of the stalks; these are eight or ten inches long. The female flowers come out from the bottom of the leaves on the side of the stalk; they are disposed in a close long thick spike, and are covered closely with thin spathes or sheaths; out of the end of these covers hangs a small long bunch of threads. When the seeds are ripe, the spikes or ears are nine or ten inches long, and sometimes a foot; but these rarely ripen in England.

Mr. Miller says he has not seen any variety of colours in this, but that it is very probable there are the same varieties in the grain as in the others. This being less common in Europe, we are not so well acquainted with it.

The second is cultivated in Italy, Spain and Portugal. The stalks are more slender, and seldom more than six or seven feet high. The leaves are narrower, and hollowed like the keel of a boat, and their tops hang downwards. The spikes of male flowers are shorter, and the ears of grain are slenderer, and not more than six or seven inches long. The grain does not come to maturity in England, unless the season prove very warm, and it is sown early in a warm soil and situation.

The third is cultivated in North America and Germany. The stalks are slender, and seldom rise more than four feet high. The leaves are shorter and narrower than either of the former; they are hollowed like the keel of a boat, and their tops hang down. The spikes of male flowers are short, and the ears of grain are seldom more than five or six inches long.

This ripens its grain perfectly well in England, in as little time as Barley.

There are several varieties of the two last, differing in the colour of the grain. The most common colour is a yellowish white; but there are some with deep yellow, others with purple, and some with blue grains; and when the different colours are planted near each other, the farina will mix, and the ears will have grains of several colours intermixed on the same spike; but when the grains of the different varieties are planted at a proper distance from each other, the produce will be the same with the grains which were sown. From long experience, says Mr. Miller, I can affirm, that these three are different, and do not alter by culture.

Maize is seldom cultivated in England for use; but in Italy, Germany, and North America it is the food of the poor inhabitants.

[We may add the South of France, Barbary, China, Cochinchina and Japan. It is much cultivated in the West Indies: in Jamaica in all parts, among the young canes. The grain is reckoned a wholesome hearty food, and is much used by the negroes, who make it into various messes. It is there given to horses, and is the principal support of poultry and small stock, of which the people raise great quantities.]

Mr. Miller thinks that Maize might be cultivated in England to advantage. But it can scarcely be expected to be grown here for the grain, except in favourable seasons, and warm soils and situations. Yet as a fodder it might be of considerable service, if it were cut when just opening into ear, and given fresh to the cattle every day.

This plant is an annual; native of America; and was cultivated here in 1562. As appears from Turner's herbal, part 2. fol. 58<sup>u</sup>.]

#### PROPAGATION AND CULTURE.

In North America it is treated in the following manner. They first dig the ground well in the spring, and having made it level, they draw a line cross the whole piece; then they raise little hills at about three or four feet distance, into each of which they put two or three good seeds, covering them about an inch thick with earth. The rows are four feet asunder, and the hills three or four feet distant from each other. Six quarts of seed is allowed to an acre, which, if the soil be good, will produce fifty bushels of corn.

There is nothing more observed in the culture of this grain, but only to keep it clear from weeds, by frequent hoeing the ground; and when the stems are advanced, to draw the earth up in a hill about each plant, which, if done, will greatly strengthen them; and preserve the ground about their roots moist for a considerable time.

When the Corn is ripe they cut off the stalks close to the ground, and after having gathered the spikes of grain, they spread the stalks in the sun to harden and dry, which they afterward use in the same manner as Reeds in England for making fences, covering sheds, &c. for, which purpose they are very useful to the inhabitants of warm countries; and when there is a scarcity of forage, they feed their cattle with them green, as fast as the Corn is gathered off.

The Corn is ground to flour, and the poorest sort of people in America, and also in Italy and Germany, make their bread of this flour; and in many of the warmer countries, the inhabitants roast the whole spikes, and dress them many different ways, making several dishes of them; but this grain seldom agrees with those who have not been accustomed to eat it; however, in times of scarcity of other grain, this would be a better substitute for the poor than Bean flour, or other sorts, which have been used in England; and at all times will be found a hearty food for cattle, hogs, and poultry; so that in light sandy lands, where Beans succeed not well, this grain may be cultivated to answer both purposes to advantage.

If this grain is cultivated by the horse-hoeing husbandry, it may be done at less expense than in any other method; for this is one of the plants which is

<sup>1</sup> Brown. jam. 335.

<sup>u</sup> Hort. kew.



more particularly adapted to this husbandry: therefore I shall here give an account of the method in which it has been cultivated by the horse-hoe, and has succeeded beyond expectation.

The land was very light and sandy, and far from being rich; this was ploughed deep before winter, and laid up in high ridges till the spring, when it was well harrowed to break it fine, and the beginning of april the ground was again ploughed, laid level, and well harrowed to make the surface smooth; then the seeds were sown in drills, which were made four feet asunder, into which the seeds were dropped at about a foot distance. When the plants were come up three inches high, where any of them were too close, they were cut up with a hand hoe, and the intervals between the rows were ploughed shallow, to destroy the young weeds. But when the stems were advanced, the ground in the intervals was ploughed deeper, and the earth laid up to the plants on both sides; and when the weeds began to grow again, the ground was a third time ploughed to destroy them; this kept the ground pretty clean from weeds till the grain was ripe, as the season was not wet, but otherwise it would have required a fourth ploughing to answer this purpose. The stalks of these plants produced from three to six spikes of grain each, which was a great increase.

The time for sowing this Corn, is about the same as for Barley; in light warm land it may be sown the latter end of march or the beginning of april, but in cold ground, the middle or end of april will be early enough, for the grain is subject to rot in cold land, especially if the season proves wet. When the large sorts are planted in a garden for curiosity, their seeds should be sown upon a moderate hot-bed the beginning of march; and when the plants are fit to remove, they should be transplanted on another moderate hot-bed to bring them forward; but they must not be kept too closely covered, for that will draw them up weak; therefore, when the weather is mild, they should be inured to bear the open air; and the beginning of may they should be taken up with balls of earth to their roots, and transplanted into a warm border at three or four feet distance, carefully watering them if the weather proves dry, until they have taken new root, after which they will require no other care but to keep them clean from weeds. If the season should prove warm, these plants will ripen their grain in the autumn.

[ZEA. See *Triticum Spelta*.

ZEDOARIA. See *Kämpferia*.

ZEOCRITON. See *Hordeum*.

ZEOPHTHALMUM. See *Dolichos urens*.

ZERUMBET. See *Anomum*.

ZEUGITES. See *Apluda*.

ZIA-RAEK. See *Aclepias gigantea*.

ZIERIA. (So named by Dr. Smith, in memory of John Zier, fellow of the Linnean society, an indefatigable botanist.)

*Lin. Transf.* 4. 217.

Class 4. 1. Tetrandria Monogynia, near Fagara.

Nat. Order of *Rutaceæ* Juss.

#### ESSENTIAL CHARACTER.

Cal. four-parted. Pet. four. Stam. smooth, placed on glands. Styles simple. Stigma four-lobed. Caps. four, united. Seeds arilled.

This is one of the twenty new genera from the South Seas, the characters of which are given by Dr. J. E. Smith. It is distinguished by having each of the stamens inserted into a large gland: and consists of shrubs with opposite, ternate leaves, and white flowers.

ZIETANIA. See *Stackys*.

ZILLA. See *Bunias*.

ZINGI. See *Illicium*.

ZINZIBER. See *Anomum* and *Costus*.]

ZINNIA. (So named by Linneus, in honour of John Godofr. Zinn, pupil of Haller, and professor of botany at Goettingen after him. Author of *Hortus Goettingensis*. 1757.

*Lin. gen.* n. 974. *Reich.* n. 1046. *Schreb.* n. 1305. *Gärtn.* t. 172. *Juss.* 188.

Class. 19. 2. Syngenesia Polygamia Superflua.  
Nat. Order of *Compositæ Oppositifoliæ*.  
*Corymbiferae* Juss.

#### GENERIC CHARACTER.

CAL. Common ovate-cylindrical, even, imbricate: scales numerous, obtuse, erect, permanent.

COR. Compound, radiate: Corollæ hermaphrodite several in a raised disk. Females five to ten, in a ray.

Proper of the Hermaphrodite funnel-form, five-cleft, villose within.

Female ligulate, roundish, retuse, larger than the disk, permanent.

STAM. in the Hermaphrodites: Filaments five, very short. Anther cylindrical, tubular.

PIST. in the Hermaphrodites: Germ oblong, awned, one awn longer than the other. Style filiform, semibifid. Stigmas two, erect, obtuse.

In the Females: Germ oblong, three-sided, awnless.

Style capillary, semibifid. Stigmas two, recurved.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodite solitary, oblong, four-cornered-ancipital. Down with two points, one of them awned.—In the Females solitary, awnless, crowned with the permanent petal.

REC. chaffy: chaffs tongue-shaped, channelled, length of the calyx, deciduous.

#### ESSENTIAL CHARACTER.

Cal. ovate-cylindrical, imbricate. Florets of the ray five, permanent, entire. Seed-down with two erect awns. Receptacle chaffy.

#### SPECIES.

1. *Zinnia pauciflora*. Yellow Zinnia.  
*Lin. spec.* 1269. *syst.* 771. *Reich.* 3. 842. *Willd.* 3. 2139. *Kniph. cent.* 7. n. 100.

2. *Z. lutea*. *Gärtn. fruct.* 459.  
*Chrysogonum peruvianum*. *Lin. spec. ed.* 1. 920.  
*Verbesina foliis oppositis ovatis acutis integerrimis scabris*. *Aët. petrop.* 1763. p. 325. t. 13.  
*Bidens calyce oblongo, feminibus radii corolla non decidua coronatis*. *Jussieu. Mill. fig.* 43. t. 64. *Dist. ed.* 7. n. 4.

*Rudbeckia fol. oppositis*. *Zinn. goett.* 409. t. 1.

*Leiica*. *Hill. exot.* n. 29.

*Craffina*. *Scepin. diff. acad.*

Flowers sessile, leaves opposite cordate-lanceolate embracing sessile.

2. *Zinnia multiflora*. Red Zinnia.  
*Lin. spec.* 1269. *syst.* 771. *Reich.* 3. 842. *Willd.* 3. 2139. *dec.* 23. t. 12. *Kniph. cent.* 12. n. 100.  
*Curt. magaz.* t. 149. *Jacqu. obs.* 2. 19. t. 40.  
*Z. caule piloso*. *Nov. aët. nat. cur.* 6. 173.

Flowers peduncled, leaves opposite ovate-lanceolate sub-petioled.

3. *Zinnia verticillata*. Whorl-leaved Zinnia.  
*Willd. spec.* 3. 2140. *Andrews repf.* 3. t. 189.  
Flowers peduncled, leaves in whorls ovate-lanceolate petioled, ray double.

4. *Zinnia elegans*. Purple Zinnia.  
*Willd. spec.* 3. 2140. *Jacqu. ic. rar.* 3. t. 589. *collect.* 5. 152. *Curt. magaz.* t. 527.  
*Z. violacea*. *Cavan. ic.* 1. 57. t. 81. *Andrews repos.* 1. t. 55.

Flowers peduncled, leaves opposite cordate-ovate sessile embracing, stem rough-haired, chaffs of the corolla ferrate.

5. *Zinnia tenuiflora*. Slender-flowered Zinnia.  
*Willd. spec.* 3. 2140. *Jacqu. ic. rar.* 3. t. 590. *collect.* 5. 153. *Curt. magaz.* t. 555.  
*Z. revoluta*. *Cavan. ic.* 3. 26. t. 251.  
Flowers peduncled, leaves opposite cordate-lanceolate petioled, ray linear-lanceolate reflexed.]

#### DESCRIPTIONS, &c.

1. This rises to the height of four feet. The stalks become hard and woody, and divide into many branches. Leaves oblong, smooth, entire. Flowers terminating, solitary, with smaller leaves on the peduncle close to the calyx. When blown they are as large as those of the common Marygold, and of a yellow colour. They do not fall off, only changing their



their colour, and adhere so closely to the seeds as to render it difficult to part them<sup>x</sup>.

[Root annual. Stem round, erect, compound. Leaves smooth, three-nerved, quite entire, rugged at the edge. Calyx terminating, sessile, solitary, smooth, cylindrical. Corolla yellow, permanent. Branches from the wings of the leaves, not next the flower, like the stem and higher<sup>y</sup>.

Receptacle ovate-conical, covered below with the scales of the calyx, above with chaffs, hollow within. Chaffs oblong, keeled, longer than the seed. Seeds uniform, oblong, triangular or rhomb-compressed, striated, pale. Down difform: of the ray none, but instead of it the shrivelled permanent female corolla; of the disk awned: awns awl-shaped, spiny, straight, unequal, single or two together, very seldom three<sup>z</sup>.

Native of Peru, whence the seeds were sent to the Royal Garden at Paris. The plants produced ripe seeds there, some of which were sent to Mr. Miller in 1753; and the following summer the plants flowered, and produced good seeds in the Chelsea garden<sup>a</sup>.

In the seventh folio edition of the Dictionary it may be found under the name of *Bidens*; but both this and the second species are omitted in the eighth edition. They are both in the fifth and sixth quarto editions, under their proper name of *Zinnia*.]

2. Root annual. Stalk and branches more erect, covered with soft hairs and channelled. Leaves three-nerved, hairy. Flowers terminating: ray of a deep gold-colour on the upper side when first open, but afterwards changing to a dark copper; on the outside pale straw-colour. These are permanent like the former.

[Stem rough-haired. Leaves petioled. Ray of the corolla red<sup>b</sup>. It varies with the corolla red and yellow<sup>c</sup>.

This differs from the former, to which it is so nearly allied as to be almost regarded as a variety, in being only about half the size; the stem round, not angular or grooved, but hirsute with very spreading hairs; the leaves more petioled; the flowers on long naked peduncles, in greater abundance, smaller, with a red (not yellow) ray; the calyx-scales oblong not orbicular. When in full flower, the corolla is purple powdered with gold, like *Amaryllis formosissima*, and yellowish-green underneath: afterwards it becomes of a duller colour, red mixed with yellow, and green underneath. It is particular in having the florets of the disk hirsute<sup>d</sup>.

This species is described in detail by Jacquin, in his observations. The ray of the corolla is composed of from fifteen to thirty florets, of a deep shining scarlet above, and of a dusky yellowish colour beneath, both finally changing to brown. Chaffs in the disk membranaceous, brown at the tip, converging so as to inclose the whole floret laterally, except the border: seed-down has a single awn opposite to the chaff. The radical florets have neither chaff nor down.

Native of North America. Miller and others say Louisiana. The younger Linneus concludes it to be a native of Brasil, because it came from France to Holland under the name of *Caithe de Bresil*, but that is probably erroneous. He says that seeds of it were first sent to the botanic garden at Upsal by Nicol. Laur. Burman, M. D. and afterwards by Philip Miller, *horti Chelseani Custode, Hortulanorumque Principe*. Jacquin informs us, that seeds sent to Vienna from Schemnitz in Hungary, and sown in may, flowered from the end of july to november, and bore ripe seeds in october.

According to the Kew catalogue it was introduced about 1771. But Mr. Miller has described it, and given its culture in the fifth quarto edition of his Dictionary, published in 1763.

Mr. Curtis remarks, that there is a variety with yellow flowers, in our gardens, nearly as common as the red.

3. This resembles the first species; but the leaves are always in whorls, three, four, or five together; and the ray of the corolla is red and double.

Native of Mexico<sup>e</sup>.

4. Root annual. Stem erect, round, rough, six feet high, putting forth upright branches the whole length. Leaves acute, quite entire, rough on both sides, appearing ciliate to the magnifier, veined, the larger seven-nerved and five inches long, the smaller five-nerved; the nerves rough-haired. Peduncles terminating, one-flowered, thickened at top, hollow, rough-haired, erect, from one to five inches long. Flowers handsome, but without scent. Calyxes at first ovate, but afterwards more bell-shaped; scales oblong, rounded, smooth, marked with lines, pale green with a dark edge, ciliate a little below. Corollets in the ray from twelve to twenty, emarginate or quite entire, more than an inch long, at first red above but afterwards violet, beneath of a dirty pale colour. Florets in the disk yellow, villose within. Chaffs white, with a red top. Seeds obovate, flat, very shortly and equally two-pointed, brown.

Native of Mexico.

5. Root annual. Stem three feet high, erect, round; rugged, hirsute, branched, the thickness of a reed. Leaves acute, quite entire, rugged on both sides, sessile, appearing to the magnifier ciliate at the edges; three or five-nerved, hirsute on the nerves beneath, about two inches in length. Peduncles terminating, one-flowered, hirsute, thickened and fistular at the top, erect. Calyx cylindrical, about half an inch long; scales oblong, rounded, smooth, green with a dark edge. Corollets in the ray from eight to fifteen, quite entire or two-toothed, red-orange above, beneath dirty-pale. Florets in the disk yellow within, dusky without. Germ three-sided, hirsute, with an awn at one corner as long as the corollet, and at the two other corners a short toothlet. Chaffs whitish with a footy tip<sup>f</sup>.

To Jacquin's description Mr. Curtis adds, that the florets of the ray are sharp-pointed, very rough to the touch, and of a lively pale green underneath, not a dingy white, as he describes them. Probably native of South America. First raised here in the garden of Edward Woodford, Esq. at Vauxhall, from seed sent by Mons. Thouin.]

#### PROPAGATION AND CULTURE.

1. 2. Sow the seeds upon a moderate hot-bed in march. When the plants come up, raise the lights to give them air, whenever the weather is not too cold, otherwise the plants will draw up weak. When they are about an inch high, plant them on another hot-bed, but do not treat them too tenderly, for they are very subject to grow too luxuriant in branches. The first sort will not produce many flowers, if the plants are not stunted in their growth while young, which may be effected by planting them in small pots to confine their roots; otherwise the seeds will not ripen in England.

The second sort is much more prolific of flowers, and may be treated with less care. When the plants have been brought forward on the hotbed, inure them gradually to bear the open air in may, and in june transplant them into the borders of the flower-garden, where they will continue flowering all the summer, and will perfect their seeds very well: but the plants of the first sort should be placed in a stove or under a glass case, to obtain good seeds.

[3. 4. Sow the seeds on a hot-bed, as before, and about the end of may plant them in large pots or in the open border, where they will continue to flower till destroyed by the frost.

5. Sow it on a common hot-bed with balsams and other tender annuals, and set out the plants in the open border at the end of may, where they will continue to flower for some months, and produce ripe seeds in favourable seasons.

ZINZIBER. See *Amomum*.

ZIZANIA. (Plural of *Ζίζανιον*, which some interpret *lolium*; in our translation of the New Testament it is

<sup>x</sup> Mill. fig.

<sup>y</sup> Linn. spec.

<sup>z</sup> Gartner.

<sup>a</sup> Mill. fig.

<sup>b</sup> Linn. syst.

<sup>c</sup> Willdenow.

<sup>d</sup> Linn. dec.

<sup>e</sup> Willdenow.

<sup>f</sup> Jacquin.



Tares, but very erroneously. A variety of fanciful etymologies may be seen in Vossius and others.)

Lin. gen. n. 1062. Reich. n. 1159. Schreb. n. 1433. Gronovii. Gærtn. t. 82. Juss. 33. Elymus. Mitch. 7. Schreb. gram. 2. t. 29.

Class. 21. 6. Monoecia Hexandria.

Nat. Order of Gramina. Gramineæ Juss. Grasses.

#### GENERIC CHARACTER.

\* Male Flowers below the females.

CAL. none.

COR. Glume two-valved: valves lanceolate, awnless, membranaceous, nerved, embracing: the outer bigger. Nectary two-leaved: leaflets ovate, obtuse.

STAM. Filaments six, capillary, very short. Anthers linear, bifid, scarcely the length of the corolla.

\* Female Flowers in the same panicle, bigger.

CAL. none.

COR. Glume two-valved, closed, gaping only above the germ: outer valve bigger, hollow, long, straight, embracing the inner on both sides, rigid, ending in a long straight awn: inner narrower, lanceolate.

Nectary two-leaved: leaflets ovate, rounded.

STAM. Filaments six? minute. Anthers small, barren.

PIST. Germ ovate. Styles two, very small. Stigmas feathered, eminent.

PER. none. Glume closed, permanent.

SEED single, oblong, equal, shining, naked.

#### ESSENTIAL CHARACTER.

MALE. Cal. none. COR. Glume two-valved, awnless, mixed with the females.

FEM. Cal. none. COR. Glume two-valved, closed, awned. Style two-parted. Seed one, clothed with the plaited corolla.

#### SPECIES.

##### 1. *Zizania aquatica*.

Lin. spec. 1408. Reich. 4. 150. Gron. virg. 189, 148. Lambert in Linn. transf. 7. 264. t. 13.

Z. palustris. Lin. syst. 855. mant. 295. Schreb. gram. 2. 54. t. 29. Gærtn. fruct. 2. 11. Scheuch. alim. farin. ic.

Elymus. Mitch. gen. 210. n. 7.

Panicle racemed below, spiked above.

##### 2. *Zizania terrestris*.

Lin. spec. 1408. Reich. 4. 151.

Katou-Tsjolam. Rheed. mal. 12. 113. t. 60.

Panicle subracemed.

#### DESCRIPTIONS.

1. Root annual. Culm two feet high, obliquely erect, covered all over with the sheaths of leaves. Branches two opposite, from the base of the culm, flower-bearing. Leaves five or six, even, wider than those of the common Reed, with smooth sheaths. Panicle below loose and male, above spiked and female. Lower branches capillary, simply racemed, spreading horizontally, bearing two or three sessile flowers. Spike terminating, erect, with the flowers subsessile, approximating to the rachis, female. Flowers described in the generic character. It is singular, that the inner valve involves the lateral margins, and the outer revolves them, and thus one embraces the other closely in the female flowers<sup>2</sup>. Seed oblong, roundish, a little narrower below, black or brown rust-colour, on one side convex with a streak, on the other marked with a shallow groove<sup>h</sup>.

Native of North America: in great abundance in the lakes of Canada. Mr. Lambert is persuaded that it might be sown with some advantage where no other grain will grow, in many shallow pieces of water in Great Britain and Ireland, especially in the latter country, where there are many extensive lakes which appear well suited for the purpose. In a pond at Spring grove, Sir Joseph Banks has a great quantity of this plant, growing annually, ripening its seeds, and sowing itself round the edges. The seeds for a long time were received from America, yet none of them grew. At length Dr. Nooth, by the desire of Sir Joseph Banks, sent them from Canada, put up in

jars of water. As soon as they arrived they were sown in a proper situation, where they came up in a few days, and the plants ripened their seeds extremely well in the autumn. These seeds, which are as large as oats, and perhaps as nutritive, are used by the Indians for food<sup>h</sup>.

They have a pleasant taste, and make a pudding equal to Rice or Millet. Carver<sup>i</sup> says that this grain, which grows in great plenty throughout the interior parts of North America, is the most valuable of all the spontaneous productions of that country. Besides its utility as a supply of food for the human species, obtained without any other trouble than that of gathering it in, it attracts an infinite number of wild fowl of various kinds, which become very fat and delicious by this rich repast. It might be of great service to an infant colony, as it would afford a present support without much labour, until by cultivation other supplies could be produced: first settlers, even in a temperate climate and on a good soil, being often exposed to great hardships for want of an immediate supply of necessary food. This useful grain grows commonly where the water is about two feet deep, and where it finds a rich muddy soil. The stalks, which are full of joints, rise more than eight feet above the water. Nearly about the time that the grain begins to turn from its milky state and to ripen, the natives run their canoes into the midst of it, and tying bunches of it together, just below the ears, with bark, leave it in this situation three or four weeks longer, until it is perfectly ripe. About the end of September they return, when each family having its separate allotment, distinguished by the manner of fastening the sheaves, gather in the portion that belongs to them.

As a substitute for Rice in our new settlements in the southern hemisphere, where the climate may be too cold for that grain, it should seem to be a very desirable acquisition, and might be sowed in the morasses and stagnated waters that always abound in thinly inhabited countries, and which require more labour to drain than new establishments can afford<sup>k</sup>.

The French in Canada call it *Folle Avoine*, the English, *Wild Rice*, and the Germans *Risave*. What could induce Linneus, as Mr. White observes, to degrade this highly beneficial grain, with the name of that pernicious weed, which the enemy sowed among the wheat, does not easily appear. He might not however be fully acquainted with its great utility, when he first imposed the name upon it: and was perhaps influenced by its general resemblance to that destructive weed the Wild Oat. The word *Zizania* not being found in any Greek author except St. Matthew, Mr. White deems it now impossible to ascertain what plant the Evangelist intended. But surely a botanist who should be in Palestine during the time that the Wheat crop was growing, might at least make a shrewd guess at it. Hasselquist has not made any mention of this weed.

*Zizania palustris* of Linneus's mantissa, is the same with what he had described in both editions of the Species Plantarum, under the name of *Z. aquatica*; as the original specimen in his herbarium shews. It seems however that he latterly intended Sloane's plant, (hist. Jam. t. 67.) to remain as the *aquatica*; conceiving that, on account of its great spreading panicle, to be a different plant. Probably Browne's synonym belongs rather to Sloane's plant<sup>l</sup>.

Sir Hans describes it as putting forth roots from every joint, and sending up round, hollow culms, jointed at every two inches distance, of a clay colour, and about the bigness of one's little finger. The sheath of the leaf covers the whole internode; and the leaf is near half an inch broad at the base, tapers for more than a foot in length, and ends in a point of a blueish green colour. The stalks rise fourteen or fifteen feet high; the top is a panicle of a foot in length, branched out into many rough spikes. He

<sup>h</sup> Lambert in Linn. transf.

<sup>i</sup> Travels, 522.

<sup>k</sup> Tho. White, Esq. in Gent. Mag. for 1789. vol. 59. p. 128. See Young's annals, 6. 390 to 396.

<sup>l</sup> Linn. transf. vol. 7.

<sup>2</sup> Linn. mant.

<sup>h</sup> Gærtner.



calls it the Trumpet Reed; and says that it grows in the Laguna near Passage Fort very plentifully.

2. This is a native of Malabar, not in water, but on dry ground. Linneus notes in his manuscript, that it should be examined, in order to be distinguished from the other the specific character<sup>m</sup>.]

ZIZIPHORA. (Moris. Zizi Indis. Linn.)

Lin. gen. n. 36. Reich. n. 39. Schreb. n. 47. Gærtn. 1. 66. Juss. 111.

Class. 2. 1. Diandria Monogynia.

Nat. Order of Verticillatæ. Labiatæ Juss.

#### GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, cylindrical, very long, striated, hispid; with a very small, five-toothed mouth, and a bearded throat.

COR. one-petalled, ringent: tube cylindrical, length of the calyx: border very small: upper lip ovate, reflexed, entire; lower spreading, wider, trifid, segments rounded, equal.

STAM. filaments two, simple, spreading, almost the length of the corolla. Anthers oblong, distant.

PIST. Germ four-cleft. Style bristle-shaped, length of the corolla. Stigma acuminate, bent in.

PER. none. Calyx unchanged.

SEEDS four, far shorter than the calyx, oblong, obtuse, on one side gibbous, on the other angular.

#### ESSENTIAL CHARACTER.

Cal. filiform. Cor. ringent, with the upper lip bent back and entire. Seeds four.

#### SPECIES.

1. Ziziphora capitata. Ovate-leaved Ziziphora.

Lin. spec. 31. syst. 67. Reich. 1. 58. Willd. 1.

127. mant. 317. hort. cliff. 305. Gærtn. fruct.

1. 316. Pallas it. 2. 522. Desfont. atlant. 1.

18. Kniph. orig. cent. 8. n. 100. Lamarck

illustr. n. 266. t. 18. f. 3. Pluk. phyt. t. 164.

f. 4. Mor. hist. f. 11. t. 8. f. 5. (Clinopodium.)

Buxb. cent. 3. 28. t. 51. f. 1. (Thymus.)

Fascicles terminating, leaves ovate.

[2. Ziziphora hispanica. Spanish Ziziphora.

Lin. spec. 31. Reich. 1. 58. Willd. 1. 124. amoen. 4. 263.

Leaves ovate, flowers raceme spiked, bractes ovate nerved acute.]

3. Ziziphora tenuior. Spear-leaved Ziziphora.

Lin. spec. 31. Reich. 1. 58. Willd. 1. 124. hort.

cliff. 305. upf. 9. Desfont. atlant. 1. 18. Lamarck

illustr. n. 268. t. 18. f. 2.

Acinos tyriaca folio tenuiore, capsulis hirtis.

Mor. hist. 3. 404. f. 11. t. 19. f. 4.

Clinopodium orient. hirsutum, foliis inferioribus Ocy-mum, superioribus Hyssopum referentibus.

Tournef. cor. 12.

Flowers lateral, leaves lanceolate.

[4. Ziziphora acinoides. Thyme-leaved Ziziphora.

Lin. spec. 31. Reich. 1. 58. Willd. 1. 124.

Clinopodium supinum incanum. Amm. ruth. n. 66.

Flowers lateral, leaves ovate.]

#### DESCRIPTIONS, &c.

1. Root annual. Stem four-cornered, about four inches high, sending out opposite side-branches from the bottom. These are terminated by a cluster of small flowers surrounded by ovate leaves ending in acute points. Flowers purple, just emerging from the slender calyx.

[Seeds ovate, narrower towards the base, smooth, of a bay-ruffet colour<sup>n</sup>.

Flowers all terminating in bundles. Corolla without any spot on the palate, such as may be seen in Z. tenuior<sup>o</sup>. From which this differs in having the flowers in a head, as the trivial name implies; and four ovate, acute bractes, surrounding the head<sup>p</sup>.

Native of Syria, Armenia, Barbary, Siberia. Cultivated by Mr. Miller, in 1752<sup>q</sup>.] It flowers in june, july, and august; and the seeds ripen about six weeks after.

<sup>m</sup> Linn. transf. vol. 7.  
<sup>p</sup> Desfontaines.

<sup>n</sup> Gærtner.

<sup>o</sup> Linn. mant.

<sup>q</sup> Hort. kew.

2. Native of Spain.—Mr. Miller has a species under this name, which he says that he received from Dr. Russel, who procured the seeds from Aleppo. He describes the flowers as disposed in whorls; and the plant as smelling like Pennyroyal.

3. This sends up many slender woody stalks, near a foot high. Leaves about the size of those of Summer Savory, with a scent like them. Flowers in whorls, resembling those of the first sort, and appearing at the same season.

[Root annual. Plant branched, erect. Stems four-cornered, thickening above, pubescent. Leaves ciliate, toothletted or quite entire, running down into the petiole, with oblique nerves beneath. Flowers whorled, spiked; each pedicelled. Tube of the corolla a little longer than the calyx. Bractes lanceolate, opposite, longer than the flowers. Two of the stamens are fertile, and two barren<sup>r</sup>. Native of the Levant and Barbary.—Cultivated in 1752, by Mr. Miller. It flowers in june and july<sup>s</sup>.

4. This has the habit of Thymus Acinos; but all the parts are five times as big. It has the leaves of the first species, and lateral flowers as in the third, but more abundant. The calyxes are hispid as in that; and the stamens thrust out beyond the tube of the corolla. Native of Siberia<sup>t</sup>. Introduced in 1786, by William Pitcairn, M. D. It flowers in july and august; and is perennial<sup>u</sup>.]

#### PROPAGATION AND CULTURE.

Sow the seeds in a border of light earth, where they are to remain, either in spring or autumn. Those plants which come up in autumn will abide through the winter, and grow much larger than those which come up in the spring: their seeds will be ripe in july or august; but those of the spring plants will not ripen till the end of august, or the beginning of september; when, if the seeds are permitted to scatter, the plants will come up, and require no farther care but to clear them from weeds, and thin them where they are too close.

[ZIZYPHUS. See Elæagnus, and Rhamnus.

ZOEGEA. (So named by Linneus, from Johann Zoega, M. D. Author of Flora Islandica, 1772 and 1775. 4to. &c.

Lin. gen. Reich. n. 1065. Schreb. n. 1330. Juss. 174.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. Order of Compositæ Capitata, Cinarocephalæ Juss.

#### GENERIC CHARACTER.

CAL. Common ovate, imbricate: scales lanceolate, ciliate: the inmost scariose, lanceolate, longer.

COR. Common radiate. Corollets hermaphrodite numerous in the disk. Females fewer in the ray. Proper of the Hermaphrodite one-petalled: tube filiform; border five-parted; segments lanceolate, erect.

Female one-petalled, ligulate, flat, slightly five-toothed.

STAM. in the Hermaphrodites. Filaments five, short. Anther cylindric.

PIST. in the Hermaphrodites. Germ short. Style capillary, very long, erect. Stigma short, bifid.

In the Females Germ short. Style none. Stigma none.

PER. none. Calyx unchanged, converging.

SEEDS in the Hermaphrodites solitary. Down none. In the Females none.

REC. Bristly.

OBS. This genus bears a great affinity to Centaurea, but the ray of the flower is flat.

#### ESSENTIAL CHARACTER.

Cal. imbricate. Cor. of the ray ligulate. Down bristle-shaped. Recept. bristly.

#### SPECIES.

1. Zoegea Leptaurea.

Lin. syst. 784. Reich. 3. 895. Willd. 3. 2276.

mant. 117. Gærtn. fruct. 2. 452. L'Herit.

stirp. 57. t. 29.

<sup>r</sup> Desfontaines.

<sup>s</sup> Hort. kew.

<sup>t</sup> Linn. spec.

<sup>u</sup> Hort. kew.



*Zoegea aleppica*. *Jacqu. ic. 1. t. 177. collect. 1. 89.*

## DESCRIPTION, &amp;c.

This is an annual plant, with the stem branched, almost upright, round, scarcely striated, squallid, about eighteen inches in height, scarcely as thick as a reed. Branches and branchlets alternate, diffused, angular, striated, somewhat rugged. Leaves alternate, petioled, spreading. The radical and lower stem leaves pinnatifid, with two or three pairs of segments, which are mostly opposite, remote, ovate or oblong, one-nerved, bluntish or sharply acuminate, (the lower ones gradually less, the outmost very large, lanceolate, somewhat toothed;) villose, squallid, somewhat rugged, pale, three inches long, and two wide. The branch-leaves subsessile, lanceolate, bluntish with a sharp point, almost entire, three-nerved, reclining, gradually less to the tip. Petioles widish, keeled, running into the leaf, widened at the base, much shorter than the leaf, very short even on the branch-leaves. Flowers terminating, solitary, erect, yellow, on elongated peduncles, which are thickened at the top, striated, squallid, bracted or naked, two inches in length. Bracte (when there is one) towards the middle of the peduncle, sessile, linear, ciliate at the tip; and some of the same shape now and then scattered at the apex of the peduncle\*.

Linneus describes the stem as a palm only in height; the leaves sessile, remote, quite entire and rugged; the peduncles naked and one-flowered; the flowers like those in the genus *Centaurea*, with a ciliate calyx, the ciliae testaceous; and the corolla like that of *Calendula* or *Marygold*, of a fulvous or tawny yellow colour. He refers to a species of *Centaurea* in Gmelin's *Itin. 1. 126. t. 20.* as being perhaps the same with this†.

It was found by Andr. Michaux, in the Levant, and is rather a handsome plant, flowering in summer and autumn, and ripening a few seeds‡.

ZOOPHTHALMUM. See *Dolichos*.

ZOSTERA. (From *ζωστής*, *cingulum*, a belt.)

*Lin. gen. n. 1032. Reich. n. 1123. Schreb. n. 1390. Gertn. t. 19. Juss. 24. Engl. bot. t. 467. Alga Raii angl. ed. 3. 52. Ruppia Moench. act. ang. 1741. p. 217.*

Class. 1. 1. Monandria Monogynia. *Smith.*—Polyandria Polygynia. *Thunb. and Withering.*—Gynandria Polyandria. *Lin. gen. and syst. Monoecia Monandria. Schreb. gen.*

Nat. Order of *Inundatae. Aroideae* Juss.

## GENERIC CHARACTER.

CAL. *Spathe* none, except the sheathing base of the leaf. converging longitudinally, emarginate on both sides above, inclosing the spadix.

*Spadix* linear, flat, furnished on one side with stamens above, and pistils below. *Perianth* none.

COR. none.

STAM. *Filaments* alternate, very short (or none) inserted above the germ into the spadix. *Anther* ovate-oblong, nodding, obtuse, retrosubulate upwards, curved in.

PIST. *Germ*s alternate, ovate, compressed, ancipital, subpedicelled, fastened by the apex, nodding. *Style* simple. *Stigmas* two, capillary or linear.

PER. *Capsule* ovate, beaked, terminated by the style, somewhat compressed, membranaceous, diaphanous, one-celled, valveless.

SEED single, elliptic, compressed, striated.

## ESSENTIAL CHARACTER.

*Spadix* linear, within the sheath of the leaves, flower-bearing on one side. *Cal.* none. *Cor.* none. *Anther* sessile, opposite to the germ. *Stigmas* two, linear. *Caps.* one-seeded.

## SPECIES.

1. *Zostera marina*. *Grass-wrack*.

*Lin. spec. 1374. syst. 829. Reich. 4. 77. it. wogth. 166. t. 4. f. 1. Hudf. angl. 395. Wither. arr. ed. 3. 496. Smith. brit. 7. engl. bot. t. 467. Fl. dan. t. 15. Scop. carn. n. 1140. Gron. virg. 142.*

\* L'Heritier.

† Mant.

‡ L'Heritier.

*Z. marina*. *Gertn. fruct. 1. 76.*

*Alga. Raii syn. 52.*

β. *Fucus marinus*, f. *Alga marina graminea, minor. Raii syn. 52.*

*Algoides. Mich. ic. ined. t. 60. f. 2.*

γ. *Fucus* f. *Alga marina graminea angustifolia feminfra ramofior. Raii syn. 52.*

*Algoides. Mich. ic. ined. t. 59.*

δ. *Potamogeton marinum in utriculis epiphyllispermon minus. Raii syn. 53.*

ε. *Alga angustifolia vitrariorum. Raii syn. 53.*

## DESCRIPTION, &amp;c.

Root fibrous, seemingly perennial, throwing out roots from the joints of its long, round, smooth, branching stem; which at the base is decumbent, but above floating, leafy, and compressed a little. Leaves alternate, petioled, very long, linear, flaccid and tender, bluntish, quite entire, smooth, a little above the base opening by a longitudinal fissure, and putting forth a flat, linear spadix, bearing flowers on one side. The flowers are completely protected from the salt water, under which they grow, by this sheathing base of the leaf, which closely enfolds them.

Linneus placed this genus in the class Gynandria, considering its spadix as the common receptacle of one flower, composed of many anthers, ranged alternately with many pistils. Thunberg and Withering, abolishing that class, have referred it to Polyandria Polygynia. The flowers are by no means gynandrous, as the stamens cannot in any sense be understood to grow out of the pistils; neither are they simply polyandrous, as in every such flower, the male organs are invariably collected round the central females. Nor will the analogy of *Arum*, however we may understand that flower, at all help us to comprehend this, they having no real affinity. *Zostera* is easier understood as a simple unilateral spike of naked flowers disposed in two ranks. The anther of each is sessile, oblong, a little curved. By its side is affixed an oblong germ, with a short style, having two long linear pointed stigmas. These are arranged along the spike alternately, so that each anther may perhaps impregnate the germ of the flower below it.

Native of the sea coast, in æstuaries and salt water ditches, as about Yarmouth; flowering in august and september<sup>a</sup>.

It is thrown on the shore by the tide in great plenty, and mounds are made with it to oppose the encroachment of the sea. Buildings are thatched with the green leaves, and this covering will endure upwards of a century. Exposure to the weather bleaches it white. It is used by the inhabitants of Gothland as a manure, and also for stuffing beds in preference to hay, as being softer. Horses and swine eat it. Cows are not fond of it<sup>b</sup>.

Dr. Smith has reduced Ray's varieties to one species, till experience shall have informed us better; he has also collated the inedited figures of Micheli, in his own and Sir Joseph Banks's libraries.—*Zostera oceanica* of Linneus, a plant of a peculiar genus, is not found on our shores. The fructification of it has been illustrated by Filippo Cavolini, in *Usteri annal. bot. fasc. 9.* and by Micheli in *ic. ined. t. 58<sup>c</sup>.*

ZUZYGIUM. See *Calyptanthus*.

ZWINGERA. (From *Theodorus Zuinger*, professor of anatomy and botany at Basil, author of *Theatrum Botanicum*, Basel 1696. fol. and several academical dissertations. Born 1657. Died 1724.)

*Lin. gen. Schreb. n. 1752. p. 802. Simaba. Aubl. t. 153. Juss. 373.*

Class. 10. 1. Decandria Monogynia.

Nat. Order of *Terebintaceae* Juss.

## GENERIC CHARACTER.

CAL. *Perianth* five-parted, small: segments ovate acute.

COR. *Petals* five, oblong, obtuse, spreading.

STAM. *Filaments* ten, capillary, wider at the base, hairy, shorter than the corolla. *Anthers* ovate.

PIST. *Germ* roundish, divided by five deep grooves,

<sup>a</sup> Smith brit. & engl. bot.

<sup>b</sup> Withering.

<sup>c</sup> Smith brit.

placed



placed on a gland. *Style* long, striated. *Stigmas* five.

**PER.** *Capsules*? five; coriaceous, ovate, diverging, placed on a fleshy gland; one-celled.

**SEEDS** solitary.

**OBS.** *The number of parts in the fructification varies, and is sometimes by threes.—Compare Aruba of Aublet, t. 115.*

#### ESSENTIAL CHARACTER.

*Cal.* five-parted. *Pet.* five. *Filam.* widened at the base, hairy. *Caps.* five, coriaceous, one-seeded, inserted into a fleshy receptacle.

#### SPECIES.

1. *Zwingera amara*.

*Willd. spec. 2. 569.*

*Simaba guianensis. Aubl. guian. 1. 400. t. 153.*

#### DESCRIPTION, &c.

This is a shrub, about eight feet in height. Leaves alternate, unequally pinnate, of five leaflets, or else ternate. Leaflets oblong, acuminate, emarginate, quite entire, veined, smooth. Peduncles three-flowered, axillary. Flowers white.

The genus approaches very near to that of *Quassia*; but differs in having a five-parted (not a five-leaved) calyx; in not having any nectary; and in the fruits being dry. It admits of doubt however whether this be a sufficient character to make a distinct genus; *Quassia excelsa* having no nectary.

Native of Guiana, in woods<sup>d</sup>.

**ZWINGERA.** See *Nolana*.

**ZYGIS.** See *Thymus*.]

**ZYGOPHYLLUM.** (So named by Linneus, from ζυγος and φύλλον, conjugatum folium. The leaves being conjugate.)

*Lin. gen. n. 530. Reich. n. 577. Schreb. n. 730.*

*Gært. t. 112. Juss. 296. Fabago Tournef. t. 135.*

**Class** 10. 1. Decandria Monogynia.

**Nat. Order** of *Gruinales. Rutaceae* Juss.

#### GENERIC CHARACTER.

**CAL.** *Perianth* five-leaved: leaflets ovate, obtuse, concave, erect.

**COR.** *Petals* five, gradually wider, obtuse, emarginate, a little longer than the calyx.

*Nectary* ten-leaved, converging, inclosing the germ: a leaflet or scale growing to each filament next the base, acuminate, converging.

**STAM.** *Filaments* ten, awl-shaped, shorter than the corolla. *Anthers* oblong, incumbent.

**PIST.** *Germ* oblong, attenuated at the base. *Style* awl-shaped, length of the stamens. *Stigma* simple.

**PER.** *Capsule* ovate, five-cornered, five-celled, five-valved, with the partitions adhering to the valves themselves.

**SEEDS** many, roundish, compressed.

**OBS.** *The form of the pericarp is different in the different species.*

*In one species, a fifth part of the number is excluded in the fructification.*

*Z. album* differs in having five stigmas.

#### ESSENTIAL CHARACTER.

*Cal.* five-leaved. *Pet.* five. *Nect.* ten-leaved, covering the germ, and bearing the stamens. *Caps.* five-celled.

#### SPECIES.

[1. *Zygophyllum simplex.* Simple-leaved Bean-caper.

*Lin. syst. 400. Reich. 2. 272. Willd. 2. 560. mant. 68.*

*Z. portulacoides. Forsk. aegypt. 88. n. 67. ic. t. 12. Leaves simple sessile cylindrical.*

2. *Zygophyllum cordifolium.* Heart-leaved Bean-caper.

*Lin. syst. 400. Willd. 2. 560. suppl. 232. Thunb. prodr. 80. Ait. kew. 2. 60.*

*Leaves simple opposite sessile roundish.*

3. *Zygophyllum Fabago.* Common Bean-caper.

<sup>d</sup> Aublet.

*Lin. spec. ed. 1. 385. ed. 2. 551. syst. 400. Reich.*

*2. 273. Willd. 2. 560. hort. cliff. 160. upf. 163.*

*Gært. fruct. 2. 144. Lerch. in nov. act. nat.*

*cur. vol. 5. app. 163. Gron. orient. n. 132.*

*Gmel. fib. 4. 176. n. 93.*

*Capparis portulacæ folio. Baub. pin. 480. Rait. hist. 1912.*

*C. Fabago. Dod. pempt. 741. Ger. 750. emac. 897.*

*Best. syst. act. 10. t. 1. f. 1.—f. leguminosa. Park.*

*theat. 1021. 5. ic. 1023. 5.*

*Leaves conjugate petioled, leaflets obovate, peduncles erect, calyx smooth, petals undivided, stem herbaceous.*

[4. *Zygophyllum foetidum.* Fetid Bean-caper.

*Willd. spec. 2. 561. Schrad. & Wendl. fert. hannov.*

*17. t. 9.*

*Z. insuave. Curt. magaz. 372.*

*Z. retrofractum. Thunb. prodr. 80?*

*Leaves conjugate petioled, leaflets obovate, flower nodding, calyx pubescent, petals cut, stem shrubby.*

5. *Zygophyllum maculatum.* Spotted Bean-caper.

*Willd. spec. 2. 561. Ait. kew. 2. 60.*

*Leaves conjugate petioled, leaflets linear-lanceolate.*

6. *Zygophyllum coccineum.* Scarlet Bean-caper.

*Lin. spec. ed. 1. 386. ed. 2. 551. Reich. 2. 273.*

*Willd. 2. 561. Lepich. it. 1. 310.*

*Z. desertorum. Forsk. arab. 87. n. 65. ic. t. 11.*

*Fabago arabica teretifolia, flore coccineo.*

*Shaw afr. f. 231.*

*Leaves conjugate petioled: leaflets cylindrical fleshy even.*

7. *Zygophyllum album.* White Bean-caper.

*Lin. spec. 551. syst. 400. Reich. 2. 273. Willd.*

*2. 562. mant. 379. dec. 1. 11. t. 6. Desfont.*

*atlant. 1. 338.*

*Z. proliferum. Forsk. flor. 87. n. 65. it. t. xii. f. A.*

*Leaves conjugate petioled, leaflets club-shaped fleshy hoary like a spider's web.*

8. *Zygophyllum Morgsana.* Four-leaved Bean-caper.

*Lin. spec. ed. 1. 385. ed. 2. 551. syst. 400. Reich.*

*2. 274. Willd. 2. 582. mant. 379. Thunb.*

*prodr. 80. Burm. afr. 7. t. 3. f. 2. Dill. elth.*

*142. t. 116. f. 141. (Fabago.) Pluk. amaltb.*

*t. 429. f. 4. (Planta africana.)*

*Leaves conjugate subpetioled, leaflets obovate, stem shrubby.*

[9. *Zygophyllum microphyllum.*

*Lin. syst. 400. Willd. 2. 563. suppl. 232. Thunb.*

*prodr. 80.*

*Leaves conjugate sessile, leaflets ovate even, stem shrubby.]*

10. *Zygophyllum sessilifolium.* Sessile-leaved Bean-caper.

*Lin. spec. ed. 1. 385. ed. 2. 552. Reich. 274.*

*Willd. 2. 563. hort. cliff. 160. Thunb. prodr.*

*80. Dill. elth 142. t. 116. f. 142. Burm. afr.*

*4. t. 2. f. 1. Comm. rar. t. 10. (Fabago.)*

β. *Z. fulvum. Lin. spec. ed. 1. 386. Kniph. cent. 3.*

*n. 100. Burm. afr. 6. t. 3. f. 1. (Fabago.)*

*Leaves conjugate sessile, leaflets lanceolate-oval rugged at the edge, stem shrubby.*

[11. *Zygophyllum spinosum.* Thorny Bean-caper.

*Lin. spec. ed. 1. 386. ed. 2. 552. syst. 400. Reich.*

*2. 275. Willd. 2. 563. mant. 380. Thunb.*

*prodr. 80. Burm. afr. 5. t. 5. (Fabago.)*

*Leaves conjugate sessile, leaflets linear fleshy flat above, stem shrubby.*

12. *Zygophyllum æstuans.*

*Lin. spec. 552. Reich. 2. 275. Willd. 2. 564.*

*Leaves conjugate sessile, leaflets obovate retuse.*

13. *Zygophyllum lanatum.* Woolly Bean-caper.

*Lin. spec. ed. Willd. 2. 564.*

*Leaves ternate, leaflets papillose beneath, flowers five-styled, stem flexuose woolly at the joints.*

14. *Zygophyllum arboreum.* Tree Bean-caper.

*Lin. spec. 1673. syst. 400. Reich. 2. 275. Willd.*

*2. 564. Jacqu. amer. 130. t. 83. piæt. 65. t. 124.*

*Leaves pinnate, stem arboreous.*

#### DESCRIPTIONS, &c.

1. This is a tender succulent, which came up from seeds sent by Forskahl, but did not flower. Stem herbaceous, dichotomous, divaricating. Leaves opposite, sessile, fleshy, linear, spreading very much. Flowers yellow.



Native of Arabia<sup>a</sup>.

2. Found at the Cape of Good Hope by Thunberg<sup>f</sup>. Introduced in 1774, by Mr. Fr. Masson. It flowers here in October<sup>g</sup>.]

3. Root thick, fleshy, striking deep into the ground. The stalks decay every autumn to the root, from which spring new shoots every year, in number proportionable to the size of the root: they rise three or four feet high, and send out a few smooth, green, jointed branches. Leaves smooth, fleshy like those of Purslane, two together on the same foot-stalk, which is an inch long; they are of a bluish green colour. Flowers axillary, two or three from the same joint, on short peduncles. Petals roundish, concave, of a reddish colour on the outside. [Capsule, before it is full ripe, subcylindrical, smooth, filled with a soft pulp; afterwards columnar-oblong, juiceless, sharply five-cornered, where the seeds are repand-knobbed. Seeds about ten in each cell, irregularly ovate, somewhat kidney-shaped and flexuose, compressed greenish or dirty russet, fastened to the central margin of the partitions, in a double row in each cell<sup>h</sup>.

Native of Syria and Siberia.—Cultivated in 1596, by Gerarde. It flowers in July<sup>i</sup>.

4. This species comes nearest to *Zyg. Morgsana*, but the leaves of that are fleshy, nearly sessile, and scentless; these are not fleshy, stand on long footstalks, and diffuse widely a strong foxy smell, like that of Crown Imperial; the flowers of that are small, of this large and ornamental, when the plant is healthy; the seed-vessel of the *Morgsana* has four wings, but in this there is not the least appearance of any. Native of the Cape of Good Hope. It flowers from July to September<sup>k</sup>.—Petals yellow, with dusky red spots near the base. The fruiting peduncle turns back, whence Thunberg's trivial name *retrofractum*.

5. Petals yellow, with a red heart-shaped spot at the base of each, and above that a transverse red line in the three upper petals. Native of the Cape of Good Hope. Introduced in 1782, by George Wynch, Esq. It flowers in November<sup>l</sup>.

6. This is distinguished from the next species, by having scarlet flowers, and oblong capsules. Native of Africa and Siberia<sup>m</sup>.

7. This is a small succulent hoary shrub. Leaves opposite, ovate, round. Petiole ovate-oblong, still bigger. Peduncles lateral, one-flowered, very short. Calyx purplish, concave. Petals broad-lanceolate. At the base of the stamens scales, covering the receptacle. Receptacle of the fruit fleshy, bigger than the germ, depressed, with ten obscure angles. Germ superior, ovate. Style with five acute stigmas<sup>n</sup>.

Stem knobbed, suffruticose, procumbent, very much branched. Leaves fleshy, short, obtuse, sometimes simple, sometimes conjugate. Flowers axillary, solitary, sessile. Calyx five-parted. Corolla white, longer than the calyx<sup>o</sup>.

Native of Egypt; of Barbary, in the sands of the desert, and on the coast; and of the Canary islands, whence it was introduced by Masson in 1779<sup>p</sup>. The younger Linneus informs us, that the seeds were sent to Sweden from Egypt by Dr. Roquè, in 1760.]

8. Stem shrubby, divided into many irregular jointed branches, and rising four or six feet high. Leaves thick, succulent, larger and more obtuse than those of the tenth sort, and placed by fours at each joint, two on each side the stalk opposite. Flowers axillary upon slender foot-stalks; they have but four petals, which are broader than those of the tenth sort, but of the same colour, each having a brown spot at their tails. The fruit has four broad membranaceous wings, resembling the sails of a mill.

[Stem round, jointed, ash-coloured; with alternate branches. Leaves opposite, subsessile: leaflets obtuse, quite entire, fleshy, even. Stipules solitary between the petioles, linear, reflexed. Peduncles lateral, two together, one-flowered, interfoliaceous

Calyx four-leaved, even, concave, obtuse. Corolla yellow, within the tips of the calyx brown. Petals four, sometimes but seldom five, spreading; slightly emarginate. Stamens double the number of the petals, erect. Anthers yellow, with a yellow nectareous scale at the base, brown at the edge. Style length of the stamens<sup>q</sup>.

Native of the Cape of Good Hope. Cultivated in 1732, by James Sherard, M.D. It flowers most part of the summer<sup>r</sup>.

9. Stem shrubby, upright, with the branches for the most part alternate. Leaves opposite, subpetioled, conjugate; leaflets somewhat fleshy, flat. Peduncles capillary, lateral, length of the leaves, solitary. Petals oblong, yellow. Capsule retuse at both ends, five-cornered; with the corners very much compressed, and rounded. Found by Thunberg at the Cape of Good Hope<sup>s</sup>.

10. Leaves sessile: leaflets cartilaginous-crenate or rugged at the edge. Stem angular. Peduncles solitary, longer than the leaves. Petals crenate<sup>t</sup>.]

α. Stem thick, woody, three or four feet high, sending out many branches. Leaves succulent, sessile, placed by fours. Peduncles axillary, long, slender. Petals five, sulphur-coloured, with a brown spot on the tail of each. Capsule roundish, depressed, five-celled: each cell containing two roundish seeds.

β. Stems shrubby, jointed, irregular, branching out greatly from the bottom. Leaves the consistence of Purslane, narrow at their tails, but ovate towards their points, placed by fours at each joint. Flowers axillary, upon slender peduncles. Petals pale yellow, with a pretty large red spot at the tail of each. Capsule ovate, about three quarters of an inch long, having five deep furrows, and divided into five cells, filled with roundish seeds. They both flower great part of the year, and the fruit ripens at the end of autumn or in winter.

[The chief difference in these consists in the shape of the fruit. Native of the Cape of Good Hope. Cultivated in 1713, by the Dutchess Dowager of Beaufort<sup>u</sup>.

11. Stem erect, with alternate branches the length of the plant. Stipules four in whorls, awl-shaped, very short, stiffish. Leaves in fours, linear, fleshy, flat above, beneath roundish, acute. Corollas nodding, yellow<sup>v</sup>. Native of the Cape of Good Hope.

12. Stems herbaceous, a foot high, even, diffused, roundish, flat on the upper side. Stipules in fives, reflexed; two between the leaves at the upper side, one between the leaves at the lower side, and one between each pair of leaves. Found in Surinam by Rolander<sup>w</sup>.

13. This plant is of a doubtful gender. The stem seems to be herbaceous, flexuose, round, smooth, but very woolly at the joints. Leaves opposite, petioled, ternate, small. Leaflets on very short petioles, roundish, attenuated at the base, mucronate at the tip, on the upper surface even, on the lower covered with raised papillæ. Peduncles axillary, solitary, one-flowered, erect in flowering-time, but afterwards drooping. Calyx five-leaved: leaflets linear, obtuse, pubescent within and at the edge. Corolla, if any, was fallen off. Filaments a little dilated at the base. Germ club-shaped. Styles five, long, filiform. Stigmas blunt. Capsule five-cornered, ovate, five-celled, five-valved opening at the base; valves keel-edged. Seeds solitary. Native of Sierra Leone<sup>x</sup>.

14. This is a very handsome tree, forty feet high, with a very thick large elegant head. Trunk upright, dividing into numerous opposite or dichotomous branches. Leaves pinnate, shining, opposite, very numerous; the midrib three inches long, and abrupt; leaflets on each side six or seven, oblong, quite entire, obtuse, sessile, alternate. Racemes loose, opposite, often dichotomous, axillary and terminating. Flowers inodorous, large, handsome. Calyx yellowish green. Petals orange, roundish, with a claw the length of the

<sup>a</sup> Linn. mant.

<sup>f</sup> Linn. suppl.

<sup>g</sup> Hort. kew.

<sup>h</sup> Gærtner.

<sup>i</sup> Hort. kew.

<sup>k</sup> Curtis.

<sup>l</sup> Hort. kew.

<sup>m</sup> Linn. spec.

<sup>n</sup> Linn. mant.

<sup>o</sup> Desfontaines.

<sup>p</sup> Hort. kew.

<sup>q</sup> Linn. mant.

<sup>r</sup> Hort. kew.

<sup>s</sup> Linn. suppl.

<sup>t</sup> Linn. spec.

<sup>u</sup> Hort. kew.

<sup>v</sup> Linn. syst.

<sup>w</sup> Linn. spec.

<sup>x</sup> Willdenow.



calyx. Scales of the nectary hirsute, in the upper filaments gradually larger, in the uppermost very large. Stamens converging. Germ attenuated at the base into a long thick five-grooved pedicel. Capsule with five very large membranaceous wings. This tree has a very beautiful appearance when in flower. The natives call it *Guayacan*, but they give that name to all hard woods. They have a notion that if it be buried in the ground, it will be converted into stone.

Native of Carthagen in Spanish America, in woody vallies; and common in sandy woods on the coast: flowering in July.<sup>a</sup>]

#### PROPAGATION AND CULTURE.

The third sort is only propagated by seeds, which ripen very well in England in warm seasons; these may be either sown upon a moderate hot-bed in the spring, or on a warm border of light ground; those which are sown upon the hot-bed will come up in three weeks or a month, and about a month after, the plants will be fit to remove, when they should be each planted in a separate small pot filled with fresh light earth, and plunged into a gentle hot-bed to promote their taking root, and shaded from the sun in the day time; afterward they must be gradually hardened to bear the open air, to which they should be exposed all the summer; but in autumn, when their stalks begin to decay, they should be placed in a hot-bed frame to shelter them from the frost in winter, for while they are young, they are a little tender. The spring following they may be turned out of the pots, and planted in a south border close to the wall, in a dry rubbishy soil, where they will endure the cold without covering. There is a plant of this kind in the Chelsea Garden, which is more than fifty years old, and has resisted the severest cold without any covering, and produces great plenty of flowers and fruit annually.

Those plants which come up in the full ground will require no other care but to keep them clean from weeds, and thin them where they come up too close, giving them room to grow the first year; and when their stalks decay in autumn, the surface of the ground

<sup>a</sup> Jacquin.

should be covered with tan to prevent the frost from penetrating to the roots, or in frosty weather, they may be covered with straw or Peas haulm, which will answer the same purpose, the young plants being somewhat tender; and in the spring, the roots should be carefully taken up, planting them close to a warm wall, as before directed.

The other sorts are too tender to live through the winter in the open air in this country, so they must be kept in pots, and housed in autumn. These plants may be propagated either by seeds or cuttings.

The tenth sort ripens its seeds pretty well in England, and may be propagated by sowing them on a moderate hot-bed in the spring; when the plants are about an inch high, they should be each transplanted into a small pot filled with light earth, and plunged into a moderate hot-bed, shading them from the sun till they have taken root; then as the season advances, they should be gradually hardened to bear the open air, into which they should be removed the latter end of May, placing them in a warm sheltered situation, where they may remain till autumn, when they should be placed in a dry airy glass-case, where they will succeed better than in a green-house; for they require a large share of air in mild weather, otherwise their shoots are apt to be weak and tender, so are often injured by damp air in winter, but they do not require any artificial heat. If they are screened from the frost, and have plenty of air, they will thrive very well.

The eighth sort seldom produces good seeds in England, so is propagated by cuttings, and the tenth is generally increased in the gardens the same way, that method being very expeditious, though the seedling plants grow stronger, and rise to a greater height. These cuttings may be planted in a bed of light earth during any of the summer months; if these are covered close down with bell or hand-glasses, and shaded from the sun, they will put out roots in five or six weeks, and then may be taken up carefully and potted, placing them in the shade till they have taken new root; after which they may be removed to a warm sheltered situation, and treated in the same way as those plants raised from seeds.

FINIS.



















